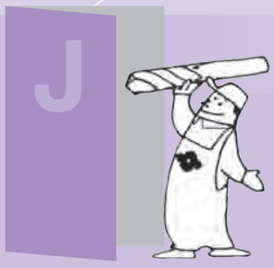
Drills J

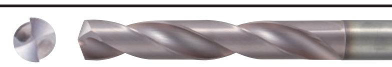
J1 to J175



Stock Markings and Symbols

- ●● mark : Standard stocked item
- ● mark : To be replaced with the new item featured on the same page
- ▲ mark : To be replaced by a new product, made to order, or discontinued (please confirm stock availability).
- * mark : Semi-standard stock (please confirm stock availability)
- ○ mark : Stock or planned stock (please confirm stock availability)
- Blank : Made-to-order item
- — mark : Not available

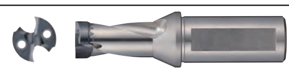
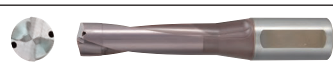
Drill Selection Guide

Applications	Work Material	Series	Cat. No.	Diameter (mm)	Appearance	Ref. Page
General-purpose	P M K S	MULTIDRILL NeXEO **MDE-E** Type	MDE○○○○S○○E02	ø1.0 to ø20.0		J8
			MDE○○○○S○○E04	ø1.0 to ø20.0		
	P M K N S	MULTIDRILL NeXEO **MDE-H** Type	MDE○○○○S○○H03	ø1.0 to ø20.0		J8
			MDE○○○○S○○H05	ø1.0 to ø20.0		
			MDE○○○○S○○H08	ø1.0 to ø16.0		
High Efficiency	P K	Super MULTIDRILLs **GS** Type	MDW○○○○GS2	ø1.0 to 20.0		J48
			MDW○○○○GS4	ø1.0 to 20.0		
	P M K S	Super MULTIDRILLs **HGS** Type	MDW○○○○HGS3	ø1.5 to 20.0		J48
			MDW○○○○HGS5	ø1.5 to 20.0		
			MDW○○○○HGS8	ø1.5 to 16.0		
	P K	Strong MULTIDRILLs **HY** Type	MDW○○○○HY3	ø5.0 to 16.0		J70
			MDW○○○○HY5	ø5.0 to 16.0		
			MDW○○○○HY8	ø5.0 to 16.0		
Spot Facing	P M K N	Flat MULTIDRILLs **MDF** Type	MDF○○○○S2D	ø0.3 to 20.0	 	J36
			MDF○○○○L2D	ø3.0 to 20.0		
			MDF○○○○H3D	ø3.0 to 16.0		
			MDF○○○○H5D	ø3.0 to 16.0		
Deep Hole	P M K	Super MULTIDRILLs **XHGS** Type	MDW○○○○XHGS10	ø2.1 to 16.0		J76
			MDW○○○○XHGS12	ø2.5 to 16.0		
			MDW○○○○XHGS15	ø2.1 to 16.0		
			MDW○○○○XHGS20	ø2.1 to 14.0		
			MDW○○○○XHGS25	ø2.1 to 12.0		
			MDW○○○○XHGS30	ø2.1 to 10.0		
		Guide Drill for Long Drills **PHT** Type	MDW○○○○PHT	ø2.1 to 16.0		J76
Thin Plates	P M K S	MULTIDRILL NeXEO **MDE-E** Type for Hub Drilling	MDE○○○○S○○E02H	ø8.8 to ø13.97		J8
	P	Super MULTIDRILLs **WGS** Type	MDW○○○○WGS2	ø6.8 to 16.0		J60
Stainless Steel	M S	MULTIDRILL Series **MDM** Type	MDM○○○○S○○H03	ø3.0 to ø16.0		J26
			MDM○○○○S○○H05	ø3.0 to ø16.0		
Cast Iron	K	Strong MULTIDRILLs **HX** Type	MDW○○○○HX3	ø3.0 to 20.0		J62
			MDW○○○○HX5	ø3.0 to 20.0		
			MDW○○○○HX8	ø3.0 to 18.0		
Non-ferrous Metal	N	Super MULTIDRILLs **NHGS** Type	MDW○○○○NHGS3	ø3.0 to 16.0		J84
			MDW○○○○NHGS5	ø3.0 to 16.0		
			MDW○○○○NHGS10	ø3.0 to 16.0		
	N	SUMIDIA Drills **DAL** Type	DAL○○○○H	ø5.0 to 12.0		J90
	N	SUMIDIA Drills **DDL** Type	DDL○○○○H	ø5.0 to 12.0		J90
Hardened Steel	S H	Super MULTIDRILLs **D** Type	MDS○○○MD	ø1.0 to 20.0		J72
Heat-Resistant Alloy	S	Drill for Heat-Resistant Alloys **SGS** Type	MDW○○○○SGS3	ø3.0 to 12.0		J74
CFRP	CFRP	SUMIDIA Coat Drills **SDC** Type	MDS○○○○○SDC3	ø2.0 to 10.0		J89

Drill Selection Guide

Series	Drilling Depth (L/D)	Coated Carbide	Coolant Supply	P			H		M	S		K		N			Ref. Page
				Carbon Steel Alloy Steel up to 35HRC		Tempered Steel	Hardened Steel		Stainless Steel	Titanium Alloy	Heat-resistant Steel	Cast Iron	Ductile Cast Iron	Aluminum Alloy	Copper Alloy	Composite	
				C 0.28% or less	C 0.29%	SKD SKS	45HRC or less	46HRC or more	SUS	Ti	Inconel	FC	FCD	Al	Cu	CFRP	
MDE-E Type	2D 4D	NX Coat	External	○	◎	◎	○		○	○	○	◎	◎				J8
MDE-H Type	3D 5D 8D	NX Coat	Internal	◎	◎	◎	○		◎	○	○	◎	◎	○	○		J8
GS Type	2D 4D	DEX Coat	External	○	◎	◎	○	○	○	○	○	○	◎				J48
HGS Type	3D 5D 8D	DEX Coat	Internal	◎	◎	◎	○	○	◎	◎	○	○	◎		○		J48
HY Type	3D 5D 8D	DEX Coat	Internal	◎	◎							◎	◎				J70
MDF Type	2D 3D 5D	PVD Coat	External S2D	◎	◎	◎	○		○	○	○	○	○	○			J36
			External L2D	◎	◎	◎	○		○			○	○	○			
			Internal	◎	◎	◎	○		○			○	○	○			
XHGS Type	10D 12D 15D 20D 25D 30D	DEX Coat	Internal	○	◎	◎	○		○			○	◎				J76
PHT Type	Pilot 3D	DEX Coat	Internal	○	◎	◎	○		○			○	◎				J76
MDE-E Type For Hub Drilling	2D	NX Coat	External	○	◎	◎	○		○	○	○	◎	◎				J8
WGS Type	2D	DEX Coat	External	○	◎	◎	○		○			○	○				J60
MDM Type	3D 5D	NX Coat	Internal	○	○				◎	◎	○	○	○				J26
HX Type	3D 5D 8D	DEX Coat	Internal									◎	◎				J62
NHGS Type	3D 5D 10D	Aurora DLC Coat	Internal											◎	◎		J84
DAL Type	3D	—	External											◎		○	J90
DDL Type	3D	—	External											◎		○	J90
D Type	3D	ZX Coat	External				◎	◎		◎							J72
SGS Type	3D	PVD Coat	External						○	○	◎						J74
SDC Type	3D	SUMIDIA Coat	Dry											○		◎	J89

Drill Selection Guide

Applications/ Specifications	Work Material	Series	Cat. No.	Diameter (mm)	Appearance	Ref. Page
Small Diameter Deep Hole	P M K	Micro Long Drills **MLDH** Type	MLDH○○○○L5	ø0.8 to 2.0		J91
			MLDH○○○○L12	ø0.8 to 2.0		
			MLDH○○○○L20	ø0.8 to 2.0		
			MLDH○○○○L30	ø0.8 to 2.0		
		Guide Drill for MLDH Type **MLDH-P** Type	MLDH○○○○P	ø0.8 to 2.0		J91
Very Small Diameter	P M K H	MINI-MULTIDRILLs **MDSS** Type	MDSS○○○○	ø0.2 to 1.0		J94
	P M N	Micro MULTIDRILLs **MDUS** Type	MDUS○○○○-30C	ø0.03 to 0.19		J94
		Micro Multi Pointing Drill **MDUP** Type	MDUP○○○○-30C	ø0.03 to 0.18		J94
Indexable Head Type Sharper edge	P M K	SEC-MULTIDRILLs **SMD-MSL** Type Head	SMDH○○○S/-1.5D/-1.5DF	ø12.0 to 30.8 D: ø13.5 to 30.8		J96
			SMDH○○○M/-3D/-3DF			
			SMDH○○○L/-5D/-5DF			
			SMDH○○○D/-8D/-8DF			
			SMDH○○○-12D			
Indexable Head Type High Efficiency	P K	SEC-MULTIDRILLs **SMD-MTL** Type Head	SMDH○○○S/-1.5D/-1.5DF	ø12.0 to 30.8 M, L: ø12.0 to 42.5 D: ø13.5 to 30.8		J96
			SMDH○○○M/-3D/-3DF			
			SMDH○○○L/-5D/-5DF			
			SMDH○○○D/-8D/-8DF			
			SMDH○○○-12D			
Indexable Head Type Low Resistance	P M K	SEC-MULTIDRILLs **SMD-MEL** Type Head	SMDH○○○S/-1.5D/-1.5DF	ø12.0 to 30.8 D: ø13.5 to 30.8		J96
			SMDH○○○M/-3D/-3DF			
			SMDH○○○L/-5D/-5DF			
			SMDH○○○D/-8D/-8DF			
			SMDH○○○-12D			
Indexable Head Type Spot Facing	P M K N	SEC-MULTIDRILLs **SMD-MFS** Type Head	SMDH○○○-1.5D/1.5DF/S	ø12.0 to 30.0		J110
Indexable Head Type Structural Steel	P	SEC-MULTIDRILLs **SMD-MB** Type Head	SMDH○○○B3	ø24.5 to 26.7		J118
Indexable Insert Type	P M K N	SumiDrill **WDX** Type	WDX○○○D2S○○	ø13.0 to 68.0		J120
			WDX○○○D3S○○	ø13.0 to 68.0		
			WDX○○○D4S○○	ø13.0 to 63.0		
			WDX○○○D5S○○	ø13.0 to 55.0		
	P K S N	SEC-Plunge Drill **PDL** Type	PDL○○○D2S○○	ø16.0 to 40.0		J134
			PDL○○○D3S○○	ø16.0 to 40.0		
	P K S N	SEC-Plunge Mill **PCT** Type	PCT○○○D3S○○	ø16.0 to 40.0		J134
			PCT○○○D5S○○	ø16.0 to 40.0		
Solid Reamer	P K	SumiReamer **SSR** Type	SSR○○○H7T	ø2.97 to 12.0		J142
			SSR○○○H7S			
			SSR○○○JT			
			SSR○○○JS			
Indexable Insert Type Reamers	P M K N	SumiReamer **SR** Type	SRG○○.○H7-○○○-○○○12R1	ø11.9 to 140.6		J152
			SRL○○.○H7-○○○-○○○12R1	ø11.9 to 140.6		
Brazed	P K	Super MULTIDRILLs **AK** Type	KDS○○○MAK	ø13.6 to 40.5		J162
			KDS○○○LAK	ø13.6 to 40.5		
			KDS○○○DAK	ø13.0 to 40.5		
	P	Super MULTIDRILLs **BAK** Type	KDS○○○BAK	ø13.6 to 30.5		J162
HSS	P K	H's (High Speed Steel) MULTIDRILL **HMD** Type	HMD○○○S	ø1.0 to 20.0		J168
			HMD○○○M	ø2.0 to 20.0		

Drilling
J
Solid
Indexable Head Type
Indexable Insert Type
Reamers
Brazed
Others

Drill Selection Guide

Series	Drilling Depth (L/D)	Coated Carbide	Coolant Supply	P			H		M	S		K		N			Ref. Page
				Carbon Steel Alloy Steel up to 35HRC		Tempered Steel	Hardened Steel		Stainless Steel	Titanium Alloy	Heat-resistant Steel	Cast Iron	Ductile Cast Iron	Aluminum Alloy	Copper Alloy	Composite	
				C 0.28% or less	C 0.29%	SKD SKS	45HRC or less	46HRC or more	SUS	Ti	Inconel	FC	FCD	Al	Cu	CFRP	
MLDH Type	5D 12D 20D 30D	PVD Coat	Internal	◎	◎	○	○		◎	○	○	◎	◎	○			J91
MLDH-P Type	Pilot 2D	PVD Coat	Internal	◎	◎	○	○		◎	○	○	◎	◎	○			J91
MDSS Type	10D	FB Coat	External	◎	◎	◎	◎	○	◎		○	◎	◎	○			J94
MDUS Type	10D	PVD Coat	External	◎	◎				◎					○	◎		J94
MDUP Type	Pilot 1D	PVD Coat	External	◎	◎				◎					○	◎		J94
SMD -MSL Type Head	1.5D 3D 5D 8D 12D	NX Coat		◎	○				◎	○	○	◎	◎				J96
SMD -MTL Type Head	1.5D 3D 5D 8D 12D	DEX Coat	Internal	◎	◎	○	○					◎	◎				J96
SMD -MEL Type Head	1.5D 3D 5D 8D 12D	DEX Coat	Internal	◎	○		○		◎	○	○	◎	◎	○			J96
SMD -MFS Type Head	1.5D 3D 5D 8D 12D	DEX Coat	Internal	◎	◎		○		○			○	○	○			J110
SMD -MB Type Head	3D	DEX Coat	Internal	◎	◎												J118
WDX Type	2D 3D 4D 5D	PVD Coat, Aurora DLC Coat, CVD Coat	Internal	◎	◎		○		◎			◎	◎	◎			J120
PDL Type	2D 3D	PVD Coat, Aurora DLC Coat, CVD Coat	Internal	◎	◎		○		○	◎		◎	◎	◎	○		J134
PCT Type	3D 5D	PVD Coat, Aurora DLC Coat, CVD Coat	Internal	◎	◎		○		○	◎		◎	◎	◎	○		J134
SSR Type		PVD Coat	Internal	◎	◎	◎	○					◎	◎				J142
SR Type		PVD Coat, Aurora DLC Coat	Internal	◎	◎	◎	○		◎			◎	◎	○	○		J152
AK Type	3D 5D 7D	ZX Coat	Internal	◎	◎	○	○		○			○	◎				J162
BAK Type	3D	ZX Coat	Internal	◎	◎												J162
HMD Type	3D 5D	PVD Coat	External	○	○				○			○	○	○			J168

Effective Length List by Diameter

Drilling
J
Solid
Indexable Head Type
Indexable Insert Type
Reamers
Brazed
Others

● Diameter ø0.03 to ø0.78mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
0.03	0.02	38.2	MDUP 0030-30C	J94
	0.26	38.0	MDUS 0030-30C	J95
0.04	0.04	38.2	MDUP 0040-30C	J94
	0.34	38.0	MDUS 0040-30C	J95
0.05	0.05	38.2	MDUP 0050-30C	J94
	0.45	38.0	MDUS 0050-30C	J95
0.08	0.06	38.2	MDUP 0080-30C	J94
	0.72	38.0	MDUS 0080-30C	J95
0.1	0.1	38.2	MDUP 0100-30C	J94
	0.9	38.0	MDUS 0100-30C	J95
0.12	0.08	38.2	MDUP 0120-30C	J94
	1.08	38.0	MDUS 0120-30C	J95
0.15	0.08	38.2	MDUP 0150-30C	J94
	1.35	38.0	MDUS 0150-30C	J95
0.18	0.17	38.2	MDUP 0180-30C	J94
	1.62	38.0	MDUS 0180-30C	J95
0.2	2.25	38.0	MDSS 0020	J95
0.21	2.24	38.0	MDSS 0021	J95
0.22	2.23	38.0	MDSS 0022	J95
0.23	2.21	38.0	MDSS 0023	J95
0.24	2.2	38.0	MDSS 0024	J95
0.25	2.19	38.0	MDSS 0025	J95
0.26	2.18	38.0	MDSS 0026	J95
0.27	2.16	38.0	MDSS 0027	J95
0.28	2.15	38.0	MDSS 0028	J95
0.29	2.14	38.0	MDSS 0029	J95
0.3	0.9	40.0	MDF 0030S2D	J38
	2.6	38.0	MDSS 0030	J95
0.31	2.6	38.0	MDSS 0031	J95
0.32	2.6	38.0	MDSS 0032	J95
0.33	2.6	38.0	MDSS 0033	J95
0.34	2.6	38.0	MDSS 0034	J95
0.35	3.6	38.0	MDSS 0035	J95
0.36	3.6	38.0	MDSS 0036	J95
0.37	3.5	38.0	MDSS 0037	J95
0.38	3.5	38.0	MDSS 0038	J95
0.39	3.5	38.0	MDSS 0039	J95
0.4	1.2	40.0	MDF 0040S2D	J38
	4.5	38.0	MDSS 0040	J95
0.41	4.5	38.0	MDSS 0041	J95
0.42	4.5	38.0	MDSS 0042	J95
0.43	4.5	38.0	MDSS 0043	J95
0.44	4.5	38.0	MDSS 0044	J95
0.45	4.4	38.0	MDSS 0045	J95
0.46	4.4	38.0	MDSS 0046	J95
0.47	4.4	38.0	MDSS 0047	J95
0.48	4.4	38.0	MDSS 0048	J95
0.49	4.4	38.0	MDSS 0049	J95
0.5	1.5	40.0	MDF 0050S2D	J38
	5.4	38.0	MDSS 0050	J95
0.51	5.4	38.0	MDSS 0051	J95
0.52	5.4	38.0	MDSS 0052	J95
0.53	5.3	38.0	MDSS 0053	J95
0.54	5.3	38.0	MDSS 0054	J95
0.55	5.3	38.0	MDSS 0055	J95
0.56	5.3	38.0	MDSS 0056	J95
0.57	5.3	38.0	MDSS 0057	J95
0.58	5.3	38.0	MDSS 0058	J95
0.59	5.3	38.0	MDSS 0059	J95
0.6	1.8	40.0	MDF 0060S2D	J38
	6.3	38.0	MDSS 0060	J95
0.61	6.2	38.0	MDSS 0061	J95
0.62	6.2	38.0	MDSS 0062	J95
0.63	6.2	38.0	MDSS 0063	J95
0.64	6.2	38.0	MDSS 0064	J95
0.65	6.2	38.0	MDSS 0065	J95
0.66	6.2	38.0	MDSS 0066	J95
0.67	6.2	38.0	MDSS 0067	J95
0.68	6.2	38.0	MDSS 0068	J95
0.69	6.1	38.0	MDSS 0069	J95
0.7	2.1	40.0	MDF 0070S2D	J38
	8.1	38.0	MDSS 0070	J95
0.71	8.1	38.0	MDSS 0071	J95
0.72	8.1	38.0	MDSS 0072	J95
0.73	8.1	38.0	MDSS 0073	J95
0.74	8.1	38.0	MDSS 0074	J95
0.75	8.1	38.0	MDSS 0075	J95
0.76	8.1	38.0	MDSS 0076	J95
0.77	8.0	38.0	MDSS 0077	J95
0.78	8.0	38.0	MDSS 0078	J95

(Blue text: Flat head ■Indexable ■HSS)

● Diameter ø0.79 to ø0.92mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
0.79	8.0	38.0	MDSS 0079	J95
0.8	2.0	45.0	MLDH 0800P	J92
	2.4	40.0	MDF 0080S2D	J38
	6.8	50.0	MLDH 0800L5	J92
	9.0	38.0	MDSS 0080	J95
	12.8	55.0	MLDH 0800L12	J92
	17.8	60.0	MLDH 0800L20	J92
	26.8	70.0	MLDH 0800L30	J92
0.81	2.0	45.0	MLDH 0810P	J92
	7.8	50.0	MLDH 0810L5	J92
	9.0	38.0	MDSS 0081	J95
	12.8	55.0	MLDH 0810L12	J92
	17.8	60.0	MLDH 0810L20	J92
	26.8	70.0	MLDH 0810L30	J92
0.82	2.1	45.0	MLDH 0820P	J92
	7.8	50.0	MLDH 0820L5	J92
	9.0	38.0	MDSS 0082	J95
	12.8	55.0	MLDH 0820L12	J92
	18.8	60.0	MLDH 0820L20	J92
	26.8	70.0	MLDH 0820L30	J92
0.83	2.1	45.0	MLDH 0830P	J92
	7.8	50.0	MLDH 0830L5	J92
	9.0	38.0	MDSS 0083	J95
	12.8	55.0	MLDH 0830L12	J92
	18.8	60.0	MLDH 0830L20	J92
	26.8	70.0	MLDH 0830L30	J92
0.84	2.1	45.0	MLDH 0840P	J92
	7.7	50.0	MLDH 0840L5	J92
	9.0	38.0	MDSS 0084	J95
	12.7	55.0	MLDH 0840L12	J92
	18.7	60.0	MLDH 0840L20	J92
	27.7	70.0	MLDH 0840L30	J92
0.85	2.1	45.0	MLDH 0850P	J92
	7.7	50.0	MLDH 0850L5	J92
	8.9	38.0	MDSS 0085	J95
	12.7	55.0	MLDH 0850L12	J92
	18.7	60.0	MLDH 0850L20	J92
	27.7	70.0	MLDH 0850L30	J92
0.86	2.1	45.0	MLDH 0860P	J92
	7.7	50.0	MLDH 0860L5	J92
	8.9	38.0	MDSS 0086	J95
	13.7	55.0	MLDH 0860L12	J92
	19.7	65.0	MLDH 0860L20	J92
	27.7	70.0	MLDH 0860L30	J92
0.87	2.2	45.0	MLDH 0870P	J92
	7.7	50.0	MLDH 0870L5	J92
	8.9	38.0	MDSS 0087	J95
	13.7	55.0	MLDH 0870L12	J92
	19.7	65.0	MLDH 0870L20	J92
	28.7	70.0	MLDH 0870L30	J92
0.88	2.2	45.0	MLDH 0880P	J92
	7.7	50.0	MLDH 0880L5	J92
	8.9	38.0	MDSS 0088	J95
	13.7	55.0	MLDH 0880L12	J92
	19.7	65.0	MLDH 0880L20	J92
	28.7	70.0	MLDH 0880L30	J92
0.89	2.3	45.0	MLDH 0890P	J92
	7.7	50.0	MLDH 0890L5	J92
	8.9	38.0	MDSS 0089	J95
	13.7	55.0	MLDH 0890L12	J92
	19.7	65.0	MLDH 0890L20	J92
	28.7	70.0	MLDH 0890L30	J92
0.9	2.3	45.0	MLDH 0900P	J92
	2.7	40.0	MDF 0090S2D	J38
	7.7	50.0	MLDH 0900L5	J92
	9.9	38.0	MDSS 0090	J95
	13.7	55.0	MLDH 0900L12	J92
	20.7	65.0	MLDH 0900L20	J92
	29.7	75.0	MLDH 0900L30	J92
0.91	2.2	45.0	MLDH 0910P	J92
	8.6	50.0	MLDH 0910L5	J92
	9.9	38.0	MDSS 0091	J95
	13.6	55.0	MLDH 0910L12	J92
	20.6	65.0	MLDH 0910L20	J92
	29.6	75.0	MLDH 0910L30	J92
0.92	2.3	45.0	MLDH 0920P	J92
	8.6	50.0	MLDH 0920L5	J92
	9.9	38.0	MDSS 0092	J95
	14.6	60.0	MLDH 0920L12	J92
	20.6	65.0	MLDH 0920L20	J92

(Blue text: Flat head ■Indexable ■HSS)

● Diameter ø0.92 to ø1.15mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
0.92	29.6	75.0	MLDH 0920L30	J92
0.93	2.3	45.0	MLDH 0930P	J92
	8.6	50.0	MLDH 0930L5	J92
	9.8	38.0	MDSS 0093	J95
	14.6	60.0	MLDH 0930L12	J92
	20.6	65.0	MLDH 0930L20	J92
	30.6	75.0	MLDH 0930L30	J92
0.94	2.4	45.0	MLDH 0940P	J92
	8.6	50.0	MLDH 0940L5	J92
	9.8	38.0	MDSS 0094	J95
	14.6	60.0	MLDH 0940L12	J92
	21.6	65.0	MLDH 0940L20	J92
	30.6	75.0	MLDH 0940L30	J92
0.95	2.4	45.0	MLDH 0950P	J92
	8.6	50.0	MLDH 0950L5	J92
	9.8	38.0	MDSS 0095	J95
	14.6	60.0	MLDH 0950L12	J92
	21.6	65.0	MLDH 0950L20	J92
	30.6	75.0	MLDH 0950L30	J92
0.96	2.4	45.0	MLDH 0960P	J92
	8.6	50.0	MLDH 0960L5	J92
	9.8	38.0	MDSS 0096	J95
	14.6	60.0	MLDH 0960L12	J92
	21.6	65.0	MLDH 0960L20	J92
	31.6	75.0	MLDH 0960L30	J92
0.97	2.4	45.0	MLDH 0970P	J92
	8.5	50.0	MLDH 0970L5	J92
	9.8	38.0	MDSS 0097	J95
	14.5	60.0	MLDH 0970L12	J92
	21.5	65.0	MLDH 0970L20	J92
	31.5	75.0	MLDH 0970L30	J92
0.98	2.4	45.0	MLDH 0980P	J92
	8.5	50.0	MLDH 0980L5	J92
	9.8	38.0	MDSS 0098	J95
	15.5	60.0	MLDH 0980L12	J92
	22.5	65.0	MLDH 0980L20	J92
	31.5	75.0	MLDH 0980L30	J92
0.99	2.5	45.0	MLDH 0990P	J92
	8.5	50.0	MLDH 0990L5	J92
	9.8	38.0	MDSS 0099	J95
	15.5	60.0	MLDH 0990L12	J92
	22.5	65.0	MLDH 0990L20	J92
	32.5	75.0	MLDH 0990L30	J92
1.0	2.5	45.0	MLDH 1000P	J92
	3.0	45.0	MDF 0100S2D	J38
	4.5	38.0	HMD 010S	J168
	4.7	45.2	MDW 0100GS2	J50
	5.7	45.2	MDE 0100S03E02	J13
	6.7	57.2	MDE 0100S03H03	J19
	7.7	49.2	MDE 0100S03E04	J13
	8.5	50.0	MLDH 1000L5	J92
	8.7	59.2	MDE 0100S03H05	J19
	10.7	45.2	MDS 010MD	J72
	10.7	49.2	MDW 0100GS4	J50
	10.8	38.0	MDSS 0100	J95
	11.7	62.2	MDE 0100S03H08	J19
	15.5	60.0	MLDH 1000L12	J92
	22.5	65.0	MLDH 1000L20	J92
	32.5	75.0	MLDH 1000L30	J92
1.05	2.6	45.0	MLDH 1050P	J92
	10.4	55.0	MLDH 1050L5	J92
	16.4	60.0	MLDH 1050L12	J92
	23.4	65.0	MLDH 1050L20	J92
	34.4	80.0	MLDH 1050L30	J92
1.1	2.8	45.0	MLDH 1100P	J93
	3.3	45.0	MDF 0110S2D	J38
	4.6	45.2	MDW 0110GS2	J50
	5.4	39.0	HMD 011S	J168
	5.6	45.2	MDE 0110S03E02	J13
	6.6	57.2	MDE 0110S03H03	J19
	7.6	49.2	MDE 0110S03E04	J13
	8.6	59.2	MDE 0110S03H05	J19
	10.4	55.0	MLDH 1100L5	J93
	10.6	49.2	MDW 0110GS4	J50
	12.6	62.2	MDE 0110S03H08	J19
	17.4	60.0	MLDH 1100L12	J93
	24.4	70.0	MLDH 1100L20	J93
	35.4	80.0	MLDH 1100L30	J93
1.15	2.9	45.0	MLDH 1150P	J93
	10.3	55.0	MLDH 1150L5	J93

(Blue text: Flat head ■Indexable ■HSS)

Effective Length (LU) is a guideline for the usable length. Take into account the chip evacuation in relation to the flute length (LCF) when drilling.

Effective Length List by Diameter

● Diameter ø1.15 to ø1.5mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
1.15	18.3	60.0	MLDH 1150L12	J93
	26.3	70.0	MLDH 1150L20	J93
	37.3	80.0	MLDH 1150L30	J93
1.2	3.0	45.0	MLDH 1200P	J93
	3.6	45.0	MDF 0120S2D	J38
	4.4	45.2	MDW 0120GS2	J50
	6.2	40.0	HMD 012S	J168
	6.4	45.2	MDE 0120S03E02	J13
	7.4	57.2	MDE 0120S03H03	J19
	8.4	49.2	MDE 0120S03E04	J13
	9.4	59.2	MDE 0120S03H05	J19
	10.2	55.0	MLDH 1200L5	J93
	10.4	49.2	MDW 0120GS4	J50
	12.4	45.2	MDS 012MD	J72
	13.4	62.2	MDE 0120S03H08	J19
	18.2	60.0	MLDH 1200L12	J93
	27.2	70.0	MLDH 1200L20	J93
	39.2	85.0	MLDH 1200L30	J93
1.25	3.1	45.0	MLDH 1250P	J93
	12.1	55.0	MLDH 1250L5	J93
	19.1	65.0	MLDH 1250L12	J93
	28.1	70.0	MLDH 1250L20	J93
	41.1	85.0	MLDH 1250L30	J93
1.3	3.3	45.0	MLDH 1300P	J93
	3.9	45.0	MDF 0130S2D	J38
	4.4	45.3	MDW 0130GS2	J50
	6.1	40.0	HMD 013S	J168
	6.3	45.2	MDE 0130S03E02	J13
	7.3	57.2	MDE 0130S03H03	J19
	9.3	49.2	MDE 0130S03E04	J13
	10.3	59.2	MDE 0130S03H05	J19
	10.4	49.3	MDW 0130GS4	J50
	12.1	55.0	MLDH 1300L5	J93
	14.3	62.2	MDE 0130S03H08	J19
	20.1	65.0	MLDH 1300L12	J93
	29.1	75.0	MLDH 1300L20	J93
	42.1	85.0	MLDH 1300L30	J93
1.35	3.4	45.0	MLDH 1350P	J93
	12.0	55.0	MLDH 1350L5	J93
	21.0	65.0	MLDH 1350L12	J93
	30.0	75.0	MLDH 1350L20	J93
	44.0	90.0	MLDH 1350L30	J93
1.4	3.5	45.0	MLDH 1400P	J93
	4.2	45.0	MDF 0140S2D	J38
	4.2	45.3	MDW 0140GS2	J50
	6.9	41.0	HMD 014S	J168
	7.2	45.3	MDE 0140S03E02	J13
	8.2	57.3	MDE 0140S03H03	J19
	9.2	49.3	MDE 0140S03E04	J13
	10.2	49.3	MDW 0140GS4	J50
	11.2	59.3	MDE 0140S03H05	J19
	11.9	55.0	MLDH 1400L5	J93
	13.2	45.3	MDS 014MD	J72
	15.2	62.3	MDE 0140S03H08	J19
	21.9	65.0	MLDH 1400L12	J93
	31.9	75.0	MLDH 1400L20	J93
	45.9	90.0	MLDH 1400L30	J93
1.45	3.6	45.0	MLDH 1450P	J93
	13.8	55.0	MLDH 1450L5	J93
	22.8	65.0	MLDH 1450L12	J93
	32.8	75.0	MLDH 1450L20	J93
	46.8	90.0	MLDH 1450L30	J93
1.5	3.8	45.0	MLDH 1500P	J93
	4.1	45.3	MDW 0150GS2	J50
	4.5	45.0	MDF 0150S2D	J38
	6.8	41.0	HMD 015S	J168
	7.1	45.3	MDE 0150S03E02	J13
	8.1	63.3	MDW 0150HGS3	J54
	9.1	57.3	MDE 0150S03H03	J19
	10.1	49.3	MDE 0150S03E04	J13
	10.1	49.3	MDW 0150GS4	J50
	12.1	59.3	MDE 0150S03H05	J19
	12.1	70.3	MDW 0150HGS5	J54
	13.1	45.3	MDS 015MD	J72
	13.8	55.0	MLDH 1500L5	J93
	16.1	62.3	MDE 0150S03H08	J19
	16.6	76.3	MDW 0150HGS8	J54
	23.8	65.0	MLDH 1500L12	J93
	33.8	75.0	MLDH 1500L20	J93
	48.8	90.0	MLDH 1500L30	J93

(Blue text: Flat head ■Indexable ■HSS)

● Diameter ø1.55 to ø1.9mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
1.55	3.9	45.0	MLDH 1550P	J93
	13.7	55.0	MLDH 1550L5	J93
	23.7	65.0	MLDH 1550L12	J93
	34.7	80.0	MLDH 1550L20	J93
	50.7	95.0	MLDH 1550L30	J93
1.6	4.0	45.0	MLDH 1600P	J93
	4.8	45.0	MDF 0160S2D	J38
	5.9	45.3	MDW 0160GS2	J50
	7.6	42.0	HMD 016S	J168
	7.9	45.3	MDE 0160S03E02	J13
	8.9	59.3	MDE 0160S03H03	J19
	10.4	63.3	MDW 0160HGS3	J54
	10.9	49.3	MDE 0160S03E04	J13
	11.9	62.3	MDE 0160S03H05	J19
	12.9	45.3	MDS 016MD	J72
	12.9	49.3	MDW 0160GS4	J50
	13.6	55.0	MLDH 1600L5	J93
	16.9	67.3	MDE 0160S03H08	J19
	16.9	70.3	MDW 0160HGS5	J54
	21.9	76.3	MDW 0160HGS8	J54
	24.6	70.0	MLDH 1600L12	J93
	35.6	80.0	MLDH 1600L20	J93
	51.6	95.0	MLDH 1600L30	J93
1.65	4.1	50.0	MLDH 1650P	J93
	15.5	60.0	MLDH 1650L5	J93
	25.5	70.0	MLDH 1650L12	J93
	37.5	80.0	MLDH 1650L20	J93
	53.5	95.0	MLDH 1650L30	J93
1.7	4.3	50.0	MLDH 1700P	J93
	5.1	45.0	MDF 0170S2D	J38
	5.9	45.4	MDW 0170GS2	J50
	7.5	42.0	HMD 017S	J168
	7.8	45.3	MDE 0170S03E02	J13
	9.8	59.3	MDE 0170S03H03	J19
	10.4	63.4	MDW 0170HGS3	J54
	10.8	49.3	MDE 0170S03E04	J13
	12.8	62.3	MDE 0170S03H05	J19
	12.9	49.4	MDW 0170GS4	J50
	15.5	60.0	MLDH 1700L5	J93
	16.9	70.4	MDW 0170HGS5	J54
	17.8	67.3	MDE 0170S03H08	J19
	21.9	76.4	MDW 0170HGS8	J54
	26.5	70.0	MLDH 1700L12	J93
	38.5	80.0	MLDH 1700L20	J93
	55.5	100.0	MLDH 1700L30	J93
1.75	4.4	50.0	MLDH 1750P	J93
	15.4	60.0	MLDH 1750L5	J93
	27.4	70.0	MLDH 1750L12	J93
	39.4	85.0	MLDH 1750L20	J93
	57.4	100.0	MLDH 1750L30	J93
1.8	4.5	50.0	MLDH 1800P	J93
	5.4	45.0	MDF 0180S2D	J38
	5.7	45.4	MDW 0180GS2	J50
	8.3	43.0	HMD 018S	J168
	8.6	45.3	MDE 0180S03E02	J13
	9.6	59.3	MDE 0180S03H03	J19
	10.2	63.4	MDW 0180HGS3	J54
	11.6	49.3	MDE 0180S03E04	J13
	12.6	45.3	MDS 018MD	J72
	12.7	49.4	MDW 0180GS4	J50
	13.6	62.3	MDE 0180S03H05	J19
	15.3	60.0	MLDH 1800L5	J93
	16.7	70.4	MDW 0180HGS5	J54
	18.6	67.3	MDE 0180S03H08	J19
	21.7	76.4	MDW 0180HGS8	J54
	28.3	70.0	MLDH 1800L12	J93
	40.3	85.0	MLDH 1800L20	J93
	58.3	100.0	MLDH 1800L30	J93
1.85	4.6	50.0	MLDH 1850P	J93
	17.2	60.0	MLDH 1850L5	J93
	28.2	70.0	MLDH 1850L12	J93
	41.2	85.0	MLDH 1850L20	J93
	59.2	103.0	MLDH 1850L30	J93
1.9	4.8	50.0	MLDH 1900P	J93
	5.6	45.4	MDW 0190GS2	J50
	5.7	45.0	MDF 0190S2D	J38
	8.2	43.0	HMD 019S	J168
	8.5	45.3	MDE 0190S03E02	J13
	10.1	63.4	MDW 0190HGS3	J54
	10.5	59.3	MDE 0190S03H03	J19

(Blue text: Flat head ■Indexable ■HSS)

● Diameter ø1.9 to ø2.3mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
1.9	12.5	49.3	MDE 0190S03E04	J13
	12.6	49.4	MDW 0190GS4	J50
	14.5	62.3	MDE 0190S03H05	J19
	16.6	70.4	MDW 0190HGS5	J54
	17.2	60.0	MLDH 1900L5	J93
	19.5	70.3	MDE 0190S03H08	J19
	21.6	76.4	MDW 0190HGS8	J54
	29.2	75.0	MLDH 1900L12	J93
	43.2	85.0	MLDH 1900L20	J93
	60.2	103.0	MLDH 1900L30	J93
1.95	4.9	50.0	MLDH 1950P	J93
	17.1	60.0	MLDH 1950L5	J93
	30.1	75.0	MLDH 1950L12	J93
	44.1	85.0	MLDH 1950L20	J93
	61.1	103.0	MLDH 1950L30	J93
2.0	5.0	50.0	MLDH 2000P	J93
	5.4	45.4	MDW 0200GS2	J50
	6.0	50.0	MDF 0200S2D	J38
	9.0	44.0	HMD 020S	J168
	9.4	45.4	MDE 0200S03E02	J13
	9.9	63.4	MDW 0200HGS3	J54
	10.5	50.0	MDS 02000SDC3	J89
	11.4	59.4	MDE 0200S03H03	J19
	12.4	45.4	MDS 020MD	J72
	12.4	49.4	MDW 0200GS4	J50
	13.4	49.4	MDE 0200S03E04	J13
	15.4	62.4	MDE 0200S03H05	J19
	16.4	70.4	MDW 0200HGS5	J54
	17.0	60.0	MLDH 2000L5	J93
	21.0	56.0	HMD 020M	J168
	21.4	70.4	MDE 0200S03H08	J19
	21.4	76.4	MDW 0200HGS8	J54
	31.0	75.0	MLDH 2000L12	J93
	45.0	90.0	MLDH 2000L20	J93
	63.0	103.0	MLDH 2000L30	J93
2.1	6.3	50.0	MDF 0210S2D	J38
	7.3	45.4	MDW 0210GS2	J50
	8.9	44.0	HMD 021S	J168
	9.3	45.4	MDE 0210S03E02	J13
	11.3	59.4	MDE 0210S03H03	J19
	12.2	68.3	MDW 0210PHT	J78
	12.3	68.4	MDW 0210HGS3	J54
	13.3	49.4	MDE 0210S03E04	J13
	14.3	49.4	MDW 0210GS4	J50
	15.3	62.4	MDE 0210S03H05	J19
	20.9	56.0	HMD 021M	J168
	21.3	78.4	MDW 0210HGS5	J54
	22.3	70.4	MDE 0210S03H08	J19
	24.8	81.4	MDW 0210HGS8	J54
	35.3	88.4	MDW 0210XHGS10	J78
	45.3	98.4	MDW 0210XHGS15	J78
	58.3	111.4	MDW 0210XHGS20	J78
	70.3	123.4	MDW 0210XHGS25	J78
	83.3	136.4	MDW 0210XHGS30	J78
2.2	6.6	50.0	MDF 0220S2D	J38
	7.2	45.5	MDW 0220GS2	J50
	9.7	45.0	HMD 022S	J168
	10.1	45.4	MDE 0220S03E02	J13
	12.0	68.3	MDW 0220PHT	J78
	12.1	59.4	MDE 0220S03H03	J19
	12.2	68.5	MDW 0220HGS3	J54
	13.1	46.4	MDS 022MD	J72
	14.1	49.4	MDE 0220S03E04	J13
	14.2	49.5	MDW 0220GS4	J50
	16.1	62.4	MDE 0220S03H05	J19
	21.2	78.5	MDW 0220HGS5	J54
	21.7	56.0	HMD 022M	J168
	23.1	70.4	MDE 0220S03H08	J19
	24.7	81.5	MDW 0220HGS8	J54
	35.1	88.4	MDW 0220XHGS10	J78
	45.1	98.4	MDW 0220XHGS15	J78
	58.1	111.4	MDW 0220XHGS20	J78
	70.1	123.4	MDW 0220XHGS25	J78
	83.1	136.4	MDW 0220XHGS30	J78
2.3	6.9	50.0	MDF 0230S2D	J38
	7.1	45.5	MDW 0230GS2	J50
	9.6	45.0	HMD 023S	J168
	10.0	45.4	MDE 0230S03E02	J13
	11.9	68.3	MDW 0230PHT	J78
	12.0	63.4	MDE 0230S03H03	J19

(Blue text: Flat head ■Indexable ■HSS)

Effective Length (LU) is a guideline for the usable length. Take into account the chip evacuation in relation to the flute length (LCF) when drilling.

Effective Length List by Diameter

● Diameter ø2.3 to ø2.7mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
2.3	12.1	68.5	MDW 0230HGS3	J54
	14.0	49.4	MDE 0230S03E04	J13
	14.1	49.5	MDW 0230GS4	J50
	17.0	68.4	MDE 0230S03H05	J19
	21.1	78.5	MDW 0230HGS5	J54
	21.6	56.0	HMD 023M	J168
	24.0	75.4	MDE 0230S03H08	J19
	24.6	81.5	MDW 0230HGS8	J54
	35.0	88.4	MDW 0230XHGS10	J78
	45.0	98.4	MDW 0230XHGS15	J78
	58.0	111.4	MDW 0230XHGS20	J78
	70.0	123.4	MDW 0230XHGS25	J78
	83.0	136.4	MDW 0230XHGS30	J78
2.4	6.9	45.5	MDW 0240GS2	J50
	7.2	50.0	MDF 0240S2D	J38
	10.4	46.0	HMD 024S	J168
	10.8	45.4	MDE 0240S03E02	J13
	11.7	68.3	MDW 0240PHT	J78
	11.9	68.5	MDW 0240HGS3	J54
	12.8	63.4	MDE 0240S03H03	J19
	13.8	47.4	MDS 024MD	J72
	13.9	49.5	MDW 0240GS4	J50
	14.8	49.4	MDE 0240S03E04	J13
	17.8	68.4	MDE 0240S03H05	J19
	20.9	78.5	MDW 0240HGS5	J54
	24.4	81.5	MDW 0240HGS8	J54
	24.8	75.4	MDE 0240S03H08	J19
	26.4	61.0	HMD 024M	J168
	34.8	88.4	MDW 0240XHGS10	J78
	44.8	98.4	MDW 0240XHGS15	J78
	57.8	111.4	MDW 0240XHGS20	J78
	69.8	123.4	MDW 0240XHGS25	J78
	82.8	136.4	MDW 0240XHGS30	J78
2.489	12.47	50.2	MDS 02489SDC3	J89
2.5	6.8	45.5	MDW 0250GS2	J50
	7.5	50.0	MDF 0250S2D	J38
	10.3	46.0	HMD 025S	J168
	10.8	45.5	MDE 0250S03E02	J13
	11.6	68.3	MDW 0250PHT	J78
	11.8	68.5	MDW 0250HGS3	J54
	13.8	47.5	MDS 025MD	J72
	13.8	49.5	MDW 0250GS4	J50
	13.8	63.5	MDE 0250S03H03	J19
	14.8	49.5	MDE 0250S03E04	J13
	18.8	68.5	MDE 0250S03H05	J19
	20.8	78.5	MDW 0250HGS5	J54
	24.3	81.5	MDW 0250HGS8	J54
	25.8	75.5	MDE 0250S03H08	J19
	26.3	61.0	HMD 025M	J168
	34.8	88.5	MDW 0250XHGS10	J78
	37.8	91.5	MDW 0250XHGS12	J78
	44.8	98.5	MDW 0250XHGS15	J78
	57.8	111.5	MDW 0250XHGS20	J78
	69.8	123.5	MDW 0250XHGS25	J78
	82.8	136.5	MDW 0250XHGS30	J78
2.6	7.8	50.0	MDF 0260S2D	J38
	9.6	45.5	MDW 0260GS2	J50
	10.1	46.0	HMD 026S	J168
	11.6	45.5	MDE 0260S03E02	J13
	13.6	47.5	MDS 026MD	J72
	13.6	63.5	MDE 0260S03H03	J19
	13.9	68.3	MDW 0260PHT	J78
	14.1	68.5	MDW 0260HGS3	J54
	15.6	49.5	MDE 0260S03E04	J13
	15.6	49.5	MDW 0260GS4	J50
	18.6	68.5	MDE 0260S03H05	J19
	24.6	78.5	MDW 0260HGS5	J54
	26.1	61.0	HMD 026M	J168
	26.6	75.5	MDE 0260S03H08	J19
	29.6	81.5	MDW 0260HGS8	J54
	41.6	93.5	MDW 0260XHGS10	J78
	56.6	108.5	MDW 0260XHGS15	J78
	71.6	123.5	MDW 0260XHGS20	J78
	86.6	138.5	MDW 0260XHGS25	J78
	101.6	153.5	MDW 0260XHGS30	J78
2.7	8.1	50.0	MDF 0270S2D	J38
	9.6	45.6	MDW 0270GS2	J50
	11.5	45.5	MDE 0270S03E02	J13
	12.0	48.0	HMD 027S	J168
	13.9	68.4	MDW 0270PHT	J78

(Blue text: Flat head ■Indexable ■HSS)

● Diameter ø2.7 to ø3.0mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
2.7	14.1	68.6	MDW 0270HGS3	J54
	14.5	68.5	MDE 0270S03H03	J19
	15.5	49.5	MDE 0270S03E04	J13
	15.6	49.6	MDW 0270GS4	J50
	19.5	78.5	MDE 0270S03H05	J19
	24.6	78.6	MDW 0270HGS5	J54
	27.5	81.5	MDE 0270S03H08	J19
	29.0	64.0	HMD 027M	J168
	29.6	81.6	MDW 0270HGS8	J54
	41.5	93.5	MDW 0270XHGS10	J78
	56.5	108.5	MDW 0270XHGS15	J78
	71.5	123.5	MDW 0270XHGS20	J78
	86.5	138.5	MDW 0270XHGS25	J78
	101.5	153.5	MDW 0270XHGS30	J78
2.76	6.9	50.0	MDF 0276S2D	J38
	11.3	45.5	MDE 0276S03E02	J13
	20.3	78.5	MDE 0276S03H05	J19
2.78	6.9	50.0	MDF 0278S2D	J38
	11.3	45.5	MDE 0278S03E02	J13
	20.3	78.5	MDE 0278S03H05	J19
2.8	8.4	50.0	MDF 0280S2D	J38
	9.4	45.6	MDW 0280GS2	J50
	11.3	45.5	MDE 0280S03E02	J13
	11.8	48.0	HMD 028S	J168
	13.7	68.4	MDW 0280PHT	J78
	13.9	68.6	MDW 0280HGS3	J54
	14.3	68.5	MDE 0280S03H03	J19
	15.3	49.5	MDE 0280S03E04	J13
	15.3	49.5	MDS 028MD	J72
	15.4	49.6	MDW 0280GS4	J50
	20.3	78.5	MDE 0280S03H05	J19
	24.4	78.6	MDW 0280HGS5	J54
	28.3	81.5	MDE 0280S03H08	J19
	28.8	64.0	HMD 028M	J168
	29.4	81.6	MDW 0280HGS8	J54
	41.3	93.5	MDW 0280XHGS10	J78
	56.3	108.5	MDW 0280XHGS15	J78
	71.3	123.5	MDW 0280XHGS20	J78
	86.3	138.5	MDW 0280XHGS25	J78
	101.3	153.5	MDW 0280XHGS30	J78
2.9	8.7	50.0	MDF 0290S2D	J38
	9.3	45.6	MDW 0290GS2	J50
	11.2	45.5	MDE 0290S03E02	J13
	11.7	48.0	HMD 029S	J168
	13.6	68.4	MDW 0290PHT	J78
	13.8	68.6	MDW 0290HGS3	J54
	15.2	49.5	MDE 0290S03E04	J13
	15.2	68.5	MDE 0290S03H03	J19
	15.3	49.6	MDW 0290GS4	J50
	21.2	78.5	MDE 0290S03H05	J19
	24.3	78.6	MDW 0290HGS5	J54
	28.7	64.0	HMD 029M	J168
	29.2	81.5	MDE 0290S03H08	J19
	29.3	81.6	MDW 0290HGS8	J54
	41.2	93.5	MDW 0290XHGS10	J78
	56.2	108.5	MDW 0290XHGS15	J78
	71.2	123.5	MDW 0290XHGS20	J78
	86.2	138.5	MDW 0290XHGS25	J78
	101.2	153.5	MDW 0290XHGS30	J78
3.0	9.0	45.5	MDE 0300S03E02	J13
	9.0	50.0	MDF 0300S2D	J38
	9.0	100.0	MDF 0300L2D	J42
	9.1	45.6	MDW 0300GS2	J50
	11.5	48.0	HMD 030S	J168
	12.0	68.0	MDF 0300H3D	J44
	13.4	68.4	MDW 0300PHT	J78
	13.5	68.5	MDW 0300HX3	J64
	13.6	49.6	MDW 0300SGS3	J75
	13.6	68.6	MDW 0300HGS3	J54
	13.6	68.6	MDW 0300NHGS3	J85
	14.0	68.5	MDE 0300S03H03	J19
	14.0	68.5	MDM 0300S03H03	J30
	14.5	50.5	MDS 03000SDC3	J89
	15.0	49.5	MDE 0300S03E04	J13
	15.0	49.5	MDS 030MD	J72
	15.1	49.6	MDW 0300GS4	J50
	18.0	78.0	MDF 0300H5D	J44
	24.0	78.5	MDE 0300S03H05	J19
	24.0	78.5	MDM 0300S03H05	J30
	24.0	78.5	MDW 0300HX5	J64

(Blue text: Flat head ■Indexable ■HSS)

● Diameter ø3.0 to ø3.3mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
3.0	24.1	78.6	MDW 0300HGS5	J54
	24.1	78.6	MDW 0300NHGS5	J85
	28.5	64.0	HMD 030M	J168
	29.0	81.5	MDE 0300S03H08	J19
	29.0	81.5	MDW 0300HX8	J64
	29.1	81.6	MDW 0300HGS8	J54
	38.1	92.6	MDW 0300NHGS10	J85
	41.0	93.5	MDW 0300XHGS10	J78
	47.0	99.5	MDW 0300XHGS12	J78
	56.0	108.5	MDW 0300XHGS15	J78
	71.0	123.5	MDW 0300XHGS20	J78
	86.0	138.5	MDW 0300XHGS25	J78
	101.0	153.5	MDW 0300XHGS30	J78
3.1	9.3	50.0	MDF 0310S2D	J38
	9.3	100.0	MDF 0310L2D	J42
	12.4	72.0	MDF 0310H3D	J44
	13.4	50.0	HMD 031S	J168
	15.0	54.6	MDE 0310S04E02	J13
	15.0	54.6	MDW 0310GS2	J50
	15.8	72.4	MDW 0310PHT	J78
	16.0	72.6	MDE 0310S04H03	J19
	16.0	72.6	MDM 0310S04H03	J30
	16.0	72.6	MDW 0310HGS3	J54
	16.0	72.6	MDW 0310HX3	J64
	18.6	86.0	MDF 0310H5D	J44
	20.0	60.6	MDE 0310S04E04	J13
	20.0	60.6	MDW 0310GS4	J50
	28.0	86.6	MDE 0310S04H05	J19
	28.0	86.6	MDM 0310S04H05	J30
	28.0	86.6	MDW 0310HGS5	J54
	28.0	86.6	MDW 0310HX5	J64
	28.0	86.6	MDW 0310NHGS5	J85
	31.4	68.0	HMD 031M	J168
	34.5	92.6	MDE 0310S04H08	J19
	34.5	92.6	MDW 0310HGS8	J54
	49.0	103.6	MDW 0310XHGS10	J78
	64.0	118.6	MDW 0310XHGS15	J78
	82.0	136.6	MDW 0310XHGS20	J78
	99.0	153.6	MDW 0310XHGS25	J78
	117.0	171.6	MDW 0310XHGS30	J78
3.2	9.6	50.0	MDF 0320S2D	J38
	9.6	100.0	MDF 0320L2D	J42
	12.8	72.0	MDF 0320H3D	J44
	13.2	50.0	HMD 032S	J168
	14.8	54.6	MDE 0320S04E02	J13
	14.9	54.7	MDW 0320GS2	J50
	15.6	72.4	MDW 0320PHT	J78
	15.8	72.6	MDE 0320S04H03	J19
	15.8	72.6	MDM 0320S04H03	J30
	15.8	72.6	MDW 0320HX3	J64
	15.9	72.7	MDW 0320HGS3	J54
	15.9	72.7	MDW 0320NHGS3	J85
	16.8	52.6	MDS 032MD	J72
	19.2	86.0	MDF 0320H5D	J44
	19.8	60.6	MDE 0320S04E04	J13
	19.9	60.7	MDW 0320GS4	J50
	27.8	86.6	MDE 0320S04H05	J19
	27.8	86.6	MDM 0320S04H05	J30
	27.8	86.6	MDW 0320HX5	J64
	27.9	86.7	MDW 0320HGS5	J54
	27.9	86.7	MDW 0320NHGS5	J85
	31.2	68.0	HMD 032M	J168
	34.3	92.6	MDE 0320S04H08	J19
	34.4	92.7	MDW 0320HGS8	J54
	44.9	106.7	MDW 0320NHGS10	J85
	48.8	103.6	MDW 0320XHGS10	J78
	63.8	118.6	MDW 0320XHGS15	J78
	81.8	136.6	MDW 0320XHGS20	J78
	98.8	153.6	MDW 0320XHGS25	J78
	116.8	171.6	MDW 0320XHGS30	J78
3.3	9.9	50.0	MDF 0330S2D	J38
	9.9	100.0	MDF 0330L2D	J42
	13.1	50.0	HMD 033S	J168
	13.2	72.0	MDF 0330H3D	J44
	14.7	54.6	MDE 0330S04E02	J13
	14.8	54.7	MDW 0330GS2	J50
	15.5	72.4	MDW 0330PHT	J78
	15.7	72.6	MDE 0330S04H03	J19
	15.7	72.6	MDM 0330S04H03	J30
	15.7	72.6	MDW 0330HX3	J64

(Blue text: Flat head ■Indexable ■HSS)

Effective Length (LU) is a guideline for the usable length. Take into account the chip evacuation in relation to the flute length (LCF) when drilling.

Effective Length List by Diameter

● Diameter ø3.3 to ø3.5mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
3.3	15.8	72.7	MDW 0330HGS3	J54
	15.8	72.7	MDW 0330NHGS3	J85
	16.8	61.7	MDS 0330SDC3	J89
	19.7	60.6	MDE 0330S04E04	J13
	19.8	60.7	MDW 0330GS4	J50
	19.8	86.0	MDF 0330H5D	J44
	27.7	86.6	MDE 0330S04H05	J19
	27.7	86.6	MDM 0330S04H05	J30
	27.7	86.6	MDW 0330HX5	J64
	27.8	86.7	MDW 0330HGS5	J54
	27.8	86.7	MDW 0330NHGS5	J85
	31.1	68.0	HMD 033M	J168
	34.2	92.6	MDE 0330S04H08	J19
	34.3	92.7	MDW 0330HGS8	J54
	48.7	103.6	MDW 0330XHGS10	J78
	63.7	118.6	MDW 0330XHGS15	J78
	81.7	136.6	MDW 0330XHGS20	J78
	98.7	153.6	MDW 0330XHGS25	J78
	116.7	171.6	MDW 0330XHGS30	J78
3.4	10.2	50.0	MDF 0340S2D	J38
	10.2	100.0	MDF 0340L2D	J42
	13.6	72.0	MDF 0340H3D	J44
	14.5	54.6	MDE 0340S04E02	J13
	14.6	54.7	MDW 0340GS2	J50
	14.9	52.0	HMD 034S	J168
	15.4	72.5	MDW 0340PHT	J78
	15.5	72.6	MDE 0340S04H03	J19
	15.5	72.6	MDM 0340S04H03	J30
	15.5	72.6	MDW 0340HX3	J64
	15.6	72.7	MDW 0340HGS3	J54
	19.5	56.6	MDS 034MD	J72
	19.5	60.6	MDE 0340S04E04	J13
	19.6	60.7	MDW 0340GS4	J50
	20.4	86.0	MDF 0340H5D	J44
	27.5	86.6	MDE 0340S04H05	J19
	27.5	86.6	MDM 0340S04H05	J30
	27.5	86.6	MDW 0340HX5	J64
	27.6	86.7	MDW 0340HGS5	J54
	27.6	86.7	MDW 0340NHGS5	J85
	33.9	71.0	HMD 034M	J168
	34.0	92.6	MDE 0340S04H08	J19
	34.1	92.7	MDW 0340HGS8	J54
	44.6	106.7	MDW 0340NHGS10	J85
	48.5	103.6	MDW 0340XHGS10	J78
	63.5	118.6	MDW 0340XHGS15	J78
	81.5	136.6	MDW 0340XHGS20	J78
	98.5	153.6	MDW 0340XHGS25	J78
	116.5	171.6	MDW 0340XHGS30	J78
3.5	10.5	50.0	MDF 0350S2D	J38
	10.5	100.0	MDF 0350L2D	J42
	14.0	72.0	MDF 0350H3D	J44
	14.4	54.6	MDE 0350S04E02	J13
	14.5	54.7	MDW 0350GS2	J50
	14.8	52.0	HMD 035S	J168
	15.3	72.5	MDW 0350PHT	J78
	15.4	72.6	MDE 0350S04H03	J19
	15.4	72.6	MDM 0350S04H03	J30
	15.4	72.6	MDW 0350HX3	J64
	15.5	60.7	MDW 0350SGS3	J75
	15.5	72.7	MDW 0350HGS3	J54
	15.5	72.7	MDW 0350NHGS3	J85
	19.4	56.6	MDS 035MD	J72
	19.4	60.6	MDE 0350S04E04	J13
	19.5	60.7	MDW 0350GS4	J50
	21.0	86.0	MDF 0350H5D	J44
	27.4	86.6	MDE 0350S04H05	J19
	27.4	86.6	MDM 0350S04H05	J30
	27.4	86.6	MDW 0350HX5	J64
	27.5	86.7	MDW 0350HGS5	J54
	27.5	86.7	MDW 0350NHGS5	J85
	33.8	71.0	HMD 035M	J168
	33.9	92.6	MDE 0350S04H08	J19
	33.9	92.6	MDW 0350HX8	J64
	34.0	92.7	MDW 0350HGS8	J54
	44.5	106.7	MDW 0350NHGS10	J85
	48.4	103.6	MDW 0350XHGS10	J78
	53.4	108.6	MDW 0350XHGS12	J78
	63.4	118.6	MDW 0350XHGS15	J78
	81.4	136.6	MDW 0350XHGS20	J78
	98.4	153.6	MDW 0350XHGS25	J78

(Blue text: Flat head ■Indexable ■HSS)

● Diameter ø3.5 to ø3.8mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
3.5	116.4	171.6	MDW 0350XHGS30	J78
3.6	10.8	50.0	MDF 0360S2D	J38
	10.8	100.0	MDF 0360L2D	J42
	14.4	72.0	MDF 0360H3D	J44
	14.6	52.0	HMD 036S	J168
	16.3	54.7	MDE 0360S04E02	J13
	16.3	54.7	MDW 0360GS2	J50
	17.6	72.5	MDW 0360PHT	J78
	17.8	72.7	MDE 0360S04H03	J19
	17.8	72.7	MDM 0360S04H03	J30
	17.8	72.7	MDW 0360HGS3	J54
	17.8	72.7	MDW 0360HX3	J64
	19.3	56.7	MDS 036MD	J72
	21.6	86.0	MDF 0360H5D	J44
	22.3	60.7	MDE 0360S04E04	J13
	22.3	60.7	MDW 0360GS4	J50
	31.3	86.7	MDE 0360S04H05	J19
	31.3	86.7	MDM 0360S04H05	J30
	31.3	86.7	MDW 0360HGS5	J54
	31.3	86.7	MDW 0360HX5	J64
	31.3	86.7	MDW 0360NHGS5	J85
	33.6	71.0	HMD 036M	J168
	39.3	92.7	MDE 0360S04H08	J19
	39.3	92.7	MDW 0360HGS8	J54
	51.3	106.7	MDW 0360NHGS10	J85
	55.3	108.7	MDW 0360XHGS10	J78
	75.3	128.7	MDW 0360XHGS15	J78
	95.3	148.7	MDW 0360XHGS20	J78
	115.3	168.7	MDW 0360XHGS25	J78
	135.3	188.7	MDW 0360XHGS30	J78
3.65	17.8	72.8	MDW 0365NHGS3	J85
	31.3	86.8	MDW 0365NHGS5	J85
3.66	9.1	50.0	MDF 0366S2D	J38
	16.2	54.7	MDE 0366S04E02	J13
	31.2	86.7	MDE 0366S04H05	J19
	31.3	86.8	MDW 0366NHGS5	J85
3.68	9.2	50.0	MDF 0368S2D	J38
	16.2	54.7	MDE 0368S04E02	J13
	31.2	86.7	MDE 0368S04H05	J19
3.7	11.1	50.0	MDF 0370S2D	J38
	11.1	100.0	MDF 0370L2D	J42
	14.5	52.0	HMD 037S	J168
	14.8	72.0	MDF 0370H3D	J44
	16.2	54.7	MDE 0370S04E02	J13
	16.3	54.8	MDW 0370GS2	J50
	17.5	72.5	MDW 0370PHT	J79
	17.7	72.7	MDE 0370S04H03	J19
	17.7	72.7	MDM 0370S04H03	J30
	17.7	72.7	MDW 0370HX3	J64
	17.8	72.8	MDW 0370HGS3	J54
	22.2	60.7	MDE 0370S04E04	J13
	22.2	86.0	MDF 0370H5D	J44
	22.3	60.8	MDW 0370GS4	J50
	31.2	86.7	MDE 0370S04H05	J19
	31.2	86.7	MDM 0370S04H05	J30
	31.2	86.7	MDW 0370HX5	J64
	31.3	86.8	MDW 0370HGS5	J54
	31.3	86.8	MDW 0370NHGS5	J85
	33.5	71.0	HMD 037M	J168
	39.2	92.7	MDE 0370S04H08	J19
	39.3	92.8	MDW 0370HGS8	J54
	55.2	108.7	MDW 0370XHGS10	J79
	75.2	128.7	MDW 0370XHGS15	J79
	95.2	148.7	MDW 0370XHGS20	J79
	115.2	168.7	MDW 0370XHGS25	J79
	135.2	188.7	MDW 0370XHGS30	J79
3.8	11.4	50.0	MDF 0380S2D	J38
	11.4	100.0	MDF 0380L2D	J42
	15.2	72.0	MDF 0380H3D	J44
	16.0	54.7	MDE 0380S04E02	J13
	16.1	54.8	MDW 0380GS2	J50
	16.3	54.0	HMD 038S	J168
	17.3	72.5	MDW 0380PHT	J79
	17.5	72.7	MDE 0380S04H03	J20
	17.5	72.7	MDM 0380S04H03	J30
	17.5	72.7	MDW 0380HX3	J64
	17.6	72.8	MDW 0380HGS3	J54
	22.0	60.7	MDE 0380S04E04	J13
	22.0	60.7	MDS 038MD	J72
	22.1	60.8	MDW 0380GS4	J50

(Blue text: Flat head ■Indexable ■HSS)

● Diameter ø3.8 to ø4.1mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
3.8	22.8	86.0	MDF 0380H5D	J44
	31.0	86.7	MDE 0380S04H05	J20
	31.0	86.7	MDM 0380S04H05	J30
	31.0	86.7	MDW 0380HX5	J64
	31.1	86.8	MDW 0380HGS5	J54
	31.1	86.8	MDW 0380NHGS5	J85
	37.3	75.0	HMD 038M	J168
	39.0	92.7	MDE 0380S04H08	J20
	39.1	92.8	MDW 0380HGS8	J54
	55.0	108.7	MDW 0380XHGS10	J79
	75.0	128.7	MDW 0380XHGS15	J79
	95.0	148.7	MDW 0380XHGS20	J79
	115.0	168.7	MDW 0380XHGS25	J79
	135.0	188.7	MDW 0380XHGS30	J79
3.9	11.7	50.0	MDF 0390S2D	J38
	11.7	100.0	MDF 0390L2D	J42
	15.6	72.0	MDF 0390H3D	J44
	15.9	54.7	MDE 0390S04E02	J13
	16.0	54.8	MDW 0390GS2	J50
	16.2	54.0	HMD 039S	J168
	17.2	72.5	MDW 0390PHT	J79
	17.4	72.7	MDE 0390S04H03	J20
	17.4	72.7	MDM 0390S04H03	J30
	17.4	72.7	MDW 0390HX3	J64
	17.5	72.8	MDW 0390HGS3	J54
	21.9	60.7	MDE 0390S04E04	J13
	22.0	60.8	MDW 0390GS4	J50
	23.4	86.0	MDF 0390H5D	J44
	30.9	86.7	MDE 0390S04H05	J20
	30.9	86.7	MDM 0390S04H05	J30
	30.9	86.7	MDW 0390HX5	J64
	31.0	86.8	MDW 0390HGS5	J54
	31.0	86.8	MDW 0390NHGS5	J85
	37.2	75.0	HMD 039M	J168
	38.9	92.7	MDE 0390S04H08	J20
	39.0	92.8	MDW 0390HGS8	J54
	51.0	106.8	MDW 0390NHGS10	J85
	54.9	108.7	MDW 0390XHGS10	J79
	74.9	128.7	MDW 0390XHGS15	J79
	94.9	148.7	MDW 0390XHGS20	J79
	114.9	168.7	MDW 0390XHGS25	J79
	134.9	188.7	MDW 0390XHGS30	J79
4.0	12.0	50.0	MDF 0400S2D	J38
	12.0	100.0	MDF 0400L2D	J42
	15.7	54.7	MDE 0400S04E02	J13
	15.8	54.8	MDW 0400GS2	J50
	16.0	54.0	HMD 040S	J168
	16.0	72.0	MDF 0400H3D	J44
	17.0	72.5	MDW 0400PHT	J79
	17.2	72.7	MDE 0400S04H03	J20
	17.2	72.7	MDM 0400S04H03	J30
	17.2	72.7	MDW 0400HX3	J64
	17.3	60.8	MDW 0400SGS3	J75
	17.3	72.8	MDW 0400HGS3	J54
	17.3	72.8	MDW 0400NHGS3	J85
	18.5	62.0	MDS 0400SDC3	J89
	21.7	60.7	MDE 0400S04E04	J13
	21.7	60.7	MDS 040MD	J72
	21.8	60.8	MDW 0400GS4	J50
	24.0	86.0	MDF 0400H5D	J44
	30.7	86.7	MDE 0400S04H05	J20
	30.7	86.7	MDM 0400S04H05	J30
	30.7	86.7	MDW 0400HX5	J64
	30.8	86.8	MDW 0400HGS5	J54
	30.8	86.8	MDW 0400NHGS5	J85
	37.0	75.0	HMD 040M	J168
	38.7	92.7	MDE 0400S04H08	J20
	38.7	92.7	MDW 0400HX8	J64
	38.8	92.8	MDW 0400HGS8	J54
	50.8	106.8	MDW 0400NHGS10	J85
	54.7	108.7	MDW 0400XHGS10	J79
	62.7	116.7	MDW 0400XHGS12	J79
	74.7	128.7	MDW 0400XHGS15	J79
	94.7	148.7	MDW 0400XHGS20	J79
	114.7	168.7	MDW 0400XHGS25	J79
	134.7	188.7	MDW 0400XHGS30	J79
4.1	12.3	60.0	MDF 0410S2D	J38
	12.3	100.0	MDF 0410L2D	J42
	15.9	66.0	HMD 041S	J168
	16.4	80.0	MDF 0410H3D	J44

(Blue text: Flat head ■Indexable ■HSS)

Effective Length (LU) is a guideline for the usable length. Take into account the chip evacuation in relation to the flute length (LCF) when drilling.

Effective Length List by Diameter

● Diameter ø4.1 to ø4.3mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
4.1	17.6	61.7	MDE 0410S05E02	J13
	17.7	61.8	MDW 0410GS2	J50
	19.4	80.5	MDW 0410PHT	J79
	19.6	80.7	MDE 0410S05H03	J20
	19.6	80.7	MDM 0410S05H03	J30
	19.6	80.7	MDW 0410HX3	J64
	19.7	80.8	MDW 0410HGS3	J54
	19.7	80.8	MDW 0410NHGS3	J85
	24.6	98.0	MDF 0410H5D	J44
	25.6	76.7	MDE 0410S05E04	J13
	25.7	76.8	MDW 0410GS4	J50
	34.6	98.7	MDE 0410S05H05	J20
	34.6	98.7	MDM 0410S05H05	J30
	34.6	98.7	MDW 0410HX5	J64
	34.7	98.8	MDW 0410HGS5	J54
	34.7	98.8	MDW 0410NHGS5	J85
	36.9	85.0	HMD 041M	J168
	44.1	105.7	MDE 0410S05H08	J20
	44.2	105.8	MDW 0410HGS8	J54
	62.6	120.7	MDW 0410XHGS10	J79
	82.6	140.7	MDW 0410XHGS15	J79
	105.6	163.7	MDW 0410XHGS20	J79
	127.6	185.7	MDW 0410XHGS25	J79
	150.6	208.7	MDW 0410XHGS30	J79
4.2	12.6	60.0	MDF 0420S2D	J38
	12.6	100.0	MDF 0420L2D	J42
	15.7	66.0	HMD 042S	J168
	16.8	80.0	MDF 0420H3D	J44
	17.5	61.8	MDE 0420S05E02	J13
	17.6	61.9	MDW 0420GS2	J50
	19.3	80.6	MDW 0420PHT	J79
	19.5	80.8	MDE 0420S05H03	J20
	19.5	80.8	MDM 0420S05H03	J30
	19.5	80.8	MDW 0420HX3	J64
	19.6	80.9	MDW 0420HGS3	J54
	19.6	80.9	MDW 0420NHGS3	J85
	21.5	60.8	MDS 042MD	J72
	25.2	98.0	MDF 0420H5D	J44
	25.5	76.8	MDE 0420S05E04	J13
	25.6	76.9	MDW 0420GS4	J50
	34.5	98.8	MDE 0420S05H05	J20
	34.5	98.8	MDM 0420S05H05	J30
	34.5	98.8	MDW 0420HX5	J64
	34.6	98.9	MDW 0420HGS5	J54
	34.6	98.9	MDW 0420NHGS5	J85
	36.7	85.0	HMD 042M	J168
	44.0	105.8	MDE 0420S05H08	J20
	44.1	105.9	MDW 0420HGS8	J54
	62.5	120.8	MDW 0420XHGS10	J79
	82.5	140.8	MDW 0420XHGS15	J79
	105.5	163.8	MDW 0420XHGS20	J79
	127.5	185.8	MDW 0420XHGS25	J79
	150.5	208.8	MDW 0420XHGS30	J79
4.3	12.9	60.0	MDF 0430S2D	J38
	12.9	100.0	MDF 0430L2D	J42
	17.2	80.0	MDF 0430H3D	J44
	17.4	61.8	MDE 0430S05E02	J13
	17.5	61.9	MDW 0430GS2	J50
	17.6	68.0	HMD 043S	J168
	19.2	80.6	MDW 0430PHT	J79
	19.4	80.8	MDE 0430S05H03	J20
	19.4	80.8	MDM 0430S05H03	J30
	19.4	80.8	MDW 0430HX3	J64
	19.5	80.9	MDW 0430HGS3	J54
	25.4	65.8	MDS 043MD	J72
	25.4	76.8	MDE 0430S05E04	J13
	25.5	76.9	MDW 0430GS4	J50
	25.8	98.0	MDF 0430H5D	J44
	34.4	98.8	MDE 0430S05H05	J20
	34.4	98.8	MDM 0430S05H05	J30
	34.4	98.8	MDW 0430HX5	J64
	34.5	98.9	MDW 0430HGS5	J54
	34.5	98.9	MDW 0430NHGS5	J85
	40.6	89.0	HMD 043M	J168
	43.9	105.8	MDE 0430S05H08	J20
	44.0	105.9	MDW 0430HGS8	J54
	62.4	120.8	MDW 0430XHGS10	J79
	82.4	140.8	MDW 0430XHGS15	J79
	105.4	163.8	MDW 0430XHGS20	J79
	127.4	185.8	MDW 0430XHGS25	J79

(Blue text: Flat head ■Indexable ■HSS)

● Diameter ø4.3 to ø4.6mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
4.3	150.4	208.8	MDW 0430XHGS30	J79
4.4	13.2	60.0	MDF 0440S2D	J38
	13.2	100.0	MDF 0440L2D	J42
	17.2	61.8	MDE 0440S05E02	J13
	17.3	61.9	MDW 0440GS2	J50
	17.4	68.0	HMD 044S	J168
	17.6	80.0	MDF 0440H3D	J44
	19.0	80.6	MDW 0440PHT	J79
	19.2	80.8	MDE 0440S05H03	J20
	19.2	80.8	MDM 0440S05H03	J30
	19.2	80.8	MDW 0440HX3	J64
	19.3	80.9	MDW 0440HGS3	J54
	25.2	65.8	MDS 044MD	J72
	25.2	76.8	MDE 0440S05E04	J13
	25.3	76.9	MDW 0440GS4	J50
	26.4	98.0	MDF 0440H5D	J44
	34.2	98.8	MDE 0440S05H05	J20
	34.2	98.8	MDM 0440S05H05	J30
	34.2	98.8	MDW 0440HX5	J64
	34.3	98.9	MDW 0440HGS5	J54
	34.3	98.9	MDW 0440NHGS5	J85
	40.4	89.0	HMD 044M	J168
	43.7	105.8	MDE 0440S05H08	J20
	43.8	105.9	MDW 0440HGS8	J54
	62.2	120.8	MDW 0440XHGS10	J79
	82.2	140.8	MDW 0440XHGS15	J79
	105.2	163.8	MDW 0440XHGS20	J79
	127.2	185.8	MDW 0440XHGS25	J79
	150.2	208.8	MDW 0440XHGS30	J79
4.5	13.5	60.0	MDF 0450S2D	J38
	13.5	100.0	MDF 0450L2D	J42
	17.1	61.8	MDE 0450S05E02	J13
	17.2	61.9	MDW 0450GS2	J50
	17.3	68.0	HMD 045S	J168
	18.0	80.0	MDF 0450H3D	J44
	18.9	80.6	MDW 0450PHT	J79
	19.1	80.8	MDE 0450S05H03	J20
	19.1	80.8	MDM 0450S05H03	J30
	19.1	80.8	MDW 0450HX3	J64
	19.2	76.9	MDW 0450SGS3	J75
	19.2	80.9	MDW 0450HGS3	J54
	19.2	80.9	MDW 0450NHGS3	J85
	25.1	65.8	MDS 045MD	J72
	25.1	76.8	MDE 0450S05E04	J13
	25.2	76.9	MDW 0450GS4	J50
	27.0	98.0	MDF 0450H5D	J44
	34.1	98.8	MDE 0450S05H05	J20
	34.1	98.8	MDM 0450S05H05	J30
	34.1	98.8	MDW 0450HX5	J64
	34.2	98.9	MDW 0450HGS5	J54
	34.2	98.9	MDW 0450NHGS5	J85
	40.3	89.0	HMD 045M	J168
	43.6	105.8	MDE 0450S05H08	J20
	43.6	105.8	MDW 0450HX8	J64
	43.7	105.9	MDW 0450HGS8	J54
	57.2	121.9	MDW 0450NHGS10	J85
	62.1	120.8	MDW 0450XHGS10	J79
	69.1	127.8	MDW 0450XHGS12	J79
	82.1	140.8	MDW 0450XHGS15	J79
	105.1	163.8	MDW 0450XHGS20	J79
	127.1	185.8	MDW 0450XHGS25	J79
	150.1	208.8	MDW 0450XHGS30	J79
4.6	13.8	60.0	MDF 0460S2D	J38
	13.8	100.0	MDF 0460L2D	J42
	17.1	68.0	HMD 046S	J168
	18.4	80.0	MDF 0460H3D	J44
	18.9	61.8	MDE 0460S05E02	J13
	19.1	62.0	MDW 0460GS2	J50
	21.2	80.6	MDW 0460PHT	J79
	21.4	80.8	MDE 0460S05H03	J20
	21.4	80.8	MDM 0460S05H03	J30
	21.4	80.8	MDW 0460HX3	J64
	21.6	81.0	MDW 0460HGS3	J54
	21.6	81.0	MDW 0460NHGS3	J85
	24.9	65.8	MDS 046MD	J72
	27.6	98.0	MDF 0460H5D	J44
	31.9	76.8	MDE 0460S05E04	J13
	32.1	77.0	MDW 0460GS4	J50
	37.9	98.8	MDE 0460S05H05	J20
	37.9	98.8	MDM 0460S05H05	J30

(Blue text: Flat head ■Indexable ■HSS)

● Diameter ø4.6 to ø4.9mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
4.6	37.9	98.8	MDW 0460HX5	J64
	38.1	99.0	MDW 0460HGS5	J54
	38.1	99.0	MDW 0460NHGS5	J85
	40.1	89.0	HMD 046M	J168
	48.9	105.8	MDE 0460S05H08	J20
	49.1	106.0	MDW 0460HGS8	J54
	68.9	125.8	MDW 0460XHGS10	J79
	93.9	150.8	MDW 0460XHGS15	J79
	118.9	175.8	MDW 0460XHGS20	J79
	143.9	200.8	MDW 0460XHGS25	J79
	168.9	225.8	MDW 0460XHGS30	J79
4.62	11.5	60.0	MDF 0462S2D	J38
	18.9	61.8	MDE 0462S05E02	J13
	37.9	98.8	MDE 0462S05H05	J20
4.64	11.6	60.0	MDF 0464S2D	J38
	18.9	61.8	MDE 0464S05E02	J13
	37.9	98.8	MDE 0464S05H05	J20
4.7	14.1	60.0	MDF 0470S2D	J38
	14.1	100.0	MDF 0470L2D	J42
	17.0	68.0	HMD 047S	J168
	18.8	80.0	MDF 0470H3D	J44
	18.9	61.9	MDE 0470S05E02	J13
	19.0	62.0	MDW 0470GS2	J50
	21.1	80.6	MDW 0470PHT	J79
	21.4	80.9	MDE 0470S05H03	J20
	21.4	80.9	MDM 0470S05H03	J30
	21.4	80.9	MDW 0470HX3	J64
	21.5	81.0	MDW 0470HGS3	J54
	28.2	98.0	MDF 0470H5D	J44
	31.9	76.9	MDE 0470S05E04	J13
	32.0	77.0	MDW 0470GS4	J50
	37.9	98.9	MDE 0470S05H05	J20
	37.9	98.9	MDM 0470S05H05	J30
	37.9	98.9	MDW 0470HX5	J64
	38.0	99.0	MDW 0470HGS5	J54
	38.0	99.0	MDW 0470NHGS5	J85
	40.0	89.0	HMD 047M	J168
	48.9	105.9	MDE 0470S05H08	J20
	49.0	106.0	MDW 0470HGS8	J54
	68.9	125.9	MDW 0470XHGS10	J79
	93.9	150.9	MDW 0470XHGS15	J79
	118.9	175.9	MDW 0470XHGS20	J79
	143.9	200.9	MDW 0470XHGS25	J79
	168.9	225.9	MDW 0470XHGS30	J79
4.8	14.4	60.0	MDF 0480S2D	J38
	14.4	100.0	MDF 0480L2D	J42
	18.7	61.9	MDE 0480S05E02	J13
	18.8	62.0	MDW 0480GS2	J50
	18.8	70.0	HMD 048S	J168
	19.2	80.0	MDF 0480H3D	J44
	20.9	80.6	MDW 0480PHT	J79
	21.2	80.9	MDE 0480S05H03	J20
	21.2	80.9	MDM 0480S05H03	J30
	21.2	80.9	MDW 0480HX3	J64
	21.3	81.0	MDW 0480HGS3	J54
	26.7	69.9	MDS 048MD	J72
	28.8	98.0	MDF 0480H5D	J44
	31.7	76.9	MDE 0480S05E04	J13
	31.8	77.0	MDW 0480GS4	J50
	37.7	98.9	MDE 0480S05H05	J20
	37.7	98.9	MDM 0480S05H05	J30
	37.7	98.9	MDW 0480HX5	J64
	37.8	99.0	MDW 0480HGS5	J54
	37.8	99.0	MDW 0480NHGS5	J85
	44.8	94.0	HMD 048M	J168
	48.7	105.9	MDE 0480S05H08	J20
	48.8	106.0	MDW 0480HGS8	J54
	68.7	125.9	MDW 0480XHGS10	J79
	93.7	150.9	MDW 0480XHGS15	J79
	118.7	175.9	MDW 0480XHGS20	J79
	143.7	200.9	MDW 0480XHGS25	J79
	168.7	225.9	MDW 0480XHGS30	J79
4.851	21.3	77.1	MDS 04851SDC3	J89
4.9	14.7	60.0	MDF 0490S2D	J38
	14.7	100.0	MDF 0490L2D	J42
	18.6	61.9	MDE 0490S05E02	J13
	18.7	62.0	MDW 0490GS2	J50
	18.7	70.0	HMD 049S	J168
	19.6	80.0	MDF 0490H3D	J44
	20.9	80.7	MDW 0490PHT	J79

(Blue text: Flat head ■Indexable ■HSS)

Effective Length (LU) is a guideline for the usable length. Take into account the chip evacuation in relation to the flute length (LCF) when drilling.

Effective Length List by Diameter

● Diameter ø4.9 to ø5.1mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
4.9	21.1	80.9	MDE 0490S05H03	J20
	21.1	80.9	MDM 0490S05H03	J30
	21.1	80.9	MDW 0490HX3	J64
	21.2	81.0	MDW 0490HGS3	J54
	29.4	98.0	MDF 0490H5D	J44
	31.6	76.9	MDE 0490S05E04	J13
	31.7	77.0	MDW 0490GS4	J50
	37.6	98.9	MDE 0490S05H05	J20
	37.6	98.9	MDM 0490S05H05	J30
	37.6	98.9	MDW 0490HX5	J64
	37.7	99.0	MDW 0490HGS5	J54
	37.7	99.0	MDW 0490NHGS5	J85
	44.7	94.0	HMD 049M	J168
	48.6	105.9	MDE 0490S05H08	J20
	48.7	106.0	MDW 0490HGS8	J54
	63.7	122.0	MDW 0490NHGS10	J85
	68.6	125.9	MDW 0490XHGS10	J79
	93.6	150.9	MDW 0490XHGS15	J79
	118.6	175.9	MDW 0490XHGS20	J79
	143.6	200.9	MDW 0490XHGS25	J79
	168.6	225.9	MDW 0490XHGS30	J79
5.0	15.0	60.0	MDF 0500S2D	J38
	15.0	100.0	MDF 0500L2D	J42
	18.4	61.9	MDE 0500S05E02	J13
	18.5	62.0	MDW 0500GS2	J50
	18.5	70.0	HMD 050S	J168
	20.0	80.0	MDF 0500H3D	J44
	20.7	80.7	MDW 0500PHT	J79
	20.9	80.9	MDE 0500S05H03	J20
	20.9	80.9	MDM 0500S05H03	J30
	20.9	80.9	MDW 0500HX3	J64
	21.0	77.0	MDW 0500SGS3	J75
	21.0	81.0	MDW 0500HGS3	J54
	21.0	81.0	MDW 0500HY3	J71
	21.0	81.0	MDW 0500NHGS3	J85
	21.2	77.2	MDS 05000SDC3	J89
	30.0	98.0	MDF 0500H5D	J44
	31.4	76.9	MDE 0500S05E04	J13
	31.4	76.9	MDS 050MD	J72
	31.5	77.0	MDW 0500GS4	J50
	37.4	98.9	MDE 0500S05H05	J20
	37.4	98.9	MDM 0500S05H05	J30
	37.4	98.9	MDW 0500HX5	J64
	37.5	99.0	MDW 0500HGS5	J54
	37.5	99.0	MDW 0500HY5	J71
	37.5	99.0	MDW 0500NHGS5	J85
	44.5	94.0	HMD 050M	J168
	48.4	105.9	MDE 0500S05H08	J20
	48.4	105.9	MDW 0500HX8	J64
	48.5	106.0	MDW 0500HGS8	J54
	48.5	106.0	MDW 0500HY8	J71
	63.5	122.0	MDW 0500NHGS10	J85
	68.4	125.9	MDW 0500XHGS10	J79
	78.4	135.9	MDW 0500XHGS12	J79
	93.4	150.9	MDW 0500XHGS15	J79
	118.4	175.9	MDW 0500XHGS20	J79
	143.4	200.9	MDW 0500XHGS25	J79
	168.4	225.9	MDW 0500XHGS30	J79
5.1	15.3	60.0	MDF 0510S2D	J38
	15.3	110.0	MDF 0510L2D	J42
	18.3	65.9	MDE 0510S06E02	J14
	18.4	70.0	HMD 051S	J168
	18.5	66.1	MDW 0510GS2	J50
	20.4	82.0	MDF 0510H3D	J44
	20.6	82.7	MDW 0510PHT	J79
	20.8	82.9	MDE 0510S06H03	J20
	20.8	82.9	MDM 0510S06H03	J30
	20.8	82.9	MDW 0510HX3	J64
	21.0	83.1	MDW 0510HGS3	J55
	21.0	83.1	MDW 0510HY3	J71
	30.6	100.0	MDF 0510H5D	J44
	31.3	76.9	MDS 051MD	J72
	32.3	81.9	MDE 0510S06E04	J14
	32.5	82.1	MDW 0510GS4	J50
	37.3	100.9	MDE 0510S06H05	J20
	37.3	100.9	MDM 0510S06H05	J30
	37.3	100.9	MDW 0510HX5	J64
	37.5	101.1	MDW 0510HGS5	J55
	37.5	101.1	MDW 0510HY5	J71
	37.5	101.1	MDW 0510NHGS5	J85

(Blue text: Flat head ■Indexable ■HSS)

● Diameter ø5.1 to ø5.4mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
5.1	44.4	94.0	HMD 051M	J168
	53.8	118.9	MDE 0510S06H08	J20
	53.8	118.9	MDW 0510HX8	J64
	54.0	119.1	MDW 0510HGS8	J55
	70.5	137.1	MDW 0510NHGS10	J85
	76.3	137.9	MDW 0510XHGS10	J79
	101.3	162.9	MDW 0510XHGS15	J79
	131.3	192.9	MDW 0510XHGS20	J79
	156.3	217.9	MDW 0510XHGS25	J79
	184.3	245.9	MDW 0510XHGS30	J79
5.2	15.6	60.0	MDF 0520S2D	J38
	15.6	110.0	MDF 0520L2D	J42
	18.1	65.9	MDE 0520S06E02	J14
	18.2	70.0	HMD 052S	J168
	18.3	66.1	MDW 0520GS2	J50
	20.4	82.7	MDW 0520PHT	J79
	20.6	82.9	MDE 0520S06H03	J20
	20.6	82.9	MDM 0520S06H03	J30
	20.6	82.9	MDW 0520HX3	J64
	20.8	82.0	MDF 0520H3D	J44
	20.8	83.1	MDW 0520HGS3	J55
	20.8	83.1	MDW 0520NHGS3	J85
	31.1	76.9	MDS 052MD	J72
	31.2	100.0	MDF 0520H5D	J44
	32.1	81.9	MDE 0520S06E04	J14
	32.3	82.1	MDW 0520GS4	J50
	37.1	100.9	MDE 0520S06H05	J20
	37.1	100.9	MDM 0520S06H05	J30
	37.1	100.9	MDW 0520HX5	J64
	37.3	101.1	MDW 0520HGS5	J55
	37.3	101.1	MDW 0520NHGS5	J85
	44.2	94.0	HMD 052M	J168
	53.6	118.9	MDE 0520S06H08	J20
	53.8	119.1	MDW 0520HGS8	J55
	76.1	137.9	MDW 0520XHGS10	J79
	101.1	162.9	MDW 0520XHGS15	J79
	131.1	192.9	MDW 0520XHGS20	J79
	156.1	217.9	MDW 0520XHGS25	J79
	184.1	245.9	MDW 0520XHGS30	J79
5.3	15.9	60.0	MDF 0530S2D	J38
	15.9	110.0	MDF 0530L2D	J42
	18.1	66.0	MDE 0530S06E02	J14
	18.1	70.0	HMD 053S	J168
	18.2	66.1	MDW 0530GS2	J50
	20.3	82.7	MDW 0530PHT	J80
	20.6	83.0	MDE 0530S06H03	J20
	20.6	83.0	MDM 0530S06H03	J30
	20.6	83.0	MDW 0530HX3	J64
	20.7	83.1	MDW 0530HGS3	J55
	20.7	83.1	MDW 0530NHGS3	J85
	21.2	82.0	MDF 0530H3D	J44
	31.8	100.0	MDF 0530H5D	J44
	32.1	82.0	MDE 0530S06E04	J14
	32.2	82.1	MDW 0530GS4	J50
	37.1	101.0	MDE 0530S06H05	J20
	37.1	101.0	MDM 0530S06H05	J30
	37.1	101.0	MDW 0530HX5	J64
	37.2	101.1	MDW 0530HGS5	J55
	37.2	101.1	MDW 0530NHGS5	J85
	44.1	94.0	HMD 053M	J168
	53.6	119.0	MDE 0530S06H08	J20
	53.7	119.1	MDW 0530HGS8	J55
	76.1	138.0	MDW 0530XHGS10	J80
	101.1	163.0	MDW 0530XHGS15	J80
	131.1	193.0	MDW 0530XHGS20	J80
	156.1	218.0	MDW 0530XHGS25	J80
	184.1	246.0	MDW 0530XHGS30	J80
5.4	16.2	60.0	MDF 0540S2D	J38
	16.2	110.0	MDF 0540L2D	J42
	17.9	66.0	MDE 0540S06E02	J14
	18.0	66.1	MDW 0540GS2	J50
	19.9	72.0	HMD 054S	J168
	20.1	82.7	MDW 0540PHT	J80
	20.4	83.0	MDE 0540S06H03	J20
	20.4	83.0	MDM 0540S06H03	J30
	20.4	83.0	MDW 0540HX3	J64
	20.5	83.1	MDW 0540HGS3	J55
	21.6	82.0	MDF 0540H3D	J44
	30.9	77.0	MDS 054MD	J72
	31.9	82.0	MDE 0540S06E04	J14

(Blue text: Flat head ■Indexable ■HSS)

● Diameter ø5.4 to ø5.6mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
5.4	32.0	82.1	MDW 0540GS4	J50
	32.4	100.0	MDF 0540H5D	J44
	36.9	101.0	MDE 0540S06H05	J20
	36.9	101.0	MDM 0540S06H05	J30
	36.9	101.0	MDW 0540HX5	J64
	37.0	101.1	MDW 0540HGS5	J55
	37.0	101.1	MDW 0540NHGS5	J85
	48.9	99.0	HMD 054M	J168
	53.4	119.0	MDE 0540S06H08	J20
	53.5	119.1	MDW 0540HGS8	J55
	75.9	138.0	MDW 0540XHGS10	J80
	100.9	163.0	MDW 0540XHGS15	J80
	130.9	193.0	MDW 0540XHGS20	J80
	155.9	218.0	MDW 0540XHGS25	J80
	183.9	246.0	MDW 0540XHGS30	J80
5.5	16.5	60.0	MDF 0550S2D	J38
	16.5	110.0	MDF 0550L2D	J42
	17.8	66.0	MDE 0550S06E02	J14
	17.9	66.1	MDW 0550GS2	J50
	19.8	72.0	HMD 055S	J168
	20.0	82.7	MDW 0550PHT	J80
	20.3	83.0	MDE 0550S06H03	J20
	20.3	83.0	MDM 0550S06H03	J30
	20.3	83.0	MDW 0550HX3	J64
	20.4	82.1	MDW 0550SGS3	J75
	20.4	83.1	MDW 0550HGS3	J55
	20.4	83.1	MDW 0550NHGS3	J85
	22.0	82.0	MDF 0550H3D	J44
	30.8	77.0	MDS 055MD	J72
	31.8	82.0	MDE 0550S06E04	J14
	31.9	82.1	MDW 0550GS4	J50
	33.0	100.0	MDF 0550H5D	J44
	36.8	101.0	MDE 0550S06H05	J20
	36.8	101.0	MDM 0550S06H05	J30
	36.8	101.0	MDW 0550HX5	J64
	36.9	101.1	MDW 0550HGS5	J55
	36.9	101.1	MDW 0550NHGS5	J85
	48.8	99.0	HMD 055M	J168
	53.3	119.0	MDE 0550S06H08	J20
	53.3	119.0	MDW 0550HX8	J64
	53.4	119.1	MDW 0550HGS8	J55
	69.9	137.1	MDW 0550NHGS10	J85
	75.8	138.0	MDW 0550XHGS10	J80
	84.8	147.0	MDW 0550XHGS12	J80
	100.8	163.0	MDW 0550XHGS15	J80
	130.8	193.0	MDW 0550XHGS20	J80
	155.8	218.0	MDW 0550XHGS25	J80
	183.8	246.0	MDW 0550XHGS30	J80
5.52	13.8	60.0	MDF 0552S2D	J38
	19.6	66.0	MDE 0552S06E02	J14
	40.6	101.0	MDE 0552S06H05	J20
5.54	13.8	60.0	MDF 0554S2D	J38
	19.6	66.0	MDE 0554S06E02	J14
	40.6	101.0	MDE 0554S06H05	J20
5.6	16.8	60.0	MDF 0560S2D	J38
	16.8	110.0	MDF 0560L2D	J42
	19.6	66.0	MDE 0560S06E02	J14
	19.6	72.0	HMD 056S	J168
	19.8	66.2	MDW 0560GS2	J50
	22.4	82.0	MDF 0560H3D	J44
	22.4	82.8	MDW 0560PHT	J80
	22.6	83.0	MDE 0560S06H03	J20
	22.6	83.0	MDM 0560S06H03	J30
	22.6	83.0	MDW 0560HX3	J64
	22.8	83.2	MDW 0560HGS3	J55
	22.9	82.3	MDS 05600SDC3	J89
	33.6	82.0	MDE 0560S06E04	J14
	33.6	82.0	MDS 056MD	J72
	33.6	100.0	MDF 0560H5D	J44
	33.8	82.2	MDW 0560GS4	J50
	40.6	101.0	MDE 0560S06H05	J20
	40.6	101.0	MDM 0560S06H05	J30
	40.6	101.0	MDW 0560HX5	J64
	40.8	101.2	MDW 0560HGS5	J55
	40.8	101.2	MDW 0560NHGS5	J85
	48.6	99.0	HMD 056M	J168
	58.6	119.0	MDE 0560S06H08	J20
	58.8	119.2	MDW 0560HGS8	J55
	82.6	143.0	MDW 0560XHGS10	J80
	112.6	173.0	MDW 0560XHGS15	J80

(Blue text: Flat head ■Indexable ■HSS)

Effective Length (LU) is a guideline for the usable length. Take into account the chip evacuation in relation to the flute length (LCF) when drilling.

Effective Length List by Diameter

● Diameter ø5.6 to ø5.9mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
5.6	142.6	203.0	MDW 0560XHGS20	J80
	172.6	233.0	MDW 0560XHGS25	J80
	202.6	263.0	MDW 0560XHGS30	J80
5.7	17.1	60.0	MDF 0570S2D	J38
	17.1	110.0	MDF 0570L2D	J42
	19.5	66.0	MDE 0570S06E02	J14
	19.5	72.0	HMD 057S	J168
	19.7	66.2	MDW 0570GS2	J50
	22.3	82.8	MDW 0570PHT	J80
	22.5	83.0	MDE 0570S06H03	J20
	22.5	83.0	MDM 0570S06H03	J30
	22.5	83.0	MDW 0570HX3	J64
	22.7	83.2	MDW 0570HGS3	J55
	22.8	82.0	MDF 0570H3D	J44
	33.5	82.0	MDE 0570S06E04	J14
	33.7	82.2	MDW 0570GS4	J50
	34.2	100.0	MDF 0570H5D	J44
	40.5	101.0	MDE 0570S06H05	J20
	40.5	101.0	MDM 0570S06H05	J30
	40.5	101.0	MDW 0570HX5	J64
	40.7	101.2	MDW 0570HGS5	J55
	40.7	101.2	MDW 0570NHGS5	J85
	48.5	99.0	HMD 057M	J168
	58.5	119.0	MDE 0570S06H08	J20
	58.7	119.2	MDW 0570HGS8	J55
	82.5	143.0	MDW 0570XHGS10	J80
	112.5	173.0	MDW 0570XHGS15	J80
	142.5	203.0	MDW 0570XHGS20	J80
	172.5	233.0	MDW 0570XHGS25	J80
	202.5	263.0	MDW 0570XHGS30	J80
5.8	17.4	60.0	MDF 0580S2D	J38
	17.4	110.0	MDF 0580L2D	J42
	19.3	72.0	HMD 058S	J168
	19.4	66.1	MDE 0580S06E02	J14
	19.5	66.2	MDW 0580GS2	J50
	22.1	82.8	MDW 0580PHT	J80
	22.4	83.1	MDE 0580S06H03	J20
	22.4	83.1	MDM 0580S06H03	J30
	22.4	83.1	MDW 0580HX3	J64
	22.5	83.2	MDW 0580HGS3	J55
	23.2	82.0	MDF 0580H3D	J44
	33.4	82.1	MDE 0580S06E04	J14
	33.4	82.1	MDS 058MD	J72
	33.5	82.2	MDW 0580GS4	J50
	34.8	100.0	MDF 0580H5D	J44
	40.4	101.1	MDE 0580S06H05	J20
	40.4	101.1	MDM 0580S06H05	J30
	40.4	101.1	MDW 0580HX5	J64
	40.5	101.2	MDW 0580HGS5	J55
	40.5	101.2	MDW 0580NHGS5	J85
	48.3	99.0	HMD 058M	J168
	58.4	119.1	MDE 0580S06H08	J20
	58.4	119.1	MDW 0580HX8	J64
	58.5	119.2	MDW 0580HGS8	J55
	82.4	143.1	MDW 0580XHGS10	J80
	112.4	173.1	MDW 0580XHGS15	J80
	142.4	203.1	MDW 0580XHGS20	J80
	172.4	233.1	MDW 0580XHGS25	J80
	202.4	263.1	MDW 0580XHGS30	J80
5.9	17.7	60.0	MDF 0590S2D	J38
	17.7	110.0	MDF 0590L2D	J42
	19.2	72.0	HMD 059S	J168
	19.3	66.1	MDE 0590S06E02	J14
	19.4	66.2	MDW 0590GS2	J50
	22.0	82.8	MDW 0590PHT	J80
	22.3	83.1	MDE 0590S06H03	J20
	22.3	83.1	MDM 0590S06H03	J30
	22.3	83.1	MDW 0590HX3	J64
	22.4	83.2	MDW 0590HGS3	J55
	22.4	83.2	MDW 0590NHGS3	J85
	23.6	82.0	MDF 0590H3D	J44
	33.3	82.1	MDE 0590S06E04	J14
	33.4	82.2	MDW 0590GS4	J50
	35.4	100.0	MDF 0590H5D	J44
	40.3	101.1	MDE 0590S06H05	J20
	40.3	101.1	MDM 0590S06H05	J30
	40.3	101.1	MDW 0590HX5	J64
	40.4	101.2	MDW 0590HGS5	J55
	40.4	101.2	MDW 0590NHGS5	J85
	48.2	99.0	HMD 059M	J168

(Blue text: Flat head ■Indexable ■HSS)

● Diameter ø5.9 to ø6.2mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
5.9	58.3	119.1	MDE 0590S06H08	J20
	58.3	119.1	MDW 0590HX8	J64
	58.4	119.2	MDW 0590HGS8	J55
	82.3	143.1	MDW 0590XHGS10	J80
	112.3	173.1	MDW 0590XHGS15	J80
	142.3	203.1	MDW 0590XHGS20	J80
	172.3	233.1	MDW 0590XHGS25	J80
	202.3	263.1	MDW 0590XHGS30	J80
6.0	18.0	70.0	MDF 0600S2D	J38
	18.0	110.0	MDF 0600L2D	J42
	18.0	110.0	MDF 0600L2D-S5	J42
	19.0	72.0	HMD 060S	J168
	19.1	66.1	MDE 0600S06E02	J14
	19.2	66.2	MDW 0600GS2	J50
	21.8	82.8	MDW 0600PHT	J80
	22.1	83.1	MDE 0600S06H03	J20
	22.1	83.1	MDM 0600S06H03	J30
	22.1	83.1	MDW 0600HX3	J64
	22.2	82.2	MDW 0600SGS3	J75
	22.2	83.2	MDW 0600HGS3	J55
	22.2	83.2	MDW 0600HY3	J71
	22.2	83.2	MDW 0600NHGS3	J85
	22.4	82.4	MDS 06000SDC3	J89
	24.0	82.0	MDF 0600H3D	J44
	33.1	82.1	MDE 0600S06E04	J14
	33.1	82.1	MDS 060MD	J72
	33.2	82.2	MDW 0600GS4	J50
	36.0	100.0	MDF 0600H5D	J44
	40.1	101.1	MDE 0600S06H05	J20
	40.1	101.1	MDM 0600S06H05	J30
	40.1	101.1	MDW 0600HX5	J64
	40.2	101.2	MDW 0600HGS5	J55
	40.2	101.2	MDW 0600HY5	J71
	40.2	101.2	MDW 0600NHGS5	J85
	48.0	99.0	HMD 060M	J168
	58.1	119.1	MDE 0600S06H08	J20
	58.1	119.1	MDW 0600HX8	J64
	58.2	119.2	MDW 0600HGS8	J55
	58.2	119.2	MDW 0600HY8	J71
	76.2	137.2	MDW 0600NHGS10	J85
	82.1	143.1	MDW 0600XHGS10	J80
	94.1	155.1	MDW 0600XHGS12	J80
	112.1	173.1	MDW 0600XHGS15	J80
	142.1	203.1	MDW 0600XHGS20	J80
	172.1	233.1	MDW 0600XHGS25	J80
	202.1	263.1	MDW 0600XHGS30	J80
6.1	18.3	70.0	MDF 0610S2D	J38
	18.3	120.0	MDF 0610L2D	J42
	21.9	75.0	HMD 061S	J168
	23.0	74.1	MDE 0610S07E02	J14
	23.2	74.3	MDW 0610GS2	J50
	24.2	88.8	MDW 0610PHT	J80
	24.4	88.0	MDF 0610H3D	J44
	24.5	89.1	MDE 0610S07H03	J20
	24.5	89.1	MDM 0610S07H03	J30
	24.5	89.1	MDW 0610HX3	J64
	24.7	89.3	MDW 0610HGS3	J55
	34.0	84.1	MDE 0610S07E04	J14
	34.2	84.3	MDW 0610GS4	J50
	36.6	109.0	MDF 0610H5D	J44
	44.0	110.1	MDE 0610S07H05	J20
	44.0	110.1	MDM 0610S07H05	J30
	44.0	110.1	MDW 0610HX5	J64
	44.2	110.3	MDW 0610HGS5	J55
	44.2	110.3	MDW 0610NHGS5	J85
	53.9	107.0	HMD 061M	J168
	63.5	131.1	MDE 0610S07H08	J20
	63.7	131.3	MDW 0610HGS8	J55
	83.2	152.3	MDW 0610NHGS10	J85
	90.0	154.1	MDW 0610XHGS10	J80
	120.0	184.1	MDW 0610XHGS15	J80
	153.0	217.1	MDW 0610XHGS20	J80
	185.0	249.1	MDW 0610XHGS25	J80
	218.0	282.1	MDW 0610XHGS30	J80
6.2	18.6	70.0	MDF 0620S2D	J38
	18.6	120.0	MDF 0620L2D	J42
	21.7	75.0	HMD 062S	J168
	22.8	74.1	MDE 0620S07E02	J14
	23.0	74.3	MDW 0620GS2	J50
	24.0	88.8	MDW 0620PHT	J80

(Blue text: Flat head ■Indexable ■HSS)

● Diameter ø6.2 to ø6.5mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
6.2	24.3	89.1	MDE 0620S07H03	J20
	24.3	89.1	MDM 0620S07H03	J30
	24.3	89.1	MDW 0620HX3	J64
	24.5	89.3	MDW 0620HGS3	J55
	24.8	88.0	MDF 0620H3D	J44
	33.8	84.1	MDE 0620S07E04	J14
	34.0	84.3	MDW 0620GS4	J50
	37.2	109.0	MDF 0620H5D	J44
	43.8	110.1	MDE 0620S07H05	J20
	43.8	110.1	MDM 0620S07H05	J30
	43.8	110.1	MDW 0620HX5	J64
	44.0	110.3	MDW 0620HGS5	J55
	44.0	110.3	MDW 0620NHGS5	J85
	53.7	107.0	HMD 062M	J168
	63.3	131.1	MDE 0620S07H08	J20
	63.5	131.3	MDW 0620HGS8	J55
	89.8	154.1	MDW 0620XHGS10	J80
	119.8	184.1	MDW 0620XHGS15	J80
	152.8	217.1	MDW 0620XHGS20	J80
	184.8	249.1	MDW 0620XHGS25	J80
	217.8	282.1	MDW 0620XHGS30	J80
6.3	18.9	70.0	MDF 0630S2D	J38
	18.9	120.0	MDF 0630L2D	J42
	21.6	75.0	HMD 063S	J168
	22.7	74.1	MDE 0630S07E02	J14
	22.9	74.3	MDW 0630GS2	J50
	23.9	88.8	MDW 0630PHT	J80
	24.2	89.1	MDE 0630S07H03	J20
	24.2	89.1	MDM 0630S07H03	J30
	24.2	89.1	MDW 0630HX3	J64
	24.4	89.3	MDW 0630HGS3	J55
	25.2	88.0	MDF 0630H3D	J44
	33.7	84.1	MDE 0630S07E04	J14
	33.9	84.3	MDW 0630GS4	J50
	37.8	109.0	MDF 0630H5D	J44
	43.7	110.1	MDE 0630S07H05	J20
	43.7	110.1	MDM 0630S07H05	J30
	43.7	110.1	MDW 0630HX5	J64
	43.9	110.3	MDW 0630HGS5	J55
	43.9	110.3	MDW 0630NHGS5	J85
	53.6	107.0	HMD 063M	J168
	63.2	131.1	MDE 0630S07H08	J20
	63.4	131.3	MDW 0630HGS8	J55
	89.7	154.1	MDW 0630XHGS10	J80
	119.7	184.1	MDW 0630XHGS15	J80
	152.7	217.1	MDW 0630XHGS20	J80
	184.7	249.1	MDW 0630XHGS25	J80
	217.7	282.1	MDW 0630XHGS30	J80
6.375	24.4	84.5	MDS 06375SDC3	J89
6.4	19.2	70.0	MDF 0640S2D	J38
	19.2	120.0	MDF 0640L2D	J42
	21.4	75.0	HMD 064S	J168
	22.6	74.2	MDE 0640S07E02	J14
	22.7	74.3	MDW 0640GS2	J50
	23.8	88.9	MDW 0640PHT	J80
	24.1	89.2	MDE 0640S07H03	J20
	24.1	89.2	MDM 0640S07H03	J30
	24.1	89.2	MDW 0640HX3	J64
	24.2	89.3	MDW 0640HGS3	J55
	25.6	88.0	MDF 0640H3D	J44
	33.6	84.2	MDE 0640S07E04	J14
	33.7	84.3	MDW 0640GS4	J50
	38.4	109.0	MDF 0640H5D	J44
	43.6	110.2	MDE 0640S07H05	J20
	43.6	110.2	MDM 0640S07H05	J30
	43.6	110.2	MDW 0640HX5	J64
	43.7	110.3	MDW 0640HGS5	J55
	43.7	110.3	MDW 0640NHGS5	J86
	53.4	107.0	HMD 064M	J168
	63.1	131.2	MDE 0640S07H08	J20
	63.2	131.3	MDW 0640HGS8	J55
	89.6	154.2	MDW 0640XHGS10	J80
	119.6	184.2	MDW 0640XHGS15	J80
	152.6	217.2	MDW 0640XHGS20	J80
	184.6	249.2	MDW 0640XHGS25	J80
	217.6	282.2	MDW 0640XHGS30	J80
6.5	19.5	70.0	MDF 0650S2D	J38
	19.5	120.0	MDF 0650L2D	J42
	21.3	75.0	HMD 065S	J168
	22.5	74.2	MDE 0650S07E02	J14

(Blue text: Flat head ■Indexable ■HSS)

Effective Length (LU) is a guideline for the usable length. Take into account the chip evacuation in relation to the flute length (LCF) when drilling.

Effective Length List by Diameter

● Diameter ø6.5 to ø6.7mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
6.5	22.6	74.3	MDW 0650GS2	J50
	23.7	88.9	MDW 0650PHT	J80
	24.0	89.2	MDE 0650S07H03	J20
	24.0	89.2	MDM 0650S07H03	J30
	24.0	89.2	MDW 0650HX3	J64
	24.1	84.3	MDW 0650SGS3	J75
	24.1	89.3	MDW 0650HGS3	J55
	24.1	89.3	MDW 0650HY3	J71
	24.1	89.3	MDW 0650NHGS3	J86
	26.0	88.0	MDF 0650H3D	J44
	32.5	82.2	MDS 065MD	J72
	33.5	84.2	MDE 0650S07E04	J14
	33.6	84.3	MDW 0650GS4	J50
	39.0	109.0	MDF 0650H5D	J44
	43.5	110.2	MDE 0650S07H05	J20
	43.5	110.2	MDM 0650S07H05	J30
	43.5	110.2	MDW 0650HX5	J64
	43.6	110.3	MDW 0650HGS5	J55
	43.6	110.3	MDW 0650HY5	J71
	43.6	110.3	MDW 0650NHGS5	J86
	53.3	107.0	HMD 065M	J168
	63.0	131.2	MDE 0650S07H08	J20
	63.0	131.2	MDW 0650HX8	J64
	63.1	131.3	MDW 0650HGS8	J55
	82.6	152.3	MDW 0650NHGS10	J86
	89.5	154.2	MDW 0650XHGS10	J80
	100.5	165.2	MDW 0650XHGS12	J80
	119.5	184.2	MDW 0650XHGS15	J80
	152.5	217.2	MDW 0650XHGS20	J80
	184.5	249.2	MDW 0650XHGS25	J80
	217.5	282.2	MDW 0650XHGS30	J80
6.6	19.8	70.0	MDF 0660S2D	J38
	19.8	120.0	MDF 0660L2D	J42
	21.1	75.0	HMD 066S	J168
	24.3	74.2	MDE 0660S07E02	J14
	24.5	74.4	MDW 0660GS2	J51
	26.0	88.9	MDW 0660PHT	J80
	26.3	89.2	MDE 0660S07H03	J21
	26.3	89.2	MDM 0660S07H03	J30
	26.3	89.2	MDW 0660HX3	J65
	26.4	88.0	MDF 0660H3D	J44
	26.5	89.4	MDW 0660HGS3	J55
	34.3	84.2	MDE 0660S07E04	J14
	34.5	84.4	MDW 0660GS4	J51
	39.6	109.0	MDF 0660H5D	J44
	47.3	110.2	MDE 0660S07H05	J21
	47.3	110.2	MDM 0660S07H05	J30
	47.3	110.2	MDW 0660HX5	J65
	47.5	110.4	MDW 0660HGS5	J55
	47.5	110.4	MDW 0660NHGS5	J86
	53.1	107.0	HMD 066M	J168
	68.3	131.2	MDE 0660S07H08	J21
	68.5	131.4	MDW 0660HGS8	J55
	96.3	159.2	MDW 0660XHGS10	J80
	131.3	194.2	MDW 0660XHGS15	J80
	166.3	229.2	MDW 0660XHGS20	J80
	201.3	264.2	MDW 0660XHGS25	J80
	236.3	299.2	MDW 0660XHGS30	J80
6.7	20.1	70.0	MDF 0670S2D	J38
	20.1	120.0	MDF 0670L2D	J42
	21.0	75.0	HMD 067S	J168
	24.2	74.2	MDE 0670S07E02	J14
	24.4	74.4	MDW 0670GS2	J51
	25.9	88.9	MDW 0670PHT	J81
	26.2	89.2	MDE 0670S07H03	J21
	26.2	89.2	MDM 0670S07H03	J30
	26.2	89.2	MDW 0670HX3	J65
	26.4	89.4	MDW 0670HGS3	J55
	26.4	89.4	MDW 0670NHGS3	J86
	26.8	88.0	MDF 0670H3D	J44
	34.2	84.2	MDE 0670S07E04	J14
	34.4	84.4	MDW 0670GS4	J51
	40.2	109.0	MDF 0670H5D	J44
	47.2	110.2	MDE 0670S07H05	J21
	47.2	110.2	MDM 0670S07H05	J30
	47.2	110.2	MDW 0670HX5	J65
	47.4	110.4	MDW 0670HGS5	J55
	47.4	110.4	MDW 0670NHGS5	J86
	53.0	107.0	HMD 067M	J168
	68.2	131.2	MDE 0670S07H08	J21

(Blue text: Flat head ■Indexable ■HSS)

● Diameter ø6.7 to ø7.0mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
6.7	68.2	131.2	MDW 0670HX8	J65
	68.4	131.4	MDW 0670HGS8	J55
	89.4	152.4	MDW 0670NHGS10	J86
	96.2	159.2	MDW 0670XHGS10	J81
	131.2	194.2	MDW 0670XHGS15	J81
	166.2	229.2	MDW 0670XHGS20	J81
	201.2	264.2	MDW 0670XHGS25	J81
	236.2	299.2	MDW 0670XHGS30	J81
6.8	20.4	70.0	MDF 0680S2D	J38
	20.4	120.0	MDF 0680L2D	J42
	23.8	78.0	HMD 068S	J168
	24.0	74.2	MDE 0680S07E02	J14
	24.2	74.4	MDW 0680GS2	J51
	25.7	88.9	MDW 0680PHT	J81
	26.0	89.2	MDE 0680S07H03	J21
	26.0	89.2	MDM 0680S07H03	J30
	26.0	89.2	MDW 0680HX3	J65
	26.2	89.4	MDW 0680HGS3	J55
	26.2	89.4	MDW 0680HY3	J71
	26.2	89.4	MDW 0680NHGS3	J86
	27.2	88.0	MDF 0680H3D	J44
	34.0	84.2	MDE 0680S07E04	J14
	34.0	84.2	MDS 068MD	J72
	34.2	84.4	MDW 0680GS4	J51
	40.8	109.0	MDF 0680H5D	J44
	47.0	110.2	MDE 0680S07H05	J21
	47.0	110.2	MDM 0680S07H05	J30
	47.0	110.2	MDW 0680HX5	J65
	47.2	110.4	MDW 0680HGS5	J55
	47.2	110.4	MDW 0680HY5	J71
	47.2	110.4	MDW 0680NHGS5	J86
	58.8	113.0	HMD 068M	J168
	68.0	131.2	MDE 0680S07H08	J21
	68.0	131.2	MDW 0680HX8	J65
	68.2	131.4	MDW 0680HGS8	J55
	68.2	131.4	MDW 0680HY8	J71
	89.2	152.4	MDW 0680NHGS10	J86
	96.0	159.2	MDW 0680XHGS10	J81
	131.0	194.2	MDW 0680XHGS15	J81
	166.0	229.2	MDW 0680XHGS20	J81
	201.0	264.2	MDW 0680XHGS25	J81
	236.0	299.2	MDW 0680XHGS30	J81
6.9	20.7	70.0	MDF 0690S2D	J38
	20.7	120.0	MDF 0690L2D	J42
	23.7	78.0	HMD 069S	J168
	24.0	74.3	MDE 0690S07E02	J14
	24.1	74.4	MDW 0690GS2	J51
	25.6	88.9	MDW 0690PHT	J81
	26.0	89.3	MDE 0690S07H03	J21
	26.0	89.3	MDM 0690S07H03	J30
	26.0	89.3	MDW 0690HX3	J65
	26.1	89.4	MDW 0690HGS3	J55
	27.6	88.0	MDF 0690H3D	J44
	34.0	84.3	MDE 0690S07E04	J14
	34.1	84.4	MDW 0690GS4	J51
	41.4	109.0	MDF 0690H5D	J44
	47.0	110.3	MDE 0690S07H05	J21
	47.0	110.3	MDM 0690S07H05	J30
	47.0	110.3	MDW 0690HX5	J65
	47.1	110.4	MDW 0690HGS5	J55
	47.1	110.4	MDW 0690NHGS5	J86
	58.7	113.0	HMD 069M	J168
	68.0	131.3	MDE 0690S07H08	J21
	68.0	131.3	MDW 0690HX8	J65
	68.1	131.4	MDW 0690HGS8	J55
	96.0	159.3	MDW 0690XHGS10	J81
	131.0	194.3	MDW 0690XHGS15	J81
	166.0	229.3	MDW 0690XHGS20	J81
	201.0	264.3	MDW 0690XHGS25	J81
	236.0	299.3	MDW 0690XHGS30	J81
7.0	21.0	70.0	MDF 0700S2D	J38
	21.0	120.0	MDF 0700L2D	J42
	23.5	78.0	HMD 070S	J168
	23.8	74.3	MDE 0700S07E02	J14
	23.9	74.4	MDW 0700GS2	J51
	25.4	88.9	MDW 0700PHT	J81
	25.8	89.3	MDE 0700S07H03	J21
	25.8	89.3	MDM 0700S07H03	J31
	25.8	89.3	MDW 0700HX3	J65
	25.9	84.4	MDW 0700SGS3	J75

(Blue text: Flat head ■Indexable ■HSS)

● Diameter ø7.0 to ø7.2mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
7.0	25.9	89.4	MDW 0700HGS3	J55
	25.9	89.4	MDW 0700HY3	J71
	25.9	89.4	MDW 0700NHGS3	J86
	26.1	84.6	MDS 07000SDC3	J89
	28.0	88.0	MDF 0700H3D	J44
	33.8	84.3	MDE 0700S07E04	J14
	33.8	84.3	MDS 070MD	J72
	33.9	84.4	MDW 0700GS4	J51
	42.0	109.0	MDF 0700H5D	J44
	46.8	110.3	MDE 0700S07H05	J21
	46.8	110.3	MDM 0700S07H05	J31
	46.8	110.3	MDW 0700HX5	J65
	46.9	110.4	MDW 0700HGS5	J55
	46.9	110.4	MDW 0700HY5	J71
	46.9	110.4	MDW 0700NHGS5	J86
	58.5	113.0	HMD 070M	J168
	67.8	131.3	MDE 0700S07H08	J21
	67.8	131.3	MDW 0700HX8	J65
	67.9	131.4	MDW 0700HGS8	J55
	88.9	152.4	MDW 0700NHGS10	J86
	95.8	159.3	MDW 0700XHGS10	J81
	109.8	173.3	MDW 0700XHGS12	J81
	130.8	194.3	MDW 0700XHGS15	J81
	165.8	229.3	MDW 0700XHGS20	J81
	200.8	264.3	MDW 0700XHGS25	J81
	235.8	299.3	MDW 0700XHGS30	J81
7.1	21.3	70.0	MDF 0710S2D	J38
	21.3	130.0	MDF 0710L2D	J42
	23.4	78.0	HMD 071S	J169
	23.7	79.3	MDE 0710S08E02	J14
	23.9	79.5	MDW 0710GS2	J51
	27.9	95.0	MDW 0710PHT	J81
	28.2	95.3	MDE 0710S08H03	J21
	28.2	95.3	MDM 0710S08H03	J31
	28.2	95.3	MDW 0710HX3	J65
	28.4	94.0	MDF 0710H3D	J44
	28.4	95.5	MDW 0710HGS3	J55
	35.7	91.3	MDE 0710S08E04	J14
	35.9	91.5	MDW 0710GS4	J51
	42.6	118.0	MDF 0710H5D	J44
	50.7	119.3	MDE 0710S08H05	J21
	50.7	119.3	MDM 0710S08H05	J31
	50.7	119.3	MDW 0710HX5	J65
	50.9	119.5	MDW 0710HGS5	J55
	50.9	119.5	MDW 0710NHGS5	J86
	58.4	113.0	HMD 071M	J169
	73.2	143.3	MDE 0710S08H08	J21
	73.4	143.5	MDW 0710HGS8	J55
	103.7	170.3	MDW 0710XHGS10	J81
	138.7	205.3	MDW 0710XHGS15	J81
	176.7	243.3	MDW 0710XHGS20	J81
	213.7	280.3	MDW 0710XHGS25	J81
	251.7	318.3	MDW 0710XHGS30	J81
7.2	21.6	70.0	MDF 0720S2D	J38
	21.6	130.0	MDF 0720L2D	J42
	23.2	78.0	HMD 072S	J169
	23.5	79.3	MDE 0720S08E02	J14
	23.7	79.5	MDW 0720GS2	J51
	27.7	95.0	MDW 0720PHT	J81
	28.0	95.3	MDE 0720S08H03	J21
	28.0	95.3	MDM 0720S08H03	J31
	28.0	95.3	MDW 0720HX3	J65
	28.2	95.5	MDW 0720HGS3	J55
	28.8	94.0	MDF 0720H3D	J44
	35.5	91.3	MDE 0720S08E04	J14
	35.7	91.5	MDW 0720GS4	J51
	43.2	118.0	MDF 0720H5D	J44
	50.5	119.3	MDE 0720S08H05	J21
	50.5	119.3	MDM 0720S08H05	J31
	50.5	119.3	MDW 0720HX5	J65
	50.7	119.5	MDW 0720HGS5	J55
	50.7	119.5	MDW 0720NHGS5	J86
	58.2	113.0	HMD 072M	J169
	73.0	143.3	MDE 0720S08H08	J21
	73.2	143.5	MDW 0720HGS8	J55
	95.7	167.5	MDW 0720NHGS10	J86
	103.5	170.3	MDW 0720XHGS10	J81
	138.5	205.3	MDW 0720XHGS15	J81
	176.5	243.3	MDW 0720XHGS20	J81
	213.5	280.3	MDW 0720XHGS25	J81

(Blue text: Flat head ■Indexable ■HSS)

Effective Length (LU) is a guideline for the usable length. Take into account the chip evacuation in relation to the flute length (LCF) when drilling.

Effective Length List by Diameter

● Diameter ø7.2 to ø7.5mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
7.2	251.5	318.3	MDW 0720XHGS30	J81
7.3	21.9	70.0	MDF 0730S2D	J38
	21.9	130.0	MDF 0730L2D	J42
	23.1	78.0	HMD 073S	J169
	23.4	79.3	MDE 0730S08E02	J14
	23.6	79.5	MDW 0730GS2	J51
	27.6	95.0	MDW 0730PHT	J81
	27.9	95.3	MDE 0730S08H03	J21
	27.9	95.3	MDM 0730S08H03	J31
	27.9	95.3	MDW 0730HX3	J65
	28.1	95.5	MDW 0730HGS3	J55
	29.2	94.0	MDF 0730H3D	J44
	35.4	91.3	MDE 0730S08E04	J14
	35.6	91.5	MDW 0730GS4	J51
	43.8	118.0	MDF 0730H5D	J44
	50.4	119.3	MDE 0730S08H05	J21
	50.4	119.3	MDM 0730S08H05	J31
	50.4	119.3	MDW 0730HX5	J65
	50.6	119.5	MDW 0730HGS5	J55
	50.6	119.5	MDW 0730NHGS5	J86
	58.1	113.0	HMD 073M	J169
	72.9	143.3	MDE 0730S08H08	J21
	73.1	143.5	MDW 0730HGS8	J55
	103.4	170.3	MDW 0730XHGS10	J81
	138.4	205.3	MDW 0730XHGS15	J81
	176.4	243.3	MDW 0730XHGS20	J81
	213.4	280.3	MDW 0730XHGS25	J81
	251.4	318.3	MDW 0730XHGS30	J81
7.35	28.0	95.5	MDW 0735NHGS3	J86
	50.5	119.5	MDW 0735NHGS5	J86
7.36	18.4	70.0	MDF 0736S2D	J38
	23.2	79.3	MDE 0736S08E02	J14
	50.2	119.3	MDE 0736S08H05	J21
7.38	18.4	70.0	MDF 0738S2D	J38
	23.2	79.3	MDE 0738S08E02	J14
	50.2	119.3	MDE 0738S08H05	J21
7.4	22.2	70.0	MDF 0740S2D	J38
	22.2	130.0	MDF 0740L2D	J42
	22.9	78.0	HMD 074S	J169
	23.2	79.3	MDE 0740S08E02	J14
	23.4	79.5	MDW 0740GS2	J51
	27.4	95.0	MDW 0740PHT	J81
	27.7	95.3	MDE 0740S08H03	J21
	27.7	95.3	MDM 0740S08H03	J31
	27.7	95.3	MDW 0740HX3	J65
	27.9	95.5	MDW 0740HGS3	J55
	27.9	95.5	MDW 0740NHGS3	J86
	29.6	94.0	MDF 0740H3D	J44
	35.2	91.3	MDE 0740S08E04	J14
	35.4	91.5	MDW 0740GS4	J51
	44.4	118.0	MDF 0740H5D	J44
	50.2	119.3	MDE 0740S08H05	J21
	50.2	119.3	MDM 0740S08H05	J31
	50.2	119.3	MDW 0740HX5	J65
	50.4	119.5	MDW 0740HGS5	J55
	50.4	119.5	MDW 0740NHGS5	J86
	57.9	113.0	HMD 074M	J169
	72.7	143.3	MDE 0740S08H08	J21
	72.9	143.5	MDW 0740HGS8	J55
	103.2	170.3	MDW 0740XHGS10	J81
	138.2	205.3	MDW 0740XHGS15	J81
	176.2	243.3	MDW 0740XHGS20	J81
	213.2	280.3	MDW 0740XHGS25	J81
	251.2	318.3	MDW 0740XHGS30	J81
7.5	22.5	70.0	MDF 0750S2D	J38
	22.5	130.0	MDF 0750L2D	J42
	22.8	78.0	HMD 075S	J169
	23.2	79.4	MDE 0750S08E02	J14
	23.4	79.6	MDW 0750GS2	J51
	27.3	95.0	MDW 0750PHT	J81
	27.7	95.4	MDE 0750S08H03	J21
	27.7	95.4	MDM 0750S08H03	J31
	27.7	95.4	MDW 0750HX3	J65
	27.9	91.6	MDW 0750SGS3	J75
	27.9	95.6	MDW 0750HGS3	J55
	27.9	95.6	MDW 0750NHGS3	J86
	30.0	94.0	MDF 0750H3D	J44
	35.2	88.4	MDS 075MD	J72
	35.2	91.4	MDE 0750S08E04	J14
	35.4	91.6	MDW 0750GS4	J51

(Blue text: Flat head ■Indexable ■HSS)

● Diameter ø7.5 to ø7.8mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
7.5	45.0	118.0	MDF 0750H5D	J44
	50.2	119.4	MDE 0750S08H05	J21
	50.2	119.4	MDM 0750S08H05	J31
	50.2	119.4	MDW 0750HX5	J65
	50.4	119.6	MDW 0750HGS5	J55
	50.4	119.6	MDW 0750NHGS5	J86
	57.8	113.0	HMD 075M	J169
	72.7	143.4	MDE 0750S08H08	J21
	72.7	143.4	MDW 0750HX8	J65
	72.9	143.6	MDW 0750HGS8	J55
	95.4	167.6	MDW 0750NHGS10	J86
	103.2	170.4	MDW 0750XHGS10	J81
	116.2	183.4	MDW 0750XHGS12	J81
	138.2	205.4	MDW 0750XHGS15	J81
	176.2	243.4	MDW 0750XHGS20	J81
	213.2	280.4	MDW 0750XHGS25	J81
	251.2	318.4	MDW 0750XHGS30	J81
7.52	18.8	70.0	MDF 0752S2D	J38
	26.0	79.4	MDE 0752S08E02	J14
	54.0	119.4	MDE 0752S08H05	J21
7.54	18.8	70.0	MDF 0754S2D	J38
	26.0	79.4	MDE 0754S08E02	J14
	54.0	119.4	MDE 0754S08H05	J21
7.6	22.8	70.0	MDF 0760S2D	J38
	22.8	130.0	MDF 0760L2D	J42
	25.6	81.0	HMD 076S	J169
	26.0	79.4	MDE 0760S08E02	J14
	26.2	79.6	MDW 0760GS2	J51
	29.6	95.0	MDW 0760PHT	J81
	30.0	95.4	MDE 0760S08H03	J21
	30.0	95.4	MDM 0760S08H03	J31
	30.0	95.4	MDW 0760HX3	J65
	30.2	95.6	MDW 0760HGS3	J55
	30.4	94.0	MDF 0760H3D	J44
	38.0	91.4	MDE 0760S08E04	J14
	38.2	91.6	MDW 0760GS4	J51
	45.6	118.0	MDF 0760H5D	J44
	54.0	119.4	MDE 0760S08H05	J21
	54.0	119.4	MDM 0760S08H05	J31
	54.0	119.4	MDW 0760HX5	J65
	54.2	119.6	MDW 0760HGS5	J55
	54.2	119.6	MDW 0760NHGS5	J86
	63.6	119.0	HMD 076M	J169
	78.0	143.4	MDE 0760S08H08	J21
	78.2	143.6	MDW 0760HGS8	J55
	110.0	175.4	MDW 0760XHGS10	J81
	150.0	215.4	MDW 0760XHGS15	J81
	190.0	255.4	MDW 0760XHGS20	J81
	230.0	295.4	MDW 0760XHGS25	J81
	270.0	335.4	MDW 0760XHGS30	J81
7.7	23.1	70.0	MDF 0770S2D	J38
	23.1	130.0	MDF 0770L2D	J42
	25.5	81.0	HMD 077S	J169
	25.9	79.4	MDE 0770S08E02	J14
	26.1	79.6	MDW 0770GS2	J51
	29.5	95.0	MDW 0770PHT	J81
	29.9	95.4	MDE 0770S08H03	J21
	29.9	95.4	MDM 0770S08H03	J31
	29.9	95.4	MDW 0770HX3	J65
	30.1	95.6	MDW 0770HGS3	J55
	30.8	94.0	MDF 0770H3D	J44
	37.9	91.4	MDE 0770S08E04	J14
	38.1	91.6	MDW 0770GS4	J51
	46.2	118.0	MDF 0770H5D	J44
	53.9	119.4	MDE 0770S08H05	J21
	53.9	119.4	MDM 0770S08H05	J31
	53.9	119.4	MDW 0770HX5	J65
	54.1	119.6	MDW 0770HGS5	J55
	54.1	119.6	MDW 0770NHGS5	J86
	63.5	119.0	HMD 077M	J169
	77.9	143.4	MDE 0770S08H08	J21
	78.1	143.6	MDW 0770HGS8	J55
	109.9	175.4	MDW 0770XHGS10	J81
	149.9	215.4	MDW 0770XHGS15	J81
	189.9	255.4	MDW 0770XHGS20	J81
	229.9	295.4	MDW 0770XHGS25	J81
	269.9	335.4	MDW 0770XHGS30	J81
7.8	23.4	70.0	MDF 0780S2D	J38
	23.4	130.0	MDF 0780L2D	J42
	25.3	81.0	HMD 078S	J169

(Blue text: Flat head ■Indexable ■HSS)

● Diameter ø7.8 to ø8.0mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
7.8	25.7	79.4	MDE 0780S08E02	J14
	25.9	79.6	MDW 0780GS2	J51
	29.3	95.0	MDW 0780PHT	J81
	29.7	95.4	MDE 0780S08H03	J21
	29.7	95.4	MDM 0780S08H03	J31
	29.7	95.4	MDW 0780HX3	J65
	29.9	95.6	MDW 0780HGS3	J55
	29.9	95.6	MDW 0780NHGS3	J86
	31.2	94.0	MDF 0780H3D	J44
	37.7	91.4	MDE 0780S08E04	J14
	37.9	91.6	MDW 0780GS4	J51
	46.8	118.0	MDF 0780H5D	J44
	53.7	119.4	MDE 0780S08H05	J21
	53.7	119.4	MDM 0780S08H05	J31
	53.7	119.4	MDW 0780HX5	J65
	53.9	119.6	MDW 0780HGS5	J55
	53.9	119.6	MDW 0780NHGS5	J86
	63.3	119.0	HMD 078M	J169
	77.7	143.4	MDE 0780S08H08	J21
	77.9	143.6	MDW 0780HGS8	J55
	101.9	167.6	MDW 0780NHGS10	J86
	109.7	175.4	MDW 0780XHGS10	J81
	149.7	215.4	MDW 0780XHGS15	J81
	189.7	255.4	MDW 0780XHGS20	J81
	229.7	295.4	MDW 0780XHGS25	J81
	269.7	335.4	MDW 0780XHGS30	J81
7.9	23.7	70.0	MDF 0790S2D	J38
	23.7	130.0	MDF 0790L2D	J42
	25.2	81.0	HMD 079S	J169
	25.6	79.4	MDE 0790S08E02	J14
	25.8	79.6	MDW 0790GS2	J51
	29.3	95.1	MDW 0790PHT	J81
	29.6	95.4	MDE 0790S08H03	J21
	29.6	95.4	MDM 0790S08H03	J31
	29.6	95.4	MDW 0790HX3	J65
	29.8	95.6	MDW 0790HGS3	J55
	31.6	94.0	MDF 0790H3D	J44
	37.6	91.4	MDE 0790S08E04	J14
	37.8	91.6	MDW 0790GS4	J51
	47.4	118.0	MDF 0790H5D	J44
	53.6	119.4	MDE 0790S08H05	J21
	53.6	119.4	MDM 0790S08H05	J31
	53.6	119.4	MDW 0790HX5	J65
	53.8	119.6	MDW 0790HGS5	J55
	53.8	119.6	MDW 0790NHGS5	J86
	63.2	119.0	HMD 079M	J169
	77.6	143.4	MDE 0790S08H08	J21
	77.8	143.6	MDW 0790HGS8	J55
	109.6	175.4	MDW 0790XHGS10	J81
	149.6	215.4	MDW 0790XHGS15	J81
	189.6	255.4	MDW 0790XHGS20	J81
	229.6	295.4	MDW 0790XHGS25	J81
	269.6	335.4	MDW 0790XHGS30	J81
7.938	30.0	91.9	MDS 07938SDC3	J89
8.0	24.0	70.0	MDF 0800S2D	J38
	24.0	130.0	MDF 0800L2D	J42
	24.0	130.0	MDF 0800L2D-S6	J42
	25.0	81.0	HMD 080S	J169
	25.5	79.5	MDE 0800S08E02	J14
	25.7	79.7	MDW 0800GS2	J51
	29.1	95.1	MDW 0800PHT	J81
	29.5	95.5	MDE 0800S08H03	J21
	29.5	95.5	MDM 0800S08H03	J31
	29.5	95.5	MDW 0800HX3	J65
	29.7	91.7	MDW 0800SGS3	J75
	29.7	95.7	MDW 0800HGS3	J55
	29.7	95.7	MDW 0800HY3	J71
	29.7	95.7	MDW 0800NHGS3	J86
	29.9	91.9	MDS 08000SDC3	J89
	32.0	94.0	MDF 0800H3D	J44
	37.5	91.5	MDE 0800S08E04	J14
	37.5	91.5	MDS 080MD	J72
	37.7	91.7	MDW 0800GS4	J51
	48.0	118.0	MDF 0800H5D	J44
	53.5	119.5	MDE 0800S08H05	J21
	53.5	119.5	MDM 0800S08H05	J31
	53.5	119.5	MDW 0800HX5	J65
	53.7	119.7	MDW 0800HGS5	J55
	53.7	119.7	MDW 0800HY5	J71
	53.7	119.7	MDW 0800NHGS5	J86

(Blue text: Flat head ■Indexable ■HSS)

Effective Length (LU) is a guideline for the usable length. Take into account the chip evacuation in relation to the flute length (LCF) when drilling.

Drilling
J
Solid
Indexable Head Type
Indexable Insert Type
Reamers
Brazed
Others

Effective Length List by Diameter

● Diameter ø8.0 to ø8.4mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
8.0	63.0	119.0	HMD 080M	J169
	77.5	143.5	MDE 0800S08H08	J21
	77.5	143.5	MDW 0800HX8	J65
	77.7	143.7	MDW 0800HGS8	J55
	101.7	167.7	MDW 0800NHGS10	J86
	109.5	175.5	MDW 0800XHGS10	J81
	125.5	191.5	MDW 0800XHGS12	J81
	149.5	215.5	MDW 0800XHGS15	J81
	189.5	255.5	MDW 0800XHGS20	J81
	229.5	295.5	MDW 0800XHGS25	J81
	269.5	335.5	MDW 0800XHGS30	J81
8.1	24.3	80.0	MDF 0810S2D	J38
	24.3	140.0	MDF 0810L2D	J42
	24.9	87.0	HMD 081S	J169
	25.4	83.5	MDE 0810S09E02	J14
	25.6	83.7	MDW 0810GS2	J51
	31.9	101.5	MDE 0810S09H03	J21
	31.9	101.5	MDM 0810S09H03	J31
	31.9	101.5	MDW 0810HX3	J65
	32.1	101.7	MDW 0810HGS3	J55
	32.4	100.0	MDF 0810H3D	J44
	42.4	99.5	MDE 0810S09E04	J14
	42.6	99.7	MDW 0810GS4	J51
	48.6	127.0	MDF 0810H5D	J44
	57.4	128.5	MDE 0810S09H05	J21
	57.4	128.5	MDM 0810S09H05	J31
	57.4	128.5	MDW 0810HX5	J65
	57.6	128.7	MDW 0810HGS5	J55
	57.6	128.7	MDW 0810NHGS5	J86
	62.9	125.0	HMD 081M	J169
	82.9	155.5	MDE 0810S09H08	J21
	83.1	155.7	MDW 0810HGS8	J55
8.2	24.6	80.0	MDF 0820S2D	J38
	24.6	140.0	MDF 0820L2D	J42
	24.7	87.0	HMD 082S	J169
	25.2	83.5	MDE 0820S09E02	J14
	25.4	83.7	MDW 0820GS2	J51
	31.7	101.5	MDE 0820S09H03	J21
	31.7	101.5	MDM 0820S09H03	J31
	31.7	101.5	MDW 0820HX3	J65
	31.9	101.7	MDW 0820HGS3	J55
	32.8	100.0	MDF 0820H3D	J44
	42.2	99.5	MDE 0820S09E04	J14
	42.4	99.7	MDW 0820GS4	J51
	49.2	127.0	MDF 0820H5D	J44
	57.2	128.5	MDE 0820S09H05	J21
	57.2	128.5	MDM 0820S09H05	J31
	57.2	128.5	MDW 0820HX5	J65
	57.4	128.7	MDW 0820HGS5	J55
	57.4	128.7	MDW 0820NHGS5	J86
	62.7	125.0	HMD 082M	J169
	82.7	155.5	MDE 0820S09H08	J21
	82.9	155.7	MDW 0820HGS8	J55
8.3	24.6	87.0	HMD 083S	J169
	24.9	80.0	MDF 0830S2D	J38
	24.9	140.0	MDF 0830L2D	J42
	25.1	83.5	MDE 0830S09E02	J14
	25.3	83.7	MDW 0830GS2	J51
	31.6	101.5	MDE 0830S09H03	J21
	31.6	101.5	MDM 0830S09H03	J31
	31.6	101.5	MDW 0830HX3	J65
	31.8	101.7	MDW 0830HGS3	J55
	33.2	100.0	MDF 0830H3D	J44
	42.1	99.5	MDE 0830S09E04	J14
	42.3	99.7	MDW 0830GS4	J51
	49.8	127.0	MDF 0830H5D	J44
	57.1	128.5	MDE 0830S09H05	J21
	57.1	128.5	MDM 0830S09H05	J31
	57.1	128.5	MDW 0830HX5	J65
	57.3	128.7	MDW 0830HGS5	J55
	57.3	128.7	MDW 0830NHGS5	J86
	62.6	125.0	HMD 083M	J169
	82.6	155.5	MDE 0830S09H08	J21
	82.8	155.7	MDW 0830HGS8	J55
8.4	24.4	87.0	HMD 084S	J169
	24.9	83.5	MDE 0840S09E02	J14
	25.1	83.7	MDW 0840GS2	J51
	25.2	80.0	MDF 0840S2D	J38
	25.2	140.0	MDF 0840L2D	J42
	31.4	101.5	MDE 0840S09H03	J21

(Blue text: Flat head ■Indexable ■HSS)

● Diameter ø8.4 to ø8.7mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
8.4	31.4	101.5	MDM 0840S09H03	J31
	31.4	101.5	MDW 0840HX3	J65
	31.6	101.7	MDW 0840HGS3	J55
	33.6	100.0	MDF 0840H3D	J44
	41.9	99.5	MDE 0840S09E04	J14
	42.1	99.7	MDW 0840GS4	J51
	50.4	127.0	MDF 0840H5D	J44
	56.9	128.5	MDE 0840S09H05	J21
	56.9	128.5	MDM 0840S09H05	J31
	56.9	128.5	MDW 0840HX5	J65
	57.1	128.7	MDW 0840HGS5	J55
	57.1	128.7	MDW 0840NHGS5	J86
	62.4	125.0	HMD 084M	J169
	82.4	155.5	MDE 0840S09H08	J21
	82.6	155.7	MDW 0840HGS8	J55
8.5	24.3	87.0	HMD 085S	J169
	24.8	83.5	MDE 0850S09E02	J14
	25.1	83.8	MDW 0850GS2	J51
	25.5	80.0	MDF 0850S2D	J38
	25.5	140.0	MDF 0850L2D	J42
	30.9	101.1	MDW 0850PHT	J82
	31.3	101.5	MDE 0850S09H03	J21
	31.3	101.5	MDM 0850S09H03	J31
	31.3	101.5	MDW 0850HX3	J65
	31.6	99.8	MDW 0850SGS3	J75
	31.6	101.8	MDW 0850HGS3	J55
	31.6	101.8	MDW 0850HY3	J71
	31.6	101.8	MDW 0850NHGS3	J86
	34.0	100.0	MDF 0850H3D	J44
	41.8	97.5	MDS 085MD	J72
	41.8	99.5	MDE 0850S09E04	J14
	42.1	99.8	MDW 0850GS4	J51
	51.0	127.0	MDF 0850H5D	J44
	56.8	128.5	MDE 0850S09H05	J21
	56.8	128.5	MDM 0850S09H05	J31
	56.8	128.5	MDW 0850HX5	J65
	57.1	128.8	MDW 0850HGS5	J55
	57.1	128.8	MDW 0850HY5	J71
	57.1	128.8	MDW 0850NHGS5	J86
	62.3	125.0	HMD 085M	J169
	82.3	155.5	MDE 0850S09H08	J21
	82.3	155.5	MDW 0850HX8	J65
	82.6	155.8	MDW 0850HGS8	J55
	82.6	155.8	MDW 0850HY8	J71
	108.1	182.8	MDW 0850NHGS10	J86
	116.8	186.5	MDW 0850XHGS10	J82
	131.8	201.5	MDW 0850XHGS12	J82
	156.8	226.5	MDW 0850XHGS15	J82
	199.8	269.5	MDW 0850XHGS20	J82
	241.8	311.5	MDW 0850XHGS25	J82
	284.8	354.5	MDW 0850XHGS30	J82
8.6	25.8	80.0	MDF 0860S2D	J38
	25.8	140.0	MDF 0860L2D	J42
	26.7	83.6	MDE 0860S09E02	J14
	26.9	83.8	MDW 0860GS2	J51
	27.1	90.0	HMD 086S	J169
	33.7	101.6	MDE 0860S09H03	J21
	33.7	101.6	MDM 0860S09H03	J31
	33.7	101.6	MDW 0860HX3	J65
	33.9	101.8	MDW 0860HGS3	J55
	33.9	101.8	MDW 0860HY3	J71
	33.9	101.8	MDW 0860NHGS3	J86
	34.4	100.0	MDF 0860H3D	J45
	43.7	99.6	MDE 0860S09E04	J14
	43.7	99.6	MDS 086MD	J72
	43.9	99.8	MDW 0860GS4	J51
	51.6	127.0	MDF 0860H5D	J45
	60.7	128.6	MDE 0860S09H05	J21
	60.7	128.6	MDM 0860S09H05	J31
	60.7	128.6	MDW 0860HX5	J65
	60.9	128.8	MDW 0860HGS5	J55
	60.9	128.8	MDW 0860HY5	J71
	60.9	128.8	MDW 0860NHGS5	J86
	68.1	131.0	HMD 086M	J169
	87.7	155.6	MDE 0860S09H08	J21
	87.9	155.8	MDW 0860HGS8	J55
8.7	26.1	80.0	MDF 0870S2D	J38
	26.1	140.0	MDF 0870L2D	J42
	26.6	83.6	MDE 0870S09E02	J14
	26.8	83.8	MDW 0870GS2	J51

(Blue text: Flat head ■Indexable ■HSS)

● Diameter ø8.7 to ø9.0mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
8.7	27.0	90.0	HMD 087S	J169
	33.6	101.6	MDE 0870S09H03	J21
	33.6	101.6	MDM 0870S09H03	J31
	33.6	101.6	MDW 0870HX3	J65
	33.8	101.8	MDW 0870HGS3	J56
	34.8	100.0	MDF 0870H3D	J45
	43.6	99.6	MDE 0870S09E04	J14
	43.8	99.8	MDW 0870GS4	J51
	52.2	127.0	MDF 0870H5D	J45
	60.6	128.6	MDE 0870S09H05	J21
	60.6	128.6	MDM 0870S09H05	J31
	60.6	128.6	MDW 0870HX5	J65
	60.8	128.8	MDW 0870HGS5	J56
	60.8	128.8	MDW 0870NHGS5	J86
	68.0	131.0	HMD 087M	J169
	87.6	155.6	MDE 0870S09H08	J21
	87.8	155.8	MDW 0870HGS8	J56
8.8	26.4	80.0	MDF 0880S2D	J38
	26.4	83.6	MDE 0880S09E02	J14
	26.4	83.6	MDE 0880S09E02H	J17
	26.4	140.0	MDF 0880L2D	J42
	26.6	83.8	MDW 0880GS2	J51
	26.8	90.0	HMD 088S	J169
	33.4	101.6	MDE 0880S09H03	J21
	33.4	101.6	MDM 0880S09H03	J31
	33.4	101.6	MDW 0880HX3	J65
	33.6	101.8	MDW 0880HGS3	J56
	33.6	101.8	MDW 0880HY3	J71
	33.6	101.8	MDW 0880NHGS3	J86
	35.2	100.0	MDF 0880H3D	J45
	43.4	99.6	MDE 0880S09E04	J14
	43.6	99.8	MDW 0880GS4	J51
	52.8	127.0	MDF 0880H5D	J45
	60.4	128.6	MDE 0880S09H05	J21
	60.4	128.6	MDM 0880S09H05	J31
	60.4	128.6	MDW 0880HX5	J65
	60.6	128.8	MDW 0880HGS5	J56
	60.6	128.8	MDW 0880HY5	J71
	60.6	128.8	MDW 0880NHGS5	J86
	67.8	131.0	HMD 088M	J169
	87.4	155.6	MDE 0880S09H08	J21
	87.4	155.6	MDW 0880HX8	J65
	87.6	155.8	MDW 0880HGS8	J56
8.9	26.3	83.6	MDE 0890S09E02	J14
	26.5	83.8	MDW 0890GS2	J51
	26.7	80.0	MDF 0890S2D	J38
	26.7	90.0	HMD 089S	J169
	26.7	140.0	MDF 0890L2D	J42
	33.3	101.6	MDE 0890S09H03	J21
	33.3	101.6	MDM 0890S09H03	J31
	33.3	101.6	MDW 0890HX3	J65
	33.5	101.8	MDW 0890HGS3	J56
	35.6	100.0	MDF 0890H3D	J45
	43.3	99.6	MDE 0890S09E04	J14
	43.5	99.8	MDW 0890GS4	J51
	53.4	127.0	MDF 0890H5D	J45
	60.3	128.6	MDE 0890S09H05	J21
	60.3	128.6	MDM 0890S09H05	J31
	60.3	128.6	MDW 0890HX5	J65
	60.5	128.8	MDW 0890HGS5	J56
	60.5	128.8	MDW 0890NHGS5	J86
	67.7	131.0	HMD 089M	J169
	87.3	155.6	MDE 0890S09H08	J21
	87.5	155.8	MDW 0890HGS8	J56
9.0	26.1	83.6	MDE 0900S09E02	J14
	26.4	83.9	MDW 0900GS2	J51
	26.5	90.0	HMD 090S	J169
	27.0	80.0	MDF 0900S2D	J38
	27.0	140.0	MDF 0900L2D	J42
	32.7	101.2	MDW 0900PHT	J82
	33.1	101.6	MDE 0900S09H03	J21
	33.1	101.6	MDM 0900S09H03	J31
	33.1	101.6	MDW 0900HX3	J65
	33.4	99.9	MDW 0900SGS3	J75
	33.4	101.9	MDW 0900HGS3	J56
	33.4	101.9	MDW 0900HY3	J71
	33.4	101.9	MDW 0900NHGS3	J86
	33.6	100.1	MDS 09000SDC3	J89
	36.0	100.0	MDF 0900H3D	J45
	43.1	99.6	MDE 0900S09E04	J14

(Blue text: Flat head ■Indexable ■HSS)

Effective Length (LU) is a guideline for the usable length. Take into account the chip evacuation in relation to the flute length (LCF) when drilling.

Effective Length List by Diameter

● Diameter ø9.0 to ø9.3mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
9.0	43.1	99.6	MDS 090MD	J72
	43.4	99.9	MDW 0900GS4	J51
	54.0	127.0	MDF 0900H5D	J45
	60.1	128.6	MDE 0900S09H05	J21
	60.1	128.6	MDM 0900S09H05	J31
	60.1	128.6	MDW 0900HX5	J65
	60.4	128.9	MDW 0900HGS5	J56
	60.4	128.9	MDW 0900HY5	J71
	60.4	128.9	MDW 0900NHGS5	J86
	67.5	131.0	HMD 090M	J169
	87.1	155.6	MDE 0900S09H08	J21
	87.1	155.6	MDW 0900HX8	J65
	87.4	155.9	MDW 0900HGS8	J56
	114.4	182.9	MDW 0900NHGS10	J86
	123.1	191.6	MDW 0900XHGS10	J82
	141.1	209.6	MDW 0900XHGS12	J82
	168.1	236.6	MDW 0900XHGS15	J82
	213.1	281.6	MDW 0900XHGS20	J82
	258.1	326.6	MDW 0900XHGS25	J82
	303.1	371.6	MDW 0900XHGS30	J82
9.1	26.1	88.7	MDE 0910S10E02	J14
	26.3	88.9	MDW 0910GS2	J51
	26.4	90.0	HMD 091S	J169
	27.3	80.0	MDF 0910S2D	J38
	27.3	150.0	MDF 0910L2D	J42
	35.6	107.7	MDE 0910S10H03	J21
	35.6	107.7	MDM 0910S10H03	J31
	35.6	107.7	MDW 0910HX3	J65
	35.8	107.9	MDW 0910HGS3	J56
	36.4	106.0	MDF 0910H3D	J45
	46.1	106.7	MDE 0910S10E04	J14
	46.3	106.9	MDW 0910GS4	J51
	54.6	136.0	MDF 0910H5D	J45
	64.1	137.7	MDE 0910S10H05	J21
	64.1	137.7	MDM 0910S10H05	J31
	64.1	137.7	MDW 0910HX5	J65
	64.3	137.9	MDW 0910HGS5	J56
	64.3	137.9	MDW 0910NHGS5	J86
	67.4	131.0	HMD 091M	J169
	92.6	167.7	MDE 0910S10H08	J21
	92.8	167.9	MDW 0910HGS8	J56
9.2	25.9	88.7	MDE 0920S10E02	J15
	26.1	88.9	MDW 0920GS2	J51
	26.2	90.0	HMD 092S	J169
	27.6	80.0	MDF 0920S2D	J38
	27.6	150.0	MDF 0920L2D	J42
	35.4	107.7	MDE 0920S10H03	J21
	35.4	107.7	MDM 0920S10H03	J31
	35.4	107.7	MDW 0920HX3	J65
	35.6	107.9	MDW 0920HGS3	J56
	36.8	106.0	MDF 0920H3D	J45
	45.9	106.7	MDE 0920S10E04	J15
	46.1	106.9	MDW 0920GS4	J51
	55.2	136.0	MDF 0920H5D	J45
	63.9	137.7	MDE 0920S10H05	J21
	63.9	137.7	MDM 0920S10H05	J31
	63.9	137.7	MDW 0920HX5	J65
	64.1	137.9	MDW 0920HGS5	J56
	64.1	137.9	MDW 0920NHGS5	J86
	67.2	131.0	HMD 092M	J169
	92.4	167.7	MDE 0920S10H08	J21
	92.6	167.9	MDW 0920HGS8	J56
9.21	35.6	107.9	MDW 0921NHGS3	J86
	64.1	137.9	MDW 0921NHGS5	J86
9.24	23.1	80.0	MDF 0924S2D	J38
	25.8	88.7	MDE 0924S10E02	J15
	63.8	137.7	MDE 0924S10H05	J22
9.26	23.1	80.0	MDF 0926S2D	J38
	25.8	88.7	MDE 0926S10E02	J15
	63.8	137.7	MDE 0926S10H05	J22
9.3	25.8	88.7	MDE 0930S10E02	J15
	26.0	88.9	MDW 0930GS2	J51
	26.1	90.0	HMD 093S	J169
	27.9	80.0	MDF 0930S2D	J38
	27.9	150.0	MDF 0930L2D	J42
	35.3	107.7	MDE 0930S10H03	J22
	35.3	107.7	MDM 0930S10H03	J31
	35.3	107.7	MDW 0930HX3	J65
	35.5	107.9	MDW 0930HGS3	J56
	37.2	106.0	MDF 0930H3D	J45

(Blue text: Flat head ■Indexable ■HSS)

● Diameter ø9.3 to ø9.54mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
9.3	45.8	106.7	MDE 0930S10E04	J15
	46.0	106.9	MDW 0930GS4	J51
	55.8	136.0	MDF 0930H5D	J45
	63.8	137.7	MDE 0930S10H05	J22
	63.8	137.7	MDM 0930S10H05	J31
	63.8	137.7	MDW 0930HX5	J65
	64.0	137.9	MDW 0930HGS5	J56
	64.0	137.9	MDW 0930NHGS5	J86
	67.1	131.0	HMD 093M	J169
	92.3	167.7	MDE 0930S10H08	J22
	92.5	167.9	MDW 0930HGS8	J56
9.36	23.4	80.0	MDF 0936S2D	J38
	25.6	88.7	MDE 0936S10E02	J15
	63.6	137.7	MDE 0936S10H05	J22
9.38	23.4	80.0	MDF 0938S2D	J38
	25.6	88.7	MDE 0938S10E02	J15
	63.6	137.7	MDE 0938S10H05	J22
9.4	25.6	88.7	MDE 0940S10E02	J15
	25.8	88.9	MDW 0940GS2	J51
	25.9	90.0	HMD 094S	J169
	28.2	80.0	MDF 0940S2D	J38
	28.2	150.0	MDF 0940L2D	J42
	35.1	107.7	MDE 0940S10H03	J22
	35.1	107.7	MDM 0940S10H03	J31
	35.1	107.7	MDW 0940HX3	J65
	35.3	107.9	MDW 0940HGS3	J56
	35.3	107.9	MDW 0940NHGS3	J86
	37.6	106.0	MDF 0940H3D	J45
	45.6	106.7	MDE 0940S10E04	J15
	45.8	106.9	MDW 0940GS4	J51
	56.4	136.0	MDF 0940H5D	J45
	63.6	137.7	MDE 0940S10H05	J22
	63.6	137.7	MDM 0940S10H05	J31
	63.6	137.7	MDW 0940HX5	J65
	63.8	137.9	MDW 0940HGS5	J56
	63.8	137.9	MDW 0940NHGS5	J86
	66.9	131.0	HMD 094M	J169
	92.1	167.7	MDE 0940S10H08	J22
	92.3	167.9	MDW 0940HGS8	J56
9.5	25.5	88.7	MDE 0950S10E02	J15
	25.8	89.0	MDW 0950GS2	J51
	25.8	90.0	HMD 095S	J169
	28.5	80.0	MDF 0950S2D	J38
	28.5	150.0	MDF 0950L2D	J42
	34.6	107.3	MDW 0950PHT	J82
	35.0	107.7	MDE 0950S10H03	J22
	35.0	107.7	MDM 0950S10H03	J31
	35.0	107.7	MDW 0950HX3	J65
	35.3	107.0	MDW 0950SGS3	J75
	35.3	108.0	MDW 0950HGS3	J56
	35.3	108.0	MDW 0950HY3	J71
	35.3	108.0	MDW 0950NHGS3	J86
	38.0	106.0	MDF 0950H3D	J45
	45.5	103.7	MDS 095MD	J72
	45.5	106.7	MDE 0950S10E04	J15
	45.8	107.0	MDW 0950GS4	J51
	57.0	136.0	MDF 0950H5D	J45
	63.5	137.7	MDE 0950S10H05	J22
	63.5	137.7	MDM 0950S10H05	J31
	63.5	137.7	MDW 0950HX5	J65
	63.8	138.0	MDW 0950HGS5	J56
	63.8	138.0	MDW 0950HY5	J71
	63.8	138.0	MDW 0950NHGS5	J86
	66.8	131.0	HMD 095M	J169
	92.0	167.7	MDE 0950S10H08	J22
	92.0	167.7	MDW 0950HX8	J65
	92.3	168.0	MDW 0950HGS8	J56
	120.8	198.0	MDW 0950NHGS10	J86
	130.5	202.7	MDW 0950XHGS10	J82
	147.5	219.7	MDW 0950XHGS12	J82
	175.5	247.7	MDW 0950XHGS15	J82
	223.5	295.7	MDW 0950XHGS20	J82
	270.5	342.7	MDW 0950XHGS25	J82
	318.5	390.7	MDW 0950XHGS30	J82
9.52	23.8	80.0	MDF 0952S2D	J38
	28.3	88.7	MDE 0952S10E02	J15
	67.3	137.7	MDE 0952S10H05	J22
9.54	23.8	80.0	MDF 0954S2D	J39
	28.3	88.7	MDE 0954S10E02	J15
	67.3	137.7	MDE 0954S10H05	J22

(Blue text: Flat head ■Indexable ■HSS)

● Diameter ø9.55 to ø9.9mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
9.55	37.9	107.2	MDS 09550SDC3	J89
9.6	28.3	88.7	MDE 0960S10E02	J15
	28.6	89.0	MDW 0960GS2	J51
	28.6	93.0	HMD 096S	J169
	28.8	80.0	MDF 0960S2D	J39
	28.8	150.0	MDF 0960L2D	J42
	37.3	107.7	MDE 0960S10H03	J22
	37.3	107.7	MDM 0960S10H03	J31
	37.3	107.7	MDW 0960HX3	J65
	37.6	108.0	MDW 0960HGS3	J56
	38.4	106.0	MDF 0960H3D	J45
	47.3	106.7	MDE 0960S10E04	J15
	47.6	107.0	MDW 0960GS4	J51
	57.6	136.0	MDF 0960H5D	J45
	67.3	137.7	MDE 0960S10H05	J22
	67.3	137.7	MDM 0960S10H05	J31
	67.3	137.7	MDW 0960HX5	J65
	67.6	138.0	MDW 0960HGS5	J56
	67.6	138.0	MDW 0960NHGS5	J86
	72.6	137.0	HMD 096M	J169
	97.3	167.7	MDE 0960S10H08	J22
	97.6	168.0	MDW 0960HGS8	J56
9.7	28.3	88.8	MDE 0970S10E02	J15
	28.5	89.0	MDW 0970GS2	J51
	28.5	93.0	HMD 097S	J169
	29.1	80.0	MDF 0970S2D	J39
	29.1	150.0	MDF 0970L2D	J42
	37.3	107.8	MDE 0970S10H03	J22
	37.3	107.8	MDM 0970S10H03	J31
	37.3	107.8	MDW 0970HX3	J65
	37.5	108.0	MDW 0970HGS3	J56
	38.8	106.0	MDF 0970H3D	J45
	47.3	106.8	MDE 0970S10E04	J15
	47.5	107.0	MDW 0970GS4	J51
	58.2	136.0	MDF 0970H5D	J45
	67.3	137.8	MDE 0970S10H05	J22
	67.3	137.8	MDM 0970S10H05	J31
	67.3	137.8	MDW 0970HX5	J65
	67.5	138.0	MDW 0970HGS5	J56
	67.5	138.0	MDW 0970NHGS5	J86
	72.5	137.0	HMD 097M	J169
	97.3	167.8	MDE 0970S10H08	J22
	97.5	168.0	MDW 0970HGS8	J56
9.8	28.1	88.8	MDE 0980S10E02	J15
	28.3	89.0	MDW 0980GS2	J51
	28.3	93.0	HMD 098S	J169
	29.4	80.0	MDF 0980S2D	J39
	29.4	150.0	MDF 0980L2D	J42
	37.1	107.8	MDE 0980S10H03	J22
	37.1	107.8	MDM 0980S10H03	J31
	37.1	107.8	MDW 0980HX3	J65
	37.3	108.0	MDW 0980HGS3	J56
	39.2	106.0	MDF 0980H3D	J45
	47.1	106.8	MDE 0980S10E04	J15
	47.3	107.0	MDW 0980GS4	J51
	58.8	136.0	MDF 0980H5D	J45
	67.1	137.8	MDE 0980S10H05	J22
	67.1	137.8	MDM 0980S10H05	J31
	67.1	137.8	MDW 0980HX5	J65
	67.3	138.0	MDW 0980HGS5	J56
	67.3	138.0	MDW 0980NHGS5	J87
	72.3	137.0	HMD 098M	J169
	97.1	167.8	MDE 0980S10H08	J22
	97.3	168.0	MDW 0980HGS8	J56
	127.3	198.0	MDW 0980NHGS10	J87
9.9	28.0	88.8	MDE 0990S10E02	J15
	28.2	89.0	MDW 0990GS2	J51
	28.2	93.0	HMD 099S	J169
	29.7	80.0	MDF 0990S2D	J39
	29.7	150.0	MDF 0990L2D	J42
	37.0	107.8	MDE 0990S10H03	J22
	37.0	107.8	MDM 0990S10H03	J31
	37.0	107.8	MDW 0990HX3	J65
	37.2	108.0	MDW 0990HGS3	J56
	39.6	106.0	MDF 0990H3D	J45
	47.0	106.8	MDE 0990S10E04	J15
	47.2	107.0	MDW 0990GS4	J51
	59.4	136.0	MDF 0990H5D	J45
	67.0	137.8	MDE 0990S10H05	J22
	67.0	137.8	MDM 0990S10H05	J31

(Blue text: Flat head ■Indexable ■HSS)

Effective Length (LU) is a guideline for the usable length. Take into account the chip evacuation in relation to the flute length (LCF) when drilling.

Effective Length List by Diameter

● Diameter ø9.9 to ø10.2mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
9.9	67.0	137.8	MDW 0990HX5	J65
	67.2	138.0	MDW 0990HGS5	J56
	67.2	138.0	MDW 0990NHGS5	J87
	72.2	137.0	HMD 099M	J169
	97.0	167.8	MDE 0990S10H08	J22
	97.2	168.0	MDW 0990HGS8	J56
10.0	27.8	88.8	MDE 1000S10E02	J15
	27.8	88.8	MDE 1000S10E02H	J17
	28.0	93.0	HMD 100S	J169
	28.1	89.1	MDW 1000GS2	J51
	30.0	80.0	MDF 1000S2D	J39
	30.0	150.0	MDF 1000L2D	J42
	30.0	150.0	MDF 1000L2D-S8	J42
	36.3	107.3	MDW 1000PHT	J82
	36.8	107.8	MDE 1000S10H03	J22
	36.8	107.8	MDM 1000S10H03	J31
	36.8	107.8	MDW 1000HX3	J65
	37.1	107.1	MDW 1000SGS3	J75
	37.1	108.1	MDW 1000HGS3	J56
	37.1	108.1	MDW 1000HY3	J71
	37.1	108.1	MDW 1000NHGS3	J87
	37.3	107.3	MDS 10000SDC3	J89
	40.0	106.0	MDF 1000H3D	J45
	46.8	106.8	MDE 1000S10E04	J15
	46.8	106.8	MDS 100MD	J72
	47.1	107.1	MDW 1000GS4	J51
	60.0	136.0	MDF 1000H5D	J45
	66.8	137.8	MDE 1000S10H05	J22
	66.8	137.8	MDM 1000S10H05	J31
	66.8	137.8	MDW 1000HX5	J65
	67.1	138.1	MDW 1000HGS5	J56
	67.1	138.1	MDW 1000HY5	J71
	67.1	138.1	MDW 1000NHGS5	J87
	72.0	137.0	HMD 100M	J169
	96.8	167.8	MDE 1000S10H08	J22
	96.8	167.8	MDW 1000HX8	J65
	97.1	168.1	MDW 1000HGS8	J56
	127.1	198.1	MDW 1000NHGS10	J87
	136.8	207.8	MDW 1000XHGS10	J82
	156.8	227.8	MDW 1000XHGS12	J82
	186.8	257.8	MDW 1000XHGS15	J82
	236.8	307.8	MDW 1000XHGS20	J82
	286.8	357.8	MDW 1000XHGS25	J82
	336.8	407.8	MDW 1000XHGS30	J82
10.1	27.7	94.8	MDE 1010S11E02	J15
	27.9	100.0	HMD 101S	J169
	28.0	95.1	MDW 1010GS2	J51
	30.3	90.0	MDF 1010S2D	J39
	30.3	160.0	MDF 1010L2D	J42
	39.2	117.8	MDE 1010S11H03	J22
	39.2	117.8	MDM 1010S11H03	J31
	39.2	117.8	MDW 1010HX3	J65
	39.5	118.1	MDW 1010HGS3	J56
	39.5	118.1	MDW 1010NHGS3	J87
	40.4	116.0	MDF 1010H3D	J45
	52.7	115.8	MDE 1010S11E04	J15
	53.0	116.1	MDW 1010GS4	J51
	60.6	149.0	MDF 1010H5D	J45
	70.7	150.8	MDE 1010S11H05	J22
	70.7	150.8	MDM 1010S11H05	J31
	70.7	150.8	MDW 1010HX5	J65
	71.0	151.1	MDW 1010HGS5	J56
	71.9	144.0	HMD 101M	J169
	102.2	183.8	MDE 1010S11H08	J22
	102.5	184.1	MDW 1010HGS8	J56
10.2	27.6	94.9	MDE 1020S11E02	J15
	27.7	100.0	HMD 102S	J169
	27.8	95.1	MDW 1020GS2	J51
	30.6	90.0	MDF 1020S2D	J39
	30.6	160.0	MDF 1020L2D	J42
	39.1	117.9	MDE 1020S11H03	J22
	39.1	117.9	MDM 1020S11H03	J31
	39.1	117.9	MDW 1020HX3	J66
	39.3	118.1	MDW 1020HGS3	J56
	39.3	118.1	MDW 1020HY3	J71
	40.8	116.0	MDF 1020H3D	J45
	52.6	115.9	MDE 1020S11E04	J15
	52.8	116.1	MDW 1020GS4	J51
	61.2	149.0	MDF 1020H5D	J45
	70.6	150.9	MDE 1020S11H05	J22

(Blue text: Flat head ■Indexable ■HSS)

● Diameter ø10.2 to ø10.5mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
10.2	70.6	150.9	MDM 1020S11H05	J31
	70.6	150.9	MDW 1020HX5	J66
	70.8	151.1	MDW 1020HGS5	J56
	70.8	151.1	MDW 1020HY5	J71
	71.7	144.0	HMD 102M	J169
	102.1	183.9	MDE 1020S11H08	J22
	102.3	184.1	MDW 1020HGS8	J56
10.3	27.5	94.9	MDE 1030S11E02	J15
	27.6	100.0	HMD 103S	J169
	27.7	95.1	MDW 1030GS2	J51
	30.9	90.0	MDF 1030S2D	J39
	30.9	160.0	MDF 1030L2D	J42
	39.0	117.9	MDE 1030S11H03	J22
	39.0	117.9	MDM 1030S11H03	J31
	39.0	117.9	MDW 1030HX3	J66
	39.2	118.1	MDW 1030HGS3	J56
	39.2	118.1	MDW 1030HY3	J71
	39.2	118.1	MDW 1030NHGS3	J87
	41.2	116.0	MDF 1030H3D	J45
	52.5	113.9	MDS 103MD	J72
	52.5	115.9	MDE 1030S11E04	J15
	52.7	116.1	MDW 1030GS4	J51
	61.8	149.0	MDF 1030H5D	J45
	70.5	150.9	MDE 1030S11H05	J22
	70.5	150.9	MDM 1030S11H05	J31
	70.5	150.9	MDW 1030HX5	J66
	70.7	151.1	MDW 1030HGS5	J56
	70.7	151.1	MDW 1030HY5	J71
	70.7	151.1	MDW 1030NHGS5	J87
	71.6	144.0	HMD 103M	J169
	102.0	183.9	MDE 1030S11H08	J22
	102.0	183.9	MDW 1030HX8	J66
	102.2	184.1	MDW 1030HGS8	J56
	102.2	184.1	MDW 1030HY8	J71
10.4	27.3	94.9	MDE 1040S11E02	J15
	27.4	100.0	HMD 104S	J169
	27.6	95.2	MDW 1040GS2	J51
	31.2	90.0	MDF 1040S2D	J39
	31.2	160.0	MDF 1040L2D	J42
	38.8	117.9	MDE 1040S11H03	J22
	38.8	117.9	MDM 1040S11H03	J31
	38.8	117.9	MDW 1040HX3	J66
	39.1	118.2	MDW 1040HGS3	J56
	41.6	116.0	MDF 1040H3D	J45
	52.3	115.9	MDE 1040S11E04	J15
	52.6	116.2	MDW 1040GS4	J51
	62.4	149.0	MDF 1040H5D	J45
	70.3	150.9	MDE 1040S11H05	J22
	70.3	150.9	MDM 1040S11H05	J31
	70.3	150.9	MDW 1040HX5	J66
	70.6	151.2	MDW 1040HGS5	J56
	70.6	151.2	MDW 1040NHGS5	J87
	71.4	144.0	HMD 104M	J169
	101.8	183.9	MDE 1040S11H08	J22
	102.1	184.2	MDW 1040HGS8	J56
10.5	27.2	94.9	MDE 1050S11E02	J15
	27.3	100.0	HMD 105S	J169
	27.5	95.2	MDW 1050GS2	J51
	31.5	90.0	MDF 1050S2D	J39
	31.5	160.0	MDF 1050L2D	J42
	38.2	117.4	MDW 1050PHT	J82
	38.7	117.9	MDE 1050S11H03	J22
	38.7	117.9	MDM 1050S11H03	J31
	38.7	117.9	MDW 1050HX3	J66
	39.0	116.2	MDW 1050SGS3	J75
	39.0	118.2	MDW 1050HGS3	J56
	39.0	118.2	MDW 1050NHGS3	J87
	42.0	116.0	MDF 1050H3D	J45
	52.2	113.9	MDS 105MD	J72
	52.2	115.9	MDE 1050S11E04	J15
	52.5	116.2	MDW 1050GS4	J51
	63.0	149.0	MDF 1050H5D	J45
	70.2	150.9	MDE 1050S11H05	J22
	70.2	150.9	MDM 1050S11H05	J31
	70.2	150.9	MDW 1050HX5	J66
	70.5	151.2	MDW 1050HGS5	J56
	70.5	151.2	MDW 1050NHGS5	J87
	71.3	144.0	HMD 105M	J169
	101.7	183.9	MDE 1050S11H08	J22
	101.7	183.9	MDW 1050HX8	J66

(Blue text: Flat head ■Indexable ■HSS)

● Diameter ø10.5 to ø10.9mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
10.5	102.0	184.2	MDW 1050HGS8	J56
	133.5	217.2	MDW 1050NHGS10	J87
	144.2	222.9	MDW 1050XHGS10	J82
	163.2	241.9	MDW 1050XHGS12	J82
	194.2	272.9	MDW 1050XHGS15	J82
	247.2	325.9	MDW 1050XHGS20	J82
	299.2	377.9	MDW 1050XHGS25	J82
10.6	27.1	100.0	HMD 106S	J169
	31.0	94.9	MDE 1060S11E02	J15
	31.3	95.2	MDW 1060GS2	J51
	31.8	90.0	MDF 1060S2D	J39
	31.8	160.0	MDF 1060L2D	J42
	41.0	117.9	MDE 1060S11H03	J22
	41.0	117.9	MDM 1060S11H03	J31
	41.0	117.9	MDW 1060HX3	J66
	41.3	118.2	MDW 1060HGS3	J56
	41.3	118.2	MDW 1060NHGS3	J87
	42.4	116.0	MDF 1060H3D	J45
	54.0	115.9	MDE 1060S11E04	J15
	54.3	116.2	MDW 1060GS4	J51
	63.6	149.0	MDF 1060H5D	J45
	71.1	144.0	HMD 106M	J169
	74.0	150.9	MDE 1060S11H05	J22
	74.0	150.9	MDM 1060S11H05	J31
	74.0	150.9	MDW 1060HX5	J66
	74.3	151.2	MDW 1060HGS5	J56
	74.3	151.2	MDW 1060NHGS5	J87
	107.0	183.9	MDE 1060S11H08	J22
	107.3	184.2	MDW 1060HGS8	J56
10.7	30.9	94.9	MDE 1070S11E02	J15
	31.0	104.0	HMD 107S	J169
	31.2	95.2	MDW 1070GS2	J51
	32.1	90.0	MDF 1070S2D	J39
	32.1	160.0	MDF 1070L2D	J42
	40.9	117.9	MDE 1070S11H03	J22
	40.9	117.9	MDM 1070S11H03	J31
	40.9	117.9	MDW 1070HX3	J66
	41.2	118.2	MDW 1070HGS3	J56
	42.8	116.0	MDF 1070H3D	J45
	53.9	115.9	MDE 1070S11E04	J15
	54.2	116.2	MDW 1070GS4	J51
	64.2	149.0	MDF 1070H5D	J45
	73.9	150.9	MDE 1070S11H05	J22
	73.9	150.9	MDM 1070S11H05	J31
	73.9	150.9	MDW 1070HX5	J66
	74.2	151.2	MDW 1070HGS5	J56
	78.0	151.0	HMD 107M	J169
	106.9	183.9	MDE 1070S11H08	J22
	107.2	184.2	MDW 1070HGS8	J56
10.8	30.8	95.0	MDE 1080S11E02	J15
	30.8	95.0	MDE 1080S11E02H	J17
	30.8	104.0	HMD 108S	J169
	31.0	95.2	MDW 1080GS2	J51
	32.4	90.0	MDF 1080S2D	J39
	32.4	160.0	MDF 1080L2D	J42
	40.8	118.0	MDE 1080S11H03	J22
	40.8	118.0	MDM 1080S11H03	J31
	40.8	118.0	MDW 1080HX3	J66
	41.0	118.2	MDW 1080HGS3	J56
	43.2	116.0	MDF 1080H3D	J45
	53.8	116.0	MDE 1080S11E04	J15
	54.0	116.2	MDW 1080GS4	J51
	64.8	149.0	MDF 1080H5D	J45
	73.8	151.0	MDE 1080S11H05	J22
	73.8	151.0	MDM 1080S11H05	J31
	73.8	151.0	MDW 1080HX5	J66
	74.0	151.2	MDW 1080HGS5	J56
	77.8	151.0	HMD 108M	J169
	106.8	184.0	MDE 1080S11H08	J22
	107.0	184.2	MDW 1080HGS8	J56
10.9	30.7	95.0	MDE 1090S11E02	J15
	30.7	104.0	HMD 109S	J169
	31.0	95.3	MDW 1090GS2	J51
	32.7	90.0	MDF 1090S2D	J39
	32.7	160.0	MDF 1090L2D	J42
	40.7	118.0	MDE 1090S11H03	J22
	40.7	118.0	MDM 1090S11H03	J31
	40.7	118.0	MDW 1090HX3	J66
	41.0	118.3	MDW 1090HGS3	J56
	43.6	116.0	MDF 1090H3D	J45

(Blue text: Flat head ■Indexable ■HSS)

Effective Length (LU) is a guideline for the usable length. Take into account the chip evacuation in relation to the flute length (LCF) when drilling.

Effective Length List by Diameter

● Diameter ø10.9 to ø11.2mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
10.9	53.7	116.0	MDE 1090S11E04	J15
	54.0	116.3	MDW 1090GS4	J51
	65.4	149.0	MDF 1090H5D	J45
	73.7	151.0	MDE 1090S11H05	J22
	73.7	151.0	MDM 1090S11H05	J31
	73.7	151.0	MDW 1090HX5	J66
	74.0	151.3	MDW 1090HGS5	J56
	77.7	151.0	HMD 109M	J169
	106.7	184.0	MDE 1090S11H08	J22
	107.0	184.3	MDW 1090HGS8	J56
11.0	30.5	95.0	MDE 1100S11E02	J15
	30.5	104.0	HMD 110S	J169
	30.8	95.3	MDW 1100GS2	J51
	33.0	90.0	MDF 1100S2D	J39
	33.0	160.0	MDF 1100L2D	J42
	40.0	117.5	MDW 1100PHT	J82
	40.5	118.0	MDE 1100S11H03	J22
	40.5	118.0	MDM 1100S11H03	J32
	40.5	118.0	MDW 1100HX3	J66
	40.8	116.3	MDW 1100SGS3	J75
	40.8	118.3	MDW 1100HGS3	J56
	40.8	118.3	MDW 1100HY3	J71
	40.8	118.3	MDW 1100NHGS3	J87
	44.0	116.0	MDF 1100H3D	J45
	53.5	116.0	MDE 1100S11E04	J15
	53.5	116.0	MDS 110MD	J72
	53.8	116.3	MDW 1100GS4	J51
	66.0	149.0	MDF 1100H5D	J45
	73.5	151.0	MDE 1100S11H05	J22
	73.5	151.0	MDM 1100S11H05	J32
	73.5	151.0	MDW 1100HX5	J66
	73.8	151.3	MDW 1100HGS5	J56
	73.8	151.3	MDW 1100HY5	J71
	73.8	151.3	MDW 1100NHGS5	J87
	77.5	151.0	HMD 110M	J169
	106.5	184.0	MDE 1100S11H08	J22
	106.5	184.0	MDW 1100HX8	J66
	106.8	184.3	MDW 1100HGS8	J56
	139.8	217.3	MDW 1100NHGS10	J87
	150.5	228.0	MDW 1100XHGS10	J82
	172.5	250.0	MDW 1100XHGS12	J82
	205.5	283.0	MDW 1100XHGS15	J82
	260.5	338.0	MDW 1100XHGS20	J82
	315.5	393.0	MDW 1100XHGS25	J82
11.08	43.2	124.3	MDW 1108NHGS3	J87
	77.7	160.3	MDW 1108NHGS5	J87
11.1	30.4	102.0	MDE 1110S12E02	J15
	30.4	104.0	HMD 111S	J169
	30.7	102.3	MDW 1110GS2	J51
	33.3	90.0	MDF 1110S2D	J39
	33.3	170.0	MDF 1110L2D	J42
	42.9	124.0	MDE 1110S12H03	J22
	42.9	124.0	MDM 1110S12H03	J32
	42.9	124.0	MDW 1110HX3	J66
	43.2	124.3	MDW 1110HGS3	J56
	43.2	124.3	MDW 1110NHGS3	J87
	44.4	122.0	MDF 1110H3D	J45
	56.4	123.0	MDE 1110S12E04	J15
	56.7	123.3	MDW 1110GS4	J51
	66.6	158.0	MDF 1110H5D	J45
	77.4	151.0	HMD 111M	J169
	77.4	160.0	MDE 1110S12H05	J22
	77.4	160.0	MDM 1110S12H05	J32
	77.4	160.0	MDW 1110HX5	J66
	77.7	160.3	MDW 1110HGS5	J56
	77.7	160.3	MDW 1110NHGS5	J87
	111.9	196.0	MDE 1110S12H08	J22
	112.2	196.3	MDW 1110HGS8	J56
11.2	30.2	102.0	MDE 1120S12E02	J15
	30.2	104.0	HMD 112S	J169
	30.5	102.3	MDW 1120GS2	J51
	33.6	90.0	MDF 1120S2D	J39
	33.6	170.0	MDF 1120L2D	J42
	42.7	124.0	MDE 1120S12H03	J22
	42.7	124.0	MDM 1120S12H03	J32
	42.7	124.0	MDW 1120HX3	J66
	43.0	124.3	MDW 1120HGS3	J56
	43.0	124.3	MDW 1120NHGS3	J87
	44.8	122.0	MDF 1120H3D	J45
	56.2	123.0	MDE 1120S12E04	J15

(Blue text: Flat head ■Indexable ■HSS)

● Diameter ø11.2 to ø11.5mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
11.2	56.5	123.3	MDW 1120GS4	J51
	67.2	158.0	MDF 1120H5D	J45
	77.2	151.0	HMD 112M	J169
	77.2	160.0	MDE 1120S12H05	J22
	77.2	160.0	MDM 1120S12H05	J32
	77.2	160.0	MDW 1120HX5	J66
	77.5	160.3	MDW 1120HGS5	J56
	77.5	160.3	MDW 1120NHGS5	J87
	111.7	196.0	MDE 1120S12H08	J22
	112.0	196.3	MDW 1120HGS8	J56
11.22	28.0	90.0	MDF 1122S2D	J39
	30.2	102.0	MDE 1122S12E02	J15
	77.2	160.0	MDE 1122S12H05	J22
11.24	28.1	90.0	MDF 1124S2D	J39
	30.2	102.0	MDE 1124S12E02	J15
	77.2	160.0	MDE 1124S12H05	J22
11.3	30.1	104.0	HMD 113S	J169
	30.2	102.1	MDE 1130S12E02	J15
	30.4	102.3	MDW 1130GS2	J51
	33.9	90.0	MDF 1130S2D	J39
	33.9	170.0	MDF 1130L2D	J42
	42.7	124.1	MDE 1130S12H03	J22
	42.7	124.1	MDM 1130S12H03	J32
	42.7	124.1	MDW 1130HX3	J66
	42.9	124.3	MDW 1130HGS3	J56
	45.2	122.0	MDF 1130H3D	J45
	56.2	123.1	MDE 1130S12E04	J15
	56.4	123.3	MDW 1130GS4	J51
	67.8	158.0	MDF 1130H5D	J45
	77.1	151.0	HMD 113M	J169
	77.2	160.1	MDE 1130S12H05	J22
	77.2	160.1	MDM 1130S12H05	J32
	77.2	160.1	MDW 1130HX5	J66
	77.4	160.3	MDW 1130HGS5	J56
	111.7	196.1	MDE 1130S12H08	J22
	111.9	196.3	MDW 1130HGS8	J56
11.36	28.4	90.0	MDF 1136S2D	J39
	30.0	102.1	MDE 1136S12E02	J15
	77.0	160.1	MDE 1136S12H05	J22
11.38	28.4	90.0	MDF 1138S2D	J39
	30.0	102.1	MDE 1138S12E02	J15
	77.0	160.1	MDE 1138S12H05	J22
11.4	29.9	104.0	HMD 114S	J169
	30.0	102.1	MDE 1140S12E02	J15
	30.3	102.4	MDW 1140GS2	J51
	34.2	90.0	MDF 1140S2D	J39
	34.2	170.0	MDF 1140L2D	J42
	42.5	124.1	MDE 1140S12H03	J22
	42.5	124.1	MDM 1140S12H03	J32
	42.5	124.1	MDW 1140HX3	J66
	42.8	124.4	MDW 1140HGS3	J56
	42.8	124.4	MDW 1140HY3	J71
	42.8	124.4	MDW 1140NHGS3	J87
	45.6	122.0	MDF 1140H3D	J45
	56.0	123.1	MDE 1140S12E04	J15
	56.3	123.4	MDW 1140GS4	J51
	68.4	158.0	MDF 1140H5D	J45
	76.9	151.0	HMD 114M	J169
	77.0	160.1	MDE 1140S12H05	J22
	77.0	160.1	MDM 1140S12H05	J32
	77.0	160.1	MDW 1140HX5	J66
	77.3	160.4	MDW 1140HGS5	J56
	77.3	160.4	MDW 1140HY5	J71
	77.3	160.4	MDW 1140NHGS5	J87
	111.5	196.1	MDE 1140S12H08	J22
	111.8	196.4	MDW 1140HGS8	J56
11.5	29.8	104.0	HMD 115S	J169
	29.9	102.1	MDE 1150S12E02	J15
	30.2	102.4	MDW 1150GS2	J51
	34.5	90.0	MDF 1150S2D	J39
	34.5	170.0	MDF 1150L2D	J42
	41.8	123.5	MDW 1150PHT	J82
	42.4	124.1	MDE 1150S12H03	J22
	42.4	124.1	MDM 1150S12H03	J32
	42.4	124.1	MDW 1150HX3	J66
	42.7	123.4	MDW 1150SGS3	J75
	42.7	124.4	MDW 1150HGS3	J56
	42.7	124.4	MDW 1150HY3	J71
	42.7	124.4	MDW 1150NHGS3	J87
	46.0	122.0	MDF 1150H3D	J45

(Blue text: Flat head ■Indexable ■HSS)

● Diameter ø11.5 to ø11.8mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
11.5	55.9	120.1	MDS 115MD	J72
	55.9	123.1	MDE 1150S12E04	J15
	56.2	123.4	MDW 1150GS4	J51
	69.0	158.0	MDF 1150H5D	J45
	76.8	151.0	HMD 115M	J169
	76.9	160.1	MDE 1150S12H05	J22
	76.9	160.1	MDM 1150S12H05	J32
	76.9	160.1	MDW 1150HX5	J66
	77.2	160.4	MDW 1150HGS5	J56
	77.2	160.4	MDW 1150HY5	J71
	77.2	160.4	MDW 1150NHGS5	J87
	111.4	196.1	MDE 1150S12H08	J22
	111.4	196.1	MDW 1150HX8	J66
	111.7	196.4	MDW 1150HGS8	J56
	146.2	232.4	MDW 1150NHGS10	J87
	157.9	239.1	MDW 1150XHGS10	J82
	178.9	260.1	MDW 1150XHGS12	J82
	212.9	294.1	MDW 1150XHGS15	J82
	270.9	352.1	MDW 1150XHGS20	J82
	327.9	409.1	MDW 1150XHGS25	J82
11.6	29.6	104.0	HMD 116S	J169
	31.7	102.1	MDE 1160S12E02	J15
	32.0	102.4	MDW 1160GS2	J51
	34.8	90.0	MDF 1160S2D	J39
	34.8	170.0	MDF 1160L2D	J42
	44.7	124.1	MDE 1160S12H03	J22
	44.7	124.1	MDM 1160S12H03	J32
	44.7	124.1	MDW 1160HX3	J66
	45.0	124.4	MDW 1160HGS3	J56
	46.4	122.0	MDF 1160H3D	J45
	57.7	123.1	MDE 1160S12E04	J15
	58.0	123.4	MDW 1160GS4	J51
	69.6	158.0	MDF 1160H5D	J45
	76.6	151.0	HMD 116M	J169
	80.7	160.1	MDE 1160S12H05	J22
	80.7	160.1	MDM 1160S12H05	J32
	80.7	160.1	MDW 1160HX5	J66
	81.0	160.4	MDW 1160HGS5	J56
	116.7	196.1	MDE 1160S12H08	J22
	117.0	196.4	MDW 1160HGS8	J56
11.7	29.5	104.0	HMD 117S	J169
	31.6	102.1	MDE 1170S12E02	J15
	31.9	102.4	MDW 1170GS2	J51
	35.1	90.0	MDF 1170S2D	J39
	35.1	170.0	MDF 1170L2D	J42
	44.6	124.1	MDE 1170S12H03	J22
	44.6	124.1	MDM 1170S12H03	J32
	44.6	124.1	MDW 1170HX3	J66
	44.9	124.4	MDW 1170HGS3	J56
	46.8	122.0	MDF 1170H3D	J45
	57.6	123.1	MDE 1170S12E04	J15
	57.9	123.4	MDW 1170GS4	J51
	70.2	158.0	MDF 1170H5D	J45
	76.5	151.0	HMD 117M	J169
	80.6	160.1	MDE 1170S12H05	J22
	80.6	160.1	MDM 1170S12H05	J32
	80.6	160.1	MDW 1170HX5	J66
	80.9	160.4	MDW 1170HGS5	J56
	116.6	196.1	MDE 1170S12H08	J22
	116.9	196.4	MDW 1170HGS8	J56
11.8	29.3	104.0	HMD 118S	J169
	31.4	102.1	MDE 1180S12E02	J15
	31.7	102.4	MDW 1180GS2	J51
	35.4	90.0	MDF 1180S2D	J39
	35.4	170.0	MDF 1180L2D	J42
	44.4	124.1	MDE 1180S12H03	J23
	44.4	124.1	MDM 1180S12H03	J32
	44.4	124.1	MDW 1180HX3	J66
	44.7	124.4	MDW 1180HGS3	J56
	47.2	122.0	MDF 1180H3D	J45
	57.4	123.1	MDE 1180S12E04	J15
	57.7	123.4	MDW 1180GS4	J51
	70.8	158.0	MDF 1180H5D	J45
	76.3	151.0	HMD 118M	J169
	80.4	160.1	MDE 1180S12H05	J23
	80.4	160.1	MDM 1180S12H05	J32
	80.4	160.1	MDW 1180HX5	J66
	80.7	160.4	MDW 1180HGS5	J56
	116.4	196.1	MDE 1180S12H08	J23
	116.7	196.4	MDW 1180HGS8	J56

(Blue text: Flat head ■Indexable ■HSS)

Effective Length (LU) is a guideline for the usable length. Take into account the chip evacuation in relation to the flute length (LCF) when drilling.

Effective Length List by Diameter

● Diameter ø11.9 to ø12.1mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
11.9	31.4	102.2	MDE 1190S12E02	J15
	31.7	102.5	MDW 1190GS2	J51
	33.2	108.0	HMD 119S	J169
	35.7	90.0	MDF 1190S2D	J39
	35.7	170.0	MDF 1190L2D	J42
	44.4	124.2	MDE 1190S12H03	J23
	44.4	124.2	MDM 1190S12H03	J32
	44.4	124.2	MDW 1190HX3	J66
	44.7	124.5	MDW 1190HGS3	J56
	47.6	122.0	MDF 1190H3D	J45
	57.4	123.2	MDE 1190S12E04	J15
	57.7	123.5	MDW 1190GS4	J51
	71.4	158.0	MDF 1190H5D	J45
	80.4	160.2	MDE 1190S12H05	J23
	80.4	160.2	MDM 1190S12H05	J32
	80.4	160.2	MDW 1190HX5	J66
	80.7	160.5	MDW 1190HGS5	J56
	83.2	158.0	HMD 119M	J169
	116.4	196.2	MDE 1190S12H08	J23
	116.7	196.5	MDW 1190HGS8	J56
12.0	21.0	89.0	SMDT 1200 MFS+SMDH 120-1.5D	J116
	21.0	89.0	SMDT 1200 MFS+SMDH 120-1.5DF	J114
	23.0	91.0	SMDT 1200 MTL/MSL/MEL+SMDH 120-1.5D	J108
	23.0	91.0	SMDT 1200 MTL/MSL/MEL+SMDH 120-1.5DF	J106
	31.2	102.2	MDE 1200S12E02	J15
	31.5	102.5	MDW 1200GS2	J51
	33.0	108.0	HMD 120S	J169
	36.0	90.0	MDF 1200S2D	J39
	36.0	170.0	MDF 1200L2D	J42
	36.0	170.0	MDF 1200L2D-S10	J42
	40.0	105.0	SMDT 1200 MFS+SMDH 120-3D	J116
	40.0	105.0	SMDT 1200 MFS+SMDH 120-3DF	J114
	40.0	105.0	SMDT 1200 MFS+SMDH 120M	J112
	42.0	107.0	SMDT 1200 MTL/MSL/MEL+SMDH 120-3D	J108
	42.0	107.0	SMDT 1200 MTL/MSL/MEL+SMDH 120-3DF	J106
	42.0	107.0	SMDT 1200 MTL/MSL/MEL+SMDH 120M	J104
	43.6	123.6	MDW 1200PHT	J82
	44.2	124.2	MDE 1200S12H03	J23
	44.2	124.2	MDM 1200S12H03	J32
	44.2	124.2	MDW 1200HX3	J66
	44.5	123.5	MDW 1200SGS3	J75
	44.5	124.5	MDW 1200HGS3	J56
	44.5	124.5	MDW 1200HY3	J71
	44.5	124.5	MDW 1200NHGS3	J87
	48.0	122.0	MDF 1200H3D	J45
	57.2	123.2	MDE 1200S12E04	J15
	57.2	123.2	MDS 120MD	J72
	57.5	123.5	MDW 1200GS4	J51
	65.0	130.0	SMDT 1200 MFS+SMDH 120-5D	J116
	65.0	130.0	SMDT 1200 MFS+SMDH 120-5DF	J114
	65.0	130.0	SMDT 1200 MFS+SMDH 120L	J112
	67.0	132.0	SMDT 1200 MTL/MSL/MEL+SMDH 120-5D	J108
	67.0	132.0	SMDT 1200 MTL/MSL/MEL+SMDH 120-5DF	J106
	67.0	132.0	SMDT 1200 MTL/MSL/MEL+SMDH 120L	J104
	72.0	158.0	MDF 1200H5D	J45
	80.2	160.2	MDE 1200S12H05	J23
	80.2	160.2	MDM 1200S12H05	J32
	80.2	160.2	MDW 1200HX5	J66
	80.5	160.5	MDW 1200HGS5	J56
	80.5	160.5	MDW 1200HY5	J71
	80.5	160.5	MDW 1200NHGS5	J87
	83.0	158.0	HMD 120M	J169
	96.0	162.0	SMDT 1200 MFS+SMDH 120-8D	J116
	96.0	162.0	SMDT 1200 MFS+SMDH 120-8DF	J114
	98.0	164.0	SMDT 1200 MTL/MSL/MEL+SMDH 120-8D	J108
	98.0	164.0	SMDT 1200 MTL/MSL/MEL+SMDH 120-8DF	J106
	116.2	196.2	MDE 1200S12H08	J23
	116.2	196.2	MDW 1200HX8	J66
	116.5	196.5	MDW 1200HGS8	J56
	144.0	211.0	SMDT 1200 MFS+SMDH 120-12D	J116
	146.0	213.0	SMDT 1200 MTL/MSL/MEL+SMDH 120-12D	J108
	152.5	232.5	MDW 1200NHGS10	J87
	164.2	244.2	MDW 1200XHGS10	J82
	188.2	268.2	MDW 1200XHGS12	J82
	224.2	304.2	MDW 1200XHGS15	J82
	284.2	364.2	MDW 1200XHGS20	J82
	344.2	424.2	MDW 1200XHGS25	J82
12.04	31.1	102.2	MDE 1204S13E02H	J17
12.1	23.0	91.0	SMDT 1210 MTL/MSL/MEL+SMDH 120-1.5D	J108
	23.0	91.0	SMDT 1210 MTL/MSL/MEL+SMDH 120-1.5DF	J106

(Blue text: Flat head ■Indexable ■HSS)

● Diameter ø12.1 to ø12.4mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
12.1	30.2	100.0	MDF 1210S2D	J39
	31.1	102.2	MDE 1210S13E02	J15
	31.4	102.5	MDW 1210GS2	J51
	32.9	108.0	HMD 121S	J169
	42.0	107.0	SMDT 1210 MTL/MSL/MEL+SMDH 120-3D	J108
	42.0	107.0	SMDT 1210 MTL/MSL/MEL+SMDH 120-3DF	J106
	42.0	107.0	SMDT 1210 MTL/MSL/MEL+SMDH 120M	J104
	46.6	130.2	MDE 1210S13H03	J23
	46.6	130.2	MDM 1210S13H03	J32
	46.9	130.5	MDW 1210HGS3	J56
	46.9	130.5	MDW 1210NHGS3	J87
	60.1	139.2	MDE 1210S13E04	J15
	60.4	139.5	MDW 1210GS4	J51
	67.0	132.0	SMDT 1210 MTL/MSL/MEL+SMDH 120-5D	J108
	67.0	132.0	SMDT 1210 MTL/MSL/MEL+SMDH 120-5DF	J106
	67.0	132.0	SMDT 1210 MTL/MSL/MEL+SMDH 120L	J104
	82.9	158.0	HMD 121M	J169
	84.1	169.2	MDE 1210S13H05	J23
	84.1	169.2	MDM 1210S13H05	J32
	84.4	169.5	MDW 1210HGS5	J56
	84.4	169.5	MDW 1210NHGS5	J87
	98.0	164.0	SMDT 1210 MTL/MSL/MEL+SMDH 120-8D	J108
	98.0	164.0	SMDT 1210 MTL/MSL/MEL+SMDH 120-8DF	J106
	121.6	208.2	MDE 1210S13H08	J23
	146.0	213.0	SMDT 1210 MTL/MSL/MEL+SMDH 120-12D	J108
12.2	23.0	91.0	SMDT 1220 MTL/MSL/MEL+SMDH 120-1.5D	J108
	23.0	91.0	SMDT 1220 MTL/MSL/MEL+SMDH 120-1.5DF	J106
	30.5	100.0	MDF 1220S2D	J39
	30.9	102.2	MDE 1220S13E02	J15
	31.2	102.5	MDW 1220GS2	J52
	32.7	108.0	HMD 122S	J169
	42.0	107.0	SMDT 1220 MTL/MSL/MEL+SMDH 120-3D	J108
	42.0	107.0	SMDT 1220 MTL/MSL/MEL+SMDH 120-3DF	J106
	42.0	107.0	SMDT 1220 MTL/MSL/MEL+SMDH 120M	J104
	46.4	130.2	MDE 1220S13H03	J23
	46.4	130.2	MDM 1220S13H03	J32
	46.7	130.5	MDW 1220HGS3	J56
	59.9	139.2	MDE 1220S13E04	J15
	60.2	139.5	MDW 1220GS4	J52
	67.0	132.0	SMDT 1220 MTL/MSL/MEL+SMDH 120-5D	J108
	67.0	132.0	SMDT 1220 MTL/MSL/MEL+SMDH 120-5DF	J106
	67.0	132.0	SMDT 1220 MTL/MSL/MEL+SMDH 120L	J104
	82.7	158.0	HMD 122M	J169
	83.9	169.2	MDE 1220S13H05	J23
	83.9	169.2	MDM 1220S13H05	J32
	84.2	169.5	MDW 1220HGS5	J56
	98.0	164.0	SMDT 1220 MTL/MSL/MEL+SMDH 120-8D	J108
	98.0	164.0	SMDT 1220 MTL/MSL/MEL+SMDH 120-8DF	J106
	121.4	208.2	MDE 1220S13H08	J23
	146.0	213.0	SMDT 1220 MTL/MSL/MEL+SMDH 120-12D	J108
12.3	23.0	91.0	SMDT 1230 MTL/MSL/MEL+SMDH 120-1.5D	J108
	23.0	91.0	SMDT 1230 MTL/MSL/MEL+SMDH 120-1.5DF	J106
	30.7	100.0	MDF 1230S2D	J39
	30.8	102.2	MDE 1230S13E02	J15
	31.1	102.5	MDW 1230GS2	J52
	32.6	108.0	HMD 123S	J169
	42.0	107.0	SMDT 1230 MTL/MSL/MEL+SMDH 120-3D	J108
	42.0	107.0	SMDT 1230 MTL/MSL/MEL+SMDH 120-3DF	J106
	42.0	107.0	SMDT 1230 MTL/MSL/MEL+SMDH 120M	J104
	46.3	130.2	MDE 1230S13H03	J23
	46.3	130.2	MDM 1230S13H03	J32
	46.6	130.5	MDW 1230HGS3	J57
	46.6	130.5	MDW 1230NHGS3	J87
	59.8	139.2	MDE 1230S13E04	J15
	60.1	139.5	MDW 1230GS4	J52
	67.0	132.0	SMDT 1230 MTL/MSL/MEL+SMDH 120-5D	J108
	67.0	132.0	SMDT 1230 MTL/MSL/MEL+SMDH 120-5DF	J106
	67.0	132.0	SMDT 1230 MTL/MSL/MEL+SMDH 120L	J104
	82.6	158.0	HMD 123M	J169
	83.8	169.2	MDE 1230S13H05	J23
	83.8	169.2	MDM 1230S13H05	J32
	84.1	169.5	MDW 1230HGS5	J57
	84.1	169.5	MDW 1230NHGS5	J87
	98.0	164.0	SMDT 1230 MTL/MSL/MEL+SMDH 120-8D	J108
	98.0	164.0	SMDT 1230 MTL/MSL/MEL+SMDH 120-8DF	J106
	121.3	208.2	MDE 1230S13H08	J23
	146.0	213.0	SMDT 1230 MTL/MSL/MEL+SMDH 120-12D	J108
12.4	23.0	91.0	SMDT 1240 MTL/MSL/MEL+SMDH 120-1.5D	J108
	23.0	91.0	SMDT 1240 MTL/MSL/MEL+SMDH 120-1.5DF	J106
	30.7	102.3	MDE 1240S13E02	J15

(Blue text: Flat head ■Indexable ■HSS)

● Diameter ø12.4 to ø12.6mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
12.4	31.0	100.0	MDF 1240S2D	J39
	31.0	102.6	MDW 1240GS2	J52
	32.4	108.0	HMD 124S	J169
	42.0	107.0	SMDT 1240 MTL/MSL/MEL+SMDH 120-3D	J108
	42.0	107.0	SMDT 1240 MTL/MSL/MEL+SMDH 120-3DF	J106
	42.0	107.0	SMDT 1240 MTL/MSL/MEL+SMDH 120M	J104
	46.2	130.3	MDE 1240S13H03	J23
	46.2	130.3	MDM 1240S13H03	J32
	46.5	130.6	MDW 1240HGS3	J57
	59.7	139.3	MDE 1240S13E04	J15
	60.0	139.6	MDW 1240GS4	J52
	67.0	132.0	SMDT 1240 MTL/MSL/MEL+SMDH 120-5D	J108
	67.0	132.0	SMDT 1240 MTL/MSL/MEL+SMDH 120-5DF	J106
	67.0	132.0	SMDT 1240 MTL/MSL/MEL+SMDH 120L	J104
	82.4	158.0	HMD 124M	J169
	83.7	169.3	MDE 1240S13H05	J23
	83.7	169.3	MDM 1240S13H05	J32
	84.0	169.6	MDW 1240HGS5	J57
	98.0	164.0	SMDT 1240 MTL/MSL/MEL+SMDH 120-8D	J108
	98.0	164.0	SMDT 1240 MTL/MSL/MEL+SMDH 120-8DF	J106
	121.2	208.3	MDE 1240S13H08	J23
	146.0	213.0	SMDT 1240 MTL/MSL/MEL+SMDH 120-12D	J108
12.5	22.0	89.0	SMDT 1250 MFS+SMDH 125-1.5D	J116
	22.0	89.0	SMDT 1250 MFS+SMDH 125-1.5DF	J114
	24.0	91.0	SMDT 1250 MTL/MSL/MEL+SMDH 125-1.5D	J108
	24.0	91.0	SMDT 1250 MTL/MSL/MEL+SMDH 125-1.5DF	J106
	30.6	102.3	MDE 1250S13E02	J15
	30.9	102.6	MDW 1250GS2	J52
	32.3	108.0	HMD 125S	J169
	37.5	100.0	MDF 1250S2D	J39
	37.5	180.0	MDF 1250L2D	J42
	41.0	105.0	SMDT 1250 MFS+SMDH 125-3D	J116
	41.0	105.0	SMDT 1250 MFS+SMDH 125-3DF	J114
	41.0	105.0	SMDT 1250 MFS+SMDH 125M	J112
	44.0	107.0	SMDT 1250 MTL/MSL/MEL+SMDH 125-3D	J108
	44.0	107.0	SMDT 1250 MTL/MSL/MEL+SMDH 125-3DF	J106
	44.0	107.0	SMDT 1250 MTL/MSL/MEL+SMDH 125M	J104
	45.5	129.7	MDW 1250PHT	J82
	46.1	130.3	MDE 1250S13H03	J23
	46.1	130.3	MDM 1250S13H03	J32
	46.1	130.3	MDW 1250HX3	J66
	46.4	130.6	MDW 1250HGS3	J57
	46.4	130.6	MDW 1250HY3	J71
	46.4	130.6	MDW 1250NHGS3	J87
	50.0	128.0	MDF 1250H3D	J45
	59.6	137.3	MDS 125MD	J73
	59.6	139.3	MDE 1250S13E04	J15
	59.9	139.6	MDW 1250GS4	J52
	67.0	130.0	SMDT 1250 MFS+SMDH 125-5D	J116
	67.0	130.0	SMDT 1250 MFS+SMDH 125-5DF	J114
	67.0	130.0	SMDT 1250 MFS+SMDH 125L	J112
	69.0	132.0	SMDT 1250 MTL/MSL/MEL+SMDH 125-5D	J108
	69.0	132.0	SMDT 1250 MTL/MSL/MEL+SMDH 125-5DF	J106
	69.0	132.0	SMDT 1250 MTL/MSL/MEL+SMDH 125L	J104
	75.0	167.0	MDF 1250H5D	J45
	82.3	158.0	HMD 125M	J169
	83.6	169.3	MDE 1250S13H05	J23
	83.6	169.3	MDM 1250S13H05	J32
	83.6	169.3	MDW 1250HX5	J66
	83.9	169.6	MDW 1250HGS5	J57
	83.9	169.6	MDW 1250HY5	J71
	83.9	169.6	MDW 1250NHGS5	J87
	100.0	168.0	SMDT 1250 MFS+SMDH 125-8D	J116
	100.0	168.0	SMDT 1250 MFS+SMDH 125-8DF	J114
	102.0	170.0	SMDT 1250 MTL/MSL/MEL+SMDH 125-8D	J108
	102.0	170.0	SMDT 1250 MTL/MSL/MEL+SMDH 125-8DF	J106
	121.1	208.3	MDE 1250S13H08	J23
	121.1	208.3	MDW 1250HX8	J66
	121.4	208.6	MDW 1250HGS8	J57
	121.4	208.6	MDW 1250HY8	J71
	150.0	217.0	SMDT 1250 MFS+SMDH 125-12D	J116
	152.0	219.0	SMDT 1250 MTL/MSL/MEL+SMDH 125-12D	J108
	158.9	247.6	MDW 1250NHGS10	J87
	171.6	255.3	MDW 1250XHGS10	J82
	194.6	278.3	MDW 1250XHGS12	J82
	231.6	315.3	MDW 1250XHGS15	J82
	294.6	378.3	MDW 1250XHGS20	J82
12.52	32.4	102.3	MDE 1252S13E02H	J17
12.6	24.0	91.0	SMDT 1260 MTL/MSL/MEL+SMDH 125-1.5D	J108
	24.0	91.0	SMDT 1260 MTL/MSL/MEL+SMDH 125-1.5DF	J106

(Blue text: Flat head ■Indexable ■HSS)

Effective Length (LU) is a guideline for the usable length. Take into account the chip evacuation in relation to the flute length (LCF) when drilling.

Effective Length List by Diameter

● Diameter ø12.6 to ø12.9mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
12.6	31.5	100.0	MDF 1260S2D	J39
	32.1	108.0	HMD 126S	J169
	32.4	102.3	MDE 1260S13E02	J15
	32.7	102.6	MDW 1260GS2	J52
	44.0	107.0	SMDT 1260 MTL/MSL/MEL+SMDH 125-3D	J108
	44.0	107.0	SMDT 1260 MTL/MSL/MEL+SMDH 125-3DF	J106
	44.0	107.0	SMDT 1260 MTL/MSL/MEL+SMDH 125M	J104
	48.4	130.3	MDE 1260S13H03	J23
	48.4	130.3	MDM 1260S13H03	J32
	48.7	130.6	MDW 1260HGS3	J57
	61.4	139.3	MDE 1260S13E04	J15
	61.4	139.3	MDS 126MD	J73
	61.7	139.6	MDW 1260GS4	J52
	69.0	132.0	SMDT 1260 MTL/MSL/MEL+SMDH 125-5D	J108
	69.0	132.0	SMDT 1260 MTL/MSL/MEL+SMDH 125-5DF	J106
	69.0	132.0	SMDT 1260 MTL/MSL/MEL+SMDH 125L	J104
	82.1	158.0	HMD 126M	J169
	87.4	169.3	MDE 1260S13H05	J23
	87.4	169.3	MDM 1260S13H05	J32
	87.7	169.6	MDW 1260HGS5	J57
	102.0	170.0	SMDT 1260 MTL/MSL/MEL+SMDH 125-8D	J108
	102.0	170.0	SMDT 1260 MTL/MSL/MEL+SMDH 125-8DF	J106
	126.4	208.3	MDE 1260S13H08	J23
	152.0	219.0	SMDT 1260 MTL/MSL/MEL+SMDH 125-12D	J108
12.7	24.0	91.0	SMDT 1270 MTL/MSL/MEL+SMDH 125-1.5D	J108
	24.0	91.0	SMDT 1270 MTL/MSL/MEL+SMDH 125-1.5DF	J106
	31.7	100.0	MDF 1270S2D	J39
	32.0	108.0	HMD 127S	J170
	32.3	102.3	MDE 1270S13E02	J15
	32.6	102.6	MDW 1270GS2	J52
	44.0	107.0	SMDT 1270 MTL/MSL/MEL+SMDH 125-3D	J108
	44.0	107.0	SMDT 1270 MTL/MSL/MEL+SMDH 125-3DF	J106
	44.0	107.0	SMDT 1270 MTL/MSL/MEL+SMDH 125M	J104
	48.3	130.3	MDE 1270S13H03	J23
	48.3	130.3	MDM 1270S13H03	J32
	48.6	130.6	MDW 1270HGS3	J57
	61.3	139.3	MDE 1270S13E04	J15
	61.6	139.6	MDW 1270GS4	J52
	69.0	132.0	SMDT 1270 MTL/MSL/MEL+SMDH 125-5D	J108
	69.0	132.0	SMDT 1270 MTL/MSL/MEL+SMDH 125-5DF	J106
	69.0	132.0	SMDT 1270 MTL/MSL/MEL+SMDH 125L	J104
	82.0	158.0	HMD 127M	J170
	87.3	169.3	MDE 1270S13H05	J23
	87.3	169.3	MDM 1270S13H05	J32
	87.6	169.6	MDW 1270HGS5	J57
	102.0	170.0	SMDT 1270 MTL/MSL/MEL+SMDH 125-8D	J108
	102.0	170.0	SMDT 1270 MTL/MSL/MEL+SMDH 125-8DF	J106
	126.3	208.3	MDE 1270S13H08	J23
	152.0	219.0	SMDT 1270 MTL/MSL/MEL+SMDH 125-12D	J108
12.8	24.0	91.0	SMDT 1280 MTL/MSL/MEL+SMDH 125-1.5D	J108
	24.0	91.0	SMDT 1280 MTL/MSL/MEL+SMDH 125-1.5DF	J106
	31.8	108.0	HMD 128S	J170
	32.0	100.0	MDF 1280S2D	J39
	32.1	102.3	MDE 1280S13E02	J15
	32.4	102.6	MDW 1280GS2	J52
	44.0	107.0	SMDT 1280 MTL/MSL/MEL+SMDH 125-3D	J108
	44.0	107.0	SMDT 1280 MTL/MSL/MEL+SMDH 125-3DF	J106
	44.0	107.0	SMDT 1280 MTL/MSL/MEL+SMDH 125M	J104
	48.1	130.3	MDE 1280S13H03	J23
	48.1	130.3	MDM 1280S13H03	J32
	48.4	130.6	MDW 1280HGS3	J57
	61.1	139.3	MDE 1280S13E04	J15
	61.4	139.6	MDW 1280GS4	J52
	69.0	132.0	SMDT 1280 MTL/MSL/MEL+SMDH 125-5D	J108
	69.0	132.0	SMDT 1280 MTL/MSL/MEL+SMDH 125-5DF	J106
	69.0	132.0	SMDT 1280 MTL/MSL/MEL+SMDH 125L	J104
	81.8	158.0	HMD 128M	J170
	87.1	169.3	MDE 1280S13H05	J23
	87.1	169.3	MDM 1280S13H05	J32
	87.4	169.6	MDW 1280HGS5	J57
	102.0	170.0	SMDT 1280 MTL/MSL/MEL+SMDH 125-8D	J108
	102.0	170.0	SMDT 1280 MTL/MSL/MEL+SMDH 125-8DF	J106
	126.1	208.3	MDE 1280S13H08	J23
	152.0	219.0	SMDT 1280 MTL/MSL/MEL+SMDH 125-12D	J108
12.9	24.0	91.0	SMDT 1290 MTL/MSL/MEL+SMDH 125-1.5D	J108
	24.0	91.0	SMDT 1290 MTL/MSL/MEL+SMDH 125-1.5DF	J106
	31.7	108.0	HMD 129S	J170
	32.0	102.3	MDE 1290S13E02	J15
	32.2	100.0	MDF 1290S2D	J39
	32.4	102.7	MDW 1290GS2	J52

(Blue text: Flat head ■Indexable ■HSS)

● Diameter ø12.9 to ø13.1mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
12.9	44.0	107.0	SMDT 1290 MTL/MSL/MEL+SMDH 125-3D	J108
	44.0	107.0	SMDT 1290 MTL/MSL/MEL+SMDH 125-3DF	J106
	44.0	107.0	SMDT 1290 MTL/MSL/MEL+SMDH 125M	J104
	48.0	130.3	MDE 1290S13H03	J23
	48.0	130.3	MDM 1290S13H03	J32
	48.4	130.7	MDW 1290HGS3	J57
	61.0	139.3	MDE 1290S13E04	J15
	61.4	139.7	MDW 1290GS4	J52
	69.0	132.0	SMDT 1290 MTL/MSL/MEL+SMDH 125-5D	J108
	69.0	132.0	SMDT 1290 MTL/MSL/MEL+SMDH 125-5DF	J106
	69.0	132.0	SMDT 1290 MTL/MSL/MEL+SMDH 125L	J104
	81.7	158.0	HMD 129M	J170
	87.0	169.3	MDE 1290S13H05	J23
	87.0	169.3	MDM 1290S13H05	J32
	87.4	169.7	MDW 1290HGS5	J57
	102.0	170.0	SMDT 1290 MTL/MSL/MEL+SMDH 125-8D	J108
	102.0	170.0	SMDT 1290 MTL/MSL/MEL+SMDH 125-8DF	J106
	126.0	208.3	MDE 1290S13H08	J23
	152.0	219.0	SMDT 1290 MTL/MSL/MEL+SMDH 125-12D	J108
12.96	48.3	130.7	MDW 1296NHGS3	J87
	87.3	169.7	MDW 1296NHGS5	J87
13.0	23.0	90.0	SMDT 1300 MFS+SMDH 130-1.5D	J116
	23.0	90.0	SMDT 1300 MFS+SMDH 130-1.5DF	J114
	25.0	92.0	SMDT 1300 MTL/MSL/MEL+SMDH 130-1.5D	J108
	25.0	92.0	SMDT 1300 MTL/MSL/MEL+SMDH 130-1.5DF	J106
	31.5	108.0	HMD 130S	J170
	31.9	102.4	MDE 1300S13E02	J15
	32.2	102.7	MDW 1300GS2	J52
	39.0	100.0	MDF 1300S2D	J39
	39.0	180.0	MDF 1300L2D	J42
	43.0	110.0	SMDT 1300 MFS+SMDH 130-3D	J116
	43.0	110.0	SMDT 1300 MFS+SMDH 130-3DF	J114
	43.0	110.0	SMDT 1300 MFS+SMDH 130M	J112
	45.0	112.0	SMDT 1300 MTL/MSL/MEL+SMDH 130-3D	J108
	45.0	112.0	SMDT 1300 MTL/MSL/MEL+SMDH 130-3DF	J106
	45.0	112.0	SMDT 1300 MTL/MSL/MEL+SMDH 130M	J104
	47.2	129.7	MDW 1300PHT	J82
	47.9	130.4	MDE 1300S13H03	J23
	47.9	130.4	MDM 1300S13H03	J32
	47.9	130.4	MDW 1300HX3	J66
	48.2	130.7	MDW 1300HGS3	J57
	48.2	130.7	MDW 1300HY3	J71
	48.2	130.7	MDW 1300NHGS3	J87
	52.0	128.0	MDF 1300H3D	J45
	60.9	139.4	MDE 1300S13E04	J15
	60.9	139.4	MDS 130MD	J73
	61.2	139.7	MDW 1300GS4	J52
	70.0	140.0	SMDT 1300 MFS+SMDH 130-5D	J116
	70.0	140.0	SMDT 1300 MFS+SMDH 130-5DF	J114
	70.0	140.0	SMDT 1300 MFS+SMDH 130L	J112
	72.0	142.0	SMDT 1300 MTL/MSL/MEL+SMDH 130-5D	J108
	72.0	142.0	SMDT 1300 MTL/MSL/MEL+SMDH 130-5DF	J106
	72.0	142.0	SMDT 1300 MTL/MSL/MEL+SMDH 130L	J104
	78.0	167.0	MDF 1300H5D	J45
	81.5	158.0	HMD 130M	J170
	86.9	169.4	MDE 1300S13H05	J23
	86.9	169.4	MDM 1300S13H05	J32
	86.9	169.4	MDW 1300HX5	J66
	87.2	169.7	MDW 1300HGS5	J57
	87.2	169.7	MDW 1300HY5	J71
	87.2	169.7	MDW 1300NHGS5	J87
	104.0	176.0	SMDT 1300 MFS+SMDH 130-8D	J116
	104.0	176.0	SMDT 1300 MFS+SMDH 130-8DF	J114
	106.0	178.0	SMDT 1300 MTL/MSL/MEL+SMDH 130-8D	J108
	106.0	178.0	SMDT 1300 MTL/MSL/MEL+SMDH 130-8DF	J106
	108.4	177.4	KDS 130DAK	J163
	125.9	208.4	MDE 1300S13H08	J23
	125.9	208.4	MDW 1300HX8	J66
	126.2	208.7	MDW 1300HGS8	J57
	156.0	223.0	SMDT 1300 MFS+SMDH 130-12D	J116
	158.0	226.0	SMDT 1300 MTL/MSL/MEL+SMDH 130-12D	J108
	165.2	247.7	MDW 1300NHGS10	J87
	177.9	260.4	MDW 1300XHGS10	J82
	203.9	286.4	MDW 1300XHGS12	J82
	242.9	325.4	MDW 1300XHGS15	J82
	307.9	390.4	MDW 1300XHGS20	J82
13.1	25.0	92.0	SMDT 1310 MTL/MSL/MEL+SMDH 130-1.5D	J108
	25.0	92.0	SMDT 1310 MTL/MSL/MEL+SMDH 130-1.5DF	J106
	32.7	110.0	MDF 1310S2D	J39
	32.8	107.4	MDE 1310S14E02	J16

(Blue text: Flat head ■Indexable ■HSS)

● Diameter ø13.1 to ø13.4mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
13.1	33.1	107.7	MDW 1310GS2	J52
	45.0	112.0	SMDT 1310 MTL/MSL/MEL+SMDH 130-3D	J108
	45.0	112.0	SMDT 1310 MTL/MSL/MEL+SMDH 130-3DF	J106
	45.0	112.0	SMDT 1310 MTL/MSL/MEL+SMDH 130M	J104
	50.3	136.4	MDE 1310S14H03	J23
	50.3	136.4	MDM 1310S14H03	J32
	50.6	136.7	MDW 1310HGS3	J57
	66.8	149.4	MDE 1310S14E04	J16
	67.1	149.7	MDW 1310GS4	J52
	72.0	142.0	SMDT 1310 MTL/MSL/MEL+SMDH 130-5D	J108
	72.0	142.0	SMDT 1310 MTL/MSL/MEL+SMDH 130-5DF	J106
	72.0	142.0	SMDT 1310 MTL/MSL/MEL+SMDH 130L	J104
	90.8	178.4	MDE 1310S14H05	J23
	90.8	178.4	MDM 1310S14H05	J32
	91.1	178.7	MDW 1310HGS5	J57
	106.0	178.0	SMDT 1310 MTL/MSL/MEL+SMDH 130-8D	J108
	106.0	178.0	SMDT 1310 MTL/MSL/MEL+SMDH 130-8DF	J106
	131.3	220.4	MDE 1310S14H08	J23
	158.0	226.0	SMDT 1310 MTL/MSL/MEL+SMDH 130-12D	J108
13.2	25.0	92.0	SMDT 1320 MTL/MSL/MEL+SMDH 130-1.5D	J108
	25.0	92.0	SMDT 1320 MTL/MSL/MEL+SMDH 130-1.5DF	J106
	32.6	107.4	MDE 1320S14E02	J16
	32.9	107.7	MDW 1320GS2	J52
	33.0	110.0	MDF 1320S2D	J39
	45.0	112.0	SMDT 1320 MTL/MSL/MEL+SMDH 130-3D	J108
	45.0	112.0	SMDT 1320 MTL/MSL/MEL+SMDH 130-3DF	J106
	45.0	112.0	SMDT 1320 MTL/MSL/MEL+SMDH 130M	J104
	50.1	136.4	MDE 1320S14H03	J23
	50.1	136.4	MDM 1320S14H03	J32
	50.4	136.7	MDW 1320HGS3	J57
	66.6	149.4	MDE 1320S14E04	J16
	66.9	149.7	MDW 1320GS4	J52
	72.0	142.0	SMDT 1320 MTL/MSL/MEL+SMDH 130-5D	J108
	72.0	142.0	SMDT 1320 MTL/MSL/MEL+SMDH 130-5DF	J106
	72.0	142.0	SMDT 1320 MTL/MSL/MEL+SMDH 130L	J104
	90.6	178.4	MDE 1320S14H05	J23
	90.6	178.4	MDM 1320S14H05	J32
	90.9	178.7	MDW 1320HGS5	J57
	106.0	178.0	SMDT 1320 MTL/MSL/MEL+SMDH 130-8D	J108
	106.0	178.0	SMDT 1320 MTL/MSL/MEL+SMDH 130-8DF	J106
	131.1	220.4	MDE 1320S14H08	J23
	158.0	226.0	SMDT 1320 MTL/MSL/MEL+SMDH 130-12D	J108
13.3	25.0	92.0	SMDT 1330 MTL/MSL/MEL+SMDH 130-1.5D	J108
	25.0	92.0	SMDT 1330 MTL/MSL/MEL+SMDH 130-1.5DF	J106
	32.5	107.4	MDE 1330S14E02	J16
	32.9	107.8	MDW 1330GS2	J52
	33.2	110.0	MDF 1330S2D	J39
	45.0	112.0	SMDT 1330 MTL/MSL/MEL+SMDH 130-3D	J108
	45.0	112.0	SMDT 1330 MTL/MSL/MEL+SMDH 130-3DF	J106
	45.0	112.0	SMDT 1330 MTL/MSL/MEL+SMDH 130M	J104
	50.0	136.4	MDE 1330S14H03	J23
	50.0	136.4	MDM 1330S14H03	J32
	50.4	136.8	MDW 1330HGS3	J57
	66.5	149.4	MDE 1330S14E04	J16
	66.9	149.8	MDW 1330GS4	J52
	72.0	142.0	SMDT 1330 MTL/MSL/MEL+SMDH 130-5D	J108
	72.0	142.0	SMDT 1330 MTL/MSL/MEL+SMDH 130-5DF	J106
	72.0	142.0	SMDT 1330 MTL/MSL/MEL+SMDH 130L	J104
	90.5	178.4	MDE 1330S14H05	J23
	90.5	178.4	MDM 1330S14H05	J32
	90.9	178.8	MDW 1330HGS5	J57
	106.0	178.0	SMDT 1330 MTL/MSL/MEL+SMDH 130-8D	J108
	106.0	178.0	SMDT 1330 MTL/MSL/MEL+SMDH 130-8DF	J106
	131.0	220.4	MDE 1330S14H08	J23
	158.0	226.0	SMDT 1330 MTL/MSL/MEL+SMDH 130-12D	J108
13.4	25.0	92.0	SMDT 1340 MTL/MSL/MEL+SMDH 130-1.5D	J108
	25.0	92.0	SMDT 1340 MTL/MSL/MEL+SMDH 130-1.5DF	J106
	32.3	107.4	MDE 1340S14E02	J16
	32.7	107.8	MDW 1340GS2	J52
	33.5	110.0	MDF 1340S2D	J39
	45.0	112.0	SMDT 1340 MTL/MSL/MEL+SMDH 130-3D	J108
	45.0	112.0	SMDT 1340 MTL/MSL/MEL+SMDH 130-3DF	J106
	45.0	112.0	SMDT 1340 MTL/MSL/MEL+SMDH 130M	J104
	49.8	136.4	MDE 1340S14H03	J23
	49.8	136.4	MDM 1340S14H03	J32
	50.2	136.8	MDW 1340HGS3	J57
	66.3	149.4	MDE 1340S14E04	J16
	66.7	149.8	MDW 1340GS4	J52
	72.0	142.0	SMDT 1340 MTL/MSL/MEL+SMDH 130-5D	J108
	72.0	142.0	SMDT 1340 MTL/MSL/MEL+SMDH 130-5DF	J106

(Blue text: Flat head ■Indexable ■HSS)

Effective Length (LU) is a guideline for the usable length. Take into account the chip evacuation in relation to the flute length (LCF) when drilling.

Effective Length List by Diameter

● Diameter ø13.4 to ø13.6mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
13.4	72.0	142.0	SMDT 1340 MTL/MSL/MEL+SMDH 130L	J104
	90.3	178.4	MDE 1340S14H05	J23
	90.3	178.4	MDM 1340S14H05	J32
	90.7	178.8	MDW 1340HGS5	J57
	106.0	178.0	SMDT 1340 MTL/MSL/MEL+SMDH 130-8D	J108
	106.0	178.0	SMDT 1340 MTL/MSL/MEL+SMDH 130-8DF	J106
	130.8	220.4	MDE 1340S14H08	J23
	158.0	226.0	SMDT 1340 MTL/MSL/MEL+SMDH 130-12D	J108
13.5	26.0	94.0	SMDT 1350 MFS+SMDH 140-1.5D	J116
	26.0	94.0	SMDT 1350 MFS+SMDH 140-1.5DF	J114
	29.0	96.0	SMDT 1350 MTL/MSL/MEL+SMDH 140-1.5D	J108
	29.0	96.0	SMDT 1350 MTL/MSL/MEL+SMDH 140-1.5DF	J106
	32.3	107.5	MDE 1350S14E02	J16
	32.6	107.8	MDW 1350GS2	J52
	40.5	110.0	MDF 1350S2D	J39
	40.5	190.0	MDF 1350L2D	J42
	48.0	117.0	SMDT 1350 MFS+SMDH 140-3D	J116
	48.0	117.0	SMDT 1350 MFS+SMDH 140-3DF	J114
	48.0	117.0	SMDT 1350 MFS+SMDH 140M	J112
	49.1	135.8	MDW 1350PHT	J82
	49.8	136.5	MDE 1350S14H03	J23
	49.8	136.5	MDM 1350S14H03	J32
	49.8	136.5	MDW 1350HX3	J66
	50.1	136.8	MDW 1350HGS3	J57
	50.1	136.8	MDW 1350NHGS3	J88
	51.0	119.0	SMDT 1350 MTL/MSL/MEL+SMDH 140-3D	J108
	51.0	119.0	SMDT 1350 MTL/MSL/MEL+SMDH 140-3DF	J106
	51.0	119.0	SMDT 1350 MTL/MSL/MEL+SMDH 140M	J104
	51.8	132.0	HMD 135S	J170
	54.0	134.0	MDF 1350H3D	J45
	66.3	146.5	MDS 135MD	J73
	66.3	149.5	MDE 1350S14E04	J16
	66.6	149.8	MDW 1350GS4	J52
	77.0	147.0	SMDT 1350 MFS+SMDH 140-5D	J116
	77.0	147.0	SMDT 1350 MFS+SMDH 140-5DF	J114
	77.0	147.0	SMDT 1350 MFS+SMDH 140L	J112
	80.0	149.0	SMDT 1350 MTL/MSL/MEL+SMDH 140-5D	J108
	80.0	149.0	SMDT 1350 MTL/MSL/MEL+SMDH 140-5DF	J106
	80.0	149.0	SMDT 1350 MTL/MSL/MEL+SMDH 140L	J104
	81.0	176.0	MDF 1350H5D	J45
	87.8	168.0	HMD 135M	J170
	90.3	178.5	MDE 1350S14H05	J23
	90.3	178.5	MDM 1350S14H05	J32
	90.3	178.5	MDW 1350HX5	J66
	90.6	178.8	MDW 1350HGS5	J57
	90.6	178.8	MDW 1350NHGS5	J88
	108.5	177.5	KDS 135DAK	J163
	121.0	192.0	SMDT 1350 MFS+SMDH 140-8D	J116
	121.0	192.0	SMDT 1350 MFS+SMDH 140-8DF	J114
	121.0	192.0	SMDT 1350 MFS+SMDH 140D	J112
	123.0	194.0	SMDT 1350 MTL/MSL/MEL+SMDH 140-8D	J108
	123.0	194.0	SMDT 1350 MTL/MSL/MEL+SMDH 140-8DF	J106
	123.0	194.0	SMDT 1350 MTL/MSL/MEL+SMDH 140D	J104
	130.8	220.5	MDE 1350S14H08	J23
	130.8	220.5	MDW 1350HX8	J66
	131.1	220.8	MDW 1350HGS8	J57
	168.0	236.0	SMDT 1350 MFS+SMDH 140-12D	J116
	170.0	239.0	SMDT 1350 MTL/MSL/MEL+SMDH 140-12D	J108
	185.3	271.5	MDW 1350XHGS10	J82
	210.3	296.5	MDW 1350XHGS12	J82
	250.3	336.5	MDW 1350XHGS15	J82
	318.3	404.5	MDW 1350XHGS20	J82
13.6	29.0	96.0	SMDT 1360 MTL/MSL/MEL+SMDH 140-1.5D	J108
	29.0	96.0	SMDT 1360 MTL/MSL/MEL+SMDH 140-1.5DF	J106
	34.0	110.0	MDF 1360S2D	J39
	34.1	107.5	MDE 1360S14E02	J16
	34.4	107.8	MDW 1360GS2	J52
	51.0	119.0	SMDT 1360 MTL/MSL/MEL+SMDH 140-3D	J108
	51.0	119.0	SMDT 1360 MTL/MSL/MEL+SMDH 140-3DF	J106
	51.0	119.0	SMDT 1360 MTL/MSL/MEL+SMDH 140M	J104
	52.1	136.5	MDE 1360S14H03	J23
	52.1	136.5	MDM 1360S14H03	J32
	52.4	136.8	MDW 1360HGS3	J57
	68.1	149.5	MDE 1360S14E04	J16
	68.4	149.8	MDW 1360GS4	J52
	80.0	149.0	SMDT 1360 MTL/MSL/MEL+SMDH 140-5D	J108
	80.0	149.0	SMDT 1360 MTL/MSL/MEL+SMDH 140-5DF	J106
	80.0	149.0	SMDT 1360 MTL/MSL/MEL+SMDH 140L	J104
	94.1	178.5	MDE 1360S14H05	J23
	94.1	178.5	MDM 1360S14H05	J32

(Blue text: Flat head ■Indexable ■HSS)

● Diameter ø13.6 to ø13.92mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
13.6	94.4	178.8	MDW 1360HGS5	J57
	123.0	194.0	SMDT 1360 MTL/MSL/MEL+SMDH 140-8D	J108
	123.0	194.0	SMDT 1360 MTL/MSL/MEL+SMDH 140-8DF	J106
	123.0	194.0	SMDT 1360 MTL/MSL/MEL+SMDH 140D	J104
	136.1	220.5	MDE 1360S14H08	J23
	170.0	239.0	SMDT 1360 MTL/MSL/MEL+SMDH 140-12D	J108
13.7	29.0	96.0	SMDT 1370 MTL/MSL/MEL+SMDH 140-1.5D	J108
	29.0	96.0	SMDT 1370 MTL/MSL/MEL+SMDH 140-1.5DF	J106
	34.0	107.5	MDE 1370S14E02	J16
	34.2	110.0	MDF 1370S2D	J39
	34.3	107.8	MDW 1370GS2	J52
	51.0	119.0	SMDT 1370 MTL/MSL/MEL+SMDH 140-3D	J108
	51.0	119.0	SMDT 1370 MTL/MSL/MEL+SMDH 140-3DF	J106
	51.0	119.0	SMDT 1370 MTL/MSL/MEL+SMDH 140M	J104
	52.0	136.5	MDE 1370S14H03	J23
	52.0	136.5	MDM 1370S14H03	J32
	52.3	136.8	MDW 1370HGS3	J57
	68.0	149.5	MDE 1370S14E04	J16
	68.3	149.8	MDW 1370GS4	J52
	80.0	149.0	SMDT 1370 MTL/MSL/MEL+SMDH 140-5D	J108
	80.0	149.0	SMDT 1370 MTL/MSL/MEL+SMDH 140-5DF	J106
	80.0	149.0	SMDT 1370 MTL/MSL/MEL+SMDH 140L	J104
	94.0	178.5	MDE 1370S14H05	J23
	94.0	178.5	MDM 1370S14H05	J32
	94.3	178.8	MDW 1370HGS5	J57
	123.0	194.0	SMDT 1370 MTL/MSL/MEL+SMDH 140-8D	J108
	123.0	194.0	SMDT 1370 MTL/MSL/MEL+SMDH 140-8DF	J106
	123.0	194.0	SMDT 1370 MTL/MSL/MEL+SMDH 140D	J104
	136.0	220.5	MDE 1370S14H08	J23
	170.0	239.0	SMDT 1370 MTL/MSL/MEL+SMDH 140-12D	J108
13.8	29.0	96.0	SMDT 1380 MTL/MSL/MEL+SMDH 140-1.5D	J108
	29.0	96.0	SMDT 1380 MTL/MSL/MEL+SMDH 140-1.5DF	J106
	33.8	107.5	MDE 1380S14E02	J16
	34.2	107.9	MDW 1380GS2	J52
	34.5	110.0	MDF 1380S2D	J39
	51.0	119.0	SMDT 1380 MTL/MSL/MEL+SMDH 140-3D	J108
	51.0	119.0	SMDT 1380 MTL/MSL/MEL+SMDH 140-3DF	J106
	51.0	119.0	SMDT 1380 MTL/MSL/MEL+SMDH 140M	J104
	51.8	136.5	MDE 1380S14H03	J23
	51.8	136.5	MDM 1380S14H03	J32
	52.2	136.9	MDW 1380HGS3	J57
	67.8	149.5	MDE 1380S14E04	J16
	68.2	149.9	MDW 1380GS4	J52
	80.0	149.0	SMDT 1380 MTL/MSL/MEL+SMDH 140-5D	J108
	80.0	149.0	SMDT 1380 MTL/MSL/MEL+SMDH 140-5DF	J106
	80.0	149.0	SMDT 1380 MTL/MSL/MEL+SMDH 140L	J104
	93.8	178.5	MDE 1380S14H05	J23
	93.8	178.5	MDM 1380S14H05	J32
	94.2	178.9	MDW 1380HGS5	J57
	123.0	194.0	SMDT 1380 MTL/MSL/MEL+SMDH 140-8D	J108
	123.0	194.0	SMDT 1380 MTL/MSL/MEL+SMDH 140-8DF	J106
	123.0	194.0	SMDT 1380 MTL/MSL/MEL+SMDH 140D	J104
	135.8	220.5	MDE 1380S14H08	J23
	170.0	239.0	SMDT 1380 MTL/MSL/MEL+SMDH 140-12D	J108
13.85	33.7	107.5	MDE 1385S14E02H	J17
13.9	29.0	96.0	SMDT 1390 MTL/MSL/MEL+SMDH 140-1.5D	J108
	29.0	96.0	SMDT 1390 MTL/MSL/MEL+SMDH 140-1.5DF	J106
	33.7	107.5	MDE 1390S14E02	J16
	34.1	107.9	MDW 1390GS2	J52
	34.7	110.0	MDF 1390S2D	J39
	51.0	119.0	SMDT 1390 MTL/MSL/MEL+SMDH 140-3D	J108
	51.0	119.0	SMDT 1390 MTL/MSL/MEL+SMDH 140-3DF	J106
	51.0	119.0	SMDT 1390 MTL/MSL/MEL+SMDH 140M	J104
	51.7	136.5	MDE 1390S14H03	J23
	51.7	136.5	MDM 1390S14H03	J32
	52.1	136.9	MDW 1390HGS3	J57
	67.7	149.5	MDE 1390S14E04	J16
	68.1	149.9	MDW 1390GS4	J52
	80.0	149.0	SMDT 1390 MTL/MSL/MEL+SMDH 140-5D	J108
	80.0	149.0	SMDT 1390 MTL/MSL/MEL+SMDH 140-5DF	J106
	80.0	149.0	SMDT 1390 MTL/MSL/MEL+SMDH 140L	J104
	93.7	178.5	MDE 1390S14H05	J23
	93.7	178.5	MDM 1390S14H05	J32
	94.1	178.9	MDW 1390HGS5	J57
	123.0	194.0	SMDT 1390 MTL/MSL/MEL+SMDH 140-8D	J108
	123.0	194.0	SMDT 1390 MTL/MSL/MEL+SMDH 140-8DF	J106
	123.0	194.0	SMDT 1390 MTL/MSL/MEL+SMDH 140D	J104
	135.7	220.5	MDE 1390S14H08	J23
	170.0	239.0	SMDT 1390 MTL/MSL/MEL+SMDH 140-12D	J108
13.92	33.5	107.5	MDE 1392S14E02H	J17

(Blue text: Flat head ■Indexable ■HSS)

● Diameter ø13.97 to ø14.1mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
13.97	33.5	107.5	MDE 1397S14E02H	J17
14.0	26.0	94.0	SMDT 1400 MFS+SMDH 140-1.5D	J116
	26.0	94.0	SMDT 1400 MFS+SMDH 140-1.5DF	J114
	29.0	96.0	SMDT 1400 MTL/MSL/MEL+SMDH 140-1.5D	J108
	29.0	96.0	SMDT 1400 MTL/MSL/MEL+SMDH 140-1.5DF	J106
	33.5	107.5	MDE 1400S14E02	J16
	33.9	107.9	MDW 1400GS2	J52
	42.0	110.0	MDF 1400S2D	J39
	42.0	190.0	MDF 1400L2D	J42
	42.0	190.0	MDF 1400L2D-S12	J42
	48.0	117.0	SMDT 1400 MFS+SMDH 140-3D	J116
	48.0	117.0	SMDT 1400 MFS+SMDH 140-3DF	J114
	48.0	117.0	SMDT 1400 MFS+SMDH 140M	J112
	50.9	135.9	MDW 1400PHT	J82
	51.0	119.0	SMDT 1400 MTL/MSL/MEL+SMDH 140-3D	J108
	51.0	119.0	SMDT 1400 MTL/MSL/MEL+SMDH 140-3DF	J106
	51.0	119.0	SMDT 1400 MTL/MSL/MEL+SMDH 140M	J104
	51.0	132.0	HMD 140S	J170
	51.5	136.5	MDE 1400S14H03	J23
	51.5	136.5	MDM 1400S14H03	J32
	51.5	136.5	MDW 1400HX3	J67
	51.9	136.9	MDW 1400HGS3	J57
	51.9	136.9	MDW 1400HY3	J71
	51.9	136.9	MDW 1400NHGS3	J88
	53.5	117.5	KDS 140MAK	J163
	56.0	134.0	MDF 1400H3D	J45
	67.5	149.5	MDE 1400S14E04	J16
	67.5	149.5	MDS 140MD	J73
	67.9	149.9	MDW 1400GS4	J52
	77.0	147.0	SMDT 1400 MFS+SMDH 140-5D	J116
	77.0	147.0	SMDT 1400 MFS+SMDH 140-5DF	J114
	77.0	147.0	SMDT 1400 MFS+SMDH 140L	J112
	80.0	149.0	SMDT 1400 MTL/MSL/MEL+SMDH 140-5D	J108
	80.0	149.0	SMDT 1400 MTL/MSL/MEL+SMDH 140-5DF	J106
	80.0	149.0	SMDT 1400 MTL/MSL/MEL+SMDH 140L	J104
	82.5	147.5	KDS 140LAK	J163
	84.0	176.0	MDF 1400H5D	J45
	87.0	168.0	HMD 140M	J170
	93.5	178.5	MDE 1400S14H05	J23
	93.5	178.5	MDM 1400S14H05	J32
	93.5	178.5	MDW 1400HX5	J67
	93.9	178.9	MDW 1400HGS5	J57
	93.9	178.9	MDW 1400HY5	J71
	93.9	178.9	MDW 1400NHGS5	J88
	115.5	182.5	KDS 140DAK	J163
	121.0	192.0	SMDT 1400 MFS+SMDH 140-8D	J116
	121.0	192.0	SMDT 1400 MFS+SMDH 140-8DF	J114
	121.0	192.0	SMDT 1400 MFS+SMDH 140D	J112
	123.0	194.0	SMDT 1400 MTL/MSL/MEL+SMDH 140-8D	J108
	123.0	194.0	SMDT 1400 MTL/MSL/MEL+SMDH 140-8DF	J106
	123.0	194.0	SMDT 1400 MTL/MSL/MEL+SMDH 140D	J104
	135.5	220.5	MDE 1400S14H08	J23
	135.9	220.9	MDW 1400HGS8	J57
	168.0	236.0	SMDT 1400 MFS+SMDH 140-12D	J116
	170.0	239.0	SMDT 1400 MTL/MSL/MEL+SMDH 140-12D	J108
	191.5	276.5	MDW 1400XHGS10	J82
	219.5	304.5	MDW 1400XHGS12	J82
	261.5	346.5	MDW 1400XHGS15	J82
	331.5	416.5	MDW 1400XHGS20	J82
14.1	29.0	96.0	SMDT 1410 MTL/MSL/MEL+SMDH 140-1.5D	J108
	29.0	96.0	SMDT 1410 MTL/MSL/MEL+SMDH 140-1.5DF	J106
	33.5	110.6	MDE 1410S15E02	J16
	33.8	110.9	MDW 1410GS2	J52
	35.2	110.0	MDF 1410S2D	J39
	51.0	119.0	SMDT 1410 MTL/MSL/MEL+SMDH 140-3D	J108
	51.0	119.0	SMDT 1410 MTL/MSL/MEL+SMDH 140-3DF	J106
	51.0	119.0	SMDT 1410 MTL/MSL/MEL+SMDH 140M	J104
	54.0	142.6	MDE 1410S15H03	J23
	54.0	142.6	MDM 1410S15H03	J32
	54.3	142.9	MDW 1410HGS3	J57
	54.3	142.9	MDW 1410NHGS3	J88
	70.5	153.6	MDS 141MD	J73
	70.5	155.6	MDE 1410S15E04	J16
	70.8	155.9	MDW 1410GS4	J52
	80.0	149.0	SMDT 1410 MTL/MSL/MEL+SMDH 140-5D	J108
	80.0	149.0	SMDT 1410 MTL/MSL/MEL+SMDH 140-5DF	J106
	80.0	149.0	SMDT 1410 MTL/MSL/MEL+SMDH 140L	J104
	97.5	187.6	MDE 1410S15H05	J23
	97.5	187.6	MDM 1410S15H05	J32
	97.8	187.9	MDW 1410HGS5	J57

(Blue text: Flat head ■Indexable ■HSS)

Effective Length (LU) is a guideline for the usable length. Take into account the chip evacuation in relation to the flute length (LCF) when drilling.

Effective Length List by Diameter

● Diameter ø14.1 to ø14.4mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
14.1	97.8	187.9	MDW 1410NHGS5	J88
	123.0	194.0	SMDT 1410 MTL/MSL/MEL+SMDH 140-8D	J108
	123.0	194.0	SMDT 1410 MTL/MSL/MEL+SMDH 140-8DF	J106
	123.0	194.0	SMDT 1410 MTL/MSL/MEL+SMDH 140D	J104
	141.0	232.6	MDE 1410S15H08	J23
	170.0	239.0	SMDT 1410 MTL/MSL/MEL+SMDH 140-12D	J108
14.2	29.0	96.0	SMDT 1420 MTL/MSL/MEL+SMDH 140-1.5D	J108
	29.0	96.0	SMDT 1420 MTL/MSL/MEL+SMDH 140-1.5DF	J106
	33.3	110.6	MDE 1420S15E02	J16
	33.6	110.9	MDW 1420GS2	J52
	35.5	110.0	MDF 1420S2D	J39
	51.0	119.0	SMDT 1420 MTL/MSL/MEL+SMDH 140-3D	J108
	51.0	119.0	SMDT 1420 MTL/MSL/MEL+SMDH 140-3DF	J106
	51.0	119.0	SMDT 1420 MTL/MSL/MEL+SMDH 140M	J104
	53.6	117.6	KDS 142MAK	J163
	53.8	142.6	MDE 1420S15H03	J23
	53.8	142.6	MDM 1420S15H03	J32
	54.1	142.9	MDW 1420HGS3	J57
	70.3	155.6	MDE 1420S15E04	J16
	70.6	155.9	MDW 1420GS4	J52
	80.0	149.0	SMDT 1420 MTL/MSL/MEL+SMDH 140-5D	J108
	80.0	149.0	SMDT 1420 MTL/MSL/MEL+SMDH 140-5DF	J106
	80.0	149.0	SMDT 1420 MTL/MSL/MEL+SMDH 140L	J104
	82.6	147.6	KDS 142LAK	J163
	97.3	187.6	MDE 1420S15H05	J23
	97.3	187.6	MDM 1420S15H05	J32
	97.6	187.9	MDW 1420HGS5	J57
	123.0	194.0	SMDT 1420 MTL/MSL/MEL+SMDH 140-8D	J108
	123.0	194.0	SMDT 1420 MTL/MSL/MEL+SMDH 140-8DF	J106
	123.0	194.0	SMDT 1420 MTL/MSL/MEL+SMDH 140D	J104
	140.8	232.6	MDE 1420S15H08	J23
	170.0	239.0	SMDT 1420 MTL/MSL/MEL+SMDH 140-12D	J108
14.3	29.0	96.0	SMDT 1430 MTL/MSL/MEL+SMDH 140-1.5D	J108
	29.0	96.0	SMDT 1430 MTL/MSL/MEL+SMDH 140-1.5DF	J106
	33.2	110.6	MDE 1430S15E02	J16
	33.6	111.0	MDW 1430GS2	J52
	35.7	110.0	MDF 1430S2D	J39
	51.0	119.0	SMDT 1430 MTL/MSL/MEL+SMDH 140-3D	J108
	51.0	119.0	SMDT 1430 MTL/MSL/MEL+SMDH 140-3DF	J106
	51.0	119.0	SMDT 1430 MTL/MSL/MEL+SMDH 140M	J104
	53.7	142.6	MDE 1430S15H03	J23
	53.7	142.6	MDM 1430S15H03	J32
	54.1	143.0	MDW 1430HGS3	J57
	70.2	155.6	MDE 1430S15E04	J16
	70.6	156.0	MDW 1430GS4	J52
	80.0	149.0	SMDT 1430 MTL/MSL/MEL+SMDH 140-5D	J108
	80.0	149.0	SMDT 1430 MTL/MSL/MEL+SMDH 140-5DF	J106
	80.0	149.0	SMDT 1430 MTL/MSL/MEL+SMDH 140L	J104
	97.2	187.6	MDE 1430S15H05	J23
	97.2	187.6	MDM 1430S15H05	J32
	97.6	188.0	MDW 1430HGS5	J57
	123.0	194.0	SMDT 1430 MTL/MSL/MEL+SMDH 140-8D	J108
	123.0	194.0	SMDT 1430 MTL/MSL/MEL+SMDH 140-8DF	J106
	123.0	194.0	SMDT 1430 MTL/MSL/MEL+SMDH 140D	J104
	140.7	232.6	MDE 1430S15H08	J23
	170.0	239.0	SMDT 1430 MTL/MSL/MEL+SMDH 140-12D	J108
14.4	29.0	96.0	SMDT 1440 MTL/MSL/MEL+SMDH 140-1.5D	J108
	29.0	96.0	SMDT 1440 MTL/MSL/MEL+SMDH 140-1.5DF	J106
	33.0	110.6	MDE 1440S15E02	J16
	33.4	111.0	MDW 1440GS2	J52
	36.0	110.0	MDF 1440S2D	J39
	51.0	119.0	SMDT 1440 MTL/MSL/MEL+SMDH 140-3D	J108
	51.0	119.0	SMDT 1440 MTL/MSL/MEL+SMDH 140-3DF	J106
	51.0	119.0	SMDT 1440 MTL/MSL/MEL+SMDH 140M	J104
	53.5	142.6	MDE 1440S15H03	J23
	53.5	142.6	MDM 1440S15H03	J32
	53.9	143.0	MDW 1440HGS3	J57
	70.0	155.6	MDE 1440S15E04	J16
	70.4	156.0	MDW 1440GS4	J52
	80.0	149.0	SMDT 1440 MTL/MSL/MEL+SMDH 140-5D	J108
	80.0	149.0	SMDT 1440 MTL/MSL/MEL+SMDH 140-5DF	J106
	80.0	149.0	SMDT 1440 MTL/MSL/MEL+SMDH 140L	J104
	97.0	187.6	MDE 1440S15H05	J23
	97.0	187.6	MDM 1440S15H05	J32
	97.4	188.0	MDW 1440HGS5	J57
	123.0	194.0	SMDT 1440 MTL/MSL/MEL+SMDH 140-8D	J108
	123.0	194.0	SMDT 1440 MTL/MSL/MEL+SMDH 140-8DF	J106
	123.0	194.0	SMDT 1440 MTL/MSL/MEL+SMDH 140D	J104
	140.5	232.6	MDE 1440S15H08	J23
	170.0	239.0	SMDT 1440 MTL/MSL/MEL+SMDH 140-12D	J108

(Blue text: Flat head Indexable HSS)

● Diameter ø14.5 to ø14.7mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
14.5	26.0	94.0	SMDT 1450 MFS+SMDH 140-1.5D	J116
	26.0	94.0	SMDT 1450 MFS+SMDH 140-1.5DF	J114
	29.0	96.0	SMDT 1450 MTL/MSL/MEL+SMDH 140-1.5D	J108
	29.0	96.0	SMDT 1450 MTL/MSL/MEL+SMDH 140-1.5DF	J106
	32.9	110.6	MDE 1450S15E02	J16
	33.3	111.0	MDW 1450GS2	J52
	43.5	110.0	MDF 1450S2D	J39
	43.5	200.0	MDF 1450L2D	J42
	48.0	117.0	SMDT 1450 MFS+SMDH 140-3D	J116
	48.0	117.0	SMDT 1450 MFS+SMDH 140-3DF	J114
	48.0	117.0	SMDT 1450 MFS+SMDH 140M	J112
	51.0	119.0	SMDT 1450 MTL/MSL/MEL+SMDH 140-3D	J108
	51.0	119.0	SMDT 1450 MTL/MSL/MEL+SMDH 140-3DF	J106
	51.0	119.0	SMDT 1450 MTL/MSL/MEL+SMDH 140M	J104
	52.7	141.9	MDW 1450PHT	J82
	53.4	142.6	MDE 1450S15H03	J23
	53.4	142.6	MDM 1450S15H03	J32
	53.4	142.6	MDW 1450HX3	J67
	53.6	117.6	KDS 145MAK	J163
	53.8	143.0	MDW 1450HGS3	J57
	53.8	143.0	MDW 1450NHGS3	J88
	54.3	136.0	HMD 145S	J170
	58.0	140.0	MDF 1450H3D	J45
	69.9	153.6	MDS 145MD	J73
	69.9	155.6	MDE 1450S15E04	J16
	70.3	156.0	MDW 1450GS4	J52
	77.0	147.0	SMDT 1450 MFS+SMDH 140-5D	J116
	77.0	147.0	SMDT 1450 MFS+SMDH 140-5DF	J114
	77.0	147.0	SMDT 1450 MFS+SMDH 140L	J112
	80.0	149.0	SMDT 1450 MTL/MSL/MEL+SMDH 140-5D	J108
	80.0	149.0	SMDT 1450 MTL/MSL/MEL+SMDH 140-5DF	J106
	80.0	149.0	SMDT 1450 MTL/MSL/MEL+SMDH 140L	J104
	82.6	147.6	KDS 145LAK	J163
	87.0	185.0	MDF 1450H5D	J45
	92.3	173.0	HMD 145M	J170
	96.9	187.6	MDE 1450S15H05	J23
	96.9	187.6	MDM 1450S15H05	J32
	96.9	187.6	MDW 1450HX5	J67
	97.3	188.0	MDW 1450HGS5	J57
	97.3	188.0	MDW 1450NHGS5	J88
	115.6	182.6	KDS 145DAK	J163
	121.0	192.0	SMDT 1450 MFS+SMDH 140-8D	J116
	121.0	192.0	SMDT 1450 MFS+SMDH 140-8DF	J114
	121.0	192.0	SMDT 1450 MFS+SMDH 140D	J112
	123.0	194.0	SMDT 1450 MTL/MSL/MEL+SMDH 140-8D	J108
	123.0	194.0	SMDT 1450 MTL/MSL/MEL+SMDH 140-8DF	J106
	123.0	194.0	SMDT 1450 MTL/MSL/MEL+SMDH 140D	J104
	140.4	232.6	MDE 1450S15H08	J23
	140.8	233.0	MDW 1450HGS8	J57
	168.0	236.0	SMDT 1450 MFS+SMDH 140-12D	J116
	170.0	239.0	SMDT 1450 MTL/MSL/MEL+SMDH 140-12D	J108
	198.9	287.6	MDW 1450XHGS10	J82
	225.9	314.6	MDW 1450XHGS12	J82
	268.9	357.6	MDW 1450XHGS15	J82
14.6	31.0	100.0	SMDT 1460 MTL/MSL/MEL+SMDH 150-1.5D	J108
	31.0	100.0	SMDT 1460 MTL/MSL/MEL+SMDH 150-1.5DF	J106
	33.8	110.7	MDE 1460S15E02	J16
	34.1	111.0	MDW 1460GS2	J52
	36.5	110.0	MDF 1460S2D	J39
	54.0	129.0	SMDT 1460 MTL/MSL/MEL+SMDH 150-3D	J108
	54.0	129.0	SMDT 1460 MTL/MSL/MEL+SMDH 150-3DF	J106
	54.0	129.0	SMDT 1460 MTL/MSL/MEL+SMDH 150M	J104
	55.8	142.7	MDE 1460S15H03	J24
	55.8	142.7	MDM 1460S15H03	J32
	56.1	143.0	MDW 1460HGS3	J57
	71.8	155.7	MDE 1460S15E04	J16
	71.8	155.7	MDS 146MD	J73
	72.1	156.0	MDW 1460GS4	J52
	85.0	159.0	SMDT 1460 MTL/MSL/MEL+SMDH 150-5D	J108
	85.0	159.0	SMDT 1460 MTL/MSL/MEL+SMDH 150-5DF	J106
	85.0	159.0	SMDT 1460 MTL/MSL/MEL+SMDH 150L	J104
	100.8	187.7	MDE 1460S15H05	J24
	100.8	187.7	MDM 1460S15H05	J32
	101.1	188.0	MDW 1460HGS5	J57
	131.0	204.0	SMDT 1460 MTL/MSL/MEL+SMDH 150-8D	J108
	131.0	204.0	SMDT 1460 MTL/MSL/MEL+SMDH 150-8DF	J106
	131.0	204.0	SMDT 1460 MTL/MSL/MEL+SMDH 150D	J104
	145.8	232.7	MDE 1460S15H08	J24
	182.0	253.0	SMDT 1460 MTL/MSL/MEL+SMDH 150-12D	J108
14.7	31.0	100.0	SMDT 1470 MTL/MSL/MEL+SMDH 150-1.5D	J108

(Blue text: Flat head Indexable HSS)

● Diameter ø14.7 to ø15.0mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
14.7	31.0	100.0	SMDT 1470 MTL/MSL/MEL+SMDH 150-1.5DF	J106
	33.7	110.7	MDE 1470S15E02	J16
	34.0	111.0	MDW 1470GS2	J52
	36.7	110.0	MDF 1470S2D	J39
	54.0	129.0	SMDT 1470 MTL/MSL/MEL+SMDH 150-3D	J108
	54.0	129.0	SMDT 1470 MTL/MSL/MEL+SMDH 150-3DF	J106
	54.0	129.0	SMDT 1470 MTL/MSL/MEL+SMDH 150M	J104
	55.7	142.7	MDE 1470S15H03	J24
	55.7	142.7	MDM 1470S15H03	J32
	56.0	143.0	MDW 1470HGS3	J57
	71.7	155.7	MDE 1470S15E04	J16
	72.0	156.0	MDW 1470GS4	J52
	85.0	159.0	SMDT 1470 MTL/MSL/MEL+SMDH 150-5D	J108
	85.0	159.0	SMDT 1470 MTL/MSL/MEL+SMDH 150-5DF	J106
	85.0	159.0	SMDT 1470 MTL/MSL/MEL+SMDH 150L	J104
	100.7	187.7	MDE 1470S15H05	J24
	100.7	187.7	MDM 1470S15H05	J32
	101.0	188.0	MDW 1470HGS5	J57
	131.0	204.0	SMDT 1470 MTL/MSL/MEL+SMDH 150-8D	J108
	131.0	204.0	SMDT 1470 MTL/MSL/MEL+SMDH 150-8DF	J106
	131.0	204.0	SMDT 1470 MTL/MSL/MEL+SMDH 150D	J104
	145.7	232.7	MDE 1470S15H08	J24
	182.0	253.0	SMDT 1470 MTL/MSL/MEL+SMDH 150-12D	J108
14.8	31.0	100.0	SMDT 1480 MTL/MSL/MEL+SMDH 150-1.5D	J108
	31.0	100.0	SMDT 1480 MTL/MSL/MEL+SMDH 150-1.5DF	J106
	33.5	110.7	MDE 1480S15E02	J16
	33.9	111.1	MDW 1480GS2	J52
	37.0	110.0	MDF 1480S2D	J39
	54.0	129.0	SMDT 1480 MTL/MSL/MEL+SMDH 150-3D	J108
	54.0	129.0	SMDT 1480 MTL/MSL/MEL+SMDH 150-3DF	J106
	54.0	129.0	SMDT 1480 MTL/MSL/MEL+SMDH 150M	J104
	55.5	142.7	MDE 1480S15H03	J24
	55.5	142.7	MDM 1480S15H03	J32
	55.9	143.1	MDW 1480HGS3	J57
	71.5	155.7	MDE 1480S15E04	J16
	71.9	156.1	MDW 1480GS4	J52
	85.0	159.0	SMDT 1480 MTL/MSL/MEL+SMDH 150-5D	J108
	85.0	159.0	SMDT 1480 MTL/MSL/MEL+SMDH 150-5DF	J106
	85.0	159.0	SMDT 1480 MTL/MSL/MEL+SMDH 150L	J104
	100.5	187.7	MDE 1480S15H05	J24
	100.5	187.7	MDM 1480S15H05	J32
	100.9	188.1	MDW 1480HGS5	J57
	131.0	204.0	SMDT 1480 MTL/MSL/MEL+SMDH 150-8D	J108
	131.0	204.0	SMDT 1480 MTL/MSL/MEL+SMDH 150-8DF	J106
	131.0	204.0	SMDT 1480 MTL/MSL/MEL+SMDH 150D	J104
	145.5	232.7	MDE 1480S15H08	J24
	182.0	253.0	SMDT 1480 MTL/MSL/MEL+SMDH 150-12D	J108
14.9	31.0	100.0	SMDT 1490 MTL/MSL/MEL+SMDH 150-1.5D	J108
	31.0	100.0	SMDT 1490 MTL/MSL/MEL+SMDH 150-1.5DF	J106
	33.4	110.7	MDE 1490S15E02	J16
	33.8	111.1	MDW 1490GS2	J52
	37.2	110.0	MDF 1490S2D	J39
	54.0	129.0	SMDT 1490 MTL/MSL/MEL+SMDH 150-3D	J108
	54.0	129.0	SMDT 1490 MTL/MSL/MEL+SMDH 150-3DF	J106
	54.0	129.0	SMDT 1490 MTL/MSL/MEL+SMDH 150M	J104
	55.4	142.7	MDE 1490S15H03	J24
	55.4	142.7	MDM 1490S15H03	J32
	55.8	143.1	MDW 1490HGS3	J57
	55.8	143.1	MDW 1490NHGS3	J88
	71.4	155.7	MDE 1490S15E04	J16
	71.8	156.1	MDW 1490GS4	J52
	85.0	159.0	SMDT 1490 MTL/MSL/MEL+SMDH 150-5D	J108
	85.0	159.0	SMDT 1490 MTL/MSL/MEL+SMDH 150-5DF	J106
	85.0	159.0	SMDT 1490 MTL/MSL/MEL+SMDH 150L	J104
	100.4	187.7	MDE 1490S15H05	J24
	100.4	187.7	MDM 1490S15H05	J32
	100.8	188.1	MDW 1490HGS5	J57
	100.8	188.1	MDW 1490NHGS5	J88
	131.0	204.0	SMDT 1490 MTL/MSL/MEL+SMDH 150-8D	J108
	131.0	204.0	SMDT 1490 MTL/MSL/MEL+SMDH 150-8DF	J106
	131.0	204.0	SMDT 1490 MTL/MSL/MEL+SMDH 150D	J104
	145.4	232.7	MDE 1490S15H08	J24
	182.0	253.0	SMDT 1490 MTL/MSL/MEL+SMDH 150-12D	J108
14.96	55.7	143.1	MDW 1496NHGS3	J88
	100.7	188.1	MDW 1496NHGS5	J88
15.0	28.0	97.0	SMDT 1500 MFS+SMDH 150-1.5D	J116
	28.0	97.0	SMDT 1500 MFS+SMDH 150-1.5DF	J114
	31.0	100.0	SMDT 1500 MTL/MSL/MEL+SMDH 150-1.5D	J108
	31.0	100.0	SMDT 1500 MTL/MSL/MEL+SMDH 150-1.5DF	J106
	33.2	110.7	MDE 1500S15E02	J16

(Blue text: Flat head Indexable HSS)

Effective Length (LU) is a guideline for the usable length. Take into account the chip evacuation in relation to the flute length (LCF) when drilling.

Effective Length List by Diameter

● Diameter ø15.0 to ø15.2mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
15.0	33.6	111.1	MDW 1500GS2	J52
	45.0	110.0	MDF 1500S2D	J39
	45.0	200.0	MDF 1500L2D	J42
	51.0	127.0	SMDT 1500 MFS+SMDH 150-3D	J116
	51.0	127.0	SMDT 1500 MFS+SMDH 150-3DF	J114
	51.0	127.0	SMDT 1500 MFS+SMDH 150M	J112
	53.5	142.0	HMD 150S	J170
	54.0	129.0	SMDT 1500 MTL/MSL/MEL+SMDH 150-3D	J108
	54.0	129.0	SMDT 1500 MTL/MSL/MEL+SMDH 150-3DF	J106
	54.0	129.0	SMDT 1500 MTL/MSL/MEL+SMDH 150M	J104
	54.5	142.0	MDW 1500PHT	J82
	55.2	142.7	MDE 1500S15H03	J24
	55.2	142.7	MDM 1500S15H03	J33
	55.2	142.7	MDW 1500HX3	J67
	55.6	143.1	MDW 1500HGS3	J57
	55.6	143.1	MDW 1500NHGS3	J88
	56.7	127.7	KDS 150MAK	J163
	60.0	140.0	MDF 1500H3D	J45
	71.2	155.7	MDE 1500S15E04	J16
	71.2	155.7	MDS 150MD	J73
	71.6	156.1	MDW 1500GS4	J52
	82.0	157.0	SMDT 1500 MFS+SMDH 150-5D	J116
	82.0	157.0	SMDT 1500 MFS+SMDH 150-5DF	J114
	82.0	157.0	SMDT 1500 MFS+SMDH 150L	J112
	85.0	159.0	SMDT 1500 MTL/MSL/MEL+SMDH 150-5D	J108
	85.0	159.0	SMDT 1500 MTL/MSL/MEL+SMDH 150-5DF	J106
	85.0	159.0	SMDT 1500 MTL/MSL/MEL+SMDH 150L	J104
	87.7	157.7	KDS 150LAK	J163
	90.0	185.0	MDF 1500H5D	J45
	91.5	180.0	HMD 150M	J170
	100.2	187.7	MDE 1500S15H05	J24
	100.2	187.7	MDM 1500S15H05	J33
	100.2	187.7	MDW 1500HX5	J67
	100.6	188.1	MDW 1500HGS5	J57
	100.6	188.1	MDW 1500NHGS5	J88
	124.7	197.7	KDS 150DAK	J163
	129.0	202.0	SMDT 1500 MFS+SMDH 150-8D	J116
	129.0	202.0	SMDT 1500 MFS+SMDH 150-8DF	J114
	129.0	202.0	SMDT 1500 MFS+SMDH 150D	J112
	131.0	204.0	SMDT 1500 MTL/MSL/MEL+SMDH 150-8D	J108
	131.0	204.0	SMDT 1500 MTL/MSL/MEL+SMDH 150-8DF	J106
	131.0	204.0	SMDT 1500 MTL/MSL/MEL+SMDH 150D	J104
	145.2	232.7	MDE 1500S15H08	J24
	145.2	232.7	MDW 1500HX8	J67
	145.6	233.1	MDW 1500HGS8	J57
	180.0	250.0	SMDT 1500 MFS+SMDH 150-12D	J116
	182.0	253.0	SMDT 1500 MTL/MSL/MEL+SMDH 150-12D	J108
	205.2	292.7	MDW 1500XHGS10	J82
	235.2	322.7	MDW 1500XHGS12	J82
	280.2	367.7	MDW 1500XHGS15	J82
15.1	31.0	100.0	SMDT 1510 MTL/MSL/MEL+SMDH 150-1.5D	J108
	31.0	100.0	SMDT 1510 MTL/MSL/MEL+SMDH 150-1.5DF	J106
	33.1	114.7	MDE 1510S16E02	J16
	33.5	115.1	MDW 1510GS2	J52
	37.7	115.0	MDF 1510S2D	J39
	54.0	129.0	SMDT 1510 MTL/MSL/MEL+SMDH 150-3D	J108
	54.0	129.0	SMDT 1510 MTL/MSL/MEL+SMDH 150-3DF	J106
	54.0	129.0	SMDT 1510 MTL/MSL/MEL+SMDH 150M	J104
	57.6	148.7	MDE 1510S16H03	J24
	57.6	148.7	MDM 1510S16H03	J33
	58.0	149.1	MDW 1510HGS3	J57
	74.1	162.7	MDE 1510S16E04	J16
	74.5	163.1	MDW 1510GS4	J52
	85.0	159.0	SMDT 1510 MTL/MSL/MEL+SMDH 150-5D	J108
	85.0	159.0	SMDT 1510 MTL/MSL/MEL+SMDH 150-5DF	J106
	85.0	159.0	SMDT 1510 MTL/MSL/MEL+SMDH 150L	J104
	104.1	196.7	MDE 1510S16H05	J24
	104.1	196.7	MDM 1510S16H05	J33
	104.5	197.1	MDW 1510HGS5	J57
	131.0	204.0	SMDT 1510 MTL/MSL/MEL+SMDH 150-8D	J108
	131.0	204.0	SMDT 1510 MTL/MSL/MEL+SMDH 150-8DF	J106
	131.0	204.0	SMDT 1510 MTL/MSL/MEL+SMDH 150D	J104
	150.6	244.7	MDE 1510S16H08	J24
	182.0	253.0	SMDT 1510 MTL/MSL/MEL+SMDH 150-12D	J108
15.2	31.0	100.0	SMDT 1520 MTL/MSL/MEL+SMDH 150-1.5D	J108
	31.0	100.0	SMDT 1520 MTL/MSL/MEL+SMDH 150-1.5DF	J106
	33.0	114.8	MDE 1520S16E02	J16
	33.3	115.1	MDW 1520GS2	J52
	38.0	115.0	MDF 1520S2D	J39
	54.0	129.0	SMDT 1520 MTL/MSL/MEL+SMDH 150-3D	J108

(Blue text: Flat head ■Indexable ■HSS)

● Diameter ø15.2 to ø15.5mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
15.2	54.0	129.0	SMDT 1520 MTL/MSL/MEL+SMDH 150-3DF	J106
	54.0	129.0	SMDT 1520 MTL/MSL/MEL+SMDH 150M	J104
	57.5	148.8	MDE 1520S16H03	J24
	57.5	148.8	MDM 1520S16H03	J33
	57.8	149.1	MDW 1520HGS3	J57
	74.0	162.8	MDE 1520S16E04	J16
	74.3	163.1	MDW 1520GS4	J52
	85.0	159.0	SMDT 1520 MTL/MSL/MEL+SMDH 150-5D	J108
	85.0	159.0	SMDT 1520 MTL/MSL/MEL+SMDH 150-5DF	J106
	85.0	159.0	SMDT 1520 MTL/MSL/MEL+SMDH 150L	J104
	104.0	196.8	MDE 1520S16H05	J24
	104.0	196.8	MDM 1520S16H05	J33
	104.3	197.1	MDW 1520HGS5	J57
	131.0	204.0	SMDT 1520 MTL/MSL/MEL+SMDH 150-8D	J108
	131.0	204.0	SMDT 1520 MTL/MSL/MEL+SMDH 150-8DF	J106
	131.0	204.0	SMDT 1520 MTL/MSL/MEL+SMDH 150D	J104
	150.5	244.8	MDE 1520S16H08	J24
	182.0	253.0	SMDT 1520 MTL/MSL/MEL+SMDH 150-12D	J108
15.3	31.0	100.0	SMDT 1530 MTL/MSL/MEL+SMDH 150-1.5D	J108
	31.0	100.0	SMDT 1530 MTL/MSL/MEL+SMDH 150-1.5DF	J106
	32.9	114.8	MDE 1530S16E02	J16
	33.3	115.2	MDW 1530GS2	J52
	38.2	115.0	MDF 1530S2D	J39
	54.0	129.0	SMDT 1530 MTL/MSL/MEL+SMDH 150-3D	J108
	54.0	129.0	SMDT 1530 MTL/MSL/MEL+SMDH 150-3DF	J106
	54.0	129.0	SMDT 1530 MTL/MSL/MEL+SMDH 150M	J104
	57.4	148.8	MDE 1530S16H03	J24
	57.4	148.8	MDM 1530S16H03	J33
	57.8	149.2	MDW 1530HGS3	J57
	73.9	162.8	MDE 1530S16E04	J16
	74.3	163.2	MDW 1530GS4	J52
	85.0	159.0	SMDT 1530 MTL/MSL/MEL+SMDH 150-5D	J108
	85.0	159.0	SMDT 1530 MTL/MSL/MEL+SMDH 150-5DF	J106
	85.0	159.0	SMDT 1530 MTL/MSL/MEL+SMDH 150L	J104
	103.9	196.8	MDE 1530S16H05	J24
	103.9	196.8	MDM 1530S16H05	J33
	104.3	197.2	MDW 1530HGS5	J57
	131.0	204.0	SMDT 1530 MTL/MSL/MEL+SMDH 150-8D	J108
	131.0	204.0	SMDT 1530 MTL/MSL/MEL+SMDH 150-8DF	J106
	131.0	204.0	SMDT 1530 MTL/MSL/MEL+SMDH 150D	J104
	150.4	244.8	MDE 1530S16H08	J24
	182.0	253.0	SMDT 1530 MTL/MSL/MEL+SMDH 150-12D	J108
15.4	31.0	100.0	SMDT 1540 MTL/MSL/MEL+SMDH 150-1.5D	J108
	31.0	100.0	SMDT 1540 MTL/MSL/MEL+SMDH 150-1.5DF	J106
	32.7	114.8	MDE 1540S16E02	J16
	33.1	115.2	MDW 1540GS2	J52
	38.5	115.0	MDF 1540S2D	J39
	54.0	129.0	SMDT 1540 MTL/MSL/MEL+SMDH 150-3D	J108
	54.0	129.0	SMDT 1540 MTL/MSL/MEL+SMDH 150-3DF	J106
	54.0	129.0	SMDT 1540 MTL/MSL/MEL+SMDH 150M	J104
	57.2	148.8	MDE 1540S16H03	J24
	57.2	148.8	MDM 1540S16H03	J33
	57.6	149.2	MDW 1540HGS3	J57
	73.7	162.8	MDE 1540S16E04	J16
	74.1	163.2	MDW 1540GS4	J52
	85.0	159.0	SMDT 1540 MTL/MSL/MEL+SMDH 150-5D	J108
	85.0	159.0	SMDT 1540 MTL/MSL/MEL+SMDH 150-5DF	J106
	85.0	159.0	SMDT 1540 MTL/MSL/MEL+SMDH 150L	J104
	103.7	196.8	MDE 1540S16H05	J24
	103.7	196.8	MDM 1540S16H05	J33
	104.1	197.2	MDW 1540HGS5	J57
	131.0	204.0	SMDT 1540 MTL/MSL/MEL+SMDH 150-8D	J108
	131.0	204.0	SMDT 1540 MTL/MSL/MEL+SMDH 150-8DF	J106
	131.0	204.0	SMDT 1540 MTL/MSL/MEL+SMDH 150D	J104
	150.2	244.8	MDE 1540S16H08	J24
	182.0	253.0	SMDT 1540 MTL/MSL/MEL+SMDH 150-12D	J108
15.5	28.0	97.0	SMDT 1550 MFS+SMDH 150-1.5D	J116
	28.0	97.0	SMDT 1550 MFS+SMDH 150-1.5DF	J114
	31.0	100.0	SMDT 1550 MTL/MSL/MEL+SMDH 150-1.5D	J108
	31.0	100.0	SMDT 1550 MTL/MSL/MEL+SMDH 150-1.5DF	J106
	32.6	114.8	MDE 1550S16E02	J16
	33.0	115.2	MDW 1550GS2	J52
	46.5	115.0	MDF 1550S2D	J39
	46.5	210.0	MDF 1550L2D	J42
	51.0	127.0	SMDT 1550 MFS+SMDH 150-3D	J116
	51.0	127.0	SMDT 1550 MFS+SMDH 150-3DF	J114
	51.0	127.0	SMDT 1550 MFS+SMDH 150M	J112
	54.0	129.0	SMDT 1550 MTL/MSL/MEL+SMDH 150-3D	J108
	54.0	129.0	SMDT 1550 MTL/MSL/MEL+SMDH 150-3DF	J106
	54.0	129.0	SMDT 1550 MTL/MSL/MEL+SMDH 150M	J104

(Blue text: Flat head ■Indexable ■HSS)

● Diameter ø15.5 to ø15.7mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
15.5	56.4	148.1	MDW 1550PHT	J82
	56.8	127.8	KDS 155MAK	J163
	56.8	146.0	HMD 155S	J170
	57.1	148.8	MDE 1550S16H03	J24
	57.1	148.8	MDM 1550S16H03	J33
	57.1	148.8	MDW 1550HX3	J67
	57.5	149.2	MDW 1550HGS3	J57
	57.5	149.2	MDW 1550NHGS3	J88
	62.0	146.0	MDF 1550H3D	J45
	73.6	159.8	MDS 155MD	J73
	73.6	162.8	MDE 1550S16E04	J16
	74.0	163.2	MDW 1550GS4	J52
	82.0	157.0	SMDT 1550 MFS+SMDH 150-5D	J116
	82.0	157.0	SMDT 1550 MFS+SMDH 150-5DF	J114
	82.0	157.0	SMDT 1550 MFS+SMDH 150L	J112
	85.0	159.0	SMDT 1550 MTL/MSL/MEL+SMDH 150-5D	J108
	85.0	159.0	SMDT 1550 MTL/MSL/MEL+SMDH 150-5DF	J106
	85.0	159.0	SMDT 1550 MTL/MSL/MEL+SMDH 150L	J104
	87.8	157.8	KDS 155LAK	J163
	93.0	194.0	MDF 1550H5D	J45
	96.8	185.0	HMD 155M	J170
	103.6	196.8	MDE 1550S16H05	J24
	103.6	196.8	MDM 1550S16H05	J33
	103.6	196.8	MDW 1550HX5	J67
	104.0	197.2	MDW 1550HGS5	J57
	104.0	197.2	MDW 1550NHGS5	J88
	124.8	197.8	KDS 155DAK	J163
	129.0	202.0	SMDT 1550 MFS+SMDH 150-8D	J116
	129.0	202.0	SMDT 1550 MFS+SMDH 150-8DF	J114
	129.0	202.0	SMDT 1550 MFS+SMDH 150D	J112
	131.0	204.0	SMDT 1550 MTL/MSL/MEL+SMDH 150-8D	J108
	131.0	204.0	SMDT 1550 MTL/MSL/MEL+SMDH 150-8DF	J106
	131.0	204.0	SMDT 1550 MTL/MSL/MEL+SMDH 150D	J104
	150.1	244.8	MDE 1550S16H08	J24
	150.5	245.2	MDW 1550HGS8	J57
	180.0	250.0	SMDT 1550 MFS+SMDH 150-12D	J116
	182.0	253.0	SMDT 1550 MTL/MSL/MEL+SMDH 150-12D	J108
	212.6	303.8	MDW 1550XHGS10	J82
	241.6	332.8	MDW 1550XHGS12	J82
	287.6	378.8	MDW 1550XHGS15	J82
15.6	32.0	103.0	SMDT 1560 MTL/MSL/MEL+SMDH 160-1.5D	J108
	32.0	103.0	SMDT 1560 MTL/MSL/MEL+SMDH 160-1.5DF	J106
	34.4	114.8	MDE 1560S16E02	J16
	34.8	115.2	MDW 1560GS2	J52
	39.0	115.0	MDF 1560S2D	J39
	57.0	134.0	SMDT 1560 MTL/MSL/MEL+SMDH 160-3D	J108
	57.0	134.0	SMDT 1560 MTL/MSL/MEL+SMDH 160-3DF	J106
	57.0	134.0	SMDT 1560 MTL/MSL/MEL+SMDH 160M	J104
	59.4	148.8	MDE 1560S16H03	J24
	59.4	148.8	MDM 1560S16H03	J33
	59.8	149.2	MDW 1560HGS3	J57
	75.4	162.8	MDE 1560S16E04	J16
	75.4	162.8	MDS 156MD	J73
	75.8	163.2	MDW 1560GS4	J52
	90.0	169.0	SMDT 1560 MTL/MSL/MEL+SMDH 160-5D	J108
	90.0	169.0	SMDT 1560 MTL/MSL/MEL+SMDH 160-5DF	J106
	90.0	169.0	SMDT 1560 MTL/MSL/MEL+SMDH 160L	J104
	107.4	196.8	MDE 1560S16H05	J24
	107.4	196.8	MDM 1560S16H05	J33
	107.8	197.2	MDW 1560HGS5	J57
	140.0	214.0	SMDT 1560 MTL/MSL/MEL+SMDH 160-8D	J108
	140.0	214.0	SMDT 1560 MTL/MSL/MEL+SMDH 160-8DF	J106
	140.0	214.0	SMDT 1560 MTL/MSL/MEL+SMDH 160D	J104
	155.4	244.8	MDE 1560S16H08	J24
	195.0	266.0	SMDT 1560 MTL/MSL/MEL+SMDH 160-12D	J108
15.7	32.0	103.0	SMDT 1570 MTL/MSL/MEL+SMDH 160-1.5D	J108
	32.0	103.0	SMDT 1570 MTL/MSL/MEL+SMDH 160-1.5DF	J106
	34.4	114.9	MDE 1570S16E02	J16
	34.7	115.2	MDW 1570GS2	J52
	39.2	115.0	MDF 1570S2D	J39
	57.0	134.0	SMDT 1570 MTL/MSL/MEL+SMDH 160-3D	J108
	57.0	134.0	SMDT 1570 MTL/MSL/MEL+SMDH 160-3DF	J106
	57.0	134.0	SMDT 1570 MTL/MSL/MEL+SMDH 160M	J104
	59.4	148.9	MDE 1570S16H03	J24
	59.4	148.9	MDM 1570S16H03	J33
	59.7	149.2	MDW 1570HGS3	J57
	75.4	162.9	MDE 1570S16E04	J16
	75.7	163.2	MDW 1570GS4	J52
	90.0	169.0	SMDT 1570 MTL/MSL/MEL+SMDH 160-5D	J108
	90.0	169.0	SMDT 1570 MTL/MSL/MEL+SMDH 160-5DF	J106

(Blue text: Flat head ■Indexable ■HSS)

Effective Length (LU) is a guideline for the usable length. Take into account the chip evacuation in relation to the flute length (LCF) when drilling.

Effective Length List by Diameter

● Diameter ø15.7 to ø16.0mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
15.7	90.0	169.0	SMDT 1570 MTL/MSL/MEL+SMDH 160L	J104
	107.4	196.9	MDE 1570S16H05	J24
	107.4	196.9	MDM 1570S16H05	J33
	107.7	197.2	MDW 1570HGS5	J57
	140.0	214.0	SMDT 1570 MTL/MSL/MEL+SMDH 160-8D	J108
	140.0	214.0	SMDT 1570 MTL/MSL/MEL+SMDH 160-8DF	J106
	140.0	214.0	SMDT 1570 MTL/MSL/MEL+SMDH 160D	J104
	155.4	244.9	MDE 1570S16H08	J24
	195.0	266.0	SMDT 1570 MTL/MSL/MEL+SMDH 160-12D	J108
15.8	32.0	103.0	SMDT 1580 MTL/MSL/MEL+SMDH 160-1.5D	J108
	32.0	103.0	SMDT 1580 MTL/MSL/MEL+SMDH 160-1.5DF	J106
	34.2	114.9	MDE 1580S16E02	J16
	34.6	115.3	MDW 1580GS2	J52
	39.5	115.0	MDF 1580S2D	J39
	57.0	134.0	SMDT 1580 MTL/MSL/MEL+SMDH 160-3D	J108
	57.0	134.0	SMDT 1580 MTL/MSL/MEL+SMDH 160-3DF	J106
	57.0	134.0	SMDT 1580 MTL/MSL/MEL+SMDH 160M	J104
	59.2	148.9	MDE 1580S16H03	J24
	59.2	148.9	MDM 1580S16H03	J33
	59.6	149.3	MDW 1580HGS3	J57
	75.2	162.9	MDE 1580S16E04	J16
	75.6	163.3	MDW 1580GS4	J52
	90.0	169.0	SMDT 1580 MTL/MSL/MEL+SMDH 160-5D	J108
	90.0	169.0	SMDT 1580 MTL/MSL/MEL+SMDH 160-5DF	J106
	90.0	169.0	SMDT 1580 MTL/MSL/MEL+SMDH 160L	J104
	107.2	196.9	MDE 1580S16H05	J24
	107.2	196.9	MDM 1580S16H05	J33
	107.6	197.3	MDW 1580HGS5	J57
	140.0	214.0	SMDT 1580 MTL/MSL/MEL+SMDH 160-8D	J108
	140.0	214.0	SMDT 1580 MTL/MSL/MEL+SMDH 160-8DF	J106
	140.0	214.0	SMDT 1580 MTL/MSL/MEL+SMDH 160D	J104
	155.2	244.9	MDE 1580S16H08	J24
	195.0	266.0	SMDT 1580 MTL/MSL/MEL+SMDH 160-12D	J108
15.9	32.0	103.0	SMDT 1590 MTL/MSL/MEL+SMDH 160-1.5D	J108
	32.0	103.0	SMDT 1590 MTL/MSL/MEL+SMDH 160-1.5DF	J106
	34.1	114.9	MDE 1590S16E02	J16
	34.5	115.3	MDW 1590GS2	J52
	39.7	115.0	MDF 1590S2D	J39
	57.0	134.0	SMDT 1590 MTL/MSL/MEL+SMDH 160-3D	J108
	57.0	134.0	SMDT 1590 MTL/MSL/MEL+SMDH 160-3DF	J106
	57.0	134.0	SMDT 1590 MTL/MSL/MEL+SMDH 160M	J104
	59.1	148.9	MDE 1590S16H03	J24
	59.1	148.9	MDM 1590S16H03	J33
	59.5	149.3	MDW 1590HGS3	J58
	75.1	162.9	MDE 1590S16E04	J16
	75.5	163.3	MDW 1590GS4	J52
	90.0	169.0	SMDT 1590 MTL/MSL/MEL+SMDH 160-5D	J108
	90.0	169.0	SMDT 1590 MTL/MSL/MEL+SMDH 160-5DF	J106
	90.0	169.0	SMDT 1590 MTL/MSL/MEL+SMDH 160L	J104
	107.1	196.9	MDE 1590S16H05	J24
	107.1	196.9	MDM 1590S16H05	J33
	107.5	197.3	MDW 1590HGS5	J58
	140.0	214.0	SMDT 1590 MTL/MSL/MEL+SMDH 160-8D	J108
	140.0	214.0	SMDT 1590 MTL/MSL/MEL+SMDH 160-8DF	J106
	140.0	214.0	SMDT 1590 MTL/MSL/MEL+SMDH 160D	J104
	155.1	244.9	MDE 1590S16H08	J24
	195.0	266.0	SMDT 1590 MTL/MSL/MEL+SMDH 160-12D	J108
16.0	29.0	100.0	SMDT 1600 MFS+SMDH 160-1.5D	J116
	29.0	100.0	SMDT 1600 MFS+SMDH 160-1.5DF	J114
	32.0	94.0	PDL 160D2S20	J136
	32.0	103.0	SMDT 1600 MTL/MSL/MEL+SMDH 160-1.5D	J108
	32.0	103.0	SMDT 1600 MTL/MSL/MEL+SMDH 160-1.5DF	J106
	33.9	114.9	MDE 1600S16E02	J16
	34.3	115.3	MDW 1600GS2	J52
	48.0	110.0	PDL 160D3S20	J136
	48.0	115.0	MDF 1600S2D	J39
	48.0	210.0	MDF 1600L2D	J42
	48.0	210.0	MDF 1600L2D-S14	J42
	54.0	132.0	SMDT 1600 MFS+SMDH 160-3D	J116
	54.0	132.0	SMDT 1600 MFS+SMDH 160-3DF	J114
	54.0	132.0	SMDT 1600 MFS+SMDH 160M	J112
	56.0	146.0	HMD 160S	J170
	57.0	134.0	SMDT 1600 MTL/MSL/MEL+SMDH 160-3D	J108
	57.0	134.0	SMDT 1600 MTL/MSL/MEL+SMDH 160-3DF	J106
	57.0	134.0	SMDT 1600 MTL/MSL/MEL+SMDH 160M	J104
	58.1	148.1	MDW 1600PHT	J82
	58.9	148.9	MDE 1600S16H03	J24
	58.9	148.9	MDM 1600S16H03	J33
	58.9	148.9	MDW 1600HX3	J67
	59.3	149.3	MDW 1600HGS3	J58

(Blue text: Flat head ■Indexable ■HSS)

● Diameter ø16.0 to ø16.4mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
16.0	59.3	149.3	MDW 1600HY3	J71
	59.3	149.3	MDW 1600NHGS3	J88
	60.9	132.9	KDS 160MAK	J163
	64.0	146.0	MDF 1600H3D	J45
	74.9	162.9	MDE 1600S16E04	J16
	74.9	162.9	MDS 160MD	J73
	75.3	163.3	MDW 1600GS4	J52
	87.0	167.0	SMDT 1600 MFS+SMDH 160-5D	J116
	87.0	167.0	SMDT 1600 MFS+SMDH 160-5DF	J114
	87.0	167.0	SMDT 1600 MFS+SMDH 160L	J112
	90.0	169.0	SMDT 1600 MTL/MSL/MEL+SMDH 160-5D	J108
	90.0	169.0	SMDT 1600 MTL/MSL/MEL+SMDH 160-5DF	J106
	90.0	169.0	SMDT 1600 MTL/MSL/MEL+SMDH 160L	J104
	93.9	167.9	KDS 160LAK	J163
	96.0	185.0	HMD 160M	J170
	96.0	194.0	MDF 1600H5D	J45
	106.9	196.9	MDE 1600S16H05	J24
	106.9	196.9	MDM 1600S16H05	J33
	106.9	196.9	MDW 1600HX5	J67
	107.3	197.3	MDW 1600HGS5	J58
	107.3	197.3	MDW 1600HY5	J71
	107.3	197.3	MDW 1600NHGS5	J88
	131.9	207.9	KDS 160DAK	J163
	137.0	212.0	SMDT 1600 MFS+SMDH 160-8D	J116
	137.0	212.0	SMDT 1600 MFS+SMDH 160-8DF	J114
	137.0	212.0	SMDT 1600 MFS+SMDH 160D	J112
	140.0	214.0	SMDT 1600 MTL/MSL/MEL+SMDH 160-8D	J108
	140.0	214.0	SMDT 1600 MTL/MSL/MEL+SMDH 160-8DF	J106
	140.0	214.0	SMDT 1600 MTL/MSL/MEL+SMDH 160D	J104
	154.9	244.9	MDE 1600S16H08	J24
	155.3	245.3	MDW 1600HGS8	J58
	192.0	263.0	SMDT 1600 MFS+SMDH 160-12D	J116
	195.0	266.0	SMDT 1600 MTL/MSL/MEL+SMDH 160-12D	J108
	218.9	308.9	MDW 1600XHGS10	J82
	248.9	340.9	MDW 1600XHGS12	J82
	298.9	388.9	MDW 1600XHGS15	J82
16.1	32.0	103.0	SMDT 1610 MTL/MSL/MEL+SMDH 160-1.5D	J108
	32.0	103.0	SMDT 1610 MTL/MSL/MEL+SMDH 160-1.5DF	J106
	57.0	134.0	SMDT 1610 MTL/MSL/MEL+SMDH 160-3D	J108
	57.0	134.0	SMDT 1610 MTL/MSL/MEL+SMDH 160-3DF	J106
	57.0	134.0	SMDT 1610 MTL/MSL/MEL+SMDH 160M	J104
	80.8	169.9	MDS 161MD	J73
	90.0	169.0	SMDT 1610 MTL/MSL/MEL+SMDH 160-5D	J108
	90.0	169.0	SMDT 1610 MTL/MSL/MEL+SMDH 160-5DF	J106
	90.0	169.0	SMDT 1610 MTL/MSL/MEL+SMDH 160L	J104
	140.0	214.0	SMDT 1610 MTL/MSL/MEL+SMDH 160-8D	J108
	140.0	214.0	SMDT 1610 MTL/MSL/MEL+SMDH 160-8DF	J106
	140.0	214.0	SMDT 1610 MTL/MSL/MEL+SMDH 160D	J104
	195.0	266.0	SMDT 1610 MTL/MSL/MEL+SMDH 160-12D	J108
16.2	32.0	103.0	SMDT 1620 MTL/MSL/MEL+SMDH 160-1.5D	J108
	32.0	103.0	SMDT 1620 MTL/MSL/MEL+SMDH 160-1.5DF	J106
	57.0	134.0	SMDT 1620 MTL/MSL/MEL+SMDH 160-3D	J108
	57.0	134.0	SMDT 1620 MTL/MSL/MEL+SMDH 160-3DF	J106
	57.0	134.0	SMDT 1620 MTL/MSL/MEL+SMDH 160M	J104
	60.9	132.9	KDS 162MAK	J163
	90.0	169.0	SMDT 1620 MTL/MSL/MEL+SMDH 160-5D	J108
	90.0	169.0	SMDT 1620 MTL/MSL/MEL+SMDH 160-5DF	J106
	90.0	169.0	SMDT 1620 MTL/MSL/MEL+SMDH 160L	J104
	93.9	167.9	KDS 162LAK	J163
	140.0	214.0	SMDT 1620 MTL/MSL/MEL+SMDH 160-8D	J108
	140.0	214.0	SMDT 1620 MTL/MSL/MEL+SMDH 160-8DF	J106
	140.0	214.0	SMDT 1620 MTL/MSL/MEL+SMDH 160D	J104
	195.0	266.0	SMDT 1620 MTL/MSL/MEL+SMDH 160-12D	J108
16.3	32.0	103.0	SMDT 1630 MTL/MSL/MEL+SMDH 160-1.5D	J108
	32.0	103.0	SMDT 1630 MTL/MSL/MEL+SMDH 160-1.5DF	J106
	57.0	134.0	SMDT 1630 MTL/MSL/MEL+SMDH 160-3D	J108
	57.0	134.0	SMDT 1630 MTL/MSL/MEL+SMDH 160-3DF	J106
	57.0	134.0	SMDT 1630 MTL/MSL/MEL+SMDH 160M	J104
	61.0	133.0	KDS 163MAK	J163
	90.0	169.0	SMDT 1630 MTL/MSL/MEL+SMDH 160-5D	J108
	90.0	169.0	SMDT 1630 MTL/MSL/MEL+SMDH 160-5DF	J106
	90.0	169.0	SMDT 1630 MTL/MSL/MEL+SMDH 160L	J104
	140.0	214.0	SMDT 1630 MTL/MSL/MEL+SMDH 160-8D	J108
	140.0	214.0	SMDT 1630 MTL/MSL/MEL+SMDH 160-8DF	J106
	140.0	214.0	SMDT 1630 MTL/MSL/MEL+SMDH 160D	J104
	195.0	266.0	SMDT 1630 MTL/MSL/MEL+SMDH 160-12D	J108
16.4	32.0	103.0	SMDT 1640 MTL/MSL/MEL+SMDH 160-1.5D	J108
	32.0	103.0	SMDT 1640 MTL/MSL/MEL+SMDH 160-1.5DF	J106
	57.0	134.0	SMDT 1640 MTL/MSL/MEL+SMDH 160-3D	J108
	57.0	134.0	SMDT 1640 MTL/MSL/MEL+SMDH 160-3DF	J106

(Blue text: Flat head ■Indexable ■HSS)

● Diameter ø16.4 to ø16.8mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
16.4	57.0	134.0	SMDT 1640 MTL/MSL/MEL+SMDH 160M	J104
	90.0	169.0	SMDT 1640 MTL/MSL/MEL+SMDH 160-5D	J108
	90.0	169.0	SMDT 1640 MTL/MSL/MEL+SMDH 160-5DF	J106
	90.0	169.0	SMDT 1640 MTL/MSL/MEL+SMDH 160L	J104
	140.0	214.0	SMDT 1640 MTL/MSL/MEL+SMDH 160-8D	J108
	140.0	214.0	SMDT 1640 MTL/MSL/MEL+SMDH 160-8DF	J106
	140.0	214.0	SMDT 1640 MTL/MSL/MEL+SMDH 160D	J104
	195.0	266.0	SMDT 1640 MTL/MSL/MEL+SMDH 160-12D	J108
16.5	29.0	100.0	SMDT 1650 MFS+SMDH 160-1.5D	J116
	29.0	100.0	SMDT 1650 MFS+SMDH 160-1.5DF	J114
	32.0	103.0	SMDT 1650 MTL/MSL/MEL+SMDH 160-1.5D	J108
	32.0	103.0	SMDT 1650 MTL/MSL/MEL+SMDH 160-1.5DF	J106
	34.3	119.0	MDE 1650S17E02	J16
	34.7	119.4	MDW 1650GS2	J52
	49.5	125.0	MDF 1650S2D	J39
	49.5	220.0	MDF 1650L2D	J42
	54.0	132.0	SMDT 1650 MFS+SMDH 160-3D	J116
	54.0	132.0	SMDT 1650 MFS+SMDH 160-3DF	J114
	54.0	132.0	SMDT 1650 MFS+SMDH 160M	J112
	57.0	134.0	SMDT 1650 MTL/MSL/MEL+SMDH 160-3D	J108
	57.0	134.0	SMDT 1650 MTL/MSL/MEL+SMDH 160-3DF	J106
	57.0	134.0	SMDT 1650 MTL/MSL/MEL+SMDH 160M	J104
	59.3	150.0	HMD 165S	J170
	60.8	155.0	MDE 1650S17H03	J24
	60.8	155.0	MDW 1650HX3	J67
	61.0	133.0	KDS 165MAK	J163
	61.2	155.4	MDW 1650HGS3	J58
	76.3	170.0	MDE 1650S17E04	J16
	76.7	170.4	MDW 1650GS4	J52
	87.0	167.0	SMDT 1650 MFS+SMDH 160-5D	J116
	87.0	167.0	SMDT 1650 MFS+SMDH 160-5DF	J114
	87.0	167.0	SMDT 1650 MFS+SMDH 160L	J112
	90.0	169.0	SMDT 1650 MTL/MSL/MEL+SMDH 160-5D	J108
	90.0	169.0	SMDT 1650 MTL/MSL/MEL+SMDH 160-5DF	J106
	90.0	169.0	SMDT 1650 MTL/MSL/MEL+SMDH 160L	J104
	94.0	168.0	KDS 165LAK	J163
	100.3	189.0	HMD 165M	J170
	110.3	206.0	MDE 1650S17H05	J24
	110.3	206.0	MDW 1650HX5	J67
	110.7	206.4	MDW 1650HGS5	J58
	132.0	208.0	KDS 165DAK	J163
	137.0	212.0	SMDT 1650 MFS+SMDH 160-8D	J116
	137.0	212.0	SMDT 1650 MFS+SMDH 160-8DF	J114
	137.0	212.0	SMDT 1650 MFS+SMDH 160D	J112
	140.0	214.0	SMDT 1650 MTL/MSL/MEL+SMDH 160-8D	J108
	140.0	214.0	SMDT 1650 MTL/MSL/MEL+SMDH 160-8DF	J106
	140.0	214.0	SMDT 1650 MTL/MSL/MEL+SMDH 160D	J104
	192.0	263.0	SMDT 1650 MFS+SMDH 160-12D	J116
	195.0	266.0	SMDT 1650 MTL/MSL/MEL+SMDH 160-12D	J108
16.6	34.0	104.0	SMDT 1660 MTL/MSL/MEL+SMDH 170-1.5D	J108
	34.0	104.0	SMDT 1660 MTL/MSL/MEL+SMDH 170-1.5DF	J106
	60.0	140.0	SMDT 1660 MTL/MSL/MEL+SMDH 170-3D	J108
	60.0	140.0	SMDT 1660 MTL/MSL/MEL+SMDH 170-3DF	J106
	60.0	140.0	SMDT 1660 MTL/MSL/MEL+SMDH 170M	J104
	95.0	175.0	SMDT 1660 MTL/MSL/MEL+SMDH 170-5D	J108
	95.0	175.0	SMDT 1660 MTL/MSL/MEL+SMDH 170-5DF	J106
	95.0	175.0	SMDT 1660 MTL/MSL/MEL+SMDH 170L	J104
	148.0	225.0	SMDT 1660 MTL/MSL/MEL+SMDH 170-8D	J108
	148.0	225.0	SMDT 1660 MTL/MSL/MEL+SMDH 170-8DF	J106
	148.0	225.0	SMDT 1660 MTL/MSL/MEL+SMDH 170D	J104
	207.0	278.0	SMDT 1660 MTL/MSL/MEL+SMDH 170-12D	J108
16.7	34.0	104.0	SMDT 1670 MTL/MSL/MEL+SMDH 170-1.5D	J108
	34.0	104.0	SMDT 1670 MTL/MSL/MEL+SMDH 170-1.5DF	J106
	60.0	140.0	SMDT 1670 MTL/MSL/MEL+SMDH 170-3D	J108
	60.0	140.0	SMDT 1670 MTL/MSL/MEL+SMDH 170-3DF	J106
	60.0	140.0	SMDT 1670 MTL/MSL/MEL+SMDH 170M	J104
	64.0	138.0	KDS 167MAK	J163
	95.0	175.0	SMDT 1670 MTL/MSL/MEL+SMDH 170-5D	J108
	95.0	175.0	SMDT 1670 MTL/MSL/MEL+SMDH 170-5DF	J106
	95.0	175.0	SMDT 1670 MTL/MSL/MEL+SMDH 170L	J104
	148.0	225.0	SMDT 1670 MTL/MSL/MEL+SMDH 170-8D	J108
	148.0	225.0	SMDT 1670 MTL/MSL/MEL+SMDH 170-8DF	J106
	148.0	225.0	SMDT 1670 MTL/MSL/MEL+SMDH 170D	J104
	207.0	278.0	SMDT 1670 MTL/MSL/MEL+SMDH 170-12D	J108
16.8	34.0	104.0	SMDT 1680 MTL/MSL/MEL+SMDH 170-1.5D	J108
	34.0	104.0	SMDT 1680 MTL/MSL/MEL+SMDH 170-1.5DF	J106
	60.0	140.0	SMDT 1680 MTL/MSL/MEL+SMDH 170-3D	J108
	60.0	140.0	SMDT 1680 MTL/MSL/MEL+SMDH 170-3DF	J106
	60.0	140.0	SMDT 1680 MTL/MSL/MEL+SMDH 170M	J104
	75.9	170.1	MDE 1680S17E04	J16

(Blue text: Flat head ■Indexable ■HSS)

Effective Length (LU) is a guideline for the usable length. Take into account the chip evacuation in relation to the flute length (LCF) when drilling.

Effective Length List by Diameter

● Diameter ø16.8 to ø17.2mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
16.8	95.0	175.0	SMDT 1680 MTL/MSL/MEL+SMDH 170-5D	J108
	95.0	175.0	SMDT 1680 MTL/MSL/MEL+SMDH 170-5DF	J106
	95.0	175.0	SMDT 1680 MTL/MSL/MEL+SMDH 170L	J104
	148.0	225.0	SMDT 1680 MTL/MSL/MEL+SMDH 170-8D	J108
	148.0	225.0	SMDT 1680 MTL/MSL/MEL+SMDH 170-8DF	J106
	148.0	225.0	SMDT 1680 MTL/MSL/MEL+SMDH 170D	J104
	207.0	278.0	SMDT 1680 MTL/MSL/MEL+SMDH 170-12D	J108
16.9	34.0	104.0	SMDT 1690 MTL/MSL/MEL+SMDH 170-1.5D	J108
	34.0	104.0	SMDT 1690 MTL/MSL/MEL+SMDH 170-1.5DF	J106
	60.0	140.0	SMDT 1690 MTL/MSL/MEL+SMDH 170-3D	J108
	60.0	140.0	SMDT 1690 MTL/MSL/MEL+SMDH 170-3DF	J106
	60.0	140.0	SMDT 1690 MTL/MSL/MEL+SMDH 170M	J104
	95.0	175.0	SMDT 1690 MTL/MSL/MEL+SMDH 170-5D	J108
	95.0	175.0	SMDT 1690 MTL/MSL/MEL+SMDH 170-5DF	J106
	95.0	175.0	SMDT 1690 MTL/MSL/MEL+SMDH 170L	J104
	148.0	225.0	SMDT 1690 MTL/MSL/MEL+SMDH 170-8D	J108
	148.0	225.0	SMDT 1690 MTL/MSL/MEL+SMDH 170-8DF	J106
	148.0	225.0	SMDT 1690 MTL/MSL/MEL+SMDH 170D	J104
	207.0	278.0	SMDT 1690 MTL/MSL/MEL+SMDH 170-12D	J108
17.0	31.0	101.0	SMDT 1700 MFS+SMDH 170-1.5D	J116
	31.0	101.0	SMDT 1700 MFS+SMDH 170-1.5DF	J114
	34.0	104.0	SMDT 1700 MTL/MSL/MEL+SMDH 170-1.5D	J108
	34.0	104.0	SMDT 1700 MTL/MSL/MEL+SMDH 170-1.5DF	J106
	34.6	119.1	MDE 1700S17E02	J16
	35.0	119.5	MDW 1700GS2	J52
	51.0	125.0	MDF 1700S2D	J39
	51.0	220.0	MDF 1700L2D	J42
	57.0	137.0	SMDT 1700 MFS+SMDH 170-3D	J116
	57.0	137.0	SMDT 1700 MFS+SMDH 170-3DF	J114
	57.0	137.0	SMDT 1700 MFS+SMDH 170M	J112
	58.5	150.0	HMD 170S	J170
	60.0	140.0	SMDT 1700 MTL/MSL/MEL+SMDH 170-3D	J108
	60.0	140.0	SMDT 1700 MTL/MSL/MEL+SMDH 170-3DF	J106
	60.0	140.0	SMDT 1700 MTL/MSL/MEL+SMDH 170M	J104
	62.6	155.1	MDE 1700S17H03	J24
	62.6	155.1	MDW 1700HX3	J67
	63.0	155.5	MDW 1700HGS3	J58
	64.1	138.1	KDS 170MAK	J163
	75.7	170.2	MDE 1700S17E04	J16
	76.0	170.5	MDW 1700GS4	J52
	92.0	172.0	SMDT 1700 MFS+SMDH 170-5D	J116
	92.0	172.0	SMDT 1700 MFS+SMDH 170-5DF	J114
	92.0	172.0	SMDT 1700 MFS+SMDH 170L	J112
	95.0	175.0	SMDT 1700 MTL/MSL/MEL+SMDH 170-5D	J108
	95.0	175.0	SMDT 1700 MTL/MSL/MEL+SMDH 170-5DF	J106
	95.0	175.0	SMDT 1700 MTL/MSL/MEL+SMDH 170L	J104
	99.1	173.1	KDS 170LAK	J163
	99.5	189.0	HMD 170M	J170
	113.6	206.1	MDE 1700S17H05	J24
	113.6	206.1	MDW 1700HX5	J67
	114.0	206.5	MDW 1700HGS5	J58
	141.1	218.1	KDS 170DAK	J163
	145.0	222.0	SMDT 1700 MFS+SMDH 170-8D	J116
	145.0	222.0	SMDT 1700 MFS+SMDH 170-8DF	J114
	145.0	222.0	SMDT 1700 MFS+SMDH 170D	J112
	148.0	225.0	SMDT 1700 MTL/MSL/MEL+SMDH 170-8D	J108
	148.0	225.0	SMDT 1700 MTL/MSL/MEL+SMDH 170-8DF	J106
	148.0	225.0	SMDT 1700 MTL/MSL/MEL+SMDH 170D	J104
	204.0	275.0	SMDT 1700 MFS+SMDH 170-12D	J116
	207.0	278.0	SMDT 1700 MTL/MSL/MEL+SMDH 170-12D	J108
17.1	34.0	104.0	SMDT 1710 MTL/MSL/MEL+SMDH 170-1.5D	J108
	34.0	104.0	SMDT 1710 MTL/MSL/MEL+SMDH 170-1.5DF	J106
	60.0	140.0	SMDT 1710 MTL/MSL/MEL+SMDH 170-3D	J108
	60.0	140.0	SMDT 1710 MTL/MSL/MEL+SMDH 170-3DF	J106
	60.0	140.0	SMDT 1710 MTL/MSL/MEL+SMDH 170M	J104
	65.0	161.1	MDW 1710HX3	J67
	95.0	175.0	SMDT 1710 MTL/MSL/MEL+SMDH 170-5D	J108
	95.0	175.0	SMDT 1710 MTL/MSL/MEL+SMDH 170-5DF	J106
	95.0	175.0	SMDT 1710 MTL/MSL/MEL+SMDH 170L	J104
	117.5	217.1	MDW 1710HX5	J67
	148.0	225.0	SMDT 1710 MTL/MSL/MEL+SMDH 170-8D	J108
	148.0	225.0	SMDT 1710 MTL/MSL/MEL+SMDH 170-8DF	J106
	148.0	225.0	SMDT 1710 MTL/MSL/MEL+SMDH 170D	J104
	170.0	269.1	MDW 1710HX8	J67
	207.0	278.0	SMDT 1710 MTL/MSL/MEL+SMDH 170-12D	J108
17.2	34.0	104.0	SMDT 1720 MTL/MSL/MEL+SMDH 170-1.5D	J108
	34.0	104.0	SMDT 1720 MTL/MSL/MEL+SMDH 170-1.5DF	J106
	60.0	140.0	SMDT 1720 MTL/MSL/MEL+SMDH 170-3D	J108
	60.0	140.0	SMDT 1720 MTL/MSL/MEL+SMDH 170-3DF	J106
	60.0	140.0	SMDT 1720 MTL/MSL/MEL+SMDH 170M	J104

(Blue text: Flat head ■Indexable ■HSS)

● Diameter ø17.2 to ø17.6mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
17.2	95.0	175.0	SMDT 1720 MTL/MSL/MEL+SMDH 170-5D	J108
	95.0	175.0	SMDT 1720 MTL/MSL/MEL+SMDH 170-5DF	J106
	95.0	175.0	SMDT 1720 MTL/MSL/MEL+SMDH 170L	J104
	148.0	225.0	SMDT 1720 MTL/MSL/MEL+SMDH 170-8D	J108
	148.0	225.0	SMDT 1720 MTL/MSL/MEL+SMDH 170-8DF	J106
	148.0	225.0	SMDT 1720 MTL/MSL/MEL+SMDH 170D	J104
	207.0	278.0	SMDT 1720 MTL/MSL/MEL+SMDH 170-12D	J108
17.3	34.0	104.0	SMDT 1730 MTL/MSL/MEL+SMDH 170-1.5D	J108
	34.0	104.0	SMDT 1730 MTL/MSL/MEL+SMDH 170-1.5DF	J106
	60.0	140.0	SMDT 1730 MTL/MSL/MEL+SMDH 170-3D	J108
	60.0	140.0	SMDT 1730 MTL/MSL/MEL+SMDH 170-3DF	J106
	60.0	140.0	SMDT 1730 MTL/MSL/MEL+SMDH 170M	J104
	95.0	175.0	SMDT 1730 MTL/MSL/MEL+SMDH 170-5D	J108
	95.0	175.0	SMDT 1730 MTL/MSL/MEL+SMDH 170-5DF	J106
	95.0	175.0	SMDT 1730 MTL/MSL/MEL+SMDH 170L	J104
	148.0	225.0	SMDT 1730 MTL/MSL/MEL+SMDH 170-8D	J108
	148.0	225.0	SMDT 1730 MTL/MSL/MEL+SMDH 170-8DF	J106
	148.0	225.0	SMDT 1730 MTL/MSL/MEL+SMDH 170D	J104
	207.0	278.0	SMDT 1730 MTL/MSL/MEL+SMDH 170-12D	J108
17.4	34.0	104.0	SMDT 1740 MTL/MSL/MEL+SMDH 170-1.5D	J108
	34.0	104.0	SMDT 1740 MTL/MSL/MEL+SMDH 170-1.5DF	J106
	60.0	140.0	SMDT 1740 MTL/MSL/MEL+SMDH 170-3D	J108
	60.0	140.0	SMDT 1740 MTL/MSL/MEL+SMDH 170-3DF	J106
	60.0	140.0	SMDT 1740 MTL/MSL/MEL+SMDH 170M	J104
	95.0	175.0	SMDT 1740 MTL/MSL/MEL+SMDH 170-5D	J108
	95.0	175.0	SMDT 1740 MTL/MSL/MEL+SMDH 170-5DF	J106
	95.0	175.0	SMDT 1740 MTL/MSL/MEL+SMDH 170L	J104
	148.0	225.0	SMDT 1740 MTL/MSL/MEL+SMDH 170-8D	J108
	148.0	225.0	SMDT 1740 MTL/MSL/MEL+SMDH 170-8DF	J106
	148.0	225.0	SMDT 1740 MTL/MSL/MEL+SMDH 170D	J104
	207.0	278.0	SMDT 1740 MTL/MSL/MEL+SMDH 170-12D	J108
17.5	31.0	101.0	SMDT 1750 MFS+SMDH 170-1.5D	J116
	31.0	101.0	SMDT 1750 MFS+SMDH 170-1.5DF	J114
	34.0	104.0	SMDT 1750 MTL/MSL/MEL+SMDH 170-1.5D	J108
	34.0	104.0	SMDT 1750 MTL/MSL/MEL+SMDH 170-1.5DF	J106
	35.0	123.2	MDE 1750S18E02	J16
	35.4	123.6	MDW 1750GS2	J52
	52.5	130.0	MDF 1750S2D	J39
	52.5	230.0	MDF 1750L2D	J42
	57.0	137.0	SMDT 1750 MFS+SMDH 170-3D	J116
	57.0	137.0	SMDT 1750 MFS+SMDH 170-3DF	J114
	57.0	137.0	SMDT 1750 MFS+SMDH 170M	J112
	60.0	140.0	SMDT 1750 MTL/MSL/MEL+SMDH 170-3D	J108
	60.0	140.0	SMDT 1750 MTL/MSL/MEL+SMDH 170-3DF	J106
	60.0	140.0	SMDT 1750 MTL/MSL/MEL+SMDH 170M	J104
	60.8	153.0	HMD 175S	J170
	64.2	138.2	KDS 175MAK	J163
	64.5	161.2	MDE 1750S18H03	J24
	64.5	161.2	MDW 1750HX3	J68
	64.9	161.6	MDW 1750HGS3	J58
	77.0	170.2	MDE 1750S18E04	J16
	77.4	170.6	MDW 1750GS4	J52
	92.0	172.0	SMDT 1750 MFS+SMDH 170-5D	J116
	92.0	172.0	SMDT 1750 MFS+SMDH 170-5DF	J114
	92.0	172.0	SMDT 1750 MFS+SMDH 170L	J112
	95.0	175.0	SMDT 1750 MTL/MSL/MEL+SMDH 170-5D	J108
	95.0	175.0	SMDT 1750 MTL/MSL/MEL+SMDH 170-5DF	J106
	95.0	175.0	SMDT 1750 MTL/MSL/MEL+SMDH 170L	J104
	99.2	173.2	KDS 175LAK	J163
	103.8	194.0	HMD 175M	J170
	116.9	217.3	MDE 1750S18H05	J24
	117.0	217.2	MDW 1750HX5	J68
	117.4	217.6	MDW 1750HGS5	J58
	141.2	218.2	KDS 175DAK	J163
	145.0	222.0	SMDT 1750 MFS+SMDH 170-8D	J116
	145.0	222.0	SMDT 1750 MFS+SMDH 170-8DF	J114
	145.0	222.0	SMDT 1750 MFS+SMDH 170D	J112
	148.0	225.0	SMDT 1750 MTL/MSL/MEL+SMDH 170-8D	J108
	148.0	225.0	SMDT 1750 MTL/MSL/MEL+SMDH 170-8DF	J106
	148.0	225.0	SMDT 1750 MTL/MSL/MEL+SMDH 170D	J104
	204.0	275.0	SMDT 1750 MFS+SMDH 170-12D	J116
	207.0	278.0	SMDT 1750 MTL/MSL/MEL+SMDH 170-12D	J108
17.6	36.0	107.0	SMDT 1760 MTL/MSL/MEL+SMDH 180-1.5D	J108
	36.0	107.0	SMDT 1760 MTL/MSL/MEL+SMDH 180-1.5DF	J106
	63.0	145.0	SMDT 1760 MTL/MSL/MEL+SMDH 180-3D	J108
	63.0	145.0	SMDT 1760 MTL/MSL/MEL+SMDH 180-3DF	J106
	63.0	145.0	SMDT 1760 MTL/MSL/MEL+SMDH 180M	J104
	68.2	143.2	KDS 176MAK	J163
	100.0	180.0	SMDT 1760 MTL/MSL/MEL+SMDH 180-5D	J108
	100.0	180.0	SMDT 1760 MTL/MSL/MEL+SMDH 180-5DF	J106

(Blue text: Flat head ■Indexable ■HSS)

● Diameter ø17.6 to ø18.0mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
17.6	100.0	180.0	SMDT 1760 MTL/MSL/MEL+SMDH 180L	J104
	156.0	230.0	SMDT 1760 MTL/MSL/MEL+SMDH 180-8D	J108
	156.0	230.0	SMDT 1760 MTL/MSL/MEL+SMDH 180-8DF	J106
	156.0	230.0	SMDT 1760 MTL/MSL/MEL+SMDH 180D	J104
	219.0	290.0	SMDT 1760 MTL/MSL/MEL+SMDH 180-12D	J108
17.7	36.0	107.0	SMDT 1770 MTL/MSL/MEL+SMDH 180-1.5D	J108
	36.0	107.0	SMDT 1770 MTL/MSL/MEL+SMDH 180-1.5DF	J106
	63.0	145.0	SMDT 1770 MTL/MSL/MEL+SMDH 180-3D	J108
	63.0	145.0	SMDT 1770 MTL/MSL/MEL+SMDH 180-3DF	J106
	63.0	145.0	SMDT 1770 MTL/MSL/MEL+SMDH 180M	J104
	68.2	143.2	KDS 177MAK	J163
	100.0	180.0	SMDT 1770 MTL/MSL/MEL+SMDH 180-5D	J108
	100.0	180.0	SMDT 1770 MTL/MSL/MEL+SMDH 180-5DF	J106
	100.0	180.0	SMDT 1770 MTL/MSL/MEL+SMDH 180L	J104
	105.2	178.2	KDS 177LAK	J163
	156.0	230.0	SMDT 1770 MTL/MSL/MEL+SMDH 180-8D	J108
	156.0	230.0	SMDT 1770 MTL/MSL/MEL+SMDH 180-8DF	J106
	156.0	230.0	SMDT 1770 MTL/MSL/MEL+SMDH 180D	J104
	219.0	290.0	SMDT 1770 MTL/MSL/MEL+SMDH 180-12D	J108
17.8	36.0	107.0	SMDT 1780 MTL/MSL/MEL+SMDH 180-1.5D	J108
	36.0	107.0	SMDT 1780 MTL/MSL/MEL+SMDH 180-1.5DF	J106
	63.0	145.0	SMDT 1780 MTL/MSL/MEL+SMDH 180-3D	J108
	63.0	145.0	SMDT 1780 MTL/MSL/MEL+SMDH 180-3DF	J106
	63.0	145.0	SMDT 1780 MTL/MSL/MEL+SMDH 180M	J104
	100.0	180.0	SMDT 1780 MTL/MSL/MEL+SMDH 180-5D	J108
	100.0	180.0	SMDT 1780 MTL/MSL/MEL+SMDH 180-5DF	J106
	100.0	180.0	SMDT 1780 MTL/MSL/MEL+SMDH 180L	J104
	156.0	230.0	SMDT 1780 MTL/MSL/MEL+SMDH 180-8D	J108
	156.0	230.0	SMDT 1780 MTL/MSL/MEL+SMDH 180-8DF	J106
	156.0	230.0	SMDT 1780 MTL/MSL/MEL+SMDH 180D	J104
	219.0	290.0	SMDT 1780 MTL/MSL/MEL+SMDH 180-12D	J108
17.9	36.0	107.0	SMDT 1790 MTL/MSL/MEL+SMDH 180-1.5D	J108
	36.0	107.0	SMDT 1790 MTL/MSL/MEL+SMDH 180-1.5DF	J106
	63.0	145.0	SMDT 1790 MTL/MSL/MEL+SMDH 180-3D	J108
	63.0	145.0	SMDT 1790 MTL/MSL/MEL+SMDH 180-3DF	J106
	63.0	145.0	SMDT 1790 MTL/MSL/MEL+SMDH 180M	J104
	100.0	180.0	SMDT 1790 MTL/MSL/MEL+SMDH 180-5D	J108
	100.0	180.0	SMDT 1790 MTL/MSL/MEL+SMDH 180-5DF	J106
	100.0	180.0	SMDT 1790 MTL/MSL/MEL+SMDH 180L	J104
	156.0	230.0	SMDT 1790 MTL/MSL/MEL+SMDH 180-8D	J108
	156.0	230.0	SMDT 1790 MTL/MSL/MEL+SMDH 180-8DF	J106
	156.0	230.0	SMDT 1790 MTL/MSL/MEL+SMDH 180D	J104
	219.0	290.0	SMDT 1790 MTL/MSL/MEL+SMDH 180-12D	J108
18.0	32.0	104.0	SMDT 1800 MFS+SMDH 180-1.5D	J116
	32.0	104.0	SMDT 1800 MFS+SMDH 180-1.5DF	J114
	35.3	123.3	MDE 1800S18E02	J16
	35.7	123.7	MDW 1800GS2	J53
	36.0	107.0	SMDT 1800 MTL/MSL/MEL+SMDH 180-1.5D	J108
	36.0	107.0	SMDT 1800 MTL/MSL/MEL+SMDH 180-1.5DF	J106
	54.0	130.0	MDF 1800S2D	J39
	54.0	230.0	MDF 1800L2D	J42
	54.0	230.0	MDF 1800L2D-S16	J42
	60.0	142.0	SMDT 1800 MFS+SMDH 180-3D	J116
	60.0	142.0	SMDT 1800 MFS+SMDH 180-3DF	J114
	60.0	142.0	SMDT 1800 MFS+SMDH 180M	J112
	60.0	153.0	HMD 180S	J170
	63.0	145.0	SMDT 1800 MTL/MSL/MEL+SMDH 180-3D	J108
	63.0	145.0	SMDT 1800 MTL/MSL/MEL+SMDH 180-3DF	J106
	63.0	145.0	SMDT 1800 MTL/MSL/MEL+SMDH 180M	J104
	66.3	161.3	MDE 1800S18H03	J24
	66.3	161.3	MDW 1800HX3	J68
	66.7	161.7	MDW 1800HGS3	J58
	68.3	143.3	KDS 180MAK	J163
	74.4	142.4	KDS 180BAK	J163
	78.3	170.3	MDE 1800S18E04	J16
	78.7	170.7	MDW 1800GS4	J53
	97.0	177.0	SMDT 1800 MFS+SMDH 180-5D	J116
	97.0	177.0	SMDT 1800 MFS+SMDH 180-5DF	J114
	97.0	177.0	SMDT 1800 MFS+SMDH 180L	J112
	100.0	180.0	SMDT 1800 MTL/MSL/MEL+SMDH 180-5D	J108
	100.0	180.0	SMDT 1800 MTL/MSL/MEL+SMDH 180-5DF	J106
	100.0	180.0	SMDT 1800 MTL/MSL/MEL+SMDH 180L	J104
	103.0	194.0	HMD 180M	J170
	105.3	178.3	KDS 180LAK	J163
	120.3	217.3	MDE 1800S18H05	J24
	120.3	217.3	MDW 1800HX5	J68
	120.7	217.7	MDW 1800HGS5	J58
	148.3	223.3	KDS 180DAK	J163
	153.0	227.0	SMDT 1800 MFS+SMDH 180-8D	J116
	153.0	227.0	SMDT 1800 MFS+SMDH 180-8DF	J114

(Blue text: Flat head ■Indexable ■HSS)

Effective Length (LU) is a guideline for the usable length. Take into account the chip evacuation in relation to the flute length (LCF) when drilling.

Effective Length List by Diameter

● Diameter ø18.0 to ø18.5mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
18.0	153.0	227.0	SMDT 1800 MFS+SMDH 180D	J112
	156.0	230.0	SMDT 1800 MTL/MSL/MEL+SMDH 180-8D	J108
	156.0	230.0	SMDT 1800 MTL/MSL/MEL+SMDH 180-8DF	J106
	156.0	230.0	SMDT 1800 MTL/MSL/MEL+SMDH 180D	J104
	216.0	287.0	SMDT 1800 MFS+SMDH 180-12D	J116
	219.0	290.0	SMDT 1800 MTL/MSL/MEL+SMDH 180-12D	J108
18.1	36.0	107.0	SMDT 1810 MTL/MSL/MEL+SMDH 180-1.5D	J108
	36.0	107.0	SMDT 1810 MTL/MSL/MEL+SMDH 180-1.5DF	J106
	63.0	145.0	SMDT 1810 MTL/MSL/MEL+SMDH 180-3D	J108
	63.0	145.0	SMDT 1810 MTL/MSL/MEL+SMDH 180-3DF	J106
	63.0	145.0	SMDT 1810 MTL/MSL/MEL+SMDH 180M	J104
	100.0	180.0	SMDT 1810 MTL/MSL/MEL+SMDH 180-5D	J108
	100.0	180.0	SMDT 1810 MTL/MSL/MEL+SMDH 180-5DF	J106
	100.0	180.0	SMDT 1810 MTL/MSL/MEL+SMDH 180L	J104
	156.0	230.0	SMDT 1810 MTL/MSL/MEL+SMDH 180-8D	J108
	156.0	230.0	SMDT 1810 MTL/MSL/MEL+SMDH 180-8DF	J106
	156.0	230.0	SMDT 1810 MTL/MSL/MEL+SMDH 180D	J104
	219.0	290.0	SMDT 1810 MTL/MSL/MEL+SMDH 180-12D	J108
18.2	36.0	107.0	SMDT 1820 MTL/MSL/MEL+SMDH 180-1.5D	J108
	36.0	107.0	SMDT 1820 MTL/MSL/MEL+SMDH 180-1.5DF	J106
	63.0	145.0	SMDT 1820 MTL/MSL/MEL+SMDH 180-3D	J108
	63.0	145.0	SMDT 1820 MTL/MSL/MEL+SMDH 180-3DF	J106
	63.0	145.0	SMDT 1820 MTL/MSL/MEL+SMDH 180M	J104
	100.0	180.0	SMDT 1820 MTL/MSL/MEL+SMDH 180-5D	J108
	100.0	180.0	SMDT 1820 MTL/MSL/MEL+SMDH 180-5DF	J106
	100.0	180.0	SMDT 1820 MTL/MSL/MEL+SMDH 180L	J104
	156.0	230.0	SMDT 1820 MTL/MSL/MEL+SMDH 180-8D	J108
	156.0	230.0	SMDT 1820 MTL/MSL/MEL+SMDH 180-8DF	J106
	156.0	230.0	SMDT 1820 MTL/MSL/MEL+SMDH 180D	J104
	219.0	290.0	SMDT 1820 MTL/MSL/MEL+SMDH 180-12D	J108
18.3	36.0	107.0	SMDT 1830 MTL/MSL/MEL+SMDH 180-1.5D	J108
	36.0	107.0	SMDT 1830 MTL/MSL/MEL+SMDH 180-1.5DF	J106
	63.0	145.0	SMDT 1830 MTL/MSL/MEL+SMDH 180-3D	J108
	63.0	145.0	SMDT 1830 MTL/MSL/MEL+SMDH 180-3DF	J106
	63.0	145.0	SMDT 1830 MTL/MSL/MEL+SMDH 180M	J104
	100.0	180.0	SMDT 1830 MTL/MSL/MEL+SMDH 180-5D	J108
	100.0	180.0	SMDT 1830 MTL/MSL/MEL+SMDH 180-5DF	J106
	100.0	180.0	SMDT 1830 MTL/MSL/MEL+SMDH 180L	J104
	156.0	230.0	SMDT 1830 MTL/MSL/MEL+SMDH 180-8D	J108
	156.0	230.0	SMDT 1830 MTL/MSL/MEL+SMDH 180-8DF	J106
	156.0	230.0	SMDT 1830 MTL/MSL/MEL+SMDH 180D	J104
	219.0	290.0	SMDT 1830 MTL/MSL/MEL+SMDH 180-12D	J108
18.4	36.0	107.0	SMDT 1840 MTL/MSL/MEL+SMDH 180-1.5D	J108
	36.0	107.0	SMDT 1840 MTL/MSL/MEL+SMDH 180-1.5DF	J106
	63.0	145.0	SMDT 1840 MTL/MSL/MEL+SMDH 180-3D	J108
	63.0	145.0	SMDT 1840 MTL/MSL/MEL+SMDH 180-3DF	J106
	63.0	145.0	SMDT 1840 MTL/MSL/MEL+SMDH 180M	J104
	100.0	180.0	SMDT 1840 MTL/MSL/MEL+SMDH 180-5D	J108
	100.0	180.0	SMDT 1840 MTL/MSL/MEL+SMDH 180-5DF	J106
	100.0	180.0	SMDT 1840 MTL/MSL/MEL+SMDH 180L	J104
	156.0	230.0	SMDT 1840 MTL/MSL/MEL+SMDH 180-8D	J108
	156.0	230.0	SMDT 1840 MTL/MSL/MEL+SMDH 180-8DF	J106
	156.0	230.0	SMDT 1840 MTL/MSL/MEL+SMDH 180D	J104
	219.0	290.0	SMDT 1840 MTL/MSL/MEL+SMDH 180-12D	J108
18.5	32.0	104.0	SMDT 1850 MFS+SMDH 180-1.5D	J116
	32.0	104.0	SMDT 1850 MFS+SMDH 180-1.5DF	J114
	34.7	126.4	MDE 1850S19E02	J16
	35.1	126.8	MDW 1850GS2	J53
	36.0	107.0	SMDT 1850 MTL/MSL/MEL+SMDH 180-1.5D	J108
	36.0	107.0	SMDT 1850 MTL/MSL/MEL+SMDH 180-1.5DF	J106
	55.5	140.0	MDF 1850S2D	J39
	55.5	240.0	MDF 1850L2D	J42
	60.0	142.0	SMDT 1850 MFS+SMDH 180-3D	J116
	60.0	142.0	SMDT 1850 MFS+SMDH 180-3DF	J114
	60.0	142.0	SMDT 1850 MFS+SMDH 180M	J112
	62.3	156.0	HMD 185S	J170
	63.0	145.0	SMDT 1850 MTL/MSL/MEL+SMDH 180-3D	J108
	63.0	145.0	SMDT 1850 MTL/MSL/MEL+SMDH 180-3DF	J106
	63.0	145.0	SMDT 1850 MTL/MSL/MEL+SMDH 180M	J104
	68.2	167.4	MDE 1850S19H03	J24
	68.2	167.4	MDW 1850HX3	J68
	68.4	143.4	KDS 185MAK	J163
	68.6	167.8	MDW 1850HGS3	J58
	79.7	182.4	MDE 1850S19E04	J16
	80.1	182.8	MDW 1850GS4	J53
	97.0	177.0	SMDT 1850 MFS+SMDH 180-5D	J116
	97.0	177.0	SMDT 1850 MFS+SMDH 180-5DF	J114
	97.0	177.0	SMDT 1850 MFS+SMDH 180L	J112
	100.0	180.0	SMDT 1850 MTL/MSL/MEL+SMDH 180-5D	J108
	100.0	180.0	SMDT 1850 MTL/MSL/MEL+SMDH 180-5DF	J106

(Blue text: Flat head ■Indexable ■HSS)

● Diameter ø18.5 to ø19.0mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
18.5	100.0	180.0	SMDT 1850 MTL/MSL/MEL+SMDH 180L	J104
	105.4	178.4	KDS 185LAK	J163
	107.3	198.0	HMD 185M	J170
	123.6	224.4	MDE 1850S19H05	J24
	123.7	224.4	MDW 1850HX5	J68
	124.1	224.8	MDW 1850HGS5	J58
	148.4	223.4	KDS 185DAK	J163
	153.0	227.0	SMDT 1850 MFS+SMDH 180-8D	J116
	153.0	227.0	SMDT 1850 MFS+SMDH 180-8DF	J114
	153.0	227.0	SMDT 1850 MFS+SMDH 180D	J112
	156.0	230.0	SMDT 1850 MTL/MSL/MEL+SMDH 180-8D	J108
	156.0	230.0	SMDT 1850 MTL/MSL/MEL+SMDH 180-8DF	J106
	156.0	230.0	SMDT 1850 MTL/MSL/MEL+SMDH 180D	J104
	216.0	287.0	SMDT 1850 MFS+SMDH 180-12D	J116
	219.0	290.0	SMDT 1850 MTL/MSL/MEL+SMDH 180-12D	J108
18.6	37.0	115.0	SMDT 1860 MTL/MSL/MEL+SMDH 190-1.5D	J108
	37.0	115.0	SMDT 1860 MTL/MSL/MEL+SMDH 190-1.5DF	J106
	67.0	160.0	SMDT 1860 MTL/MSL/MEL+SMDH 190-3D	J108
	67.0	160.0	SMDT 1860 MTL/MSL/MEL+SMDH 190-3DF	J106
	67.0	160.0	SMDT 1860 MTL/MSL/MEL+SMDH 190M	J104
	106.0	195.0	SMDT 1860 MTL/MSL/MEL+SMDH 190-5D	J108
	106.0	195.0	SMDT 1860 MTL/MSL/MEL+SMDH 190-5DF	J106
	106.0	195.0	SMDT 1860 MTL/MSL/MEL+SMDH 190L	J104
	164.0	255.0	SMDT 1860 MTL/MSL/MEL+SMDH 190-8D	J108
	164.0	255.0	SMDT 1860 MTL/MSL/MEL+SMDH 190-8DF	J106
	164.0	255.0	SMDT 1860 MTL/MSL/MEL+SMDH 190D	J104
	231.0	309.0	SMDT 1860 MTL/MSL/MEL+SMDH 190-12D	J108
18.7	37.0	115.0	SMDT 1870 MTL/MSL/MEL+SMDH 190-1.5D	J108
	37.0	115.0	SMDT 1870 MTL/MSL/MEL+SMDH 190-1.5DF	J106
	67.0	160.0	SMDT 1870 MTL/MSL/MEL+SMDH 190-3D	J108
	67.0	160.0	SMDT 1870 MTL/MSL/MEL+SMDH 190-3DF	J106
	67.0	160.0	SMDT 1870 MTL/MSL/MEL+SMDH 190M	J104
	106.0	195.0	SMDT 1870 MTL/MSL/MEL+SMDH 190-5D	J108
	106.0	195.0	SMDT 1870 MTL/MSL/MEL+SMDH 190-5DF	J106
	106.0	195.0	SMDT 1870 MTL/MSL/MEL+SMDH 190L	J104
	164.0	255.0	SMDT 1870 MTL/MSL/MEL+SMDH 190-8D	J108
	164.0	255.0	SMDT 1870 MTL/MSL/MEL+SMDH 190-8DF	J106
	164.0	255.0	SMDT 1870 MTL/MSL/MEL+SMDH 190D	J104
	231.0	309.0	SMDT 1870 MTL/MSL/MEL+SMDH 190-12D	J108
18.8	37.0	115.0	SMDT 1880 MTL/MSL/MEL+SMDH 190-1.5D	J108
	37.0	115.0	SMDT 1880 MTL/MSL/MEL+SMDH 190-1.5DF	J106
	67.0	160.0	SMDT 1880 MTL/MSL/MEL+SMDH 190-3D	J108
	67.0	160.0	SMDT 1880 MTL/MSL/MEL+SMDH 190-3DF	J106
	67.0	160.0	SMDT 1880 MTL/MSL/MEL+SMDH 190M	J104
	106.0	195.0	SMDT 1880 MTL/MSL/MEL+SMDH 190-5D	J108
	106.0	195.0	SMDT 1880 MTL/MSL/MEL+SMDH 190-5DF	J106
	106.0	195.0	SMDT 1880 MTL/MSL/MEL+SMDH 190L	J104
	164.0	255.0	SMDT 1880 MTL/MSL/MEL+SMDH 190-8D	J108
	164.0	255.0	SMDT 1880 MTL/MSL/MEL+SMDH 190-8DF	J106
	164.0	255.0	SMDT 1880 MTL/MSL/MEL+SMDH 190D	J104
	231.0	309.0	SMDT 1880 MTL/MSL/MEL+SMDH 190-12D	J108
18.9	37.0	115.0	SMDT 1890 MTL/MSL/MEL+SMDH 190-1.5D	J108
	37.0	115.0	SMDT 1890 MTL/MSL/MEL+SMDH 190-1.5DF	J106
	67.0	160.0	SMDT 1890 MTL/MSL/MEL+SMDH 190-3D	J108
	67.0	160.0	SMDT 1890 MTL/MSL/MEL+SMDH 190-3DF	J106
	67.0	160.0	SMDT 1890 MTL/MSL/MEL+SMDH 190M	J104
	106.0	195.0	SMDT 1890 MTL/MSL/MEL+SMDH 190-5D	J108
	106.0	195.0	SMDT 1890 MTL/MSL/MEL+SMDH 190-5DF	J106
	106.0	195.0	SMDT 1890 MTL/MSL/MEL+SMDH 190L	J104
	164.0	255.0	SMDT 1890 MTL/MSL/MEL+SMDH 190-8D	J108
	164.0	255.0	SMDT 1890 MTL/MSL/MEL+SMDH 190-8DF	J106
	164.0	255.0	SMDT 1890 MTL/MSL/MEL+SMDH 190D	J104
	231.0	309.0	SMDT 1890 MTL/MSL/MEL+SMDH 190-12D	J108
19.0	34.0	111.0	SMDT 1900 MFS+SMDH 190-1.5D	J116
	34.0	111.0	SMDT 1900 MFS+SMDH 190-1.5DF	J114
	35.0	126.5	MDE 1900S19E02	J16
	35.4	126.9	MDW 1900GS2	J53
	37.0	115.0	SMDT 1900 MTL/MSL/MEL+SMDH 190-1.5D	J108
	37.0	115.0	SMDT 1900 MTL/MSL/MEL+SMDH 190-1.5DF	J106
	57.0	140.0	MDF 1900S2D	J39
	57.0	240.0	MDF 1900L2D	J42
	61.5	164.0	HMD 190S	J170
	63.0	157.0	SMDT 1900 MFS+SMDH 190-3D	J116
	63.0	157.0	SMDT 1900 MFS+SMDH 190-3DF	J114
	63.0	157.0	SMDT 1900 MFS+SMDH 190M	J112
	67.0	160.0	SMDT 1900 MTL/MSL/MEL+SMDH 190-3D	J108
	67.0	160.0	SMDT 1900 MTL/MSL/MEL+SMDH 190-3DF	J106
	67.0	160.0	SMDT 1900 MTL/MSL/MEL+SMDH 190M	J104
	70.0	167.5	MDE 1900S19H03	J24
	70.0	167.5	MDW 1900HX3	J68

(Blue text: Flat head ■Indexable ■HSS)

● Diameter ø19.0 to ø19.5mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
19.0	70.4	167.9	MDW 1900HGS3	J58
	71.5	158.5	KDS 190MAK	J163
	80.9	182.4	MDE 1900S19E04	J16
	81.4	182.9	MDW 1900GS4	J53
	102.0	192.0	SMDT 1900 MFS+SMDH 190-5D	J116
	102.0	192.0	SMDT 1900 MFS+SMDH 190-5DF	J114
	102.0	192.0	SMDT 1900 MFS+SMDH 190L	J112
	106.0	195.0	SMDT 1900 MTL/MSL/MEL+SMDH 190-5D	J108
	106.0	195.0	SMDT 1900 MTL/MSL/MEL+SMDH 190-5DF	J106
	106.0	195.0	SMDT 1900 MTL/MSL/MEL+SMDH 190L	J104
	106.5	206.0	HMD 190M	J170
	110.5	193.5	KDS 190LAK	J163
	127.0	224.5	MDE 1900S19H05	J24
	127.0	224.5	MDW 1900HX5	J68
	127.4	224.9	MDW 1900HGS5	J58
	157.5	243.5	KDS 190DAK	J163
	161.0	252.0	SMDT 1900 MFS+SMDH 190-8D	J116
	161.0	252.0	SMDT 1900 MFS+SMDH 190-8DF	J114
	161.0	252.0	SMDT 1900 MFS+SMDH 190D	J112
	164.0	255.0	SMDT 1900 MTL/MSL/MEL+SMDH 190-8D	J108
	164.0	255.0	SMDT 1900 MTL/MSL/MEL+SMDH 190-8DF	J106
	164.0	255.0	SMDT 1900 MTL/MSL/MEL+SMDH 190D	J104
	228.0	306.0	SMDT 1900 MFS+SMDH 190-12D	J116
	231.0	309.0	SMDT 1900 MTL/MSL/MEL+SMDH 190-12D	J108
19.1	37.0	115.0	SMDT 1910 MTL/MSL/MEL+SMDH 190-1.5D	J108
	37.0	115.0	SMDT 1910 MTL/MSL/MEL+SMDH 190-1.5DF	J106
	67.0	160.0	SMDT 1910 MTL/MSL/MEL+SMDH 190-3D	J108
	67.0	160.0	SMDT 1910 MTL/MSL/MEL+SMDH 190-3DF	J106
	67.0	160.0	SMDT 1910 MTL/MSL/MEL+SMDH 190M	J104
	106.0	195.0	SMDT 1910 MTL/MSL/MEL+SMDH 190-5D	J108
	106.0	195.0	SMDT 1910 MTL/MSL/MEL+SMDH 190-5DF	J106
	106.0	195.0	SMDT 1910 MTL/MSL/MEL+SMDH 190L	J104
	164.0	255.0	SMDT 1910 MTL/MSL/MEL+SMDH 190-8D	J108
	164.0	255.0	SMDT 1910 MTL/MSL/MEL+SMDH 190-8DF	J106
	164.0	255.0	SMDT 1910 MTL/MSL/MEL+SMDH 190D	J104
	231.0	309.0	SMDT 1910 MTL/MSL/MEL+SMDH 190-12D	J108
19.2	37.0	115.0	SMDT 1920 MTL/MSL/MEL+SMDH 190-1.5D	J108
	37.0	115.0	SMDT 1920 MTL/MSL/MEL+SMDH 190-1.5DF	J106
	67.0	160.0	SMDT 1920 MTL/MSL/MEL+SMDH 190-3D	J108
	67.0	160.0	SMDT 1920 MTL/MSL/MEL+SMDH 190-3DF	J106
	67.0	160.0	SMDT 1920 MTL/MSL/MEL+SMDH 190M	J104
	106.0	195.0	SMDT 1920 MTL/MSL/MEL+SMDH 190-5D	J108
	106.0	195.0	SMDT 1920 MTL/MSL/MEL+SMDH 190-5DF	J106
	106.0	195.0	SMDT 1920 MTL/MSL/MEL+SMDH 190L	J104
	164.0	255.0	SMDT 1920 MTL/MSL/MEL+SMDH 190-8D	J108
	164.0	255.0	SMDT 1920 MTL/MSL/MEL+SMDH 190-8DF	J106
	164.0	255.0	SMDT 1920 MTL/MSL/MEL+SMDH 190D	J104
	231.0	309.0	SMDT 1920 MTL/MSL/MEL+SMDH 190-12D	J108
19.3	37.0	115.0	SMDT 1930 MTL/MSL/MEL+SMDH 190-1.5D	J108
	37.0	115.0	SMDT 1930 MTL/MSL/MEL+SMDH 190-1.5DF	J106
	67.0	160.0	SMDT 1930 MTL/MSL/MEL+SMDH 190-3D	J108
	67.0	160.0	SMDT 1930 MTL/MSL/MEL+SMDH 190-3DF	J106
	67.0	160.0	SMDT 1930 MTL/MSL/MEL+SMDH 190M	J104
	106.0	195.0	SMDT 1930 MTL/MSL/MEL+SMDH 190-5D	J108
	106.0	195.0	SMDT 1930 MTL/MSL/MEL+SMDH 190-5DF	J106
	106.0	195.0	SMDT 1930 MTL/MSL/MEL+SMDH 190L	J104
	164.0	255.0	SMDT 1930 MTL/MSL/MEL+SMDH 190-8D	J108
	164.0	255.0	SMDT 1930 MTL/MSL/MEL+SMDH 190-8DF	J106
	164.0	255.0	SMDT 1930 MTL/MSL/MEL+SMDH 190D	J104
	231.0	309.0	SMDT 1930 MTL/MSL/MEL+SMDH 190-12D	J108
19.4	37.0	115.0	SMDT 1940 MTL/MSL/MEL+SMDH 190-1.5D	J108
	37.0	115.0	SMDT 1940 MTL/MSL/MEL+SMDH 190-1.5DF	J106
	67.0	160.0	SMDT 1940 MTL/MSL/MEL+SMDH 190-3D	J108
	67.0	160.0	SMDT 1940 MTL/MSL/MEL+SMDH 190-3DF	J106
	67.0	160.0	SMDT 1940 MTL/MSL/MEL+SMDH 190M	J104
	106.0	195.0	SMDT 1940 MTL/MSL/MEL+SMDH 190-5D	J108
	106.0	195.0	SMDT 1940 MTL/MSL/MEL+SMDH 190-5DF	J106
	106.0	195.0	SMDT 1940 MTL/MSL/MEL+SMDH 190L	J104
	164.0	255.0	SMDT 1940 MTL/MSL/MEL+SMDH 190-8D	J108
	164.0	255.0	SMDT 1940 MTL/MSL/MEL+SMDH 190-8DF	J106
	164.0	255.0	SMDT 1940 MTL/MSL/MEL+SMDH 190D	J104
	231.0	309.0	SMDT 1940 MTL/MSL/MEL+SMDH 190-12D	J108
19.5	34.0	111.0	SMDT 1950 MFS+SMDH 190-1.5D	J116
	34.0	111.0	SMDT 1950 MFS+SMDH 190-1.5DF	J114
	35.3	130.5	MDE 1950S20E02	J16
	35.8	131.0	MDW 1950GS2	J53
	37.0	115.0	SMDT 1950 MTL/MSL/MEL+SMDH 190-1.5D	J108
	37.0	115.0	SMDT 1950 MTL/MSL/MEL+SMDH 190-1.5DF	J106
	58.5	140.0	MDF 1950S2D	J39
	58.5	250.0	MDF 1950L2D	J42

(Blue text: Flat head ■Indexable ■HSS)

Effective Length (LU) is a guideline for the usable length. Take into account the chip evacuation in relation to the flute length (LCF) when drilling.

Effective Length List by Diameter

● Diameter ø19.5 to ø19.9mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
19.5	63.0	157.0	SMDT 1950 MFS+SMDH 190-3D	J116
	63.0	157.0	SMDT 1950 MFS+SMDH 190-3DF	J114
	63.0	157.0	SMDT 1950 MFS+SMDH 190M	J112
	64.8	168.0	HMD 195S	J170
	67.0	160.0	SMDT 1950 MTL/MSL/MEL+SMDH 190-3D	J108
	67.0	160.0	SMDT 1950 MTL/MSL/MEL+SMDH 190-3DF	J106
	67.0	160.0	SMDT 1950 MTL/MSL/MEL+SMDH 190M	J104
	71.5	158.5	KDS 195MAK	J164
	71.8	173.5	MDE 1950S20H03	J24
	71.8	173.5	MDW 1950HX3	J68
	72.3	174.0	MDW 1950HGS3	J58
	84.3	182.5	MDE 1950S20E04	J16
	84.8	183.0	MDW 1950GS4	J53
	102.0	192.0	SMDT 1950 MFS+SMDH 190-5D	J116
	102.0	192.0	SMDT 1950 MFS+SMDH 190-5DF	J114
	102.0	192.0	SMDT 1950 MFS+SMDH 190L	J112
	106.0	195.0	SMDT 1950 MTL/MSL/MEL+SMDH 190-5D	J108
	106.0	195.0	SMDT 1950 MTL/MSL/MEL+SMDH 190-5DF	J106
	106.0	195.0	SMDT 1950 MTL/MSL/MEL+SMDH 190L	J104
	110.5	193.5	KDS 195LAK	J164
	110.8	210.0	HMD 195M	J170
	130.3	233.5	MDE 1950S20H05	J24
	130.3	233.5	MDW 1950HX5	J68
	130.8	234.0	MDW 1950HGS5	J58
	157.5	243.5	KDS 195DAK	J164
	161.0	252.0	SMDT 1950 MFS+SMDH 190-8D	J116
	161.0	252.0	SMDT 1950 MFS+SMDH 190-8DF	J114
	161.0	252.0	SMDT 1950 MFS+SMDH 190D	J112
	164.0	255.0	SMDT 1950 MTL/MSL/MEL+SMDH 190-8D	J108
	164.0	255.0	SMDT 1950 MTL/MSL/MEL+SMDH 190-8DF	J106
	164.0	255.0	SMDT 1950 MTL/MSL/MEL+SMDH 190D	J104
	228.0	306.0	SMDT 1950 MFS+SMDH 190-12D	J116
	231.0	309.0	SMDT 1950 MTL/MSL/MEL+SMDH 190-12D	J108
19.6	39.0	118.0	SMDT 1960 MTL/MSL/MEL+SMDH 200-1.5D	J108
	39.0	118.0	SMDT 1960 MTL/MSL/MEL+SMDH 200-1.5DF	J106
	70.0	160.0	SMDT 1960 MTL/MSL/MEL+SMDH 200-3D	J108
	70.0	160.0	SMDT 1960 MTL/MSL/MEL+SMDH 200-3DF	J106
	70.0	160.0	SMDT 1960 MTL/MSL/MEL+SMDH 200M	J104
	111.0	200.0	SMDT 1960 MTL/MSL/MEL+SMDH 200-5D	J108
	111.0	200.0	SMDT 1960 MTL/MSL/MEL+SMDH 200-5DF	J106
	111.0	200.0	SMDT 1960 MTL/MSL/MEL+SMDH 200L	J104
	172.0	265.0	SMDT 1960 MTL/MSL/MEL+SMDH 200-8D	J108
	172.0	265.0	SMDT 1960 MTL/MSL/MEL+SMDH 200-8DF	J106
	172.0	265.0	SMDT 1960 MTL/MSL/MEL+SMDH 200D	J104
	243.0	321.0	SMDT 1960 MTL/MSL/MEL+SMDH 200-12D	J108
19.7	39.0	118.0	SMDT 1970 MTL/MSL/MEL+SMDH 200-1.5D	J108
	39.0	118.0	SMDT 1970 MTL/MSL/MEL+SMDH 200-1.5DF	J106
	70.0	160.0	SMDT 1970 MTL/MSL/MEL+SMDH 200-3D	J108
	70.0	160.0	SMDT 1970 MTL/MSL/MEL+SMDH 200-3DF	J106
	70.0	160.0	SMDT 1970 MTL/MSL/MEL+SMDH 200M	J104
	88.1	182.6	MDE 1970S20E04	J16
	111.0	200.0	SMDT 1970 MTL/MSL/MEL+SMDH 200-5D	J108
	111.0	200.0	SMDT 1970 MTL/MSL/MEL+SMDH 200-5DF	J106
	111.0	200.0	SMDT 1970 MTL/MSL/MEL+SMDH 200L	J104
	172.0	265.0	SMDT 1970 MTL/MSL/MEL+SMDH 200-8D	J108
	172.0	265.0	SMDT 1970 MTL/MSL/MEL+SMDH 200-8DF	J106
	172.0	265.0	SMDT 1970 MTL/MSL/MEL+SMDH 200D	J104
	243.0	321.0	SMDT 1970 MTL/MSL/MEL+SMDH 200-12D	J108
19.8	39.0	118.0	SMDT 1980 MTL/MSL/MEL+SMDH 200-1.5D	J108
	39.0	118.0	SMDT 1980 MTL/MSL/MEL+SMDH 200-1.5DF	J106
	70.0	160.0	SMDT 1980 MTL/MSL/MEL+SMDH 200-3D	J108
	70.0	160.0	SMDT 1980 MTL/MSL/MEL+SMDH 200-3DF	J106
	70.0	160.0	SMDT 1980 MTL/MSL/MEL+SMDH 200M	J104
	111.0	200.0	SMDT 1980 MTL/MSL/MEL+SMDH 200-5D	J108
	111.0	200.0	SMDT 1980 MTL/MSL/MEL+SMDH 200-5DF	J106
	111.0	200.0	SMDT 1980 MTL/MSL/MEL+SMDH 200L	J104
	172.0	265.0	SMDT 1980 MTL/MSL/MEL+SMDH 200-8D	J108
	172.0	265.0	SMDT 1980 MTL/MSL/MEL+SMDH 200-8DF	J106
	172.0	265.0	SMDT 1980 MTL/MSL/MEL+SMDH 200D	J104
	243.0	321.0	SMDT 1980 MTL/MSL/MEL+SMDH 200-12D	J108
19.9	39.0	118.0	SMDT 1990 MTL/MSL/MEL+SMDH 200-1.5D	J108
	39.0	118.0	SMDT 1990 MTL/MSL/MEL+SMDH 200-1.5DF	J106
	70.0	160.0	SMDT 1990 MTL/MSL/MEL+SMDH 200-3D	J108
	70.0	160.0	SMDT 1990 MTL/MSL/MEL+SMDH 200-3DF	J106
	70.0	160.0	SMDT 1990 MTL/MSL/MEL+SMDH 200M	J104
	111.0	200.0	SMDT 1990 MTL/MSL/MEL+SMDH 200-5D	J108
	111.0	200.0	SMDT 1990 MTL/MSL/MEL+SMDH 200-5DF	J106
	111.0	200.0	SMDT 1990 MTL/MSL/MEL+SMDH 200L	J104
	172.0	265.0	SMDT 1990 MTL/MSL/MEL+SMDH 200-8D	J108
	172.0	265.0	SMDT 1990 MTL/MSL/MEL+SMDH 200-8DF	J106

(Blue text: Flat head ■Indexable ■HSS)

● Diameter ø19.9 to ø20.3mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
19.9	172.0	265.0	SMDT 1990 MTL/MSL/MEL+SMDH 200D	J104
	243.0	321.0	SMDT 1990 MTL/MSL/MEL+SMDH 200-12D	J108
20.0	35.0	114.0	SMDT 2000 MFS+SMDH 200-1.5D	J116
	35.0	114.0	SMDT 2000 MFS+SMDH 200-1.5DF	J114
	35.6	130.6	MDE 2000S20E02	J16
	36.1	131.1	MDW 2000GS2	J53
	39.0	118.0	SMDT 2000 MTL/MSL/MEL+SMDH 200-1.5D	J108
	39.0	118.0	SMDT 2000 MTL/MSL/MEL+SMDH 200-1.5DF	J106
	40.0	114.0	PDL 200D2S25	J136
	60.0	134.0	PDL 200D3S25	J136
	60.0	140.0	MDF 2000S2D	J39
	60.0	250.0	MDF 2000L2D	J42
	60.0	250.0	MDF 2000L2D-S18	J42
	64.0	168.0	HMD 200S	J170
	66.0	157.0	SMDT 2000 MFS+SMDH 200-3D	J116
	66.0	157.0	SMDT 2000 MFS+SMDH 200-3DF	J114
	66.0	157.0	SMDT 2000 MFS+SMDH 200M	J112
	70.0	160.0	SMDT 2000 MTL/MSL/MEL+SMDH 200-3D	J108
	70.0	160.0	SMDT 2000 MTL/MSL/MEL+SMDH 200-3DF	J106
	70.0	160.0	SMDT 2000 MTL/MSL/MEL+SMDH 200M	J104
	73.6	173.6	MDE 2000S20H03	J24
	73.6	173.6	MDW 2000HX3	J68
	74.1	174.1	MDW 2000HGS3	J58
	75.6	158.6	KDS 200MAK	J164
	87.6	182.6	MDE 2000S20E04	J16
	88.1	183.1	MDW 2000GS4	J53
	107.0	197.0	SMDT 2000 MFS+SMDH 200-5D	J116
	107.0	197.0	SMDT 2000 MFS+SMDH 200-5DF	J114
	107.0	197.0	SMDT 2000 MFS+SMDH 200L	J112
	110.0	210.0	HMD 200M	J170
	111.0	200.0	SMDT 2000 MTL/MSL/MEL+SMDH 200-5D	J108
	111.0	200.0	SMDT 2000 MTL/MSL/MEL+SMDH 200-5DF	J106
	111.0	200.0	SMDT 2000 MTL/MSL/MEL+SMDH 200L	J104
	116.6	198.6	KDS 200LAK	J164
	133.6	233.6	MDE 2000S20H05	J24
	133.6	233.6	MDW 2000HX5	J68
	134.1	234.1	MDW 2000HGS5	J58
	164.6	248.6	KDS 200DAK	J164
	169.0	262.0	SMDT 2000 MFS+SMDH 200-8D	J116
	169.0	262.0	SMDT 2000 MFS+SMDH 200-8DF	J114
	169.0	262.0	SMDT 2000 MFS+SMDH 200D	J112
	172.0	265.0	SMDT 2000 MTL/MSL/MEL+SMDH 200-8D	J108
	172.0	265.0	SMDT 2000 MTL/MSL/MEL+SMDH 200-8DF	J106
	172.0	265.0	SMDT 2000 MTL/MSL/MEL+SMDH 200D	J104
	240.0	318.0	SMDT 2000 MFS+SMDH 200-12D	J116
	243.0	321.0	SMDT 2000 MTL/MSL/MEL+SMDH 200-12D	J108
20.1	39.0	118.0	SMDT 2010 MTL/MSL/MEL+SMDH 200-1.5D	J108
	39.0	118.0	SMDT 2010 MTL/MSL/MEL+SMDH 200-1.5DF	J106
	70.0	160.0	SMDT 2010 MTL/MSL/MEL+SMDH 200-3D	J108
	70.0	160.0	SMDT 2010 MTL/MSL/MEL+SMDH 200-3DF	J106
	70.0	160.0	SMDT 2010 MTL/MSL/MEL+SMDH 200M	J104
	111.0	200.0	SMDT 2010 MTL/MSL/MEL+SMDH 200-5D	J108
	111.0	200.0	SMDT 2010 MTL/MSL/MEL+SMDH 200-5DF	J106
	111.0	200.0	SMDT 2010 MTL/MSL/MEL+SMDH 200L	J104
	172.0	265.0	SMDT 2010 MTL/MSL/MEL+SMDH 200-8D	J108
	172.0	265.0	SMDT 2010 MTL/MSL/MEL+SMDH 200-8DF	J106
	172.0	265.0	SMDT 2010 MTL/MSL/MEL+SMDH 200D	J104
	243.0	321.0	SMDT 2010 MTL/MSL/MEL+SMDH 200-12D	J108
20.2	39.0	118.0	SMDT 2020 MTL/MSL/MEL+SMDH 200-1.5D	J108
	39.0	118.0	SMDT 2020 MTL/MSL/MEL+SMDH 200-1.5DF	J106
	70.0	160.0	SMDT 2020 MTL/MSL/MEL+SMDH 200-3D	J108
	70.0	160.0	SMDT 2020 MTL/MSL/MEL+SMDH 200-3DF	J106
	70.0	160.0	SMDT 2020 MTL/MSL/MEL+SMDH 200M	J104
	111.0	200.0	SMDT 2020 MTL/MSL/MEL+SMDH 200-5D	J108
	111.0	200.0	SMDT 2020 MTL/MSL/MEL+SMDH 200-5DF	J106
	111.0	200.0	SMDT 2020 MTL/MSL/MEL+SMDH 200L	J104
	172.0	265.0	SMDT 2020 MTL/MSL/MEL+SMDH 200-8D	J108
	172.0	265.0	SMDT 2020 MTL/MSL/MEL+SMDH 200-8DF	J106
	172.0	265.0	SMDT 2020 MTL/MSL/MEL+SMDH 200D	J104
	243.0	321.0	SMDT 2020 MTL/MSL/MEL+SMDH 200-12D	J108
20.3	39.0	118.0	SMDT 2030 MTL/MSL/MEL+SMDH 200-1.5D	J108
	39.0	118.0	SMDT 2030 MTL/MSL/MEL+SMDH 200-1.5DF	J106
	70.0	160.0	SMDT 2030 MTL/MSL/MEL+SMDH 200-3D	J108
	70.0	160.0	SMDT 2030 MTL/MSL/MEL+SMDH 200-3DF	J106
	70.0	160.0	SMDT 2030 MTL/MSL/MEL+SMDH 200M	J104
	111.0	200.0	SMDT 2030 MTL/MSL/MEL+SMDH 200-5D	J108
	111.0	200.0	SMDT 2030 MTL/MSL/MEL+SMDH 200-5DF	J106
	111.0	200.0	SMDT 2030 MTL/MSL/MEL+SMDH 200L	J104
	172.0	265.0	SMDT 2030 MTL/MSL/MEL+SMDH 200-8D	J108
	172.0	265.0	SMDT 2030 MTL/MSL/MEL+SMDH 200-8DF	J106

(Blue text: Flat head ■Indexable ■HSS)

● Diameter ø20.3 to ø20.9mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
20.3	172.0	265.0	SMDT 2030 MTL/MSL/MEL+SMDH 200D	J104
	243.0	321.0	SMDT 2030 MTL/MSL/MEL+SMDH 200-12D	J108
20.4	39.0	118.0	SMDT 2040 MTL/MSL/MEL+SMDH 200-1.5D	J108
	39.0	118.0	SMDT 2040 MTL/MSL/MEL+SMDH 200-1.5DF	J106
	70.0	160.0	SMDT 2040 MTL/MSL/MEL+SMDH 200-3D	J108
	70.0	160.0	SMDT 2040 MTL/MSL/MEL+SMDH 200-3DF	J106
	70.0	160.0	SMDT 2040 MTL/MSL/MEL+SMDH 200M	J104
	111.0	200.0	SMDT 2040 MTL/MSL/MEL+SMDH 200-5D	J108
	111.0	200.0	SMDT 2040 MTL/MSL/MEL+SMDH 200-5DF	J106
	111.0	200.0	SMDT 2040 MTL/MSL/MEL+SMDH 200L	J104
	172.0	265.0	SMDT 2040 MTL/MSL/MEL+SMDH 200-8D	J108
	172.0	265.0	SMDT 2040 MTL/MSL/MEL+SMDH 200-8DF	J106
	172.0	265.0	SMDT 2040 MTL/MSL/MEL+SMDH 200D	J104
	243.0	321.0	SMDT 2040 MTL/MSL/MEL+SMDH 200-12D	J108
20.5	35.0	114.0	SMDT 2050 MFS+SMDH 200-1.5D	J116
	35.0	114.0	SMDT 2050 MFS+SMDH 200-1.5DF	J114
	39.0	118.0	SMDT 2050 MTL/MSL/MEL+SMDH 200-1.5D	J108
	39.0	118.0	SMDT 2050 MTL/MSL/MEL+SMDH 200-1.5DF	J106
	66.0	157.0	SMDT 2050 MFS+SMDH 200-3D	J116
	66.0	157.0	SMDT 2050 MFS+SMDH 200-3DF	J114
	66.0	157.0	SMDT 2050 MFS+SMDH 200M	J112
	70.0	160.0	SMDT 2050 MTL/MSL/MEL+SMDH 200-3D	J108
	70.0	160.0	SMDT 2050 MTL/MSL/MEL+SMDH 200-3DF	J106
	70.0	160.0	SMDT 2050 MTL/MSL/MEL+SMDH 200M	J104
	75.7	158.7	KDS 205MAK	J164
	107.0	197.0	SMDT 2050 MFS+SMDH 200-5D	J116
	107.0	197.0	SMDT 2050 MFS+SMDH 200-5DF	J114
	107.0	197.0	SMDT 2050 MFS+SMDH 200L	J112
	111.0	200.0	SMDT 2050 MTL/MSL/MEL+SMDH 200-5D	J108
	111.0	200.0	SMDT 2050 MTL/MSL/MEL+SMDH 200-5DF	J106
	111.0	200.0	SMDT 2050 MTL/MSL/MEL+SMDH 200L	J104
	116.7	198.7	KDS 205LAK	J164
	164.7	248.7	KDS 205DAK	J164
	169.0	262.0	SMDT 2050 MFS+SMDH 200-8D	J116
	169.0	262.0	SMDT 2050 MFS+SMDH 200-8DF	J114
	169.0	262.0	SMDT 2050 MFS+SMDH 200D	J112
	172.0	265.0	SMDT 2050 MTL/MSL/MEL+SMDH 200-8D	J108
	172.0	265.0	SMDT 2050 MTL/MSL/MEL+SMDH 200-8DF	J106
	172.0	265.0	SMDT 2050 MTL/MSL/MEL+SMDH 200D	J104
	240.0	318.0	SMDT 2050 MFS+SMDH 200-12D	J116
	243.0	321.0	SMDT 2050 MTL/MSL/MEL+SMDH 200-12D	J108
20.6	41.0	119.0	SMDT 2060 MTL/MSL/MEL+SMDH 210-1.5D	J108
	41.0	119.0	SMDT 2060 MTL/MSL/MEL+SMDH 210-1.5DF	J106
	73.0	160.0	SMDT 2060 MTL/MSL/MEL+SMDH 210-3D	J108
	73.0	160.0	SMDT 2060 MTL/MSL/MEL+SMDH 210-3DF	J106
	73.0	160.0	SMDT 2060 MTL/MSL/MEL+SMDH 210M	J104
	116.0	200.0	SMDT 2060 MTL/MSL/MEL+SMDH 210-5D	J108
	116.0	200.0	SMDT 2060 MTL/MSL/MEL+SMDH 210-5DF	J106
	116.0	200.0	SMDT 2060 MTL/MSL/MEL+SMDH 210L	J104
	180.0	270.0	SMDT 2060 MTL/MSL/MEL+SMDH 210-8D	J108
	180.0	270.0	SMDT 2060 MTL/MSL/MEL+SMDH 210-8DF	J106
	180.0	270.0	SMDT 2060 MTL/MSL/MEL+SMDH 210D	J104
	255.0	334.0	SMDT 2060 MTL/MSL/MEL+SMDH 210-12D	J108
20.7	41.0	119.0	SMDT 2070 MTL/MSL/MEL+SMDH 210-1.5D	J108
	41.0	119.0	SMDT 2070 MTL/MSL/MEL+SMDH 210-1.5DF	J106
	73.0	160.0	SMDT 2070 MTL/MSL/MEL+SMDH 210-3D	J108
	73.0	160.0	SMDT 2070 MTL/MSL/MEL+SMDH 210-3DF	J106
	73.0	160.0	SMDT 2070 MTL/MSL/MEL+SMDH 210M	J104
	116.0	200.0	SMDT 2070 MTL/MSL/MEL+SMDH 210-5D	J108
	116.0	200.0	SMDT 2070 MTL/MSL/MEL+SMDH 210-5DF	J106
	116.0	200.0	SMDT 2070 MTL/MSL/MEL+SMDH 210L	J104
	180.0	270.0	SMDT 2070 MTL/MSL/MEL+SMDH 210-8D	J108
	180.0	270.0	SMDT 2070 MTL/MSL/MEL+SMDH 210-8DF	J106
	180.0	270.0	SMDT 2070 MTL/MSL/MEL+SMDH 210D	J104
	255.0	334.0	SMDT 2070 MTL/MSL/MEL+SMDH 210-12D	J108
20.8	41.0	119.0	SMDT 2080 MTL/MSL/MEL+SMDH 210-1.5D	J108
	41.0	119.0	SMDT 2080 MTL/MSL/MEL+SMDH 210-1.5DF	J106
	73.0	160.0	SMDT 2080 MTL/MSL/MEL+SMDH 210-3D	J108
	73.0	160.0	SMDT 2080 MTL/MSL/MEL+SMDH 210-3DF	J106
	73.0	160.0	SMDT 2080 MTL/MSL/MEL+SMDH 210M	J104
	116.0	200.0	SMDT 2080 MTL/MSL/MEL+SMDH 210-5D	J108
	116.0	200.0	SMDT 2080 MTL/MSL/MEL+SMDH 210-5DF	J106
	116.0	200.0	SMDT 2080 MTL/MSL/MEL+SMDH 210L	J104
	180.0	270.0	SMDT 2080 MTL/MSL/MEL+SMDH 210-8D	J108
	180.0	270.0	SMDT 2080 MTL/MSL/MEL+SMDH 210-8DF	J106
	180.0	270.0	SMDT 2080 MTL/MSL/MEL+SMDH 210D	J104
	255.0	334.0	SMDT 2080 MTL/MSL/MEL+SMDH 210-12D	J108
20.9	41.0	119.0	SMDT 2090 MTL/MSL/MEL+SMDH 210-1.5D	J108
	41.0	119.0	SMDT 2090 MTL/MSL/MEL+SMDH 210-1.5DF	J106
	73.0	160.0	SMDT 2090 MTL/MSL/MEL+SMDH 210-3D	J108

(Blue text: Flat head ■Indexable ■HSS)

Effective Length (LU) is a guideline for the usable length. Take into account the chip evacuation in relation to the flute length (LCF) when drilling.

Effective Length List by Diameter

● Diameter ø20.9 to ø21.4mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
20.9	73.0	160.0	SMDT 2090 MTL/MSL/MEL+SMDH 210-3DF	J106
	73.0	160.0	SMDT 2090 MTL/MSL/MEL+SMDH 210M	J104
	116.0	200.0	SMDT 2090 MTL/MSL/MEL+SMDH 210-5D	J108
	116.0	200.0	SMDT 2090 MTL/MSL/MEL+SMDH 210-5DF	J106
	116.0	200.0	SMDT 2090 MTL/MSL/MEL+SMDH 210L	J104
	180.0	270.0	SMDT 2090 MTL/MSL/MEL+SMDH 210-8D	J108
	180.0	270.0	SMDT 2090 MTL/MSL/MEL+SMDH 210-8DF	J106
	180.0	270.0	SMDT 2090 MTL/MSL/MEL+SMDH 210D	J104
	255.0	334.0	SMDT 2090 MTL/MSL/MEL+SMDH 210-12D	J108
21.0	37.0	116.0	SMDT 2100 MFS+SMDH 210-1.5D	J116
	37.0	116.0	SMDT 2100 MFS+SMDH 210-1.5DF	J114
	41.0	119.0	SMDT 2100 MTL/MSL/MEL+SMDH 210-1.5D	J108
	41.0	119.0	SMDT 2100 MTL/MSL/MEL+SMDH 210-1.5DF	J106
	69.0	157.0	SMDT 2100 MFS+SMDH 210-3D	J116
	69.0	157.0	SMDT 2100 MFS+SMDH 210-3DF	J114
	69.0	157.0	SMDT 2100 MFS+SMDH 210M	J112
	73.0	160.0	SMDT 2100 MTL/MSL/MEL+SMDH 210-3D	J108
	73.0	160.0	SMDT 2100 MTL/MSL/MEL+SMDH 210-3DF	J106
	73.0	160.0	SMDT 2100 MTL/MSL/MEL+SMDH 210M	J104
	78.8	158.8	KDS 210MAK	J164
	112.0	197.0	SMDT 2100 MFS+SMDH 210-5D	J116
	112.0	197.0	SMDT 2100 MFS+SMDH 210-5DF	J114
	112.0	197.0	SMDT 2100 MFS+SMDH 210L	J112
	116.0	200.0	SMDT 2100 MTL/MSL/MEL+SMDH 210-5D	J108
	116.0	200.0	SMDT 2100 MTL/MSL/MEL+SMDH 210-5DF	J106
	116.0	200.0	SMDT 2100 MTL/MSL/MEL+SMDH 210L	J104
	121.8	198.8	KDS 210LAK	J164
	169.8	248.8	KDS 210DAK	J164
	177.0	267.0	SMDT 2100 MFS+SMDH 210-8D	J116
	177.0	267.0	SMDT 2100 MFS+SMDH 210-8DF	J114
	177.0	267.0	SMDT 2100 MFS+SMDH 210D	J112
	180.0	270.0	SMDT 2100 MTL/MSL/MEL+SMDH 210-8D	J108
	180.0	270.0	SMDT 2100 MTL/MSL/MEL+SMDH 210-8DF	J106
	180.0	270.0	SMDT 2100 MTL/MSL/MEL+SMDH 210D	J104
	252.0	330.0	SMDT 2100 MFS+SMDH 210-12D	J116
	255.0	334.0	SMDT 2100 MTL/MSL/MEL+SMDH 210-12D	J108
21.1	41.0	119.0	SMDT 2110 MTL/MSL/MEL+SMDH 210-1.5D	J108
	41.0	119.0	SMDT 2110 MTL/MSL/MEL+SMDH 210-1.5DF	J106
	73.0	160.0	SMDT 2110 MTL/MSL/MEL+SMDH 210-3D	J108
	73.0	160.0	SMDT 2110 MTL/MSL/MEL+SMDH 210-3DF	J106
	73.0	160.0	SMDT 2110 MTL/MSL/MEL+SMDH 210M	J104
	116.0	200.0	SMDT 2110 MTL/MSL/MEL+SMDH 210-5D	J108
	116.0	200.0	SMDT 2110 MTL/MSL/MEL+SMDH 210-5DF	J106
	116.0	200.0	SMDT 2110 MTL/MSL/MEL+SMDH 210L	J104
	180.0	270.0	SMDT 2110 MTL/MSL/MEL+SMDH 210-8D	J108
	180.0	270.0	SMDT 2110 MTL/MSL/MEL+SMDH 210-8DF	J106
	180.0	270.0	SMDT 2110 MTL/MSL/MEL+SMDH 210D	J104
	255.0	334.0	SMDT 2110 MTL/MSL/MEL+SMDH 210-12D	J108
21.2	41.0	119.0	SMDT 2120 MTL/MSL/MEL+SMDH 210-1.5D	J108
	41.0	119.0	SMDT 2120 MTL/MSL/MEL+SMDH 210-1.5DF	J106
	73.0	160.0	SMDT 2120 MTL/MSL/MEL+SMDH 210-3D	J108
	73.0	160.0	SMDT 2120 MTL/MSL/MEL+SMDH 210-3DF	J106
	73.0	160.0	SMDT 2120 MTL/MSL/MEL+SMDH 210M	J104
	78.9	158.9	KDS 212MAK	J164
	116.0	200.0	SMDT 2120 MTL/MSL/MEL+SMDH 210-5D	J108
	116.0	200.0	SMDT 2120 MTL/MSL/MEL+SMDH 210-5DF	J106
	116.0	200.0	SMDT 2120 MTL/MSL/MEL+SMDH 210L	J104
	121.9	198.9	KDS 212LAK	J164
	180.0	270.0	SMDT 2120 MTL/MSL/MEL+SMDH 210-8D	J108
	180.0	270.0	SMDT 2120 MTL/MSL/MEL+SMDH 210-8DF	J106
	180.0	270.0	SMDT 2120 MTL/MSL/MEL+SMDH 210D	J104
	255.0	334.0	SMDT 2120 MTL/MSL/MEL+SMDH 210-12D	J108
21.3	41.0	119.0	SMDT 2130 MTL/MSL/MEL+SMDH 210-1.5D	J108
	41.0	119.0	SMDT 2130 MTL/MSL/MEL+SMDH 210-1.5DF	J106
	73.0	160.0	SMDT 2130 MTL/MSL/MEL+SMDH 210-3D	J108
	73.0	160.0	SMDT 2130 MTL/MSL/MEL+SMDH 210-3DF	J106
	73.0	160.0	SMDT 2130 MTL/MSL/MEL+SMDH 210M	J104
	116.0	200.0	SMDT 2130 MTL/MSL/MEL+SMDH 210-5D	J108
	116.0	200.0	SMDT 2130 MTL/MSL/MEL+SMDH 210-5DF	J106
	116.0	200.0	SMDT 2130 MTL/MSL/MEL+SMDH 210L	J104
	180.0	270.0	SMDT 2130 MTL/MSL/MEL+SMDH 210-8D	J108
	180.0	270.0	SMDT 2130 MTL/MSL/MEL+SMDH 210-8DF	J106
	180.0	270.0	SMDT 2130 MTL/MSL/MEL+SMDH 210D	J104
	255.0	334.0	SMDT 2130 MTL/MSL/MEL+SMDH 210-12D	J108
21.4	41.0	119.0	SMDT 2140 MTL/MSL/MEL+SMDH 210-1.5D	J108
	41.0	119.0	SMDT 2140 MTL/MSL/MEL+SMDH 210-1.5DF	J106
	73.0	160.0	SMDT 2140 MTL/MSL/MEL+SMDH 210-3D	J108
	73.0	160.0	SMDT 2140 MTL/MSL/MEL+SMDH 210-3DF	J106
	73.0	160.0	SMDT 2140 MTL/MSL/MEL+SMDH 210M	J104
	116.0	200.0	SMDT 2140 MTL/MSL/MEL+SMDH 210-5D	J108

(Blue text: Flat head ■Indexable ■HSS)

● Diameter ø21.4 to ø21.9mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
21.4	116.0	200.0	SMDT 2140 MTL/MSL/MEL+SMDH 210-5DF	J106
	116.0	200.0	SMDT 2140 MTL/MSL/MEL+SMDH 210L	J104
	180.0	270.0	SMDT 2140 MTL/MSL/MEL+SMDH 210-8D	J108
	180.0	270.0	SMDT 2140 MTL/MSL/MEL+SMDH 210-8DF	J106
	180.0	270.0	SMDT 2140 MTL/MSL/MEL+SMDH 210D	J104
	255.0	334.0	SMDT 2140 MTL/MSL/MEL+SMDH 210-12D	J108
21.5	37.0	116.0	SMDT 2150 MFS+SMDH 210-1.5D	J116
	37.0	116.0	SMDT 2150 MFS+SMDH 210-1.5DF	J114
	41.0	119.0	SMDT 2150 MTL/MSL/MEL+SMDH 210-1.5D	J108
	41.0	119.0	SMDT 2150 MTL/MSL/MEL+SMDH 210-1.5DF	J106
	69.0	157.0	SMDT 2150 MFS+SMDH 210-3D	J116
	69.0	157.0	SMDT 2150 MFS+SMDH 210-3DF	J114
	69.0	157.0	SMDT 2150 MFS+SMDH 210M	J112
	73.0	160.0	SMDT 2150 MTL/MSL/MEL+SMDH 210-3D	J108
	73.0	160.0	SMDT 2150 MTL/MSL/MEL+SMDH 210-3DF	J106
	73.0	160.0	SMDT 2150 MTL/MSL/MEL+SMDH 210M	J104
	78.9	158.9	KDS 215MAK	J164
	112.0	197.0	SMDT 2150 MFS+SMDH 210-5D	J116
	112.0	197.0	SMDT 2150 MFS+SMDH 210-5DF	J114
	112.0	197.0	SMDT 2150 MFS+SMDH 210L	J112
	116.0	200.0	SMDT 2150 MTL/MSL/MEL+SMDH 210-5D	J108
	116.0	200.0	SMDT 2150 MTL/MSL/MEL+SMDH 210-5DF	J106
	116.0	200.0	SMDT 2150 MTL/MSL/MEL+SMDH 210L	J104
	121.9	198.9	KDS 215LAK	J164
	169.9	248.9	KDS 215DAK	J164
	177.0	267.0	SMDT 2150 MFS+SMDH 210-8D	J116
	177.0	267.0	SMDT 2150 MFS+SMDH 210-8DF	J114
	177.0	267.0	SMDT 2150 MFS+SMDH 210D	J112
	180.0	270.0	SMDT 2150 MTL/MSL/MEL+SMDH 210-8D	J108
	180.0	270.0	SMDT 2150 MTL/MSL/MEL+SMDH 210-8DF	J106
	180.0	270.0	SMDT 2150 MTL/MSL/MEL+SMDH 210D	J104
	252.0	330.0	SMDT 2150 MFS+SMDH 210-12D	J116
	255.0	334.0	SMDT 2150 MTL/MSL/MEL+SMDH 210-12D	J108
21.6	43.0	121.0	SMDT 2160 MTL/MSL/MEL+SMDH 220-1.5D	J109
	43.0	121.0	SMDT 2160 MTL/MSL/MEL+SMDH 220-1.5DF	J106
	77.0	165.0	SMDT 2160 MTL/MSL/MEL+SMDH 220-3D	J109
	77.0	165.0	SMDT 2160 MTL/MSL/MEL+SMDH 220-3DF	J106
	77.0	165.0	SMDT 2160 MTL/MSL/MEL+SMDH 220M	J104
	123.0	205.0	SMDT 2160 MTL/MSL/MEL+SMDH 220-5D	J109
	123.0	205.0	SMDT 2160 MTL/MSL/MEL+SMDH 220-5DF	J106
	123.0	205.0	SMDT 2160 MTL/MSL/MEL+SMDH 220L	J104
	191.0	275.0	SMDT 2160 MTL/MSL/MEL+SMDH 220-8D	J109
	191.0	275.0	SMDT 2160 MTL/MSL/MEL+SMDH 220-8DF	J106
	191.0	275.0	SMDT 2160 MTL/MSL/MEL+SMDH 220D	J104
	268.0	347.0	SMDT 2160 MTL/MSL/MEL+SMDH 220-12D	J109
21.7	43.0	121.0	SMDT 2170 MTL/MSL/MEL+SMDH 220-1.5D	J109
	43.0	121.0	SMDT 2170 MTL/MSL/MEL+SMDH 220-1.5DF	J106
	77.0	165.0	SMDT 2170 MTL/MSL/MEL+SMDH 220-3D	J109
	77.0	165.0	SMDT 2170 MTL/MSL/MEL+SMDH 220-3DF	J106
	77.0	165.0	SMDT 2170 MTL/MSL/MEL+SMDH 220M	J104
	123.0	205.0	SMDT 2170 MTL/MSL/MEL+SMDH 220-5D	J109
	123.0	205.0	SMDT 2170 MTL/MSL/MEL+SMDH 220-5DF	J106
	123.0	205.0	SMDT 2170 MTL/MSL/MEL+SMDH 220L	J104
	191.0	275.0	SMDT 2170 MTL/MSL/MEL+SMDH 220-8D	J109
	191.0	275.0	SMDT 2170 MTL/MSL/MEL+SMDH 220-8DF	J106
	191.0	275.0	SMDT 2170 MTL/MSL/MEL+SMDH 220D	J104
	268.0	347.0	SMDT 2170 MTL/MSL/MEL+SMDH 220-12D	J109
21.8	43.0	121.0	SMDT 2180 MTL/MSL/MEL+SMDH 220-1.5D	J109
	43.0	121.0	SMDT 2180 MTL/MSL/MEL+SMDH 220-1.5DF	J106
	77.0	165.0	SMDT 2180 MTL/MSL/MEL+SMDH 220-3D	J109
	77.0	165.0	SMDT 2180 MTL/MSL/MEL+SMDH 220-3DF	J106
	77.0	165.0	SMDT 2180 MTL/MSL/MEL+SMDH 220M	J104
	123.0	205.0	SMDT 2180 MTL/MSL/MEL+SMDH 220-5D	J109
	123.0	205.0	SMDT 2180 MTL/MSL/MEL+SMDH 220-5DF	J106
	123.0	205.0	SMDT 2180 MTL/MSL/MEL+SMDH 220L	J104
	191.0	275.0	SMDT 2180 MTL/MSL/MEL+SMDH 220-8D	J109
	191.0	275.0	SMDT 2180 MTL/MSL/MEL+SMDH 220-8DF	J106
	191.0	275.0	SMDT 2180 MTL/MSL/MEL+SMDH 220D	J104
	268.0	347.0	SMDT 2180 MTL/MSL/MEL+SMDH 220-12D	J109
21.9	43.0	121.0	SMDT 2190 MTL/MSL/MEL+SMDH 220-1.5D	J109
	43.0	121.0	SMDT 2190 MTL/MSL/MEL+SMDH 220-1.5DF	J106
	77.0	165.0	SMDT 2190 MTL/MSL/MEL+SMDH 220-3D	J109
	77.0	165.0	SMDT 2190 MTL/MSL/MEL+SMDH 220-3DF	J106
	77.0	165.0	SMDT 2190 MTL/MSL/MEL+SMDH 220M	J104
	123.0	205.0	SMDT 2190 MTL/MSL/MEL+SMDH 220-5D	J109
	123.0	205.0	SMDT 2190 MTL/MSL/MEL+SMDH 220-5DF	J106
	123.0	205.0	SMDT 2190 MTL/MSL/MEL+SMDH 220L	J104
	191.0	275.0	SMDT 2190 MTL/MSL/MEL+SMDH 220-8D	J109
	191.0	275.0	SMDT 2190 MTL/MSL/MEL+SMDH 220-8DF	J106
	191.0	275.0	SMDT 2190 MTL/MSL/MEL+SMDH 220D	J104

(Blue text: Flat head ■Indexable ■HSS)

● Diameter ø21.9 to ø22.5mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
21.9	268.0	347.0	SMDT 2190 MTL/MSL/MEL+SMDH 220-12D	J109
22.0	39.0	117.0	SMDT 2200 MFS+SMDH 220-1.5D	J117
	39.0	117.0	SMDT 2200 MFS+SMDH 220-1.5DF	J114
	43.0	121.0	SMDT 2200 MTL/MSL/MEL+SMDH 220-1.5D	J109
	43.0	121.0	SMDT 2200 MTL/MSL/MEL+SMDH 220-1.5DF	J106
	73.0	161.0	SMDT 2200 MFS+SMDH 220-3D	J117
	73.0	161.0	SMDT 2200 MFS+SMDH 220-3DF	J114
	73.0	161.0	SMDT 2200 MFS+SMDH 220M	J112
	77.0	165.0	SMDT 2200 MTL/MSL/MEL+SMDH 220-3D	J109
	77.0	165.0	SMDT 2200 MTL/MSL/MEL+SMDH 220-3DF	J106
	77.0	165.0	SMDT 2200 MTL/MSL/MEL+SMDH 220M	J104
	83.0	164.0	KDS 220MAK	J164
	119.0	201.0	SMDT 2200 MFS+SMDH 220-5D	J117
	119.0	201.0	SMDT 2200 MFS+SMDH 220-5DF	J114
	119.0	201.0	SMDT 2200 MFS+SMDH 220L	J112
	123.0	205.0	SMDT 2200 MTL/MSL/MEL+SMDH 220-5D	J109
	123.0	205.0	SMDT 2200 MTL/MSL/MEL+SMDH 220-5DF	J106
	123.0	205.0	SMDT 2200 MTL/MSL/MEL+SMDH 220L	J104
	128.0	204.0	KDS 220LAK	J164
	181.0	254.0	KDS 220DAK	J164
	187.0	271.0	SMDT 2200 MFS+SMDH 220-8D	J117
	187.0	271.0	SMDT 2200 MFS+SMDH 220-8DF	J114
	187.0	271.0	SMDT 2200 MFS+SMDH 220D	J112
	191.0	275.0	SMDT 2200 MTL/MSL/MEL+SMDH 220-8D	J109
	191.0	275.0	SMDT 2200 MTL/MSL/MEL+SMDH 220-8DF	J106
	191.0	275.0	SMDT 2200 MTL/MSL/MEL+SMDH 220D	J104
	264.0	343.0	SMDT 2200 MFS+SMDH 220-12D	J117
	268.0	347.0	SMDT 2200 MTL/MSL/MEL+SMDH 220-12D	J109
22.1	43.0	121.0	SMDT 2210 MTL/MSL/MEL+SMDH 220-1.5D	J109
	43.0	121.0	SMDT 2210 MTL/MSL/MEL+SMDH 220-1.5DF	J106
	77.0	165.0	SMDT 2210 MTL/MSL/MEL+SMDH 220-3D	J109
	77.0	165.0	SMDT 2210 MTL/MSL/MEL+SMDH 220-3DF	J106
	77.0	165.0	SMDT 2210 MTL/MSL/MEL+SMDH 220M	J104
	123.0	205.0	SMDT 2210 MTL/MSL/MEL+SMDH 220-5D	J109
	123.0	205.0	SMDT 2210 MTL/MSL/MEL+SMDH 220-5DF	J106
	123.0	205.0	SMDT 2210 MTL/MSL/MEL+SMDH 220L	J104
	191.0	275.0	SMDT 2210 MTL/MSL/MEL+SMDH 220-8D	J109
	191.0	275.0	SMDT 2210 MTL/MSL/MEL+SMDH 220-8DF	J106
	191.0	275.0	SMDT 2210 MTL/MSL/MEL+SMDH 220D	J104
	268.0	347.0	SMDT 2210 MTL/MSL/MEL+SMDH 220-12D	J109
22.2	43.0	121.0	SMDT 2220 MTL/MSL/MEL+SMDH 220-1.5D	J109
	43.0	121.0	SMDT 2220 MTL/MSL/MEL+SMDH 220-1.5DF	J106
	77.0	165.0	SMDT 2220 MTL/MSL/MEL+SMDH 220-3D	J109
	77.0	165.0	SMDT 2220 MTL/MSL/MEL+SMDH 220-3DF	J106
	77.0	165.0	SMDT 2220 MTL/MSL/MEL+SMDH 220M	J104
	123.0	205.0	SMDT 2220 MTL/MSL/MEL+SMDH 220-5D	J109
	123.0	205.0	SMDT 2220 MTL/MSL/MEL+SMDH 220-5DF	J106
	123.0	205.0	SMDT 2220 MTL/MSL/MEL+SMDH 220L	J104
	191.0	275.0	SMDT 2220 MTL/MSL/MEL+SMDH 220-8D	J109
	191.0	275.0	SMDT 2220 MTL/MSL/MEL+SMDH 220-8DF	J106
	191.0	275.0	SMDT 2220 MTL/MSL/MEL+SMDH 220D	J104
	268.0	347.0	SMDT 2220 MTL/MSL/MEL+SMDH 220-12D	J109
22.3	43.0	121.0	SMDT 2230 MTL/MSL/MEL+SMDH 220-1.5D	J109
	43.0	121.0	SMDT 2230 MTL/MSL/MEL+SMDH 220-1.5DF	J106
	77.0	165.0	SMDT 2230 MTL/MSL/MEL+SMDH 220-3D	J109
	77.0	165.0	SMDT 2230 MTL/MSL/MEL+SMDH 220-3DF	J106
	77.0	165.0	SMDT 2230 MTL/MSL/MEL+SMDH 220M	J104
	123.0	205.0	SMDT 2230 MTL/MSL/MEL+SMDH 220-5D	J109
	123.0	205.0	SMDT 2230 MTL/MSL/MEL+SMDH 220-5DF	J106
	123.0	205.0	SMDT 2230 MTL/MSL/MEL+SMDH 220L	J104
	191.0	275.0	SMDT 2230 MTL/MSL/MEL+SMDH 220-8D	J109
	191.0	275.0	SMDT 2230 MTL/MSL/MEL+SMDH 220-8DF	J106
	191.0	275.0	SMDT 2230 MTL/MSL/MEL+SMDH 220D	J104
	268.0	347.0	SMDT 2230 MTL/MSL/MEL+SMDH 220-12D	J109
22.4	43.0	121.0	SMDT 2240 MTL/MSL/MEL+SMDH 220-1.5D	J109
	43.0	121.0	SMDT 2240 MTL/MSL/MEL+SMDH 220-1.5DF	J106
	77.0	165.0	SMDT 2240 MTL/MSL/MEL+SMDH 220-3D	J109
	77.0	165.0	SMDT 2240 MTL/MSL/MEL+SMDH 220-3DF	J106
	77.0	165.0	SMDT 2240 MTL/MSL/MEL+SMDH 220M	J104
	123.0	205.0	SMDT 2240 MTL/MSL/MEL+SMDH 220-5D	J109
	123.0	205.0	SMDT 2240 MTL/MSL/MEL+SMDH 220-5DF	J106
	123.0	205.0	SMDT 2240 MTL/MSL/MEL+SMDH 220L	J104
	191.0	275.0	SMDT 2240 MTL/MSL/MEL+SMDH 220-8D	J109
	191.0	275.0	SMDT 2240 MTL/MSL/MEL+SMDH 220-8DF	J106
	191.0	275.0	SMDT 2240 MTL/MSL/MEL+SMDH 220D	J104
	268.0	347.0	SMDT 2240 MTL/MSL/MEL+SMDH 220-12D	J109
22.5	39.0	117.0	SMDT 2250 MFS+SMDH 220-1.5D	J117
	39.0	117.0	SMDT 2250 MFS+SMDH 220-1.5DF	J114
	43.0	121.0	SMDT 2250 MTL/MSL/MEL+SMDH 220-1.5D	J109
	43.0	121.0	SMDT 2250 MTL/MSL/MEL+SMDH 220-1.5DF	J106

(Blue text: Flat head ■Indexable ■HSS)

Effective Length (LU) is a guideline for the usable length. Take into account the chip evacuation in relation to the flute length (LCF) when drilling.

Effective Length List by Diameter

● Diameter ø22.5 to ø22.9mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
22.5	73.0	161.0	SMDT 2250 MFS+SMDH 220-3D	J117
	73.0	161.0	SMDT 2250 MFS+SMDH 220-3DF	J114
	73.0	161.0	SMDT 2250 MFS+SMDH 220M	J112
	77.0	165.0	SMDT 2250 MTL/MSL/MEL+SMDH 220-3D	J109
	77.0	165.0	SMDT 2250 MTL/MSL/MEL+SMDH 220-3DF	J106
	77.0	165.0	SMDT 2250 MTL/MSL/MEL+SMDH 220M	J104
	83.1	164.1	KDS 225MAK	J164
	119.0	201.0	SMDT 2250 MFS+SMDH 220-5D	J117
	119.0	201.0	SMDT 2250 MFS+SMDH 220-5DF	J114
	119.0	201.0	SMDT 2250 MFS+SMDH 220L	J112
	123.0	205.0	SMDT 2250 MTL/MSL/MEL+SMDH 220-5D	J109
	123.0	205.0	SMDT 2250 MTL/MSL/MEL+SMDH 220-5DF	J106
	123.0	205.0	SMDT 2250 MTL/MSL/MEL+SMDH 220L	J104
	128.1	204.1	KDS 225LAK	J164
	181.1	254.1	KDS 225DAK	J164
	187.0	271.0	SMDT 2250 MFS+SMDH 220-8D	J117
	187.0	271.0	SMDT 2250 MFS+SMDH 220-8DF	J114
	187.0	271.0	SMDT 2250 MFS+SMDH 220D	J112
	191.0	275.0	SMDT 2250 MTL/MSL/MEL+SMDH 220-8D	J109
	191.0	275.0	SMDT 2250 MTL/MSL/MEL+SMDH 220-8DF	J106
	191.0	275.0	SMDT 2250 MTL/MSL/MEL+SMDH 220D	J104
	264.0	343.0	SMDT 2250 MFS+SMDH 220-12D	J117
	268.0	347.0	SMDT 2250 MTL/MSL/MEL+SMDH 220-12D	J109
22.6	43.0	121.0	SMDT 2260 MTL/MSL/MEL+SMDH 220-1.5D	J109
	43.0	121.0	SMDT 2260 MTL/MSL/MEL+SMDH 220-1.5DF	J106
	77.0	165.0	SMDT 2260 MTL/MSL/MEL+SMDH 220-3D	J109
	77.0	165.0	SMDT 2260 MTL/MSL/MEL+SMDH 220-3DF	J106
	77.0	165.0	SMDT 2260 MTL/MSL/MEL+SMDH 220M	J104
	123.0	205.0	SMDT 2260 MTL/MSL/MEL+SMDH 220-5D	J109
	123.0	205.0	SMDT 2260 MTL/MSL/MEL+SMDH 220-5DF	J106
	123.0	205.0	SMDT 2260 MTL/MSL/MEL+SMDH 220L	J104
	191.0	275.0	SMDT 2260 MTL/MSL/MEL+SMDH 220-8D	J109
	191.0	275.0	SMDT 2260 MTL/MSL/MEL+SMDH 220-8DF	J106
	191.0	275.0	SMDT 2260 MTL/MSL/MEL+SMDH 220D	J104
	268.0	347.0	SMDT 2260 MTL/MSL/MEL+SMDH 220-12D	J109
22.7	43.0	121.0	SMDT 2270 MTL/MSL/MEL+SMDH 220-1.5D	J109
	43.0	121.0	SMDT 2270 MTL/MSL/MEL+SMDH 220-1.5DF	J106
	77.0	165.0	SMDT 2270 MTL/MSL/MEL+SMDH 220-3D	J109
	77.0	165.0	SMDT 2270 MTL/MSL/MEL+SMDH 220-3DF	J106
	77.0	165.0	SMDT 2270 MTL/MSL/MEL+SMDH 220M	J104
	123.0	205.0	SMDT 2270 MTL/MSL/MEL+SMDH 220-5D	J109
	123.0	205.0	SMDT 2270 MTL/MSL/MEL+SMDH 220-5DF	J106
	123.0	205.0	SMDT 2270 MTL/MSL/MEL+SMDH 220L	J104
	191.0	275.0	SMDT 2270 MTL/MSL/MEL+SMDH 220-8D	J109
	191.0	275.0	SMDT 2270 MTL/MSL/MEL+SMDH 220-8DF	J106
	191.0	275.0	SMDT 2270 MTL/MSL/MEL+SMDH 220D	J104
	268.0	347.0	SMDT 2270 MTL/MSL/MEL+SMDH 220-12D	J109
22.8	43.0	121.0	SMDT 2280 MTL+SMDH 220-1.5D	J109
	43.0	121.0	SMDT 2280 MTL+SMDH 220-1.5DF	J106
	43.0	121.0	SMDT 2280 MSL/MEL+SMDH 220-1.5D	J109
	43.0	121.0	SMDT 2280 MSL/MEL+SMDH 220-1.5DF	J106
	77.0	165.0	SMDT 2280 MTL+SMDH 220-3D	J109
	77.0	165.0	SMDT 2280 MTL+SMDH 220-3DF	J106
	77.0	165.0	SMDT 2280 MTL+SMDH 220M	J104
	77.0	165.0	SMDT 2280 MSL/MEL+SMDH 220-3D	J109
	77.0	165.0	SMDT 2280 MSL/MEL+SMDH 220-3DF	J106
	77.0	165.0	SMDT 2280 MSL/MEL+SMDH 220M	J104
	123.0	205.0	SMDT 2280 MTL+SMDH 220-5D	J109
	123.0	205.0	SMDT 2280 MTL+SMDH 220-5DF	J106
	123.0	205.0	SMDT 2280 MTL+SMDH 220L	J104
	123.0	205.0	SMDT 2280 MSL/MEL+SMDH 220-5D	J109
	123.0	205.0	SMDT 2280 MSL/MEL+SMDH 220-5DF	J106
	123.0	205.0	SMDT 2280 MSL/MEL+SMDH 220L	J104
	191.0	275.0	SMDT 2280 MTL+SMDH 220-8D	J109
	191.0	275.0	SMDT 2280 MTL+SMDH 220-8DF	J106
	191.0	275.0	SMDT 2280 MTL+SMDH 220D	J104
	191.0	275.0	SMDT 2280 MSL/MEL+SMDH 220-8D	J109
	191.0	275.0	SMDT 2280 MSL/MEL+SMDH 220-8DF	J106
	191.0	275.0	SMDT 2280 MSL/MEL+SMDH 220D	J104
	268.0	347.0	SMDT 2280 MTL+SMDH 220-12D	J109
	268.0	347.0	SMDT 2280 MSL/MEL+SMDH 220-12D	J109
22.9	45.0	122.0	SMDT 2290 MTL/MSL/MEL+SMDH 230-1.5D	J109
	45.0	122.0	SMDT 2290 MTL/MSL/MEL+SMDH 230-1.5DF	J106
	80.0	165.0	SMDT 2290 MTL/MSL/MEL+SMDH 230-3D	J109
	80.0	165.0	SMDT 2290 MTL/MSL/MEL+SMDH 230-3DF	J106
	80.0	165.0	SMDT 2290 MTL/MSL/MEL+SMDH 230M	J104
	128.0	215.0	SMDT 2290 MTL/MSL/MEL+SMDH 230-5D	J109
	128.0	215.0	SMDT 2290 MTL/MSL/MEL+SMDH 230-5DF	J106
	128.0	215.0	SMDT 2290 MTL/MSL/MEL+SMDH 230L	J104
	199.0	285.0	SMDT 2290 MTL/MSL/MEL+SMDH 230-8D	J109

(Blue text: Flat head ■Indexable ■HSS)

● Diameter ø22.9 to ø23.5mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
22.9	199.0	285.0	SMDT 2290 MTL/MSL/MEL+SMDH 230-8DF	J106
	199.0	285.0	SMDT 2290 MTL/MSL/MEL+SMDH 230D	J104
	280.0	359.0	SMDT 2290 MTL/MSL/MEL+SMDH 230-12D	J109
23.0	40.0	118.0	SMDT 2300 MFS+SMDH 230-1.5D	J117
	40.0	118.0	SMDT 2300 MFS+SMDH 230-1.5DF	J114
	45.0	122.0	SMDT 2300 MTL/MSL/MEL+SMDH 230-1.5D	J109
	45.0	122.0	SMDT 2300 MTL/MSL/MEL+SMDH 230-1.5DF	J106
	76.0	161.0	SMDT 2300 MFS+SMDH 230-3D	J117
	76.0	161.0	SMDT 2300 MFS+SMDH 230-3DF	J114
	76.0	161.0	SMDT 2300 MFS+SMDH 230M	J112
	80.0	165.0	SMDT 2300 MTL/MSL/MEL+SMDH 230-3D	J109
	80.0	165.0	SMDT 2300 MTL/MSL/MEL+SMDH 230-3DF	J106
	80.0	165.0	SMDT 2300 MTL/MSL/MEL+SMDH 230M	J104
	86.2	164.2	KDS 230MAK	J164
	124.0	211.0	SMDT 2300 MFS+SMDH 230-5D	J117
	124.0	211.0	SMDT 2300 MFS+SMDH 230-5DF	J114
	124.0	211.0	SMDT 2300 MFS+SMDH 230L	J112
	128.0	215.0	SMDT 2300 MTL/MSL/MEL+SMDH 230-5D	J109
	128.0	215.0	SMDT 2300 MTL/MSL/MEL+SMDH 230-5DF	J106
	128.0	215.0	SMDT 2300 MTL/MSL/MEL+SMDH 230L	J104
	133.2	214.2	KDS 230LAK	J164
	190.2	274.2	KDS 230DAK	J164
	195.0	281.0	SMDT 2300 MFS+SMDH 230-8D	J117
	195.0	281.0	SMDT 2300 MFS+SMDH 230-8DF	J114
	195.0	281.0	SMDT 2300 MFS+SMDH 230D	J112
	199.0	285.0	SMDT 2300 MTL/MSL/MEL+SMDH 230-8D	J109
	199.0	285.0	SMDT 2300 MTL/MSL/MEL+SMDH 230-8DF	J106
	199.0	285.0	SMDT 2300 MTL/MSL/MEL+SMDH 230D	J104
	276.0	355.0	SMDT 2300 MFS+SMDH 230-12D	J117
	280.0	359.0	SMDT 2300 MTL/MSL/MEL+SMDH 230-12D	J109
23.1	45.0	122.0	SMDT 2310 MTL/MSL/MEL+SMDH 230-1.5D	J109
	45.0	122.0	SMDT 2310 MTL/MSL/MEL+SMDH 230-1.5DF	J106
	80.0	165.0	SMDT 2310 MTL/MSL/MEL+SMDH 230-3D	J109
	80.0	165.0	SMDT 2310 MTL/MSL/MEL+SMDH 230-3DF	J106
	80.0	165.0	SMDT 2310 MTL/MSL/MEL+SMDH 230M	J104
	128.0	215.0	SMDT 2310 MTL/MSL/MEL+SMDH 230-5D	J109
	128.0	215.0	SMDT 2310 MTL/MSL/MEL+SMDH 230-5DF	J106
	128.0	215.0	SMDT 2310 MTL/MSL/MEL+SMDH 230L	J104
	199.0	285.0	SMDT 2310 MTL/MSL/MEL+SMDH 230-8D	J109
	199.0	285.0	SMDT 2310 MTL/MSL/MEL+SMDH 230-8DF	J106
	199.0	285.0	SMDT 2310 MTL/MSL/MEL+SMDH 230D	J104
	280.0	359.0	SMDT 2310 MTL/MSL/MEL+SMDH 230-12D	J109
23.2	45.0	122.0	SMDT 2320 MTL/MSL/MEL+SMDH 230-1.5D	J109
	45.0	122.0	SMDT 2320 MTL/MSL/MEL+SMDH 230-1.5DF	J106
	80.0	165.0	SMDT 2320 MTL/MSL/MEL+SMDH 230-3D	J109
	80.0	165.0	SMDT 2320 MTL/MSL/MEL+SMDH 230-3DF	J106
	80.0	165.0	SMDT 2320 MTL/MSL/MEL+SMDH 230M	J104
	128.0	215.0	SMDT 2320 MTL/MSL/MEL+SMDH 230-5D	J109
	128.0	215.0	SMDT 2320 MTL/MSL/MEL+SMDH 230-5DF	J106
	128.0	215.0	SMDT 2320 MTL/MSL/MEL+SMDH 230L	J104
	199.0	285.0	SMDT 2320 MTL/MSL/MEL+SMDH 230-8D	J109
	199.0	285.0	SMDT 2320 MTL/MSL/MEL+SMDH 230-8DF	J106
	199.0	285.0	SMDT 2320 MTL/MSL/MEL+SMDH 230D	J104
	280.0	359.0	SMDT 2320 MTL/MSL/MEL+SMDH 230-12D	J109
23.3	45.0	122.0	SMDT 2330 MTL/MSL/MEL+SMDH 230-1.5D	J109
	45.0	122.0	SMDT 2330 MTL/MSL/MEL+SMDH 230-1.5DF	J106
	80.0	165.0	SMDT 2330 MTL/MSL/MEL+SMDH 230-3D	J109
	80.0	165.0	SMDT 2330 MTL/MSL/MEL+SMDH 230-3DF	J106
	80.0	165.0	SMDT 2330 MTL/MSL/MEL+SMDH 230M	J104
	128.0	215.0	SMDT 2330 MTL/MSL/MEL+SMDH 230-5D	J109
	128.0	215.0	SMDT 2330 MTL/MSL/MEL+SMDH 230-5DF	J106
	128.0	215.0	SMDT 2330 MTL/MSL/MEL+SMDH 230L	J104
	199.0	285.0	SMDT 2330 MTL/MSL/MEL+SMDH 230-8D	J109
	199.0	285.0	SMDT 2330 MTL/MSL/MEL+SMDH 230-8DF	J106
	199.0	285.0	SMDT 2330 MTL/MSL/MEL+SMDH 230D	J104
	280.0	359.0	SMDT 2330 MTL/MSL/MEL+SMDH 230-12D	J109
23.4	45.0	122.0	SMDT 2340 MTL/MSL/MEL+SMDH 230-1.5D	J109
	45.0	122.0	SMDT 2340 MTL/MSL/MEL+SMDH 230-1.5DF	J106
	80.0	165.0	SMDT 2340 MTL/MSL/MEL+SMDH 230-3D	J109
	80.0	165.0	SMDT 2340 MTL/MSL/MEL+SMDH 230-3DF	J106
	80.0	165.0	SMDT 2340 MTL/MSL/MEL+SMDH 230M	J104
	128.0	215.0	SMDT 2340 MTL/MSL/MEL+SMDH 230-5D	J109
	128.0	215.0	SMDT 2340 MTL/MSL/MEL+SMDH 230-5DF	J106
	128.0	215.0	SMDT 2340 MTL/MSL/MEL+SMDH 230L	J104
	199.0	285.0	SMDT 2340 MTL/MSL/MEL+SMDH 230-8D	J109
	199.0	285.0	SMDT 2340 MTL/MSL/MEL+SMDH 230-8DF	J106
	199.0	285.0	SMDT 2340 MTL/MSL/MEL+SMDH 230D	J104
	280.0	359.0	SMDT 2340 MTL/MSL/MEL+SMDH 230-12D	J109
23.5	40.0	118.0	SMDT 2350 MFS+SMDH 230-1.5D	J117
	40.0	118.0	SMDT 2350 MFS+SMDH 230-1.5DF	J114

(Blue text: Flat head ■Indexable ■HSS)

● Diameter ø23.5 to ø24.0mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
23.5	45.0	122.0	SMDT 2350 MTL/MSL/MEL+SMDH 230-1.5D	J109
	45.0	122.0	SMDT 2350 MTL/MSL/MEL+SMDH 230-1.5DF	J106
	76.0	161.0	SMDT 2350 MFS+SMDH 230-3D	J117
	76.0	161.0	SMDT 2350 MFS+SMDH 230-3DF	J114
	76.0	161.0	SMDT 2350 MFS+SMDH 230M	J112
	80.0	165.0	SMDT 2350 MTL/MSL/MEL+SMDH 230-3D	J109
	80.0	165.0	SMDT 2350 MTL/MSL/MEL+SMDH 230-3DF	J106
	80.0	165.0	SMDT 2350 MTL/MSL/MEL+SMDH 230M	J104
	86.3	164.3	KDS 235MAK	J164
	124.0	211.0	SMDT 2350 MFS+SMDH 230-5D	J117
	124.0	211.0	SMDT 2350 MFS+SMDH 230-5DF	J114
	124.0	211.0	SMDT 2350 MFS+SMDH 230L	J112
	128.0	215.0	SMDT 2350 MTL/MSL/MEL+SMDH 230-5D	J109
	128.0	215.0	SMDT 2350 MTL/MSL/MEL+SMDH 230-5DF	J106
	128.0	215.0	SMDT 2350 MTL/MSL/MEL+SMDH 230L	J104
	133.3	214.3	KDS 235LAK	J164
	190.3	274.3	KDS 235DAK	J164
	195.0	281.0	SMDT 2350 MFS+SMDH 230-8D	J117
	195.0	281.0	SMDT 2350 MFS+SMDH 230-8DF	J114
	195.0	281.0	SMDT 2350 MFS+SMDH 230D	J112
	199.0	285.0	SMDT 2350 MTL/MSL/MEL+SMDH 230-8D	J109
	199.0	285.0	SMDT 2350 MTL/MSL/MEL+SMDH 230-8DF	J106
	199.0	285.0	SMDT 2350 MTL/MSL/MEL+SMDH 230D	J104
	276.0	355.0	SMDT 2350 MFS+SMDH 230-12D	J117
	280.0	359.0	SMDT 2350 MTL/MSL/MEL+SMDH 230-12D	J109
23.6	45.0	122.0	SMDT 2360 MTL/MSL/MEL+SMDH 230-1.5D	J109
	45.0	122.0	SMDT 2360 MTL/MSL/MEL+SMDH 230-1.5DF	J106
	80.0	165.0	SMDT 2360 MTL/MSL/MEL+SMDH 230-3D	J109
	80.0	165.0	SMDT 2360 MTL/MSL/MEL+SMDH 230-3DF	J106
	80.0	165.0	SMDT 2360 MTL/MSL/MEL+SMDH 230M	J104
	128.0	215.0	SMDT 2360 MTL/MSL/MEL+SMDH 230-5D	J109
	128.0	215.0	SMDT 2360 MTL/MSL/MEL+SMDH 230-5DF	J106
	128.0	215.0	SMDT 2360 MTL/MSL/MEL+SMDH 230L	J104
	199.0	285.0	SMDT 2360 MTL/MSL/MEL+SMDH 230-8D	J109
	199.0	285.0	SMDT 2360 MTL/MSL/MEL+SMDH 230-8DF	J106
	199.0	285.0	SMDT 2360 MTL/MSL/MEL+SMDH 230D	J104
	280.0	359.0	SMDT 2360 MTL/MSL/MEL+SMDH 230-12D	J109
23.7	45.0	122.0	SMDT 2370 MTL/MSL/MEL+SMDH 230-1.5D	J109
	45.0	122.0	SMDT 2370 MTL/MSL/MEL+SMDH 230-1.5DF	J106
	80.0	165.0	SMDT 2370 MTL/MSL/MEL+SMDH 230-3D	J109
	80.0	165.0	SMDT 2370 MTL/MSL/MEL+SMDH 230-3DF	J106
	80.0	165.0	SMDT 2370 MTL/MSL/MEL+SMDH 230M	J104
	128.0	215.0	SMDT 2370 MTL/MSL/MEL+SMDH 230-5D	J109
	128.0	215.0	SMDT 2370 MTL/MSL/MEL+SMDH 230-5DF	J106
	128.0	215.0	SMDT 2370 MTL/MSL/MEL+SMDH 230L	J104
	199.0	285.0	SMDT 2370 MTL/MSL/MEL+SMDH 230-8D	J109
	199.0	285.0	SMDT 2370 MTL/MSL/MEL+SMDH 230-8DF	J106
	199.0	285.0	SMDT 2370 MTL/MSL/MEL+SMDH 230D	J104
	280.0	359.0	SMDT 2370 MTL/MSL/MEL+SMDH 230-12D	J109
23.8	45.0	122.0	SMDT 2380 MTL/MSL/MEL+SMDH 230-1.5D	J109
	45.0	122.0	SMDT 2380 MTL/MSL/MEL+SMDH 230-1.5DF	J106
	80.0	165.0	SMDT 2380 MTL/MSL/MEL+SMDH 230-3D	J109
	80.0	165.0	SMDT 2380 MTL/MSL/MEL+SMDH 230-3DF	J106
	80.0	165.0	SMDT 2380 MTL/MSL/MEL+SMDH 230M	J104
	128.0	215.0	SMDT 2380 MTL/MSL/MEL+SMDH 230-5D	J109
	128.0	215.0	SMDT 2380 MTL/MSL/MEL+SMDH 230-5DF	J106
	128.0	215.0	SMDT 2380 MTL/MSL/MEL+SMDH 230L	J104
	199.0	285.0	SMDT 2380 MTL/MSL/MEL+SMDH 230-8D	J109
	199.0	285.0	SMDT 2380 MTL/MSL/MEL+SMDH 230-8DF	J106
	199.0	285.0	SMDT 2380 MTL/MSL/MEL+SMDH 230D	J104
	280.0	359.0	SMDT 2380 MTL/MSL/MEL+SMDH 230-12D	J109
23.9	46.0	129.0	SMDT 2390 MTL/MSL/MEL+SMDH 240-1.5D	J109
	46.0	129.0	SMDT 2390 MTL/MSL/MEL+SMDH 240-1.5DF	J106
	83.0	175.0	SMDT 2390 MTL/MSL/MEL+SMDH 240-3D	J109
	83.0	175.0	SMDT 2390 MTL/MSL/MEL+SMDH 240-3DF	J106
	83.0	175.0	SMDT 2390 MTL/MSL/MEL+SMDH 240M	J104
	133.0	225.0	SMDT 2390 MTL/MSL/MEL+SMDH 240-5D	J109
	133.0	225.0	SMDT 2390 MTL/MSL/MEL+SMDH 240-5DF	J106
	133.0	225.0	SMDT 2390 MTL/MSL/MEL+SMDH 240L	J104
	207.0	300.0	SMDT 2390 MTL/MSL/MEL+SMDH 240-8D	J109
	207.0	300.0	SMDT 2390 MTL/MSL/MEL+SMDH 240-8DF	J106
	207.0	300.0	SMDT 2390 MTL/MSL/MEL+SMDH 240D	J104
	292.0	376.0	SMDT 2390 MTL/MSL/MEL+SMDH 240-12D	J109
24.0	42.0	124.0	SMDT 2400 MFS+SMDH 240-1.5D	J117
	42.0	124.0	SMDT 2400 MFS+SMDH 240-1.5DF	J114
	46.0	129.0	SMDT 2400 MTL/MSL/MEL+SMDH 240-1.5D	J109
	46.0	129.0	SMDT 2400 MTL/MSL/MEL+SMDH 240-1.5DF	J106
	79.0	170.0	SMDT 2400 MFS+SMDH 240-3D	J117
	79.0	170.0	SMDT 2400 MFS+SMDH 240-3DF	J114
	79.0	170.0	SMDT 2400 MFS+SMDH 240M	J112

(Blue text: Flat head ■Indexable ■HSS)

Effective Length (LU) is a guideline for the usable length. Take into account the chip evacuation in relation to the flute length (LCF) when drilling.

Effective Length List by Diameter

● Diameter ø24.0 to ø24.5mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
24.0	83.0	175.0	SMDT 2400 MTL/MSL/MEL+SMDH 240-3D	J109
	83.0	175.0	SMDT 2400 MTL/MSL/MEL+SMDH 240-3DF	J106
	83.0	175.0	SMDT 2400 MTL/MSL/MEL+SMDH 240M	J104
	90.4	174.4	KDS 240MAK	J164
	99.2	183.2	KDS 240BAK	J164
	129.0	220.0	SMDT 2400 MFS+SMDH 240-5D	J117
	129.0	220.0	SMDT 2400 MFS+SMDH 240-5DF	J114
	129.0	220.0	SMDT 2400 MFS+SMDH 240L	J112
	133.0	225.0	SMDT 2400 MTL/MSL/MEL+SMDH 240-5D	J109
	133.0	225.0	SMDT 2400 MTL/MSL/MEL+SMDH 240-5DF	J106
	133.0	225.0	SMDT 2400 MTL/MSL/MEL+SMDH 240L	J104
	139.4	224.4	KDS 240LAK	J164
	194.4	284.4	KDS 240DAK	J164
	203.0	295.0	SMDT 2400 MFS+SMDH 240-8D	J117
	203.0	295.0	SMDT 2400 MFS+SMDH 240-8DF	J114
	203.0	295.0	SMDT 2400 MFS+SMDH 240D	J112
	207.0	300.0	SMDT 2400 MTL/MSL/MEL+SMDH 240-8D	J109
	207.0	300.0	SMDT 2400 MTL/MSL/MEL+SMDH 240-8DF	J106
	207.0	300.0	SMDT 2400 MTL/MSL/MEL+SMDH 240D	J104
	288.0	372.0	SMDT 2400 MFS+SMDH 240-12D	J117
	292.0	376.0	SMDT 2400 MTL/MSL/MEL+SMDH 240-12D	J109
24.1	46.0	129.0	SMDT 2410 MTL/MSL/MEL+SMDH 240-1.5D	J109
	46.0	129.0	SMDT 2410 MTL/MSL/MEL+SMDH 240-1.5DF	J106
	83.0	175.0	SMDT 2410 MTL/MSL/MEL+SMDH 240-3D	J109
	83.0	175.0	SMDT 2410 MTL/MSL/MEL+SMDH 240-3DF	J106
	83.0	175.0	SMDT 2410 MTL/MSL/MEL+SMDH 240M	J104
	90.4	174.4	KDS 241MAK	J164
	133.0	225.0	SMDT 2410 MTL/MSL/MEL+SMDH 240-5D	J109
	133.0	225.0	SMDT 2410 MTL/MSL/MEL+SMDH 240-5DF	J106
	133.0	225.0	SMDT 2410 MTL/MSL/MEL+SMDH 240L	J104
	207.0	300.0	SMDT 2410 MTL/MSL/MEL+SMDH 240-8D	J109
	207.0	300.0	SMDT 2410 MTL/MSL/MEL+SMDH 240-8DF	J106
	207.0	300.0	SMDT 2410 MTL/MSL/MEL+SMDH 240D	J104
	292.0	376.0	SMDT 2410 MTL/MSL/MEL+SMDH 240-12D	J109
24.2	46.0	129.0	SMDT 2420 MTL/MSL/MEL+SMDH 240-1.5D	J109
	46.0	129.0	SMDT 2420 MTL/MSL/MEL+SMDH 240-1.5DF	J106
	83.0	175.0	SMDT 2420 MTL/MSL/MEL+SMDH 240-3D	J109
	83.0	175.0	SMDT 2420 MTL/MSL/MEL+SMDH 240-3DF	J106
	83.0	175.0	SMDT 2420 MTL/MSL/MEL+SMDH 240M	J104
	133.0	225.0	SMDT 2420 MTL/MSL/MEL+SMDH 240-5D	J109
	133.0	225.0	SMDT 2420 MTL/MSL/MEL+SMDH 240-5DF	J106
	133.0	225.0	SMDT 2420 MTL/MSL/MEL+SMDH 240L	J104
	207.0	300.0	SMDT 2420 MTL/MSL/MEL+SMDH 240-8D	J109
	207.0	300.0	SMDT 2420 MTL/MSL/MEL+SMDH 240-8DF	J106
	207.0	300.0	SMDT 2420 MTL/MSL/MEL+SMDH 240D	J104
	292.0	376.0	SMDT 2420 MTL/MSL/MEL+SMDH 240-12D	J109
24.3	46.0	129.0	SMDT 2430 MTL/MSL/MEL+SMDH 240-1.5D	J109
	46.0	129.0	SMDT 2430 MTL/MSL/MEL+SMDH 240-1.5DF	J106
	83.0	175.0	SMDT 2430 MTL/MSL/MEL+SMDH 240-3D	J109
	83.0	175.0	SMDT 2430 MTL/MSL/MEL+SMDH 240-3DF	J106
	83.0	175.0	SMDT 2430 MTL/MSL/MEL+SMDH 240M	J104
	133.0	225.0	SMDT 2430 MTL/MSL/MEL+SMDH 240-5D	J109
	133.0	225.0	SMDT 2430 MTL/MSL/MEL+SMDH 240-5DF	J106
	133.0	225.0	SMDT 2430 MTL/MSL/MEL+SMDH 240L	J104
	207.0	300.0	SMDT 2430 MTL/MSL/MEL+SMDH 240-8D	J109
	207.0	300.0	SMDT 2430 MTL/MSL/MEL+SMDH 240-8DF	J106
	207.0	300.0	SMDT 2430 MTL/MSL/MEL+SMDH 240D	J104
	292.0	376.0	SMDT 2430 MTL/MSL/MEL+SMDH 240-12D	J109
24.4	46.0	129.0	SMDT 2440 MTL/MSL/MEL+SMDH 240-1.5D	J109
	46.0	129.0	SMDT 2440 MTL/MSL/MEL+SMDH 240-1.5DF	J106
	83.0	175.0	SMDT 2440 MTL/MSL/MEL+SMDH 240-3D	J109
	83.0	175.0	SMDT 2440 MTL/MSL/MEL+SMDH 240-3DF	J106
	83.0	175.0	SMDT 2440 MTL/MSL/MEL+SMDH 240M	J104
	133.0	225.0	SMDT 2440 MTL/MSL/MEL+SMDH 240-5D	J109
	133.0	225.0	SMDT 2440 MTL/MSL/MEL+SMDH 240-5DF	J106
	133.0	225.0	SMDT 2440 MTL/MSL/MEL+SMDH 240L	J104
	207.0	300.0	SMDT 2440 MTL/MSL/MEL+SMDH 240-8D	J109
	207.0	300.0	SMDT 2440 MTL/MSL/MEL+SMDH 240-8DF	J106
	207.0	300.0	SMDT 2440 MTL/MSL/MEL+SMDH 240D	J104
	292.0	376.0	SMDT 2440 MTL/MSL/MEL+SMDH 240-12D	J109
24.5	42.0	124.0	SMDT 2450 MFS+SMDH 240-1.5D	J117
	42.0	124.0	SMDT 2450 MFS+SMDH 240-1.5DF	J114
	46.0	129.0	SMDT 2450 MTL/MSL/MEL+SMDH 240-1.5D	J109
	46.0	129.0	SMDT 2450 MTL/MSL/MEL+SMDH 240-1.5DF	J106
	79.0	170.0	SMDT 2450 MFS+SMDH 240-3D	J117
	79.0	170.0	SMDT 2450 MFS+SMDH 240-3DF	J114
	79.0	170.0	SMDT 2450 MFS+SMDH 240M	J112
	83.0	175.0	SMDT 2450 MTL/MSL/MEL+SMDH 240-3D	J109
	83.0	175.0	SMDT 2450 MTL/MSL/MEL+SMDH 240-3DF	J106
	83.0	175.0	SMDT 2450 MTL/MSL/MEL+SMDH 240M	J104

(Blue text: Flat head ■Indexable ■HSS)

● Diameter ø24.5 to ø25.0mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
24.5	84.0	173.0	SMDT 2450 MB+SMDH 240B3	J119
	90.5	174.5	KDS 245MAK	J164
	99.3	183.3	KDS 245BAK	J164
	129.0	220.0	SMDT 2450 MFS+SMDH 240-5D	J117
	129.0	220.0	SMDT 2450 MFS+SMDH 240-5DF	J114
	129.0	220.0	SMDT 2450 MFS+SMDH 240L	J112
	133.0	225.0	SMDT 2450 MTL/MSL/MEL+SMDH 240-5D	J109
	133.0	225.0	SMDT 2450 MTL/MSL/MEL+SMDH 240-5DF	J106
	133.0	225.0	SMDT 2450 MTL/MSL/MEL+SMDH 240L	J104
	139.5	224.5	KDS 245LAK	J164
	194.5	284.5	KDS 245DAK	J164
	203.0	295.0	SMDT 2450 MFS+SMDH 240-8D	J117
	203.0	295.0	SMDT 2450 MFS+SMDH 240-8DF	J114
	203.0	295.0	SMDT 2450 MFS+SMDH 240D	J112
	207.0	300.0	SMDT 2450 MTL/MSL/MEL+SMDH 240-8D	J109
	207.0	300.0	SMDT 2450 MTL/MSL/MEL+SMDH 240-8DF	J106
	207.0	300.0	SMDT 2450 MTL/MSL/MEL+SMDH 240D	J104
	288.0	372.0	SMDT 2450 MFS+SMDH 240-12D	J117
	292.0	376.0	SMDT 2450 MTL/MSL/MEL+SMDH 240-12D	J109
24.6	46.0	129.0	SMDT 2460 MTL/MSL/MEL+SMDH 240-1.5D	J109
	46.0	129.0	SMDT 2460 MTL/MSL/MEL+SMDH 240-1.5DF	J106
	83.0	175.0	SMDT 2460 MTL/MSL/MEL+SMDH 240-3D	J109
	83.0	175.0	SMDT 2460 MTL/MSL/MEL+SMDH 240-3DF	J106
	83.0	175.0	SMDT 2460 MTL/MSL/MEL+SMDH 240M	J104
	92.5	174.5	KDS 246MAK	J164
	103.3	188.3	KDS 246BAK	J164
	133.0	225.0	SMDT 2460 MTL/MSL/MEL+SMDH 240-5D	J109
	133.0	225.0	SMDT 2460 MTL/MSL/MEL+SMDH 240-5DF	J106
	133.0	225.0	SMDT 2460 MTL/MSL/MEL+SMDH 240L	J104
	207.0	300.0	SMDT 2460 MTL/MSL/MEL+SMDH 240-8D	J109
	207.0	300.0	SMDT 2460 MTL/MSL/MEL+SMDH 240-8DF	J106
	207.0	300.0	SMDT 2460 MTL/MSL/MEL+SMDH 240D	J104
	292.0	376.0	SMDT 2460 MTL/MSL/MEL+SMDH 240-12D	J109
24.7	46.0	129.0	SMDT 2470 MTL/MSL/MEL+SMDH 240-1.5D	J109
	46.0	129.0	SMDT 2470 MTL/MSL/MEL+SMDH 240-1.5DF	J106
	83.0	175.0	SMDT 2470 MTL/MSL/MEL+SMDH 240-3D	J109
	83.0	175.0	SMDT 2470 MTL/MSL/MEL+SMDH 240-3DF	J106
	83.0	175.0	SMDT 2470 MTL/MSL/MEL+SMDH 240M	J104
	84.0	173.0	SMDT 2470 MB+SMDH 240B3	J119
	92.5	174.5	KDS 247MAK	J165
	103.3	188.3	KDS 247BAK	J165
	133.0	225.0	SMDT 2470 MTL/MSL/MEL+SMDH 240-5D	J109
	133.0	225.0	SMDT 2470 MTL/MSL/MEL+SMDH 240-5DF	J106
	133.0	225.0	SMDT 2470 MTL/MSL/MEL+SMDH 240L	J104
	207.0	300.0	SMDT 2470 MTL/MSL/MEL+SMDH 240-8D	J109
	207.0	300.0	SMDT 2470 MTL/MSL/MEL+SMDH 240-8DF	J106
	207.0	300.0	SMDT 2470 MTL/MSL/MEL+SMDH 240D	J104
	292.0	376.0	SMDT 2470 MTL/MSL/MEL+SMDH 240-12D	J109
24.8	46.0	129.0	SMDT 2480 MTL/MSL/MEL+SMDH 240-1.5D	J109
	46.0	129.0	SMDT 2480 MTL/MSL/MEL+SMDH 240-1.5DF	J106
	83.0	175.0	SMDT 2480 MTL/MSL/MEL+SMDH 240-3D	J109
	83.0	175.0	SMDT 2480 MTL/MSL/MEL+SMDH 240-3DF	J106
	83.0	175.0	SMDT 2480 MTL/MSL/MEL+SMDH 240M	J104
	133.0	225.0	SMDT 2480 MTL/MSL/MEL+SMDH 240-5D	J109
	133.0	225.0	SMDT 2480 MTL/MSL/MEL+SMDH 240-5DF	J106
	133.0	225.0	SMDT 2480 MTL/MSL/MEL+SMDH 240L	J104
	207.0	300.0	SMDT 2480 MTL/MSL/MEL+SMDH 240-8D	J109
	207.0	300.0	SMDT 2480 MTL/MSL/MEL+SMDH 240-8DF	J106
	207.0	300.0	SMDT 2480 MTL/MSL/MEL+SMDH 240D	J104
	292.0	376.0	SMDT 2480 MTL/MSL/MEL+SMDH 240-12D	J109
24.9	48.0	129.0	SMDT 2490 MTL/MSL/MEL+SMDH 250-1.5D	J109
	48.0	129.0	SMDT 2490 MTL/MSL/MEL+SMDH 250-1.5DF	J107
	87.0	175.0	SMDT 2490 MTL/MSL/MEL+SMDH 250-3D	J109
	87.0	175.0	SMDT 2490 MTL/MSL/MEL+SMDH 250-3DF	J107
	87.0	175.0	SMDT 2490 MTL/MSL/MEL+SMDH 250M	J104
	138.0	230.0	SMDT 2490 MTL/MSL/MEL+SMDH 250-5D	J109
	138.0	230.0	SMDT 2490 MTL/MSL/MEL+SMDH 250-5DF	J107
	138.0	230.0	SMDT 2490 MTL/MSL/MEL+SMDH 250L	J104
	216.0	305.0	SMDT 2490 MTL/MSL/MEL+SMDH 250-8D	J109
	216.0	305.0	SMDT 2490 MTL/MSL/MEL+SMDH 250-8DF	J107
	216.0	305.0	SMDT 2490 MTL/MSL/MEL+SMDH 250D	J104
	304.0	388.0	SMDT 2490 MTL/MSL/MEL+SMDH 250-12D	J109
25.0	43.0	125.0	SMDT 2500 MFS+SMDH 250-1.5D	J117
	43.0	125.0	SMDT 2500 MFS+SMDH 250-1.5DF	J115
	48.0	129.0	SMDT 2500 MTL/MSL/MEL+SMDH 250-1.5D	J109
	48.0	129.0	SMDT 2500 MTL/MSL/MEL+SMDH 250-1.5DF	J107
	50.0	127.0	PDL 250D2S25	J136
	75.0	152.0	PDL 250D3S25	J136
	82.0	170.0	SMDT 2500 MFS+SMDH 250-3D	J117
	82.0	170.0	SMDT 2500 MFS+SMDH 250-3DF	J115

(Blue text: Flat head ■Indexable ■HSS)

● Diameter ø25.0 to ø25.5mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
25.0	82.0	170.0	SMDT 2500 MFS+SMDH 250M	J112
	87.0	175.0	SMDT 2500 MTL/MSL/MEL+SMDH 250-3D	J109
	87.0	175.0	SMDT 2500 MTL/MSL/MEL+SMDH 250-3DF	J107
	87.0	175.0	SMDT 2500 MTL/MSL/MEL+SMDH 250M	J104
	92.5	174.5	KDS 250MAK	J165
	134.0	225.0	SMDT 2500 MFS+SMDH 250-5D	J117
	134.0	225.0	SMDT 2500 MFS+SMDH 250-5DF	J115
	134.0	225.0	SMDT 2500 MFS+SMDH 250L	J112
	138.0	230.0	SMDT 2500 MTL/MSL/MEL+SMDH 250-5D	J109
	138.0	230.0	SMDT 2500 MTL/MSL/MEL+SMDH 250-5DF	J107
	138.0	230.0	SMDT 2500 MTL/MSL/MEL+SMDH 250L	J104
	144.5	229.5	KDS 250LAK	J165
	204.5	294.5	KDS 250DAK	J165
	211.0	300.0	SMDT 2500 MFS+SMDH 250-8D	J117
	211.0	300.0	SMDT 2500 MFS+SMDH 250-8DF	J115
	211.0	300.0	SMDT 2500 MFS+SMDH 250D	J112
	216.0	305.0	SMDT 2500 MTL/MSL/MEL+SMDH 250-8D	J109
	216.0	305.0	SMDT 2500 MTL/MSL/MEL+SMDH 250-8DF	J107
	216.0	305.0	SMDT 2500 MTL/MSL/MEL+SMDH 250D	J104
	300.0	384.0	SMDT 2500 MFS+SMDH 250-12D	J117
	304.0	388.0	SMDT 2500 MTL/MSL/MEL+SMDH 250-12D	J109
25.1	48.0	129.0	SMDT 2510 MTL/MSL/MEL+SMDH 250-1.5D	J109
	48.0	129.0	SMDT 2510 MTL/MSL/MEL+SMDH 250-1.5DF	J107
	87.0	175.0	SMDT 2510 MTL/MSL/MEL+SMDH 250-3D	J109
	87.0	175.0	SMDT 2510 MTL/MSL/MEL+SMDH 250-3DF	J107
	87.0	175.0	SMDT 2510 MTL/MSL/MEL+SMDH 250M	J104
	138.0	230.0	SMDT 2510 MTL/MSL/MEL+SMDH 250-5D	J109
	138.0	230.0	SMDT 2510 MTL/MSL/MEL+SMDH 250-5DF	J107
	138.0	230.0	SMDT 2510 MTL/MSL/MEL+SMDH 250L	J104
	216.0	305.0	SMDT 2510 MTL/MSL/MEL+SMDH 250-8D	J109
	216.0	305.0	SMDT 2510 MTL/MSL/MEL+SMDH 250-8DF	J107
	216.0	305.0	SMDT 2510 MTL/MSL/MEL+SMDH 250D	J104
	304.0	388.0	SMDT 2510 MTL/MSL/MEL+SMDH 250-12D	J109
25.2	48.0	129.0	SMDT 2520 MTL/MSL/MEL+SMDH 250-1.5D	J109
	48.0	129.0	SMDT 2520 MTL/MSL/MEL+SMDH 250-1.5DF	J107
	87.0	175.0	SMDT 2520 MTL/MSL/MEL+SMDH 250-3D	J109
	87.0	175.0	SMDT 2520 MTL/MSL/MEL+SMDH 250-3DF	J107
	87.0	175.0	SMDT 2520 MTL/MSL/MEL+SMDH 250M	J104
	138.0	230.0	SMDT 2520 MTL/MSL/MEL+SMDH 250-5D	J109
	138.0	230.0	SMDT 2520 MTL/MSL/MEL+SMDH 250-5DF	J107
	138.0	230.0	SMDT 2520 MTL/MSL/MEL+SMDH 250L	J104
	216.0	305.0	SMDT 2520 MTL/MSL/MEL+SMDH 250-8D	J109
	216.0	305.0	SMDT 2520 MTL/MSL/MEL+SMDH 250-8DF	J107
	216.0	305.0	SMDT 2520 MTL/MSL/MEL+SMDH 250D	J104
	304.0	388.0	SMDT 2520 MTL/MSL/MEL+SMDH 250-12D	J109
25.3	48.0	129.0	SMDT 2530 MTL/MSL/MEL+SMDH 250-1.5D	J109
	48.0	129.0	SMDT 2530 MTL/MSL/MEL+SMDH 250-1.5DF	J107
	87.0	175.0	SMDT 2530 MTL/MSL/MEL+SMDH 250-3D	J109
	87.0	175.0	SMDT 2530 MTL/MSL/MEL+SMDH 250-3DF	J107
	87.0	175.0	SMDT 2530 MTL/MSL/MEL+SMDH 250M	J104
	138.0	230.0	SMDT 2530 MTL/MSL/MEL+SMDH 250-5D	J109
	138.0	230.0	SMDT 2530 MTL/MSL/MEL+SMDH 250-5DF	J107
	138.0	230.0	SMDT 2530 MTL/MSL/MEL+SMDH 250L	J104
	216.0	305.0	SMDT 2530 MTL/MSL/MEL+SMDH 250-8D	J109
	216.0	305.0	SMDT 2530 MTL/MSL/MEL+SMDH 250-8DF	J107
	216.0	305.0	SMDT 2530 MTL/MSL/MEL+SMDH 250D	J104
	304.0	388.0	SMDT 2530 MTL/MSL/MEL+SMDH 250-12D	J109
25.4	48.0	129.0	SMDT 2540 MTL/MSL/MEL+SMDH 250-1.5D	J109
	48.0	129.0	SMDT 2540 MTL/MSL/MEL+SMDH 250-1.5DF	J107
	87.0	175.0	SMDT 2540 MTL/MSL/MEL+SMDH 250-3D	J109
	87.0	175.0	SMDT 2540 MTL/MSL/MEL+SMDH 250-3DF	J107
	87.0	175.0	SMDT 2540 MTL/MSL/MEL+SMDH 250M	J104
	138.0	230.0	SMDT 2540 MTL/MSL/MEL+SMDH 250-5D	J109
	138.0	230.0	SMDT 2540 MTL/MSL/MEL+SMDH 250-5DF	J107
	138.0	230.0	SMDT 2540 MTL/MSL/MEL+SMDH 250L	J104
	216.0	305.0	SMDT 2540 MTL/MSL/MEL+SMDH 250-8D	J109
	216.0	305.0	SMDT 2540 MTL/MSL/MEL+SMDH 250-8DF	J107
	216.0	305.0	SMDT 2540 MTL/MSL/MEL+SMDH 250D	J104
	304.0	388.0	SMDT 2540 MTL/MSL/MEL+SMDH 250-12D	J109
25.5	43.0	125.0	SMDT 2550 MFS+SMDH 250-1.5D	J117
	43.0	125.0	SMDT 2550 MFS+SMDH 250-1.5DF	J115
	48.0	129.0	SMDT 2550 MTL/MSL/MEL+SMDH 250-1.5D	J109
	48.0	129.0	SMDT 2550 MTL/MSL/MEL+SMDH 250-1.5DF	J107
	82.0	170.0	SMDT 2550 MFS+SMDH 250-3D	J117
	82.0	170.0	SMDT 2550 MFS+SMDH 250-3DF	J115
	82.0	170.0	SMDT 2550 MFS+SMDH 250M	J112
	87.0	175.0	SMDT 2550 MTL/MSL/MEL+SMDH 250-3D	J109
	87.0	175.0	SMDT 2550 MTL/MSL/MEL+SMDH 250-3DF	J107
	87.0	175.0	SMDT 2550 MTL/MSL/MEL+SMDH 250M	J104
	92.6	174.6	KDS 255MAK	J165

(Blue text: Flat head ■Indexable ■HSS)

Effective Length (LU) is a guideline for the usable length. Take into account the chip evacuation in relation to the flute length (LCF) when drilling.

Effective Length List by Diameter

Drilling | J | Solid | Indexable Head Type | Indexable Insert Type | Reamers | Brazed | Others

● Diameter ø25.5 to ø26.0mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
25.5	134.0	225.0	SMDT 2550 MFS+SMDH 250-5D	J117
	134.0	225.0	SMDT 2550 MFS+SMDH 250-5DF	J115
	134.0	225.0	SMDT 2550 MFS+SMDH 250L	J112
	138.0	230.0	SMDT 2550 MTL/MSL/MEL+SMDH 250-5D	J109
	138.0	230.0	SMDT 2550 MTL/MSL/MEL+SMDH 250-5DF	J107
	138.0	230.0	SMDT 2550 MTL/MSL/MEL+SMDH 250L	J104
	144.6	229.6	KDS 255LAK	J165
	204.6	294.6	KDS 255DAK	J165
	211.0	300.0	SMDT 2550 MFS+SMDH 250-8D	J117
	211.0	300.0	SMDT 2550 MFS+SMDH 250-8DF	J115
	211.0	300.0	SMDT 2550 MFS+SMDH 250D	J112
	216.0	305.0	SMDT 2550 MTL/MSL/MEL+SMDH 250-8D	J109
	216.0	305.0	SMDT 2550 MTL/MSL/MEL+SMDH 250-8DF	J107
	216.0	305.0	SMDT 2550 MTL/MSL/MEL+SMDH 250D	J104
	300.0	384.0	SMDT 2550 MFS+SMDH 250-12D	J117
	304.0	388.0	SMDT 2550 MTL/MSL/MEL+SMDH 250-12D	J109
25.6	48.0	129.0	SMDT 2560 MTL/MSL/MEL+SMDH 250-1.5D	J109
	48.0	129.0	SMDT 2560 MTL/MSL/MEL+SMDH 250-1.5DF	J107
	87.0	175.0	SMDT 2560 MTL/MSL/MEL+SMDH 250-3D	J109
	87.0	175.0	SMDT 2560 MTL/MSL/MEL+SMDH 250-3DF	J107
	87.0	175.0	SMDT 2560 MTL/MSL/MEL+SMDH 250M	J104
	138.0	230.0	SMDT 2560 MTL/MSL/MEL+SMDH 250-5D	J109
	138.0	230.0	SMDT 2560 MTL/MSL/MEL+SMDH 250-5DF	J107
	138.0	230.0	SMDT 2560 MTL/MSL/MEL+SMDH 250L	J104
	216.0	305.0	SMDT 2560 MTL/MSL/MEL+SMDH 250-8D	J109
	216.0	305.0	SMDT 2560 MTL/MSL/MEL+SMDH 250-8DF	J107
	216.0	305.0	SMDT 2560 MTL/MSL/MEL+SMDH 250D	J104
	304.0	388.0	SMDT 2560 MTL/MSL/MEL+SMDH 250-12D	J109
25.7	48.0	129.0	SMDT 2570 MTL/MSL/MEL+SMDH 250-1.5D	J109
	48.0	129.0	SMDT 2570 MTL/MSL/MEL+SMDH 250-1.5DF	J107
	87.0	175.0	SMDT 2570 MTL/MSL/MEL+SMDH 250-3D	J109
	87.0	175.0	SMDT 2570 MTL/MSL/MEL+SMDH 250-3DF	J107
	87.0	175.0	SMDT 2570 MTL/MSL/MEL+SMDH 250M	J104
	138.0	230.0	SMDT 2570 MTL/MSL/MEL+SMDH 250-5D	J109
	138.0	230.0	SMDT 2570 MTL/MSL/MEL+SMDH 250-5DF	J107
	138.0	230.0	SMDT 2570 MTL/MSL/MEL+SMDH 250L	J104
	216.0	305.0	SMDT 2570 MTL/MSL/MEL+SMDH 250-8D	J109
	216.0	305.0	SMDT 2570 MTL/MSL/MEL+SMDH 250-8DF	J107
	216.0	305.0	SMDT 2570 MTL/MSL/MEL+SMDH 250D	J104
	304.0	388.0	SMDT 2570 MTL/MSL/MEL+SMDH 250-12D	J109
25.8	48.0	129.0	SMDT 2580 MTL/MSL/MEL+SMDH 250-1.5D	J109
	48.0	129.0	SMDT 2580 MTL/MSL/MEL+SMDH 250-1.5DF	J107
	87.0	175.0	SMDT 2580 MTL/MSL/MEL+SMDH 250-3D	J109
	87.0	175.0	SMDT 2580 MTL/MSL/MEL+SMDH 250-3DF	J107
	87.0	175.0	SMDT 2580 MTL/MSL/MEL+SMDH 250M	J104
	138.0	230.0	SMDT 2580 MTL/MSL/MEL+SMDH 250-5D	J109
	138.0	230.0	SMDT 2580 MTL/MSL/MEL+SMDH 250-5DF	J107
	138.0	230.0	SMDT 2580 MTL/MSL/MEL+SMDH 250L	J104
	216.0	305.0	SMDT 2580 MTL/MSL/MEL+SMDH 250-8D	J109
	216.0	305.0	SMDT 2580 MTL/MSL/MEL+SMDH 250-8DF	J107
	216.0	305.0	SMDT 2580 MTL/MSL/MEL+SMDH 250D	J104
	304.0	388.0	SMDT 2580 MTL/MSL/MEL+SMDH 250-12D	J109
25.9	50.0	132.0	SMDT 2590 MTL/MSL/MEL+SMDH 260-1.5D	J109
	50.0	132.0	SMDT 2590 MTL/MSL/MEL+SMDH 260-1.5DF	J107
	90.0	180.0	SMDT 2590 MTL/MSL/MEL+SMDH 260-3D	J109
	90.0	180.0	SMDT 2590 MTL/MSL/MEL+SMDH 260-3DF	J107
	90.0	180.0	SMDT 2590 MTL/MSL/MEL+SMDH 260M	J104
	143.0	235.0	SMDT 2590 MTL/MSL/MEL+SMDH 260-5D	J109
	143.0	235.0	SMDT 2590 MTL/MSL/MEL+SMDH 260-5DF	J107
	143.0	235.0	SMDT 2590 MTL/MSL/MEL+SMDH 260L	J104
	224.0	315.0	SMDT 2590 MTL/MSL/MEL+SMDH 260-8D	J109
	224.0	315.0	SMDT 2590 MTL/MSL/MEL+SMDH 260-8DF	J107
	224.0	315.0	SMDT 2590 MTL/MSL/MEL+SMDH 260D	J104
	316.0	401.0	SMDT 2590 MTL/MSL/MEL+SMDH 260-12D	J109
26.0	45.0	127.0	SMDT 2600 MFS+SMDH 260-1.5D	J117
	45.0	127.0	SMDT 2600 MFS+SMDH 260-1.5DF	J115
	50.0	132.0	SMDT 2600 MTL/MSL/MEL+SMDH 260-1.5D	J109
	50.0	132.0	SMDT 2600 MTL/MSL/MEL+SMDH 260-1.5DF	J107
	85.0	175.0	SMDT 2600 MFS+SMDH 260-3D	J117
	85.0	175.0	SMDT 2600 MFS+SMDH 260-3DF	J115
	85.0	175.0	SMDT 2600 MFS+SMDH 260M	J112
	90.0	180.0	SMDT 2600 MTL/MSL/MEL+SMDH 260-3D	J109
	90.0	180.0	SMDT 2600 MTL/MSL/MEL+SMDH 260-3DF	J107
	90.0	180.0	SMDT 2600 MTL/MSL/MEL+SMDH 260M	J104
	96.7	179.7	KDS 260MAK	J165
	139.0	230.0	SMDT 2600 MFS+SMDH 260-5D	J117
	139.0	230.0	SMDT 2600 MFS+SMDH 260-5DF	J115
	139.0	230.0	SMDT 2600 MFS+SMDH 260L	J112
	143.0	235.0	SMDT 2600 MTL/MSL/MEL+SMDH 260-5D	J109
	143.0	235.0	SMDT 2600 MTL/MSL/MEL+SMDH 260-5DF	J107

(Blue text: Flat head ■Indexable ■HSS)

● Diameter ø26.0 to ø26.5mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
26.0	143.0	235.0	SMDT 2600 MTL/MSL/MEL+SMDH 260L	J104
	150.7	234.7	KDS 260LAK	J165
	214.7	304.7	KDS 260DAK	J165
	219.0	310.0	SMDT 2600 MFS+SMDH 260-8D	J117
	219.0	310.0	SMDT 2600 MFS+SMDH 260-8DF	J115
	219.0	310.0	SMDT 2600 MFS+SMDH 260D	J112
	224.0	315.0	SMDT 2600 MTL/MSL/MEL+SMDH 260-8D	J109
	224.0	315.0	SMDT 2600 MTL/MSL/MEL+SMDH 260-8DF	J107
	224.0	315.0	SMDT 2600 MTL/MSL/MEL+SMDH 260D	J104
	312.0	396.0	SMDT 2600 MFS+SMDH 260-12D	J117
	316.0	401.0	SMDT 2600 MTL/MSL/MEL+SMDH 260-12D	J109
26.1	50.0	132.0	SMDT 2610 MTL/MSL/MEL+SMDH 260-1.5D	J109
	50.0	132.0	SMDT 2610 MTL/MSL/MEL+SMDH 260-1.5DF	J107
	90.0	180.0	SMDT 2610 MTL/MSL/MEL+SMDH 260-3D	J109
	90.0	180.0	SMDT 2610 MTL/MSL/MEL+SMDH 260-3DF	J107
	90.0	180.0	SMDT 2610 MTL/MSL/MEL+SMDH 260M	J104
	143.0	235.0	SMDT 2610 MTL/MSL/MEL+SMDH 260-5D	J109
	143.0	235.0	SMDT 2610 MTL/MSL/MEL+SMDH 260-5DF	J107
	143.0	235.0	SMDT 2610 MTL/MSL/MEL+SMDH 260L	J104
	224.0	315.0	SMDT 2610 MTL/MSL/MEL+SMDH 260-8D	J109
	224.0	315.0	SMDT 2610 MTL/MSL/MEL+SMDH 260-8DF	J107
	224.0	315.0	SMDT 2610 MTL/MSL/MEL+SMDH 260D	J104
	316.0	401.0	SMDT 2610 MTL/MSL/MEL+SMDH 260-12D	J109
26.2	50.0	132.0	SMDT 2620 MTL/MSL/MEL+SMDH 260-1.5D	J109
	50.0	132.0	SMDT 2620 MTL/MSL/MEL+SMDH 260-1.5DF	J107
	90.0	180.0	SMDT 2620 MTL/MSL/MEL+SMDH 260-3D	J109
	90.0	180.0	SMDT 2620 MTL/MSL/MEL+SMDH 260-3DF	J107
	90.0	180.0	SMDT 2620 MTL/MSL/MEL+SMDH 260M	J104
	143.0	235.0	SMDT 2620 MTL/MSL/MEL+SMDH 260-5D	J109
	143.0	235.0	SMDT 2620 MTL/MSL/MEL+SMDH 260-5DF	J107
	143.0	235.0	SMDT 2620 MTL/MSL/MEL+SMDH 260L	J104
	224.0	315.0	SMDT 2620 MTL/MSL/MEL+SMDH 260-8D	J109
	224.0	315.0	SMDT 2620 MTL/MSL/MEL+SMDH 260-8DF	J107
	224.0	315.0	SMDT 2620 MTL/MSL/MEL+SMDH 260D	J104
	316.0	401.0	SMDT 2620 MTL/MSL/MEL+SMDH 260-12D	J109
26.3	50.0	132.0	SMDT 2630 MTL/MSL/MEL+SMDH 260-1.5D	J109
	50.0	132.0	SMDT 2630 MTL/MSL/MEL+SMDH 260-1.5DF	J107
	90.0	180.0	SMDT 2630 MTL/MSL/MEL+SMDH 260-3D	J109
	90.0	180.0	SMDT 2630 MTL/MSL/MEL+SMDH 260-3DF	J107
	90.0	180.0	SMDT 2630 MTL/MSL/MEL+SMDH 260M	J104
	143.0	235.0	SMDT 2630 MTL/MSL/MEL+SMDH 260-5D	J109
	143.0	235.0	SMDT 2630 MTL/MSL/MEL+SMDH 260-5DF	J107
	143.0	235.0	SMDT 2630 MTL/MSL/MEL+SMDH 260L	J104
	224.0	315.0	SMDT 2630 MTL/MSL/MEL+SMDH 260-8D	J109
	224.0	315.0	SMDT 2630 MTL/MSL/MEL+SMDH 260-8DF	J107
	224.0	315.0	SMDT 2630 MTL/MSL/MEL+SMDH 260D	J104
	316.0	401.0	SMDT 2630 MTL/MSL/MEL+SMDH 260-12D	J109
26.4	50.0	132.0	SMDT 2640 MTL/MSL/MEL+SMDH 260-1.5D	J109
	50.0	132.0	SMDT 2640 MTL/MSL/MEL+SMDH 260-1.5DF	J107
	90.0	180.0	SMDT 2640 MTL/MSL/MEL+SMDH 260-3D	J109
	90.0	180.0	SMDT 2640 MTL/MSL/MEL+SMDH 260-3DF	J107
	90.0	180.0	SMDT 2640 MTL/MSL/MEL+SMDH 260M	J104
	143.0	235.0	SMDT 2640 MTL/MSL/MEL+SMDH 260-5D	J109
	143.0	235.0	SMDT 2640 MTL/MSL/MEL+SMDH 260-5DF	J107
	143.0	235.0	SMDT 2640 MTL/MSL/MEL+SMDH 260L	J104
	224.0	315.0	SMDT 2640 MTL/MSL/MEL+SMDH 260-8D	J109
	224.0	315.0	SMDT 2640 MTL/MSL/MEL+SMDH 260-8DF	J107
	224.0	315.0	SMDT 2640 MTL/MSL/MEL+SMDH 260D	J104
	316.0	401.0	SMDT 2640 MTL/MSL/MEL+SMDH 260-12D	J109
26.5	45.0	127.0	SMDT 2650 MFS+SMDH 260-1.5D	J117
	45.0	127.0	SMDT 2650 MFS+SMDH 260-1.5DF	J115
	50.0	132.0	SMDT 2650 MTL/MSL/MEL+SMDH 260-1.5D	J109
	50.0	132.0	SMDT 2650 MTL/MSL/MEL+SMDH 260-1.5DF	J107
	85.0	175.0	SMDT 2650 MFS+SMDH 260-3D	J117
	85.0	175.0	SMDT 2650 MFS+SMDH 260-3DF	J115
	85.0	175.0	SMDT 2650 MFS+SMDH 260M	J112
	90.0	179.0	SMDT 2650 MB+SMDH 260B3	J119
	90.0	180.0	SMDT 2650 MTL/MSL/MEL+SMDH 260-3D	J109
	90.0	180.0	SMDT 2650 MTL/MSL/MEL+SMDH 260-3DF	J107
	90.0	180.0	SMDT 2650 MTL/MSL/MEL+SMDH 260M	J104
	96.8	179.8	KDS 265MAK	J165
	107.6	193.6	KDS 265BAK	J165
	139.0	230.0	SMDT 2650 MFS+SMDH 260-5D	J117
	139.0	230.0	SMDT 2650 MFS+SMDH 260-5DF	J115
	139.0	230.0	SMDT 2650 MFS+SMDH 260L	J112
	143.0	235.0	SMDT 2650 MTL/MSL/MEL+SMDH 260-5D	J109
	143.0	235.0	SMDT 2650 MTL/MSL/MEL+SMDH 260-5DF	J107
	143.0	235.0	SMDT 2650 MTL/MSL/MEL+SMDH 260L	J104
	150.8	234.8	KDS 265LAK	J165
	214.8	304.8	KDS 265DAK	J165

(Blue text: Flat head ■Indexable ■HSS)

● Diameter ø26.5 to ø27.0mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
26.5	219.0	310.0	SMDT 2650 MFS+SMDH 260-8D	J117
	219.0	310.0	SMDT 2650 MFS+SMDH 260-8DF	J115
	219.0	310.0	SMDT 2650 MFS+SMDH 260D	J112
	224.0	315.0	SMDT 2650 MTL/MSL/MEL+SMDH 260-8D	J109
	224.0	315.0	SMDT 2650 MTL/MSL/MEL+SMDH 260-8DF	J107
	224.0	315.0	SMDT 2650 MTL/MSL/MEL+SMDH 260D	J104
	312.0	396.0	SMDT 2650 MFS+SMDH 260-12D	J117
	316.0	401.0	SMDT 2650 MTL/MSL/MEL+SMDH 260-12D	J109
26.6	50.0	132.0	SMDT 2660 MTL/MSL/MEL+SMDH 260-1.5D	J109
	50.0	132.0	SMDT 2660 MTL/MSL/MEL+SMDH 260-1.5DF	J107
	90.0	180.0	SMDT 2660 MTL/MSL/MEL+SMDH 260-3D	J109
	90.0	180.0	SMDT 2660 MTL/MSL/MEL+SMDH 260-3DF	J107
	90.0	180.0	SMDT 2660 MTL/MSL/MEL+SMDH 260M	J104
	143.0	235.0	SMDT 2660 MTL/MSL/MEL+SMDH 260-5D	J109
	143.0	235.0	SMDT 2660 MTL/MSL/MEL+SMDH 260-5DF	J107
	143.0	235.0	SMDT 2660 MTL/MSL/MEL+SMDH 260L	J104
	224.0	315.0	SMDT 2660 MTL/MSL/MEL+SMDH 260-8D	J109
	224.0	315.0	SMDT 2660 MTL/MSL/MEL+SMDH 260-8DF	J107
	224.0	315.0	SMDT 2660 MTL/MSL/MEL+SMDH 260D	J104
	316.0	401.0	SMDT 2660 MTL/MSL/MEL+SMDH 260-12D	J109
26.7	50.0	132.0	SMDT 2670 MTL/MSL/MEL+SMDH 260-1.5D	J109
	50.0	132.0	SMDT 2670 MTL/MSL/MEL+SMDH 260-1.5DF	J107
	90.0	179.0	SMDT 2670 MB+SMDH 260B3	J119
	90.0	180.0	SMDT 2670 MTL/MSL/MEL+SMDH 260-3D	J109
	90.0	180.0	SMDT 2670 MTL/MSL/MEL+SMDH 260-3DF	J107
	90.0	180.0	SMDT 2670 MTL/MSL/MEL+SMDH 260M	J104
	111.6	198.6	KDS 267BAK	J165
	143.0	235.0	SMDT 2670 MTL/MSL/MEL+SMDH 260-5D	J109
	143.0	235.0	SMDT 2670 MTL/MSL/MEL+SMDH 260-5DF	J107
	143.0	235.0	SMDT 2670 MTL/MSL/MEL+SMDH 260L	J104
	224.0	315.0	SMDT 2670 MTL/MSL/MEL+SMDH 260-8D	J109
	224.0	315.0	SMDT 2670 MTL/MSL/MEL+SMDH 260-8DF	J107
	224.0	315.0	SMDT 2670 MTL/MSL/MEL+SMDH 260D	J104
	316.0	401.0	SMDT 2670 MTL/MSL/MEL+SMDH 260-12D	J109
26.8	50.0	132.0	SMDT 2680 MTL/MSL/MEL+SMDH 260-1.5D	J109
	50.0	132.0	SMDT 2680 MTL/MSL/MEL+SMDH 260-1.5DF	J107
	90.0	180.0	SMDT 2680 MTL/MSL/MEL+SMDH 260-3D	J109
	90.0	180.0	SMDT 2680 MTL/MSL/MEL+SMDH 260-3DF	J107
	90.0	180.0	SMDT 2680 MTL/MSL/MEL+SMDH 260M	J104
	143.0	235.0	SMDT 2680 MTL/MSL/MEL+SMDH 260-5D	J109
	143.0	235.0	SMDT 2680 MTL/MSL/MEL+SMDH 260-5DF	J107
	143.0	235.0	SMDT 2680 MTL/MSL/MEL+SMDH 260L	J104
	224.0	315.0	SMDT 2680 MTL/MSL/MEL+SMDH 260-8D	J109
	224.0	315.0	SMDT 2680 MTL/MSL/MEL+SMDH 260-8DF	J107
	224.0	315.0	SMDT 2680 MTL/MSL/MEL+SMDH 260D	J104
	316.0	401.0	SMDT 2680 MTL/MSL/MEL+SMDH 260-12D	J109
26.9	51.0	133.0	SMDT 2690 MTL/MSL/MEL+SMDH 270-1.5D	J109
	51.0	133.0	SMDT 2690 MTL/MSL/MEL+SMDH 270-1.5DF	J107
	93.0	180.0	SMDT 2690 MTL/MSL/MEL+SMDH 270-3D	J109
	93.0	180.0	SMDT 2690 MTL/MSL/MEL+SMDH 270-3DF	J107
	93.0	180.0	SMDT 2690 MTL/MSL/MEL+SMDH 270M	J104
	149.0	240.0	SMDT 2690 MTL/MSL/MEL+SMDH 270-5D	J109
	149.0	240.0	SMDT 2690 MTL/MSL/MEL+SMDH 270-5DF	J107
	149.0	240.0	SMDT 2690 MTL/MSL/MEL+SMDH 270L	J104
	232.0	325.0	SMDT 2690 MTL/MSL/MEL+SMDH 270-8D	J109
	232.0	325.0	SMDT 2690 MTL/MSL/MEL+SMDH 270-8DF	J107
	232.0	325.0	SMDT 2690 MTL/MSL/MEL+SMDH 270D	J104
	329.0	413.0	SMDT 2690 MTL/MSL/MEL+SMDH 270-12D	J109
27.0	46.0	128.0	SMDT 2700 MFS+SMDH 270-1.5D	J117
	46.0	128.0	SMDT 2700 MFS+SMDH 270-1.5DF	J115
	51.0	133.0	SMDT 2700 MTL/MSL/MEL+SMDH 270-1.5D	J109
	51.0	133.0	SMDT 2700 MTL/MSL/MEL+SMDH 270-1.5DF	J107
	88.0	175.0	SMDT 2700 MFS+SMDH 270-3D	J117
	88.0	175.0	SMDT 2700 MFS+SMDH 270-3DF	J115
	88.0	175.0	SMDT 2700 MFS+SMDH 270M	J112
	93.0	180.0	SMDT 2700 MTL/MSL/MEL+SMDH 270-3D	J109
	93.0	180.0	SMDT 2700 MTL/MSL/MEL+SMDH 270-3DF	J107
	93.0	180.0	SMDT 2700 MTL/MSL/MEL+SMDH 270M	J104
	98.9	179.9	KDS 270MAK	J165
	144.0	235.0	SMDT 2700 MFS+SMDH 270-5D	J117
	144.0	235.0	SMDT 2700 MFS+SMDH 270-5DF	J115
	144.0	235.0	SMDT 2700 MFS+SMDH 270L	J112
	149.0	240.0	SMDT 2700 MTL/MSL/MEL+SMDH 270-5D	J109
	149.0	240.0	SMDT 2700 MTL/MSL/MEL+SMDH 270-5DF	J107
	149.0	240.0	SMDT 2700 MTL/MSL/MEL+SMDH 270L	J104
	155.9	239.9	KDS 270LAK	J165
	219.9	309.9	KDS 270DAK	J165
	227.0	320.0	SMDT 2700 MFS+SMDH 270-8D	J117
	227.0	320.0	SMDT 2700 MFS+SMDH 270-8DF	J115
	227.0	320.0	SMDT 2700 MFS+SMDH 270D	J112

(Blue text: Flat head ■Indexable ■HSS)

Effective Length (LU) is a guideline for the usable length. Take into account the chip evacuation in relation to the flute length (LCF) when drilling.

Effective Length List by Diameter

● Diameter ø27.0 to ø27.6mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
27.0	232.0	325.0	SMDT 2700 MTL/MSL/MEL+SMDH 270-8D	J109
	232.0	325.0	SMDT 2700 MTL/MSL/MEL+SMDH 270-8DF	J107
	232.0	325.0	SMDT 2700 MTL/MSL/MEL+SMDH 270D	J104
	324.0	408.0	SMDT 2700 MFS+SMDH 270-12D	J117
	329.0	413.0	SMDT 2700 MTL/MSL/MEL+SMDH 270-12D	J109
27.1	51.0	133.0	SMDT 2710 MTL/MSL/MEL+SMDH 270-1.5D	J109
	51.0	133.0	SMDT 2710 MTL/MSL/MEL+SMDH 270-1.5DF	J107
	93.0	180.0	SMDT 2710 MTL/MSL/MEL+SMDH 270-3D	J109
	93.0	180.0	SMDT 2710 MTL/MSL/MEL+SMDH 270-3DF	J107
	93.0	180.0	SMDT 2710 MTL/MSL/MEL+SMDH 270M	J104
	149.0	240.0	SMDT 2710 MTL/MSL/MEL+SMDH 270-5D	J109
	149.0	240.0	SMDT 2710 MTL/MSL/MEL+SMDH 270-5DF	J107
	149.0	240.0	SMDT 2710 MTL/MSL/MEL+SMDH 270L	J104
	232.0	325.0	SMDT 2710 MTL/MSL/MEL+SMDH 270-8D	J109
	232.0	325.0	SMDT 2710 MTL/MSL/MEL+SMDH 270-8DF	J107
	232.0	325.0	SMDT 2710 MTL/MSL/MEL+SMDH 270D	J104
	329.0	413.0	SMDT 2710 MTL/MSL/MEL+SMDH 270-12D	J109
27.2	51.0	133.0	SMDT 2720 MTL/MSL/MEL+SMDH 270-1.5D	J109
	51.0	133.0	SMDT 2720 MTL/MSL/MEL+SMDH 270-1.5DF	J107
	93.0	180.0	SMDT 2720 MTL/MSL/MEL+SMDH 270-3D	J109
	93.0	180.0	SMDT 2720 MTL/MSL/MEL+SMDH 270-3DF	J107
	93.0	180.0	SMDT 2720 MTL/MSL/MEL+SMDH 270M	J104
	149.0	240.0	SMDT 2720 MTL/MSL/MEL+SMDH 270-5D	J109
	149.0	240.0	SMDT 2720 MTL/MSL/MEL+SMDH 270-5DF	J107
	149.0	240.0	SMDT 2720 MTL/MSL/MEL+SMDH 270L	J104
	232.0	325.0	SMDT 2720 MTL/MSL/MEL+SMDH 270-8D	J109
	232.0	325.0	SMDT 2720 MTL/MSL/MEL+SMDH 270-8DF	J107
	232.0	325.0	SMDT 2720 MTL/MSL/MEL+SMDH 270D	J104
	329.0	413.0	SMDT 2720 MTL/MSL/MEL+SMDH 270-12D	J109
27.3	51.0	133.0	SMDT 2730 MTL/MSL/MEL+SMDH 270-1.5D	J109
	51.0	133.0	SMDT 2730 MTL/MSL/MEL+SMDH 270-1.5DF	J107
	93.0	180.0	SMDT 2730 MTL/MSL/MEL+SMDH 270-3D	J109
	93.0	180.0	SMDT 2730 MTL/MSL/MEL+SMDH 270-3DF	J107
	93.0	180.0	SMDT 2730 MTL/MSL/MEL+SMDH 270M	J104
	149.0	240.0	SMDT 2730 MTL/MSL/MEL+SMDH 270-5D	J109
	149.0	240.0	SMDT 2730 MTL/MSL/MEL+SMDH 270-5DF	J107
	149.0	240.0	SMDT 2730 MTL/MSL/MEL+SMDH 270L	J104
	232.0	325.0	SMDT 2730 MTL/MSL/MEL+SMDH 270-8D	J109
	232.0	325.0	SMDT 2730 MTL/MSL/MEL+SMDH 270-8DF	J107
	232.0	325.0	SMDT 2730 MTL/MSL/MEL+SMDH 270D	J104
	329.0	413.0	SMDT 2730 MTL/MSL/MEL+SMDH 270-12D	J109
27.4	51.0	133.0	SMDT 2740 MTL/MSL/MEL+SMDH 270-1.5D	J109
	51.0	133.0	SMDT 2740 MTL/MSL/MEL+SMDH 270-1.5DF	J107
	93.0	180.0	SMDT 2740 MTL/MSL/MEL+SMDH 270-3D	J109
	93.0	180.0	SMDT 2740 MTL/MSL/MEL+SMDH 270-3DF	J107
	93.0	180.0	SMDT 2740 MTL/MSL/MEL+SMDH 270M	J104
	149.0	240.0	SMDT 2740 MTL/MSL/MEL+SMDH 270-5D	J109
	149.0	240.0	SMDT 2740 MTL/MSL/MEL+SMDH 270-5DF	J107
	149.0	240.0	SMDT 2740 MTL/MSL/MEL+SMDH 270L	J104
	232.0	325.0	SMDT 2740 MTL/MSL/MEL+SMDH 270-8D	J109
	232.0	325.0	SMDT 2740 MTL/MSL/MEL+SMDH 270-8DF	J107
	232.0	325.0	SMDT 2740 MTL/MSL/MEL+SMDH 270D	J104
	329.0	413.0	SMDT 2740 MTL/MSL/MEL+SMDH 270-12D	J109
27.5	46.0	128.0	SMDT 2750 MFS+SMDH 270-1.5D	J117
	46.0	128.0	SMDT 2750 MFS+SMDH 270-1.5DF	J115
	51.0	133.0	SMDT 2750 MTL/MSL/MEL+SMDH 270-1.5D	J109
	51.0	133.0	SMDT 2750 MTL/MSL/MEL+SMDH 270-1.5DF	J107
	88.0	175.0	SMDT 2750 MFS+SMDH 270-3D	J117
	88.0	175.0	SMDT 2750 MFS+SMDH 270-3DF	J115
	88.0	175.0	SMDT 2750 MFS+SMDH 270M	J112
	93.0	180.0	SMDT 2750 MTL/MSL/MEL+SMDH 270-3D	J109
	93.0	180.0	SMDT 2750 MTL/MSL/MEL+SMDH 270-3DF	J107
	93.0	180.0	SMDT 2750 MTL/MSL/MEL+SMDH 270M	J104
	99.0	180.0	KDS 275MAK	J165
	144.0	235.0	SMDT 2750 MFS+SMDH 270-5D	J117
	144.0	235.0	SMDT 2750 MFS+SMDH 270-5DF	J115
	144.0	235.0	SMDT 2750 MFS+SMDH 270L	J112
	149.0	240.0	SMDT 2750 MTL/MSL/MEL+SMDH 270-5D	J109
	149.0	240.0	SMDT 2750 MTL/MSL/MEL+SMDH 270-5DF	J107
	149.0	240.0	SMDT 2750 MTL/MSL/MEL+SMDH 270L	J104
	156.0	240.0	KDS 275LAK	J165
	227.0	320.0	SMDT 2750 MFS+SMDH 270-8D	J117
	227.0	320.0	SMDT 2750 MFS+SMDH 270-8DF	J115
	227.0	320.0	SMDT 2750 MFS+SMDH 270D	J112
	232.0	325.0	SMDT 2750 MTL/MSL/MEL+SMDH 270-8D	J109
	232.0	325.0	SMDT 2750 MTL/MSL/MEL+SMDH 270-8DF	J107
	232.0	325.0	SMDT 2750 MTL/MSL/MEL+SMDH 270D	J104
	324.0	408.0	SMDT 2750 MFS+SMDH 270-12D	J117
	329.0	413.0	SMDT 2750 MTL/MSL/MEL+SMDH 270-12D	J109
27.6	51.0	133.0	SMDT 2760 MTL/MSL/MEL+SMDH 270-1.5D	J109

(Blue text: Flat head ■Indexable ■HSS)

● Diameter ø27.6 to ø28.1mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
27.6	51.0	133.0	SMDT 2760 MTL/MSL/MEL+SMDH 270-1.5DF	J107
	93.0	180.0	SMDT 2760 MTL/MSL/MEL+SMDH 270-3D	J109
	93.0	180.0	SMDT 2760 MTL/MSL/MEL+SMDH 270-3DF	J107
	93.0	180.0	SMDT 2760 MTL/MSL/MEL+SMDH 270M	J104
	149.0	240.0	SMDT 2760 MTL/MSL/MEL+SMDH 270-5D	J109
	149.0	240.0	SMDT 2760 MTL/MSL/MEL+SMDH 270-5DF	J107
	149.0	240.0	SMDT 2760 MTL/MSL/MEL+SMDH 270L	J104
	232.0	325.0	SMDT 2760 MTL/MSL/MEL+SMDH 270-8D	J109
	232.0	325.0	SMDT 2760 MTL/MSL/MEL+SMDH 270-8DF	J107
	232.0	325.0	SMDT 2760 MTL/MSL/MEL+SMDH 270D	J104
	329.0	413.0	SMDT 2760 MTL/MSL/MEL+SMDH 270-12D	J109
27.7	51.0	133.0	SMDT 2770 MTL/MSL/MEL+SMDH 270-1.5D	J109
	51.0	133.0	SMDT 2770 MTL/MSL/MEL+SMDH 270-1.5DF	J107
	93.0	180.0	SMDT 2770 MTL/MSL/MEL+SMDH 270-3D	J109
	93.0	180.0	SMDT 2770 MTL/MSL/MEL+SMDH 270-3DF	J107
	93.0	180.0	SMDT 2770 MTL/MSL/MEL+SMDH 270M	J104
	149.0	240.0	SMDT 2770 MTL/MSL/MEL+SMDH 270-5D	J109
	149.0	240.0	SMDT 2770 MTL/MSL/MEL+SMDH 270-5DF	J107
	149.0	240.0	SMDT 2770 MTL/MSL/MEL+SMDH 270L	J104
	232.0	325.0	SMDT 2770 MTL/MSL/MEL+SMDH 270-8D	J109
	232.0	325.0	SMDT 2770 MTL/MSL/MEL+SMDH 270-8DF	J107
	232.0	325.0	SMDT 2770 MTL/MSL/MEL+SMDH 270D	J104
	329.0	413.0	SMDT 2770 MTL/MSL/MEL+SMDH 270-12D	J109
27.8	51.0	133.0	SMDT 2780 MTL/MSL/MEL+SMDH 270-1.5D	J109
	51.0	133.0	SMDT 2780 MTL/MSL/MEL+SMDH 270-1.5DF	J107
	93.0	180.0	SMDT 2780 MTL/MSL/MEL+SMDH 270-3D	J109
	93.0	180.0	SMDT 2780 MTL/MSL/MEL+SMDH 270-3DF	J107
	93.0	180.0	SMDT 2780 MTL/MSL/MEL+SMDH 270M	J104
	149.0	240.0	SMDT 2780 MTL/MSL/MEL+SMDH 270-5D	J109
	149.0	240.0	SMDT 2780 MTL/MSL/MEL+SMDH 270-5DF	J107
	149.0	240.0	SMDT 2780 MTL/MSL/MEL+SMDH 270L	J104
	232.0	325.0	SMDT 2780 MTL/MSL/MEL+SMDH 270-8D	J109
	232.0	325.0	SMDT 2780 MTL/MSL/MEL+SMDH 270-8DF	J107
	232.0	325.0	SMDT 2780 MTL/MSL/MEL+SMDH 270D	J104
	329.0	413.0	SMDT 2780 MTL/MSL/MEL+SMDH 270-12D	J109
27.9	53.0	134.0	SMDT 2790 MTL/MSL/MEL+SMDH 280-1.5D	J109
	53.0	134.0	SMDT 2790 MTL/MSL/MEL+SMDH 280-1.5DF	J107
	96.0	185.0	SMDT 2790 MTL/MSL/MEL+SMDH 280-3D	J109
	96.0	185.0	SMDT 2790 MTL/MSL/MEL+SMDH 280-3DF	J107
	96.0	185.0	SMDT 2790 MTL/MSL/MEL+SMDH 280M	J104
	154.0	245.0	SMDT 2790 MTL/MSL/MEL+SMDH 280-5D	J109
	154.0	245.0	SMDT 2790 MTL/MSL/MEL+SMDH 280-5DF	J107
	154.0	245.0	SMDT 2790 MTL/MSL/MEL+SMDH 280L	J104
	240.0	330.0	SMDT 2790 MTL/MSL/MEL+SMDH 280-8D	J109
	240.0	330.0	SMDT 2790 MTL/MSL/MEL+SMDH 280-8DF	J107
	240.0	330.0	SMDT 2790 MTL/MSL/MEL+SMDH 280D	J104
	341.0	426.0	SMDT 2790 MTL/MSL/MEL+SMDH 280-12D	J109
28.0	48.0	129.0	SMDT 2800 MFS+SMDH 280-1.5D	J117
	48.0	129.0	SMDT 2800 MFS+SMDH 280-1.5DF	J115
	53.0	134.0	SMDT 2800 MTL/MSL/MEL+SMDH 280-1.5D	J109
	53.0	134.0	SMDT 2800 MTL/MSL/MEL+SMDH 280-1.5DF	J107
	91.0	180.0	SMDT 2800 MFS+SMDH 280-3D	J117
	91.0	180.0	SMDT 2800 MFS+SMDH 280-3DF	J115
	91.0	180.0	SMDT 2800 MFS+SMDH 280M	J112
	96.0	185.0	SMDT 2800 MTL/MSL/MEL+SMDH 280-3D	J109
	96.0	185.0	SMDT 2800 MTL/MSL/MEL+SMDH 280-3DF	J107
	96.0	185.0	SMDT 2800 MTL/MSL/MEL+SMDH 280M	J104
	102.1	185.1	KDS 280MAK	J165
	149.0	240.0	SMDT 2800 MFS+SMDH 280-5D	J117
	149.0	240.0	SMDT 2800 MFS+SMDH 280-5DF	J115
	149.0	240.0	SMDT 2800 MFS+SMDH 280L	J112
	154.0	245.0	SMDT 2800 MTL/MSL/MEL+SMDH 280-5D	J109
	154.0	245.0	SMDT 2800 MTL/MSL/MEL+SMDH 280-5DF	J107
	154.0	245.0	SMDT 2800 MTL/MSL/MEL+SMDH 280L	J104
	162.1	245.1	KDS 280LAK	J165
	225.1	315.1	KDS 280DAK	J165
	235.0	325.0	SMDT 2800 MFS+SMDH 280-8D	J117
	235.0	325.0	SMDT 2800 MFS+SMDH 280-8DF	J115
	235.0	325.0	SMDT 2800 MFS+SMDH 280D	J112
	240.0	330.0	SMDT 2800 MTL/MSL/MEL+SMDH 280-8D	J109
	240.0	330.0	SMDT 2800 MTL/MSL/MEL+SMDH 280-8DF	J107
	240.0	330.0	SMDT 2800 MTL/MSL/MEL+SMDH 280D	J104
	336.0	421.0	SMDT 2800 MFS+SMDH 280-12D	J117
	341.0	426.0	SMDT 2800 MTL/MSL/MEL+SMDH 280-12D	J109
28.1	53.0	134.0	SMDT 2810 MTL/MSL/MEL+SMDH 280-1.5D	J109
	53.0	134.0	SMDT 2810 MTL/MSL/MEL+SMDH 280-1.5DF	J107
	96.0	185.0	SMDT 2810 MTL/MSL/MEL+SMDH 280-3D	J109
	96.0	185.0	SMDT 2810 MTL/MSL/MEL+SMDH 280-3DF	J107
	96.0	185.0	SMDT 2810 MTL/MSL/MEL+SMDH 280M	J104
	154.0	245.0	SMDT 2810 MTL/MSL/MEL+SMDH 280-5D	J109

(Blue text: Flat head ■Indexable ■HSS)

● Diameter ø28.1 to ø28.6mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
28.1	154.0	245.0	SMDT 2810 MTL/MSL/MEL+SMDH 280-5DF	J107
	154.0	245.0	SMDT 2810 MTL/MSL/MEL+SMDH 280L	J104
	240.0	330.0	SMDT 2810 MTL/MSL/MEL+SMDH 280-8D	J109
	240.0	330.0	SMDT 2810 MTL/MSL/MEL+SMDH 280-8DF	J107
	240.0	330.0	SMDT 2810 MTL/MSL/MEL+SMDH 280D	J104
	341.0	426.0	SMDT 2810 MTL/MSL/MEL+SMDH 280-12D	J109
28.2	53.0	134.0	SMDT 2820 MTL/MSL/MEL+SMDH 280-1.5D	J109
	53.0	134.0	SMDT 2820 MTL/MSL/MEL+SMDH 280-1.5DF	J107
	96.0	185.0	SMDT 2820 MTL/MSL/MEL+SMDH 280-3D	J109
	96.0	185.0	SMDT 2820 MTL/MSL/MEL+SMDH 280-3DF	J107
	96.0	185.0	SMDT 2820 MTL/MSL/MEL+SMDH 280M	J104
	154.0	245.0	SMDT 2820 MTL/MSL/MEL+SMDH 280-5D	J109
	154.0	245.0	SMDT 2820 MTL/MSL/MEL+SMDH 280-5DF	J107
	154.0	245.0	SMDT 2820 MTL/MSL/MEL+SMDH 280L	J104
	240.0	330.0	SMDT 2820 MTL/MSL/MEL+SMDH 280-8D	J109
	240.0	330.0	SMDT 2820 MTL/MSL/MEL+SMDH 280-8DF	J107
	240.0	330.0	SMDT 2820 MTL/MSL/MEL+SMDH 280D	J104
	341.0	426.0	SMDT 2820 MTL/MSL/MEL+SMDH 280-12D	J109
28.3	53.0	134.0	SMDT 2830 MTL/MSL/MEL+SMDH 280-1.5D	J109
	53.0	134.0	SMDT 2830 MTL/MSL/MEL+SMDH 280-1.5DF	J107
	96.0	185.0	SMDT 2830 MTL/MSL/MEL+SMDH 280-3D	J109
	96.0	185.0	SMDT 2830 MTL/MSL/MEL+SMDH 280-3DF	J107
	96.0	185.0	SMDT 2830 MTL/MSL/MEL+SMDH 280M	J104
	154.0	245.0	SMDT 2830 MTL/MSL/MEL+SMDH 280-5D	J109
	154.0	245.0	SMDT 2830 MTL/MSL/MEL+SMDH 280-5DF	J107
	154.0	245.0	SMDT 2830 MTL/MSL/MEL+SMDH 280L	J104
	240.0	330.0	SMDT 2830 MTL/MSL/MEL+SMDH 280-8D	J109
	240.0	330.0	SMDT 2830 MTL/MSL/MEL+SMDH 280-8DF	J107
	240.0	330.0	SMDT 2830 MTL/MSL/MEL+SMDH 280D	J104
	341.0	426.0	SMDT 2830 MTL/MSL/MEL+SMDH 280-12D	J109
28.4	53.0	134.0	SMDT 2840 MTL/MSL/MEL+SMDH 280-1.5D	J109
	53.0	134.0	SMDT 2840 MTL/MSL/MEL+SMDH 280-1.5DF	J107
	96.0	185.0	SMDT 2840 MTL/MSL/MEL+SMDH 280-3D	J109
	96.0	185.0	SMDT 2840 MTL/MSL/MEL+SMDH 280-3DF	J107
	96.0	185.0	SMDT 2840 MTL/MSL/MEL+SMDH 280M	J104
	154.0	245.0	SMDT 2840 MTL/MSL/MEL+SMDH 280-5D	J109
	154.0	245.0	SMDT 2840 MTL/MSL/MEL+SMDH 280-5DF	J107
	154.0	245.0	SMDT 2840 MTL/MSL/MEL+SMDH 280L	J104
	240.0	330.0	SMDT 2840 MTL/MSL/MEL+SMDH 280-8D	J109
	240.0	330.0	SMDT 2840 MTL/MSL/MEL+SMDH 280-8DF	J107
	240.0	330.0	SMDT 2840 MTL/MSL/MEL+SMDH 280D	J104
	341.0	426.0	SMDT 2840 MTL/MSL/MEL+SMDH 280-12D	J109
28.5	48.0	129.0	SMDT 2850 MFS+SMDH 280-1.5D	J117
	48.0	129.0	SMDT 2850 MFS+SMDH 280-1.5DF	J115
	53.0	134.0	SMDT 2850 MTL/MSL/MEL+SMDH 280-1.5D	J109
	53.0	134.0	SMDT 2850 MTL/MSL/MEL+SMDH 280-1.5DF	J107
	91.0	180.0	SMDT 2850 MFS+SMDH 280-3D	J117
	91.0	180.0	SMDT 2850 MFS+SMDH 280-3DF	J115
	91.0	180.0	SMDT 2850 MFS+SMDH 280M	J112
	96.0	185.0	SMDT 2850 MTL/MSL/MEL+SMDH 280-3D	J109
	96.0	185.0	SMDT 2850 MTL/MSL/MEL+SMDH 280-3DF	J107
	96.0	185.0	SMDT 2850 MTL/MSL/MEL+SMDH 280M	J104
	102.2	185.2	KDS 285MAK	J165
	149.0	240.0	SMDT 2850 MFS+SMDH 280-5D	J117
	149.0	240.0	SMDT 2850 MFS+SMDH 280-5DF	J115
	149.0	240.0	SMDT 2850 MFS+SMDH 280L	J112
	154.0	245.0	SMDT 2850 MTL/MSL/MEL+SMDH 280-5D	J109
	154.0	245.0	SMDT 2850 MTL/MSL/MEL+SMDH 280-5DF	J107
	154.0	245.0	SMDT 2850 MTL/MSL/MEL+SMDH 280L	J104
	162.2	245.2	KDS 285LAK	J165
	235.0	325.0	SMDT 2850 MFS+SMDH 280-8D	J117
	235.0	325.0	SMDT 2850 MFS+SMDH 280-8DF	J115
	235.0	325.0	SMDT 2850 MFS+SMDH 280D	J112
	240.0	330.0	SMDT 2850 MTL/MSL/MEL+SMDH 280-8D	J109
	240.0	330.0	SMDT 2850 MTL/MSL/MEL+SMDH 280-8DF	J107
	240.0	330.0	SMDT 2850 MTL/MSL/MEL+SMDH 280D	J104
	336.0	421.0	SMDT 2850 MFS+SMDH 280-12D	J117
	341.0	426.0	SMDT 2850 MTL/MSL/MEL+SMDH 280-12D	J109
28.6	53.0	134.0	SMDT 2860 MTL/MSL/MEL+SMDH 280-1.5D	J109
	53.0	134.0	SMDT 2860 MTL/MSL/MEL+SMDH 280-1.5DF	J107
	96.0	185.0	SMDT 2860 MTL/MSL/MEL+SMDH 280-3D	J109
	96.0	185.0	SMDT 2860 MTL/MSL/MEL+SMDH 280-3DF	J107
	96.0	185.0	SMDT 2860 MTL/MSL/MEL+SMDH 280M	J104
	154.0	245.0	SMDT 2860 MTL/MSL/MEL+SMDH 280-5D	J109
	154.0	245.0	SMDT 2860 MTL/MSL/MEL+SMDH 280-5DF	J107
	154.0	245.0	SMDT 2860 MTL/MSL/MEL+SMDH 280L	J104
	240.0	330.0	SMDT 2860 MTL/MSL/MEL+SMDH 280-8D	J109
	240.0	330.0	SMDT 2860 MTL/MSL/MEL+SMDH 280-8DF	J107
	240.0	330.0	SMDT 2860 MTL/MSL/MEL+SMDH 280D	J104
	341.0	426.0	SMDT 2860 MTL/MSL/MEL+SMDH 280-12D	J109

(Blue text: Flat head ■Indexable ■HSS)

Effective Length (LU) is a guideline for the usable length. Take into account the chip evacuation in relation to the flute length (LCF) when drilling.

Effective Length List by Diameter

● Diameter ø28.7 to ø29.2mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
28.7	53.0	134.0	SMDT 2870 MTL/MSL/MEL+SMDH 280-1.5D	J109
	53.0	134.0	SMDT 2870 MTL/MSL/MEL+SMDH 280-1.5DF	J107
	96.0	185.0	SMDT 2870 MTL/MSL/MEL+SMDH 280-3D	J109
	96.0	185.0	SMDT 2870 MTL/MSL/MEL+SMDH 280-3DF	J107
	96.0	185.0	SMDT 2870 MTL/MSL/MEL+SMDH 280M	J104
	154.0	245.0	SMDT 2870 MTL/MSL/MEL+SMDH 280-5D	J109
	154.0	245.0	SMDT 2870 MTL/MSL/MEL+SMDH 280-5DF	J107
	154.0	245.0	SMDT 2870 MTL/MSL/MEL+SMDH 280L	J104
	240.0	330.0	SMDT 2870 MTL/MSL/MEL+SMDH 280-8D	J109
	240.0	330.0	SMDT 2870 MTL/MSL/MEL+SMDH 280-8DF	J107
	240.0	330.0	SMDT 2870 MTL/MSL/MEL+SMDH 280D	J104
	341.0	426.0	SMDT 2870 MTL/MSL/MEL+SMDH 280-12D	J109
28.8	53.0	134.0	SMDT 2880 MTL/MSL/MEL+SMDH 280-1.5D	J109
	53.0	134.0	SMDT 2880 MTL/MSL/MEL+SMDH 280-1.5DF	J107
	96.0	185.0	SMDT 2880 MTL/MSL/MEL+SMDH 280-3D	J109
	96.0	185.0	SMDT 2880 MTL/MSL/MEL+SMDH 280-3DF	J107
	96.0	185.0	SMDT 2880 MTL/MSL/MEL+SMDH 280M	J104
	154.0	245.0	SMDT 2880 MTL/MSL/MEL+SMDH 280-5D	J109
	154.0	245.0	SMDT 2880 MTL/MSL/MEL+SMDH 280-5DF	J107
	154.0	245.0	SMDT 2880 MTL/MSL/MEL+SMDH 280L	J104
	240.0	330.0	SMDT 2880 MTL/MSL/MEL+SMDH 280-8D	J109
	240.0	330.0	SMDT 2880 MTL/MSL/MEL+SMDH 280-8DF	J107
	240.0	330.0	SMDT 2880 MTL/MSL/MEL+SMDH 280D	J104
	341.0	426.0	SMDT 2880 MTL/MSL/MEL+SMDH 280-12D	J109
28.9	55.0	136.0	SMDT 2890 MTL/MSL/MEL+SMDH 290-1.5D	J109
	55.0	136.0	SMDT 2890 MTL/MSL/MEL+SMDH 290-1.5DF	J107
	99.0	190.0	SMDT 2890 MTL/MSL/MEL+SMDH 290-3D	J109
	99.0	190.0	SMDT 2890 MTL/MSL/MEL+SMDH 290-3DF	J107
	99.0	190.0	SMDT 2890 MTL/MSL/MEL+SMDH 290M	J104
	159.0	250.0	SMDT 2890 MTL/MSL/MEL+SMDH 290-5D	J109
	159.0	250.0	SMDT 2890 MTL/MSL/MEL+SMDH 290-5DF	J107
	159.0	250.0	SMDT 2890 MTL/MSL/MEL+SMDH 290L	J104
	248.0	340.0	SMDT 2890 MTL/MSL/MEL+SMDH 290-8D	J109
	248.0	340.0	SMDT 2890 MTL/MSL/MEL+SMDH 290-8DF	J107
	248.0	340.0	SMDT 2890 MTL/MSL/MEL+SMDH 290D	J104
	353.0	438.0	SMDT 2890 MTL/MSL/MEL+SMDH 290-12D	J109
29.0	49.0	131.0	SMDT 2900 MFS+SMDH 290-1.5D	J117
	49.0	131.0	SMDT 2900 MFS+SMDH 290-1.5DF	J115
	55.0	136.0	SMDT 2900 MTL/MSL/MEL+SMDH 290-1.5D	J109
	55.0	136.0	SMDT 2900 MTL/MSL/MEL+SMDH 290-1.5DF	J107
	94.0	185.0	SMDT 2900 MFS+SMDH 290-3D	J117
	94.0	185.0	SMDT 2900 MFS+SMDH 290-3DF	J115
	94.0	185.0	SMDT 2900 MFS+SMDH 290M	J112
	99.0	190.0	SMDT 2900 MTL/MSL/MEL+SMDH 290-3D	J109
	99.0	190.0	SMDT 2900 MTL/MSL/MEL+SMDH 290-3DF	J107
	99.0	190.0	SMDT 2900 MTL/MSL/MEL+SMDH 290M	J104
	105.3	190.3	KDS 290MAK	J165
	154.0	245.0	SMDT 2900 MFS+SMDH 290-5D	J117
	154.0	245.0	SMDT 2900 MFS+SMDH 290-5DF	J115
	154.0	245.0	SMDT 2900 MFS+SMDH 290L	J112
	159.0	250.0	SMDT 2900 MTL/MSL/MEL+SMDH 290-5D	J109
	159.0	250.0	SMDT 2900 MTL/MSL/MEL+SMDH 290-5DF	J107
	159.0	250.0	SMDT 2900 MTL/MSL/MEL+SMDH 290L	J104
	167.3	250.3	KDS 290LAK	J165
	235.3	325.3	KDS 290DAK	J165
	243.0	335.0	SMDT 2900 MFS+SMDH 290-8D	J117
	243.0	335.0	SMDT 2900 MFS+SMDH 290-8DF	J115
	243.0	335.0	SMDT 2900 MFS+SMDH 290D	J112
	248.0	340.0	SMDT 2900 MTL/MSL/MEL+SMDH 290-8D	J109
	248.0	340.0	SMDT 2900 MTL/MSL/MEL+SMDH 290-8DF	J107
	248.0	340.0	SMDT 2900 MTL/MSL/MEL+SMDH 290D	J104
	348.0	433.0	SMDT 2900 MFS+SMDH 290-12D	J117
	353.0	438.0	SMDT 2900 MTL/MSL/MEL+SMDH 290-12D	J109
29.1	55.0	136.0	SMDT 2910 MTL/MSL/MEL+SMDH 290-1.5D	J109
	55.0	136.0	SMDT 2910 MTL/MSL/MEL+SMDH 290-1.5DF	J107
	99.0	190.0	SMDT 2910 MTL/MSL/MEL+SMDH 290-3D	J109
	99.0	190.0	SMDT 2910 MTL/MSL/MEL+SMDH 290-3DF	J107
	99.0	190.0	SMDT 2910 MTL/MSL/MEL+SMDH 290M	J104
	159.0	250.0	SMDT 2910 MTL/MSL/MEL+SMDH 290-5D	J109
	159.0	250.0	SMDT 2910 MTL/MSL/MEL+SMDH 290-5DF	J107
	159.0	250.0	SMDT 2910 MTL/MSL/MEL+SMDH 290L	J104
	248.0	340.0	SMDT 2910 MTL/MSL/MEL+SMDH 290-8D	J109
	248.0	340.0	SMDT 2910 MTL/MSL/MEL+SMDH 290-8DF	J107
	248.0	340.0	SMDT 2910 MTL/MSL/MEL+SMDH 290D	J104
	353.0	438.0	SMDT 2910 MTL/MSL/MEL+SMDH 290-12D	J109
29.2	55.0	136.0	SMDT 2920 MTL/MSL/MEL+SMDH 290-1.5D	J109
	55.0	136.0	SMDT 2920 MTL/MSL/MEL+SMDH 290-1.5DF	J107
	99.0	190.0	SMDT 2920 MTL/MSL/MEL+SMDH 290-3D	J109
	99.0	190.0	SMDT 2920 MTL/MSL/MEL+SMDH 290-3DF	J107
	99.0	190.0	SMDT 2920 MTL/MSL/MEL+SMDH 290M	J104

(Blue text: Flat head ■Indexable ■HSS)

● Diameter ø29.2 to ø29.7mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
29.2	159.0	250.0	SMDT 2920 MTL/MSL/MEL+SMDH 290-5D	J109
	159.0	250.0	SMDT 2920 MTL/MSL/MEL+SMDH 290-5DF	J107
	159.0	250.0	SMDT 2920 MTL/MSL/MEL+SMDH 290L	J104
	248.0	340.0	SMDT 2920 MTL/MSL/MEL+SMDH 290-8D	J109
	248.0	340.0	SMDT 2920 MTL/MSL/MEL+SMDH 290-8DF	J107
	248.0	340.0	SMDT 2920 MTL/MSL/MEL+SMDH 290D	J104
	353.0	438.0	SMDT 2920 MTL/MSL/MEL+SMDH 290-12D	J109
29.3	55.0	136.0	SMDT 2930 MTL/MSL/MEL+SMDH 290-1.5D	J109
	55.0	136.0	SMDT 2930 MTL/MSL/MEL+SMDH 290-1.5DF	J107
	99.0	190.0	SMDT 2930 MTL/MSL/MEL+SMDH 290-3D	J109
	99.0	190.0	SMDT 2930 MTL/MSL/MEL+SMDH 290-3DF	J107
	99.0	190.0	SMDT 2930 MTL/MSL/MEL+SMDH 290M	J104
	159.0	250.0	SMDT 2930 MTL/MSL/MEL+SMDH 290-5D	J109
	159.0	250.0	SMDT 2930 MTL/MSL/MEL+SMDH 290-5DF	J107
	159.0	250.0	SMDT 2930 MTL/MSL/MEL+SMDH 290L	J104
	248.0	340.0	SMDT 2930 MTL/MSL/MEL+SMDH 290-8D	J109
	248.0	340.0	SMDT 2930 MTL/MSL/MEL+SMDH 290-8DF	J107
	248.0	340.0	SMDT 2930 MTL/MSL/MEL+SMDH 290D	J104
	353.0	438.0	SMDT 2930 MTL/MSL/MEL+SMDH 290-12D	J109
29.4	55.0	136.0	SMDT 2940 MTL/MSL/MEL+SMDH 290-1.5D	J109
	55.0	136.0	SMDT 2940 MTL/MSL/MEL+SMDH 290-1.5DF	J107
	99.0	190.0	SMDT 2940 MTL/MSL/MEL+SMDH 290-3D	J109
	99.0	190.0	SMDT 2940 MTL/MSL/MEL+SMDH 290-3DF	J107
	99.0	190.0	SMDT 2940 MTL/MSL/MEL+SMDH 290M	J104
	159.0	250.0	SMDT 2940 MTL/MSL/MEL+SMDH 290-5D	J109
	159.0	250.0	SMDT 2940 MTL/MSL/MEL+SMDH 290-5DF	J107
	159.0	250.0	SMDT 2940 MTL/MSL/MEL+SMDH 290L	J104
	248.0	340.0	SMDT 2940 MTL/MSL/MEL+SMDH 290-8D	J109
	248.0	340.0	SMDT 2940 MTL/MSL/MEL+SMDH 290-8DF	J107
	248.0	340.0	SMDT 2940 MTL/MSL/MEL+SMDH 290D	J104
	353.0	438.0	SMDT 2940 MTL/MSL/MEL+SMDH 290-12D	J109
29.5	49.0	131.0	SMDT 2950 MFS+SMDH 290-1.5D	J117
	49.0	131.0	SMDT 2950 MFS+SMDH 290-1.5DF	J115
	55.0	136.0	SMDT 2950 MTL/MSL/MEL+SMDH 290-1.5D	J109
	55.0	136.0	SMDT 2950 MTL/MSL/MEL+SMDH 290-1.5DF	J107
	94.0	185.0	SMDT 2950 MFS+SMDH 290-3D	J117
	94.0	185.0	SMDT 2950 MFS+SMDH 290-3DF	J115
	94.0	185.0	SMDT 2950 MFS+SMDH 290M	J112
	99.0	190.0	SMDT 2950 MTL/MSL/MEL+SMDH 290-3D	J109
	99.0	190.0	SMDT 2950 MTL/MSL/MEL+SMDH 290-3DF	J107
	99.0	190.0	SMDT 2950 MTL/MSL/MEL+SMDH 290M	J104
	105.4	190.4	KDS 295MAK	J165
	154.0	245.0	SMDT 2950 MFS+SMDH 290-5D	J117
	154.0	245.0	SMDT 2950 MFS+SMDH 290-5DF	J115
	154.0	245.0	SMDT 2950 MFS+SMDH 290L	J112
	159.0	250.0	SMDT 2950 MTL/MSL/MEL+SMDH 290-5D	J109
	159.0	250.0	SMDT 2950 MTL/MSL/MEL+SMDH 290-5DF	J107
	159.0	250.0	SMDT 2950 MTL/MSL/MEL+SMDH 290L	J104
	167.4	250.4	KDS 295LAK	J165
	243.0	335.0	SMDT 2950 MFS+SMDH 290-8D	J117
	243.0	335.0	SMDT 2950 MFS+SMDH 290-8DF	J115
	243.0	335.0	SMDT 2950 MFS+SMDH 290D	J112
	248.0	340.0	SMDT 2950 MTL/MSL/MEL+SMDH 290-8D	J109
	248.0	340.0	SMDT 2950 MTL/MSL/MEL+SMDH 290-8DF	J107
	248.0	340.0	SMDT 2950 MTL/MSL/MEL+SMDH 290D	J104
	348.0	433.0	SMDT 2950 MFS+SMDH 290-12D	J117
	353.0	438.0	SMDT 2950 MTL/MSL/MEL+SMDH 290-12D	J109
29.6	55.0	136.0	SMDT 2960 MTL/MSL/MEL+SMDH 290-1.5D	J109
	55.0	136.0	SMDT 2960 MTL/MSL/MEL+SMDH 290-1.5DF	J107
	99.0	190.0	SMDT 2960 MTL/MSL/MEL+SMDH 290-3D	J109
	99.0	190.0	SMDT 2960 MTL/MSL/MEL+SMDH 290-3DF	J107
	99.0	190.0	SMDT 2960 MTL/MSL/MEL+SMDH 290M	J104
	159.0	250.0	SMDT 2960 MTL/MSL/MEL+SMDH 290-5D	J109
	159.0	250.0	SMDT 2960 MTL/MSL/MEL+SMDH 290-5DF	J107
	159.0	250.0	SMDT 2960 MTL/MSL/MEL+SMDH 290L	J104
	248.0	340.0	SMDT 2960 MTL/MSL/MEL+SMDH 290-8D	J109
	248.0	340.0	SMDT 2960 MTL/MSL/MEL+SMDH 290-8DF	J107
	248.0	340.0	SMDT 2960 MTL/MSL/MEL+SMDH 290D	J104
	353.0	438.0	SMDT 2960 MTL/MSL/MEL+SMDH 290-12D	J109
29.7	55.0	136.0	SMDT 2970 MTL/MSL/MEL+SMDH 290-1.5D	J109
	55.0	136.0	SMDT 2970 MTL/MSL/MEL+SMDH 290-1.5DF	J107
	99.0	190.0	SMDT 2970 MTL/MSL/MEL+SMDH 290-3D	J109
	99.0	190.0	SMDT 2970 MTL/MSL/MEL+SMDH 290-3DF	J107
	99.0	190.0	SMDT 2970 MTL/MSL/MEL+SMDH 290M	J104
	159.0	250.0	SMDT 2970 MTL/MSL/MEL+SMDH 290-5D	J109
	159.0	250.0	SMDT 2970 MTL/MSL/MEL+SMDH 290-5DF	J107
	159.0	250.0	SMDT 2970 MTL/MSL/MEL+SMDH 290L	J104
	248.0	340.0	SMDT 2970 MTL/MSL/MEL+SMDH 290-8D	J109
	248.0	340.0	SMDT 2970 MTL/MSL/MEL+SMDH 290-8DF	J107
	248.0	340.0	SMDT 2970 MTL/MSL/MEL+SMDH 290D	J104

(Blue text: Flat head ■Indexable ■HSS)

● Diameter ø29.7 to ø30.3mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
29.7	353.0	438.0	SMDT 2970 MTL/MSL/MEL+SMDH 290-12D	J109
29.8	55.0	136.0	SMDT 2980 MTL/MSL/MEL+SMDH 290-1.5D	J109
	55.0	136.0	SMDT 2980 MTL/MSL/MEL+SMDH 290-1.5DF	J107
	99.0	190.0	SMDT 2980 MTL/MSL/MEL+SMDH 290-3D	J109
	99.0	190.0	SMDT 2980 MTL/MSL/MEL+SMDH 290-3DF	J107
	99.0	190.0	SMDT 2980 MTL/MSL/MEL+SMDH 290M	J104
	159.0	250.0	SMDT 2980 MTL/MSL/MEL+SMDH 290-5D	J109
	159.0	250.0	SMDT 2980 MTL/MSL/MEL+SMDH 290-5DF	J107
	159.0	250.0	SMDT 2980 MTL/MSL/MEL+SMDH 290L	J104
	248.0	340.0	SMDT 2980 MTL/MSL/MEL+SMDH 290-8D	J109
	248.0	340.0	SMDT 2980 MTL/MSL/MEL+SMDH 290-8DF	J107
	248.0	340.0	SMDT 2980 MTL/MSL/MEL+SMDH 290D	J104
	353.0	438.0	SMDT 2980 MTL/MSL/MEL+SMDH 290-12D	J109
29.9	56.0	139.0	SMDT 2990 MTL/MSL/MEL+SMDH 300-1.5D	J109
	56.0	139.0	SMDT 2990 MTL/MSL/MEL+SMDH 300-1.5DF	J107
	103.0	190.0	SMDT 2990 MTL/MSL/MEL+SMDH 300-3D	J109
	103.0	190.0	SMDT 2990 MTL/MSL/MEL+SMDH 300-3DF	J107
	103.0	190.0	SMDT 2990 MTL/MSL/MEL+SMDH 300M	J105
	164.0	260.0	SMDT 2990 MTL/MSL/MEL+SMDH 300-5D	J109
	164.0	260.0	SMDT 2990 MTL/MSL/MEL+SMDH 300-5DF	J107
	164.0	260.0	SMDT 2990 MTL/MSL/MEL+SMDH 300L	J105
	257.0	350.0	SMDT 2990 MTL/MSL/MEL+SMDH 300-8D	J109
	257.0	350.0	SMDT 2990 MTL/MSL/MEL+SMDH 300-8DF	J107
	257.0	350.0	SMDT 2990 MTL/MSL/MEL+SMDH 300D	J105
	365.0	451.0	SMDT 2990 MTL/MSL/MEL+SMDH 300-12D	J109
30.0	51.0	133.0	SMDT 3000 MFS+SMDH 300-1.5D	J117
	51.0	133.0	SMDT 3000 MFS+SMDH 300-1.5DF	J115
	56.0	139.0	SMDT 3000 MTL/MSL/MEL+SMDH 300-1.5D	J109
	56.0	139.0	SMDT 3000 MTL/MSL/MEL+SMDH 300-1.5DF	J107
	97.0	185.0	SMDT 3000 MFS+SMDH 300-3D	J117
	97.0	185.0	SMDT 3000 MFS+SMDH 300-3DF	J115
	97.0	185.0	SMDT 3000 MFS+SMDH 300M	J113
	103.0	190.0	SMDT 3000 MTL/MSL/MEL+SMDH 300-3D	J109
	103.0	190.0	SMDT 3000 MTL/MSL/MEL+SMDH 300-3DF	J107
	103.0	190.0	SMDT 3000 MTL/MSL/MEL+SMDH 300M	J105
	109.5	190.5	KDS 300MAK	J165
	159.0	255.0	SMDT 3000 MFS+SMDH 300-5D	J117
	159.0	255.0	SMDT 3000 MFS+SMDH 300-5DF	J115
	159.0	255.0	SMDT 3000 MFS+SMDH 300L	J113
	164.0	260.0	SMDT 3000 MTL/MSL/MEL+SMDH 300-5D	J109
	164.0	260.0	SMDT 3000 MTL/MSL/MEL+SMDH 300-5DF	J107
	164.0	260.0	SMDT 3000 MTL/MSL/MEL+SMDH 300L	J105
	172.5	260.5	KDS 300LAK	J165
	245.5	335.5	KDS 300DAK	J165
	251.0	345.0	SMDT 3000 MFS+SMDH 300-8D	J117
	251.0	345.0	SMDT 3000 MFS+SMDH 300-8DF	J115
	251.0	345.0	SMDT 3000 MFS+SMDH 300D	J113
	257.0	350.0	SMDT 3000 MTL/MSL/MEL+SMDH 300-8D	J109
	257.0	350.0	SMDT 3000 MTL/MSL/MEL+SMDH 300-8DF	J107
	257.0	350.0	SMDT 3000 MTL/MSL/MEL+SMDH 300D	J105
	360.0	445.0	SMDT 3000 MFS+SMDH 300-12D	J117
	365.0	451.0	SMDT 3000 MTL/MSL/MEL+SMDH 300-12D	J109
30.1	56.0	139.0	SMDT 3010 MTL/MSL/MEL+SMDH 300-1.5D	J109
	56.0	139.0	SMDT 3010 MTL/MSL/MEL+SMDH 300-1.5DF	J107
	103.0	190.0	SMDT 3010 MTL/MSL/MEL+SMDH 300-3D	J109
	103.0	190.0	SMDT 3010 MTL/MSL/MEL+SMDH 300-3DF	J107
	103.0	190.0	SMDT 3010 MTL/MSL/MEL+SMDH 300M	J105
	164.0	260.0	SMDT 3010 MTL/MSL/MEL+SMDH 300-5D	J109
	164.0	260.0	SMDT 3010 MTL/MSL/MEL+SMDH 300-5DF	J107
	164.0	260.0	SMDT 3010 MTL/MSL/MEL+SMDH 300L	J105
	257.0	350.0	SMDT 3010 MTL/MSL/MEL+SMDH 300-8D	J109
	257.0	350.0	SMDT 3010 MTL/MSL/MEL+SMDH 300-8DF	J107
	257.0	350.0	SMDT 3010 MTL/MSL/MEL+SMDH 300D	J105
	365.0	451.0	SMDT 3010 MTL/MSL/MEL+SMDH 300-12D	J109
30.2	56.0	139.0	SMDT 3020 MTL/MSL/MEL+SMDH 300-1.5D	J109
	56.0	139.0	SMDT 3020 MTL/MSL/MEL+SMDH 300-1.5DF	J107
	103.0	190.0	SMDT 3020 MTL/MSL/MEL+SMDH 300-3D	J109
	103.0	190.0	SMDT 3020 MTL/MSL/MEL+SMDH 300-3DF	J107
	103.0	190.0	SMDT 3020 MTL/MSL/MEL+SMDH 300M	J105
	164.0	260.0	SMDT 3020 MTL/MSL/MEL+SMDH 300-5D	J109
	164.0	260.0	SMDT 3020 MTL/MSL/MEL+SMDH 300-5DF	J107
	164.0	260.0	SMDT 3020 MTL/MSL/MEL+SMDH 300L	J105
	257.0	350.0	SMDT 3020 MTL/MSL/MEL+SMDH 300-8D	J109
	257.0	350.0	SMDT 3020 MTL/MSL/MEL+SMDH 300-8DF	J107
	257.0	350.0	SMDT 3020 MTL/MSL/MEL+SMDH 300D	J105
	365.0	451.0	SMDT 3020 MTL/MSL/MEL+SMDH 300-12D	J109
30.3	56.0	139.0	SMDT 3030 MTL/MSL/MEL+SMDH 300-1.5D	J109
	56.0	139.0	SMDT 3030 MTL/MSL/MEL+SMDH 300-1.5DF	J107
	103.0	190.0	SMDT 3030 MTL/MSL/MEL+SMDH 300-3D	J109
	103.0	190.0	SMDT 3030 MTL/MSL/MEL+SMDH 300-3DF	J107

(Blue text: Flat head ■Indexable ■HSS)

Effective Length (LU) is a guideline for the usable length. Take into account the chip evacuation in relation to the flute length (LCF) when drilling.

Effective Length List by Diameter

● Diameter ø30.3 to ø33.0mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
30.3	103.0	190.0	SMDT 3030 MTL/MSL/MEL+SMDH 300M	J105
	164.0	260.0	SMDT 3030 MTL/MSL/MEL+SMDH 300-5D	J109
	164.0	260.0	SMDT 3030 MTL/MSL/MEL+SMDH 300-5DF	J107
	164.0	260.0	SMDT 3030 MTL/MSL/MEL+SMDH 300L	J105
	257.0	350.0	SMDT 3030 MTL/MSL/MEL+SMDH 300-8D	J109
	257.0	350.0	SMDT 3030 MTL/MSL/MEL+SMDH 300-8DF	J107
	257.0	350.0	SMDT 3030 MTL/MSL/MEL+SMDH 300D	J105
	365.0	451.0	SMDT 3030 MTL/MSL/MEL+SMDH 300-12D	J109
30.4	56.0	139.0	SMDT 3040 MTL/MSL/MEL+SMDH 300-1.5D	J109
	56.0	139.0	SMDT 3040 MTL/MSL/MEL+SMDH 300-1.5DF	J107
	103.0	190.0	SMDT 3040 MTL/MSL/MEL+SMDH 300-3D	J109
	103.0	190.0	SMDT 3040 MTL/MSL/MEL+SMDH 300-3DF	J107
	103.0	190.0	SMDT 3040 MTL/MSL/MEL+SMDH 300M	J105
	164.0	260.0	SMDT 3040 MTL/MSL/MEL+SMDH 300-5D	J109
	164.0	260.0	SMDT 3040 MTL/MSL/MEL+SMDH 300-5DF	J107
	164.0	260.0	SMDT 3040 MTL/MSL/MEL+SMDH 300L	J105
	257.0	350.0	SMDT 3040 MTL/MSL/MEL+SMDH 300-8D	J109
	257.0	350.0	SMDT 3040 MTL/MSL/MEL+SMDH 300-8DF	J107
	257.0	350.0	SMDT 3040 MTL/MSL/MEL+SMDH 300D	J105
	365.0	451.0	SMDT 3040 MTL/MSL/MEL+SMDH 300-12D	J109
30.5	56.0	139.0	SMDT 3050 MTL/MSL/MEL+SMDH 300-1.5D	J109
	56.0	139.0	SMDT 3050 MTL/MSL/MEL+SMDH 300-1.5DF	J107
	103.0	190.0	SMDT 3050 MTL/MSL/MEL+SMDH 300-3D	J109
	103.0	190.0	SMDT 3050 MTL/MSL/MEL+SMDH 300-3DF	J107
	103.0	190.0	SMDT 3050 MTL/MSL/MEL+SMDH 300M	J105
	109.6	190.6	KDS 305MAK	J165
	164.0	260.0	SMDT 3050 MTL/MSL/MEL+SMDH 300-5D	J109
	164.0	260.0	SMDT 3050 MTL/MSL/MEL+SMDH 300-5DF	J107
	164.0	260.0	SMDT 3050 MTL/MSL/MEL+SMDH 300L	J105
	172.6	260.6	KDS 305LAK	J165
	257.0	350.0	SMDT 3050 MTL/MSL/MEL+SMDH 300-8D	J109
	257.0	350.0	SMDT 3050 MTL/MSL/MEL+SMDH 300-8DF	J107
	257.0	350.0	SMDT 3050 MTL/MSL/MEL+SMDH 300D	J105
	365.0	451.0	SMDT 3050 MTL/MSL/MEL+SMDH 300-12D	J109
30.6	56.0	139.0	SMDT 3060 MTL/MSL/MEL+SMDH 300-1.5D	J109
	56.0	139.0	SMDT 3060 MTL/MSL/MEL+SMDH 300-1.5DF	J107
	103.0	190.0	SMDT 3060 MTL/MSL/MEL+SMDH 300-3D	J109
	103.0	190.0	SMDT 3060 MTL/MSL/MEL+SMDH 300-3DF	J107
	103.0	190.0	SMDT 3060 MTL/MSL/MEL+SMDH 300M	J105
	164.0	260.0	SMDT 3060 MTL/MSL/MEL+SMDH 300-5D	J109
	164.0	260.0	SMDT 3060 MTL/MSL/MEL+SMDH 300-5DF	J107
	164.0	260.0	SMDT 3060 MTL/MSL/MEL+SMDH 300L	J105
	257.0	350.0	SMDT 3060 MTL/MSL/MEL+SMDH 300-8D	J109
	257.0	350.0	SMDT 3060 MTL/MSL/MEL+SMDH 300-8DF	J107
	257.0	350.0	SMDT 3060 MTL/MSL/MEL+SMDH 300D	J105
	365.0	451.0	SMDT 3060 MTL/MSL/MEL+SMDH 300-12D	J109
30.7	56.0	139.0	SMDT 3070 MTL/MSL/MEL+SMDH 300-1.5D	J109
	56.0	139.0	SMDT 3070 MTL/MSL/MEL+SMDH 300-1.5DF	J107
	103.0	190.0	SMDT 3070 MTL/MSL/MEL+SMDH 300-3D	J109
	103.0	190.0	SMDT 3070 MTL/MSL/MEL+SMDH 300-3DF	J107
	103.0	190.0	SMDT 3070 MTL/MSL/MEL+SMDH 300M	J105
	164.0	260.0	SMDT 3070 MTL/MSL/MEL+SMDH 300-5D	J109
	164.0	260.0	SMDT 3070 MTL/MSL/MEL+SMDH 300-5DF	J107
	164.0	260.0	SMDT 3070 MTL/MSL/MEL+SMDH 300L	J105
	257.0	350.0	SMDT 3070 MTL/MSL/MEL+SMDH 300-8D	J109
	257.0	350.0	SMDT 3070 MTL/MSL/MEL+SMDH 300-8DF	J107
	257.0	350.0	SMDT 3070 MTL/MSL/MEL+SMDH 300D	J105
	365.0	451.0	SMDT 3070 MTL/MSL/MEL+SMDH 300-12D	J109
30.8	56.0	139.0	SMDT 3080 MTL/MSL/MEL+SMDH 300-1.5D	J109
	56.0	139.0	SMDT 3080 MTL/MSL/MEL+SMDH 300-1.5DF	J107
	103.0	190.0	SMDT 3080 MTL/MSL/MEL+SMDH 300-3D	J109
	103.0	190.0	SMDT 3080 MTL/MSL/MEL+SMDH 300-3DF	J107
	103.0	190.0	SMDT 3080 MTL/MSL/MEL+SMDH 300M	J105
	164.0	260.0	SMDT 3080 MTL/MSL/MEL+SMDH 300-5D	J109
	164.0	260.0	SMDT 3080 MTL/MSL/MEL+SMDH 300-5DF	J107
	164.0	260.0	SMDT 3080 MTL/MSL/MEL+SMDH 300L	J105
	257.0	350.0	SMDT 3080 MTL/MSL/MEL+SMDH 300-8D	J109
	257.0	350.0	SMDT 3080 MTL/MSL/MEL+SMDH 300-8DF	J107
	257.0	350.0	SMDT 3080 MTL/MSL/MEL+SMDH 300D	J105
	365.0	451.0	SMDT 3080 MTL/MSL/MEL+SMDH 300-12D	J109
31.0	106.0	201.0	SMDT 3100 MTL+SMDH 320M	J105
	170.0	266.0	SMDT 3100 MTL+SMDH 320L	J105
	266.0	361.0	SMDT 3100 MTL+SMDH 320D	J105
32.0	64.0	162.0	PDL 320D2S40	J136
	96.0	194.0	PDL 320D3S40	J136
	106.0	201.0	SMDT 3200 MTL+SMDH 320M	J105
	170.0	266.0	SMDT 3200 MTL+SMDH 320L	J105
	266.0	361.0	SMDT 3200 MTL+SMDH 320D	J105
33.0	111.0	206.0	SMDT 3300 MTL+SMDH 335M	J105
	178.0	276.0	SMDT 3300 MTL+SMDH 335L	J105

(Blue text: Flat head ■Indexable ■HSS)

● Diameter ø33.0 to ø42.0mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
33.0	200.0	291.0	KDS 330LAK	J165
	279.0	376.0	SMDT 3300 MTL+SMDH 335D	J105
34.0	116.0	221.0	SMDT 3400 MTL+SMDH 350M	J105
	186.0	296.0	SMDT 3400 MTL+SMDH 350L	J105
	291.0	401.0	SMDT 3400 MTL+SMDH 350D	J105
35.0	116.0	221.0	SMDT 3500 MTL+SMDH 350M	J105
	186.0	296.0	SMDT 3500 MTL+SMDH 350L	J105
	291.0	401.0	SMDT 3500 MTL+SMDH 350D	J105
36.0	121.0	227.0	SMDT 3600 MTL+SMDH 365M	J105
	194.0	302.0	SMDT 3600 MTL+SMDH 365L	J105
	303.0	412.0	SMDT 3600 MTL+SMDH 365D	J105
37.0	125.0	232.0	SMDT 3700 MTL+SMDH 380M	J105
	201.0	312.0	SMDT 3700 MTL+SMDH 380L	J105
	315.0	427.0	SMDT 3700 MTL+SMDH 380D	J105
37.5	125.0	232.0	SMDT 3750 MTL+SMDH 380M	J105
	201.0	312.0	SMDT 3750 MTL+SMDH 380L	J105
	315.0	427.0	SMDT 3750 MTL+SMDH 380D	J105
38.0	125.0	232.0	SMDT 3800 MTL+SMDH 380M	J105
	201.0	312.0	SMDT 3800 MTL+SMDH 380L	J105
	315.0	427.0	SMDT 3800 MTL+SMDH 380D	J105
39.0	130.0	237.0	SMDT 3900 MTL+SMDH 395M	J105
	209.0	322.0	SMDT 3900 MTL+SMDH 395L	J105
	328.0	437.0	SMDT 3900 MTL+SMDH 395D	J105
40.0	80.0	185.0	PDL 400D2S40	J136
	120.0	225.0	PDL 400D3S40	J136
	135.0	252.0	SMDT 4000 MTL+SMDH 410M	J105
	217.0	332.0	SMDT 4000 MTL+SMDH 410L	J105
	340.0	457.0	SMDT 4000 MTL+SMDH 410D	J105
40.5	135.0	252.0	SMDT 4050 MTL+SMDH 410M	J105
	217.0	332.0	SMDT 4050 MTL+SMDH 410L	J105
	340.0	457.0	SMDT 4050 MTL+SMDH 410D	J105
41.0	135.0	252.0	SMDT 4100 MTL+SMDH 410M	J105
	217.0	332.0	SMDT 4100 MTL+SMDH 410L	J105
	340.0	457.0	SMDT 4100 MTL+SMDH 410D	J105
42.0	140.0	258.0	SMDT 4200 MTL+SMDH 425M	J105
	225.0	343.0	SMDT 4200 MTL+SMDH 425L	J105
	352.0	468.0	SMDT 4200 MTL+SMDH 425D	J105

(Blue text: Flat head ■Indexable ■HSS)

Effective Length (LU) is a guideline for the usable length. Take into account the chip evacuation in relation to the flute length (LCF) when drilling.

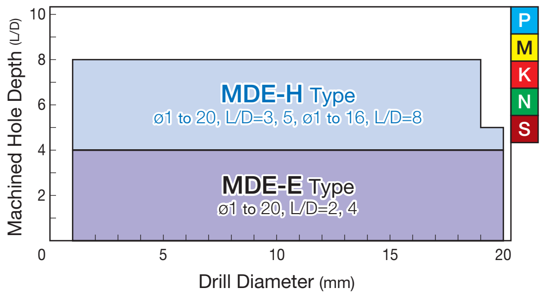
MEMO

Application Range of Major Drills

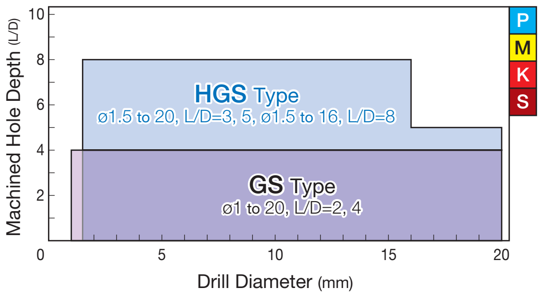
Coolant: External supply / Internal supply

Solid Carbide Drills

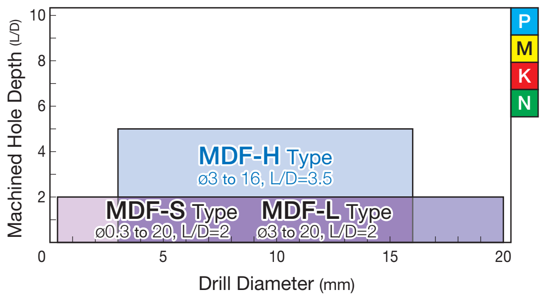
General-purpose MULTIDRILL NeXEO MDE Type J8



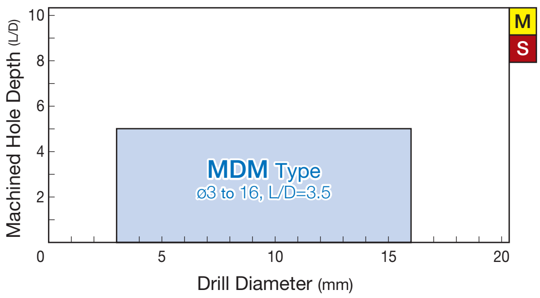
GS/HGS Type for General-purpose High-efficiency Drilling J48



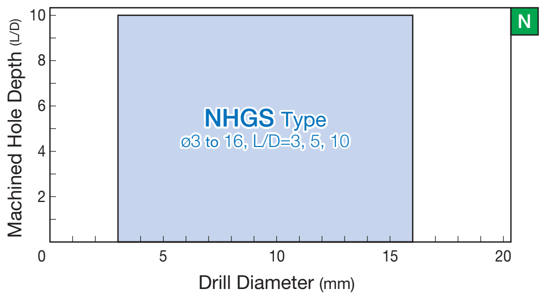
Flat MULTIDRILL MDF Type J36



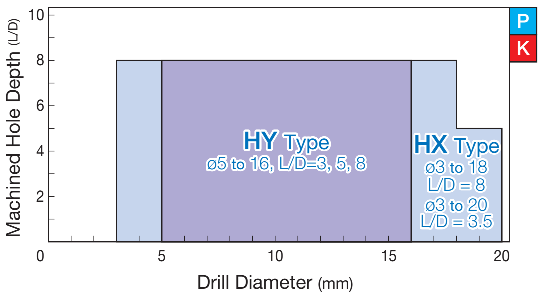
MDM Type for Stainless Steel and Exotic Alloy Drilling J26



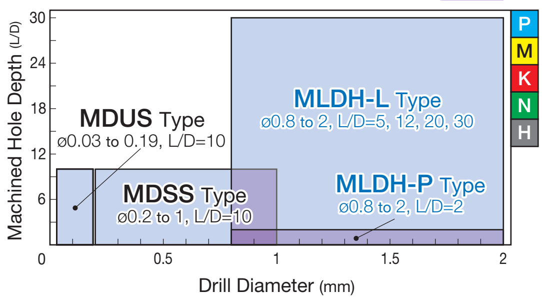
NHGS Type for High-efficiency Drilling of Aluminum Alloy J84



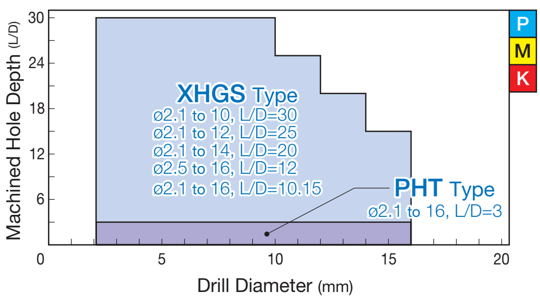
For Steel / Cast Iron: HX Type J62
For High-efficiency Drilling: HY Type J70



Small Diameter Long Drill MLDH-L Type/MLDH-P Type J91
MDUS Type/MDSS Type Very Small Diameter Drills J94

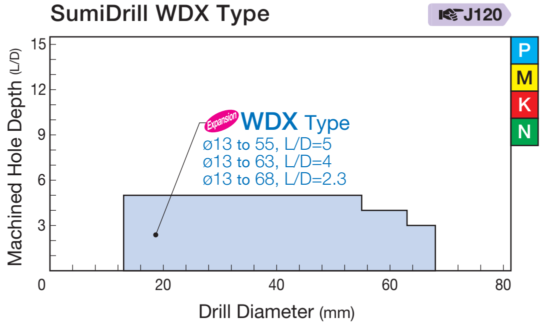


XHGS/PHT Type for High-efficiency Deep Hole Drilling J76



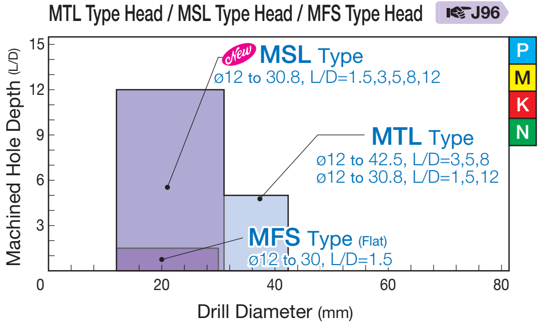
Indexable Insert Type Drill

SumiDrill WDX Type J120



Indexable Drill Head

SEC-MULTIDRILL SMD Type
MTL Type Head / MSL Type Head / MFS Type Head J96



MEMO

NX Coat

General-purpose grade

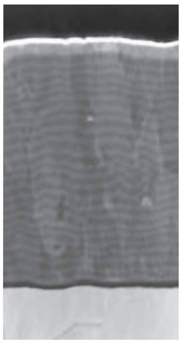
ACT100
ACT70

MULTIDRILL
NeXEO
- Next for Everyone -

NX Coat | NX Coat

■ General Features

- Sumitomo Electric Hardmetal's proprietary nano-coating technology provides stable tool life under a wide range of cutting conditions with a variety of work materials.
- Coating Structure



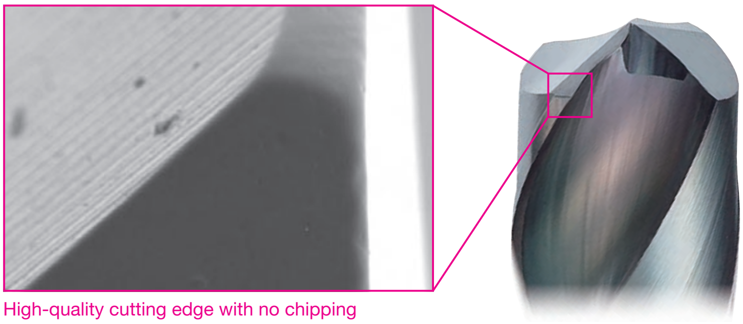
Super multi-layered TiAlCrSi coating
Hardness (HV): 46GPa
Oxidisation Starting Temperature: 1,100°C

Highly Adhesive Layer

■ Features

- ABSOTECH™ technology for high quality, high hardness, high strength and excellent wear resistance and thermal resistance.
- Resistant to shoulder chipping
- High-quality edge provides stable tool life

NeXEO MDE Type



High-quality cutting edge with no chipping

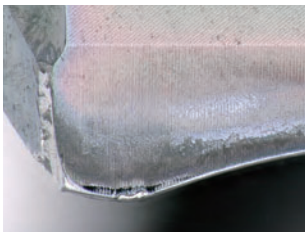
Competitor's Product A

Chipping in edge coating

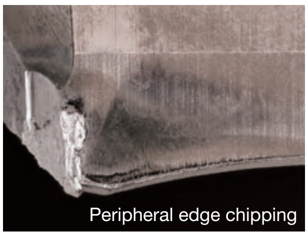
■ NX Coat Application Examples

Drilling of high carbon steel (S50C)

NeXEO MDE Type



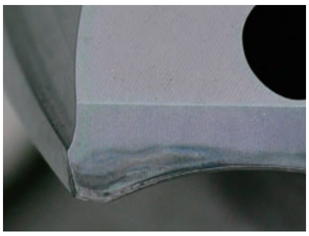
Competitor's Product B



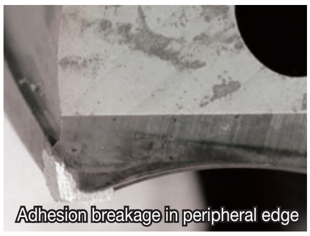
Cutting Conditions: v_c= 80m/min, f= 0.15mm/rev, internal coolant supply (water soluble)

Drilling of alloy steel (SCM415)

NeXEO MDE Type



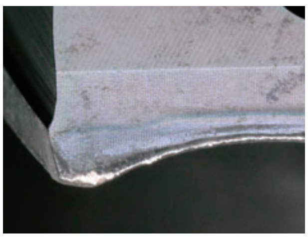
Competitor's Product C



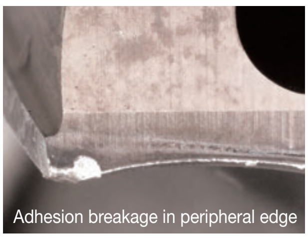
Cutting Conditions: v_c= 110m/min, f= 0.2mm/rev, internal coolant supply (water soluble)

Drilling of stainless steel (SUS304)

NeXEO MDE Type



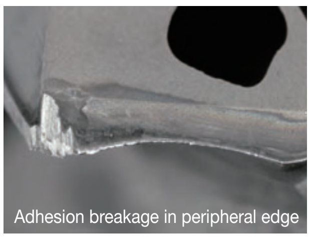
Competitor's Product D



Cutting Conditions: v_c= 60m/min, f= 0.1mm/rev, internal coolant supply (water soluble)

MDM Type

Competitor's Product E



Cutting Conditions: v_c= 80m/min, f= 0.25mm/rev, internal coolant supply (water soluble)

Drill Coating

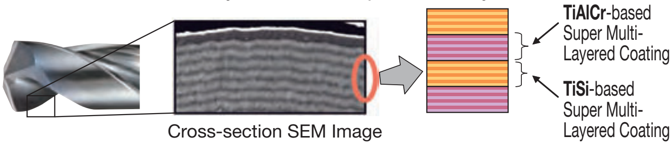
DEX Coat

■ General Features

Sumitomo Electric Hardmetal's drill coating utilises nano-coating technology to provide long tool life.

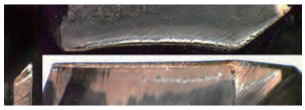
■ Features

● Coating Structure
World's first compound super multi-layered coating made from alternate layers of two super multi-layered substrates.



● Silicon and chrome improve wear, thermal and adhesion resistance.
● Super multi-layered structure offers improved chipping resistance.

■ DEX Coat Application Examples

GS Type MULTIDRILL with DEX Coat (after drilling 100 holes)	
Competitor's Product A (after 70m of machining)	

Tool: MDW 0800GS4
Work Material: S50C (200HB)
Cutting Conditions: v_c= 70m/min, f= 0.25mm/rev, H= 32mm, external coolant supply (water soluble)

AURORA Coat

DL1300 DL1500

■ General Features

AURORA Coat is a high-hardness, low-friction coefficient layer of DLC (Diamond-like Carbon) which dramatically improves adhesion resistance in drilling of aluminum alloy and non-ferrous metals, and works with combinations of special shapes to achieve stable long tool life.

■ Features

● Thin, ultra-smooth DLC coating with a low coefficient of friction.
Helps prevent adhesion to the cutting edge and requires significantly less cutting force during drilling of aluminum alloy and non-ferrous metals.
● High adhesion strength withstands stringent cutting conditions
The world's first coating applicable to cutting tools, with a special coating technique that significantly improves adhesion strength.
● A spectrum of colours
Glossy colours are achieved by the special coating technique.

■ AURORA Coat Application Examples

AURORA Coat Super MULTIDRILL NHGS Type (after drilling 100 holes)	 Clean cutting edge with no adhesion
Competitor's Product B (After Drilling 20 Holes)	 Severe adhesion

Tool: MDW 0800NHGS5
Work Material: ADC12
Cutting Conditions: v_c= 200m/min, f= 1.0mm/rev, H= 32mm, internal coolant supply

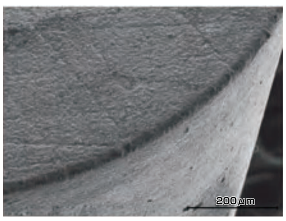
SUMIDIA Coat

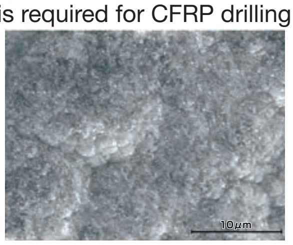
■ General Features

Our original polycrystalline diamond coating technology achieves over 10 times the wear resistance of uncoated carbide.
Excellent diamond film adhesion is achieved with a combination of a dedicated diamond coating alloy and a proprietary coating pre-treatment technique.

■ Features

● Realizes micro-grain diamond coating that provides the combination of high strength and high wear resistance on smooth surfaces that is required for CFRP drilling





■ SUMIDIA Coat Application Examples

SUMIDIA Coat	Competitor's Diamond Coating
	
No. of Workpieces: 600 holes Able to continue 	No. of Workpieces: 50 holes Coating peels and burrs are formed 

Tool: SUMIDIA Coat Drill ø6.35mm
Work Material: CFRP
Cutting Conditions: v_c= 130m/min, f= 0.075mm/rev, H= 15mm Through Hole Dry

MULTIDRILL Series

NeXEO MDE Type

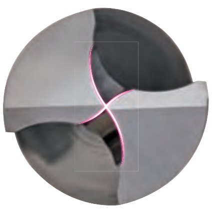
General Features

- Innovative new general purpose drill. Utilising the ACT100 grade.
- Applicable to a wide range of materials from high carbon steel and die steel to stainless steel. Enables stable drilling even on small machining centres and small lathes.
- NX coating made with ABSOTECH™ technology for excellent wear resistance and thermal resistance.
- Low resistance chip breaking

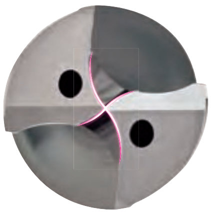
Features and Applications

- RX thinning reduces thrust. Also ideal for small machining centres and small lathes.
- Further reduces resistance with overlap thinning, suppressing wear in hub drilling. Excellent for shallow holes
  *L/D=2 sizes only

RX Thinning + Arc Shaped Cutting Lip

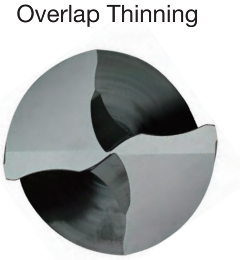


External Coolant Supply

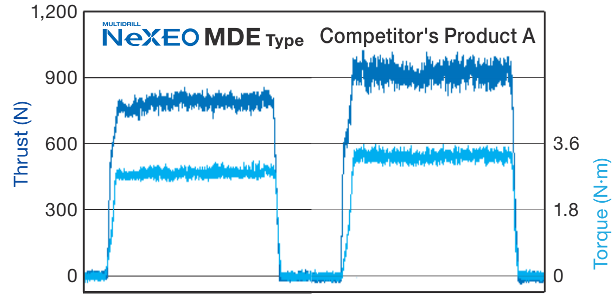


Internal Coolant Supply

Overlap Thinning



For Hub Drilling



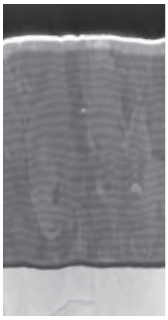
Work Material: S50C
Diameter: ø8mm
Hole Depth: 5D
Cutting Conditions: v_c= 80m/min, f= 0.15mm/rev, H= 38mm (through),
internal coolant supply (water soluble)

- General-purpose drill suitable for a wide range of work materials and cutting conditions

General-purpose grade

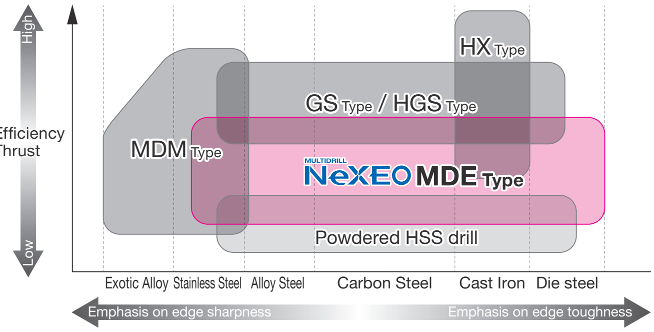
ACT100

- **Micro-grained carbide substrate**
  Achieves both wear and fracture resistance
- **NX Coating**
  ABSOTECH™ technology for high quality, high hardness, high strength and excellent wear resistance and thermal resistance.
- **High-quality edge provides stable tool life**

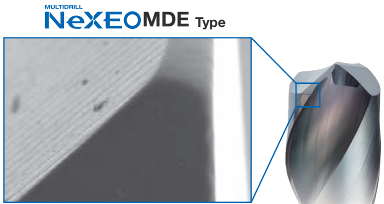


TiAlCrSi-based Super Multi-Layered Coated Carbide
Hardness HV: 46GPa
Starting Temperature For Oxidisation : 1,100 °C

Highly Adhesive Layer

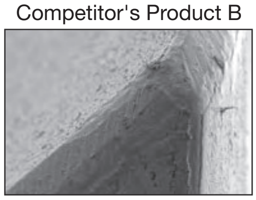


NeXEO MDE Type



High-quality cutting edge with no chipping

Competitor's Product B



Chipping in edge coating

- Strong arc-shaped cutting edge design for good chip evacuation

NeXEO MDE Type

Chips are cut into fine pieces

Competitor's Product C

Long chips

Work Material: S50C
Diameter: ø9mm
Hole Depth: 5D
Cutting Conditions: v_c= 80m/min, f= 0.15mm/rev,
internal coolant supply (water soluble)

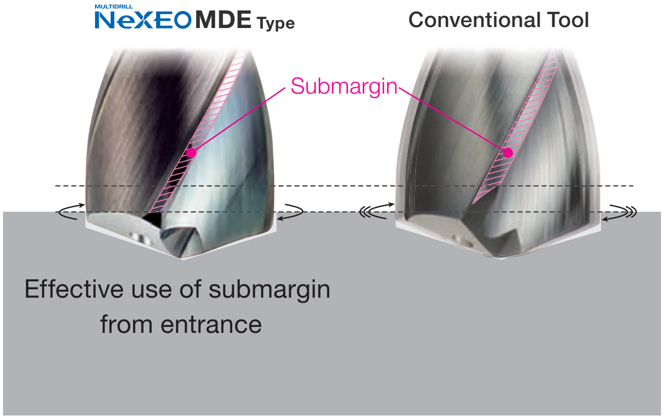
NeXEO MDE Type

● Drills holes with good precision and high quality

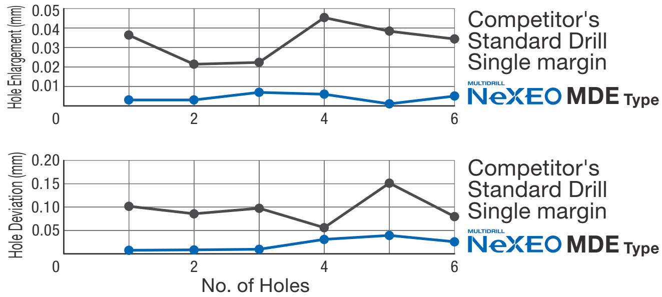
Internal Coolant Supply: Double margin

External Coolant Supply: Single margin

● Special double margin for good hole precision (internal coolant supply)

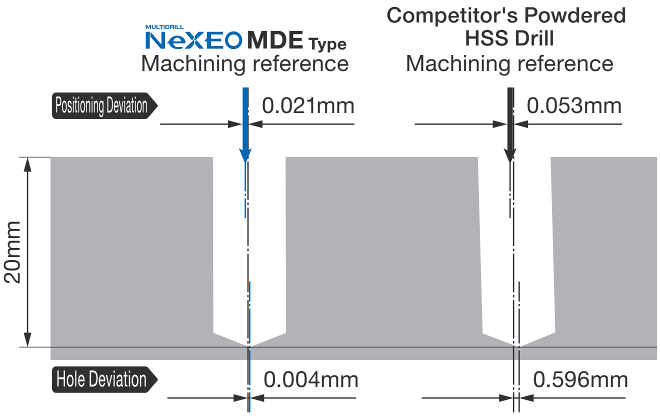


● Comparison of hole precision (die steel drilling)



Work Material: DH31S (49HRC)
Tool: MDE 0800S08H05 (ø8mmx5D), with hole
Cutting Conditions: v_c= 17m/min, f= 0.07mm/rev,
internal coolant supply (water soluble)

● Compared to powdered HSS drill, good hole precision (die steel drilling)



Good hole position accuracy
Minimal hole deviation

Work Material: NAK55
Tool: MDE 0680S07E04 (ø6.8mmx4D)
Cutting Conditions: v_c= 50m/min, f= 0.1mm/rev, H= 20mm,
external coolant supply (water soluble)

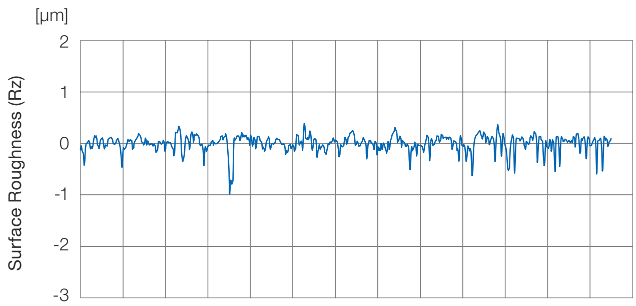
● Comparison of hole wall

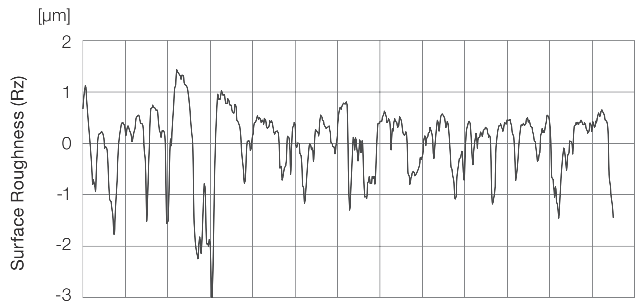
MULTIDRILL NeXEO MDE Type

Shiny and good

Competitor's powdered HSS drill

Cloudiness due to blemishes



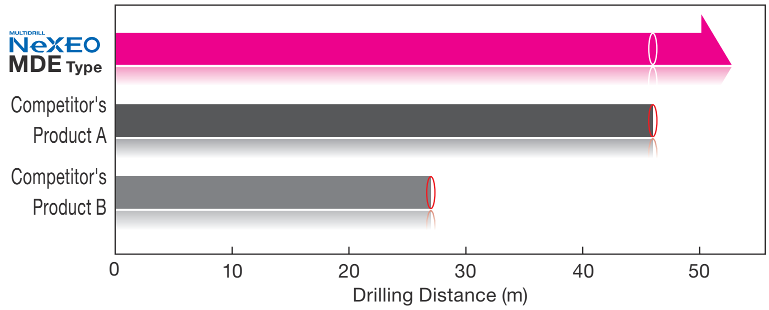


NeXEO MDE Type

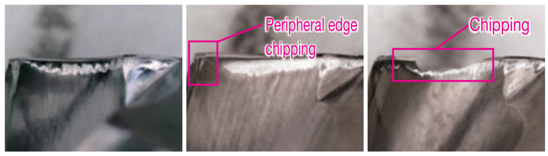
■ Application Examples

High Carbon Steel

ACT100 grade achieves high wear resistance and peripheral edge breakage resistance



MULTIDRILL NeXEO MDE Type | Competitor's Product A | Competitor's Product B



After drilling 46m | After drilling 46m | After drilling 27m

Work Material: S50C, Machine: BT30 Vertical Machining Centre, Tool: MDE 0800S08H05 (ø8mmx5D)
Cutting Conditions: v_c= 80m/min, f= 0.15mm/rev, H= 38mm (through), internal coolant supply (water soluble)

Low Carbon Steel

Good chip control in low carbon steel drilling

MULTIDRILL NeXEO MDE Type

Chips are cut into fine pieces

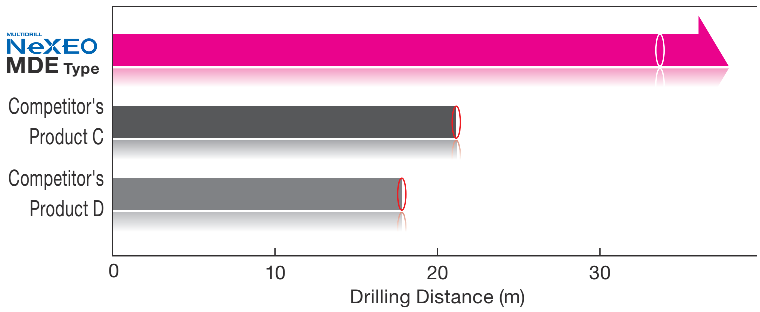
Conventional Product A

Long chips

Work Material: SM material (machine tool frame), Machine: Large double column machining centre, Tool: MDE 1150S12H05 (ø11.5mmx5D)
Cutting Conditions: v_c= 100m/min, f= 0.25mm/rev, internal coolant supply (water soluble), drilling distance: approx. 20m per 30 min

Ultra-hard Alloy Steel

Grade ACT100 and new edge design prevent workpiece adhesion chipping



MULTIDRILL NeXEO MDE Type | Competitor's Product C | Competitor's Product D

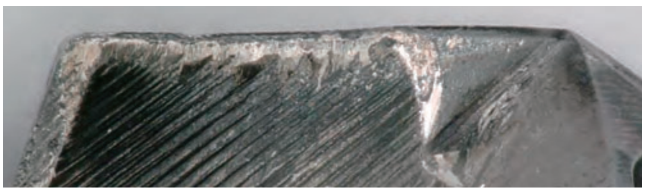
After drilling 34m
Small adhesion | After drilling 21m | After drilling 18m

Work Material: SCM440H (30HRC), Machine: BT30 vertical machining centre, Tool: MDE 0800S08H05 (ø8mmx5D)
Cutting Conditions: v_c= 80m/min, f= 0.15mm/rev, H= 40mm (through), internal coolant supply (water soluble)

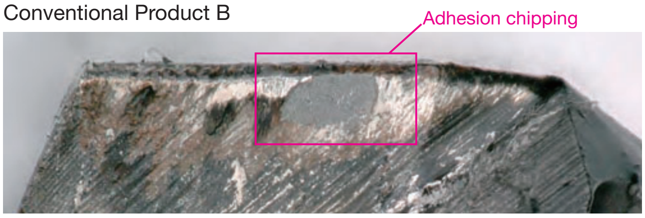
Stainless Steel

Stable drilling of stainless steel on a lathe

MULTIDRILL NeXEO MDE Type



Conventional Product B



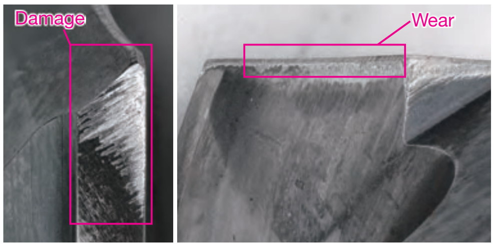
Work Material: SUS310, Machine: NC lathe (workpiece rotates), Tool: MDE 0350S04H05 (ø3.5mmx5D)
Cutting Conditions: v_c= 40m/min, f= 0.05mm/rev, H= 14mm, internal coolant supply (non-water-soluble), number of workpieces: 5,000

Ductile Cast Iron

NX coating reduces margin damage and rake face wear

NeXEO MDE Type

Competitor's Product E

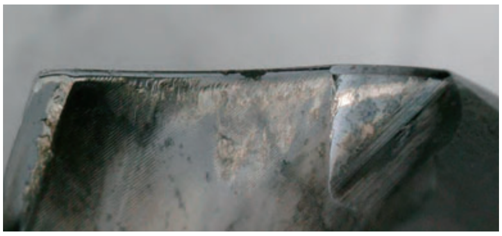


Work Material: FCD450, Machine: HSK63 machining centre, Tool: MDE 079S08H05 (ø7.9mmx5D)
Cutting Conditions: v_c= 70m/min, f= 0.1mm/rev, H= 40mm (through), internal coolant supply (water soluble), drilling distance: 64m

Frequency of Replacement Compared to Powdered HSS Drill

Long tool life approx. 10 times longer than powdered HSS drill

NeXEO MDE Type No. of Workpieces: 12,000 holes



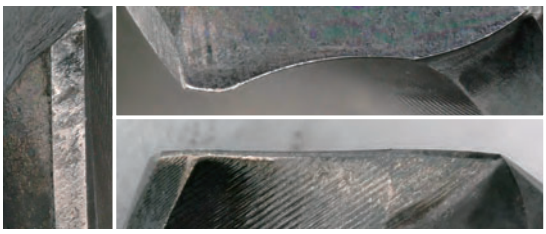
Competitor's product F: Powdered HSS drill No. of Workpieces: 1,200 holes

Work Material: S15C (automotive parts), Machine: BT30 small machining centre
Tool: MDE 0680S07E04 (ø6.8mm x 4D)
Cutting Conditions: v_c= 60m/min, f= 0.15mm/rev, external coolant supply (non-water-soluble)
Tool: Competitor's Product F Powdered HSS Drill (ø6.8mm x 4D)
Cutting Conditions: v_c= 40m/min, f= 0.15mm/rev, external coolant supply (non-water-soluble)

Stainless Steel, Small Lathe

Low resistance, good chip control and long, stable tool life

NeXEO MDE Type

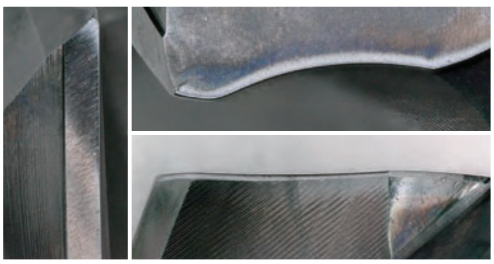


Work Material: SUS316L (95 to 100HRB) (plugs), Machine: Automatic CNC lathe (workpiece rotates), Tool: MDE 0680S07E2 (ø6.8mmx2D)
Cutting Conditions: v_c= 50m/min, f= 0.09mm/rev, external coolant supply (non-water-soluble)

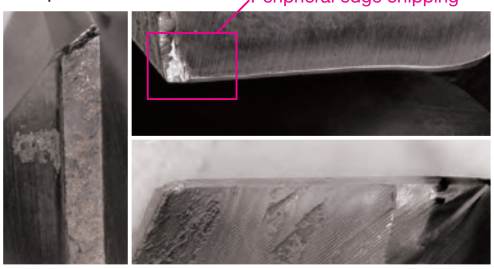
High Carbon Steel, Small Machining Centre

Achieves long, stable tool life even with low feed drilling of high carbon steel

NeXEO MDE Type



Competitor's Product G Peripheral edge chipping



Work Material: S48C, Machine: BT30 small machining centre, Tool: MDE 0830S07E4 (ø8.3mmx4D)
Cutting Conditions: v_c= 30m/min, f= 0.08mm/rev, external coolant supply (water soluble), number of workpieces: 150

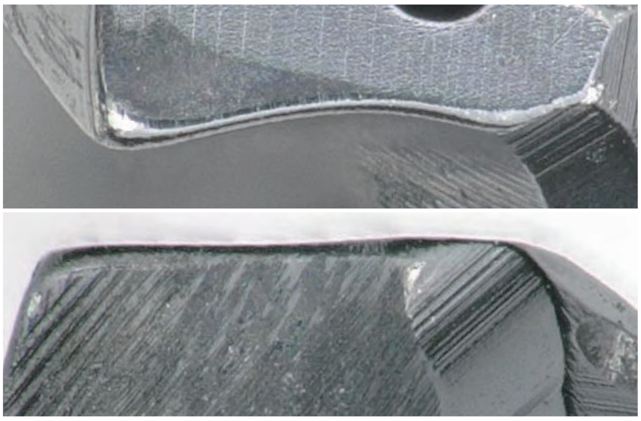
NeXEO MDE Type

● Series expansion of small diameter drills from ø1.0mm to 2.9mm

■ Application Examples

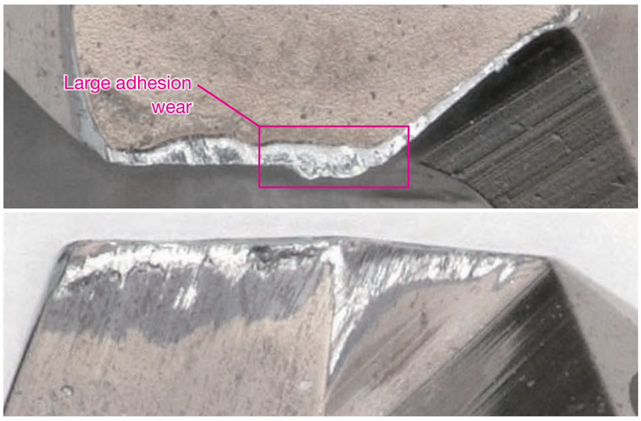
Low Carbon Steel

NeXEO MDE Type



After drilling 900 holes

Competitor's Product H

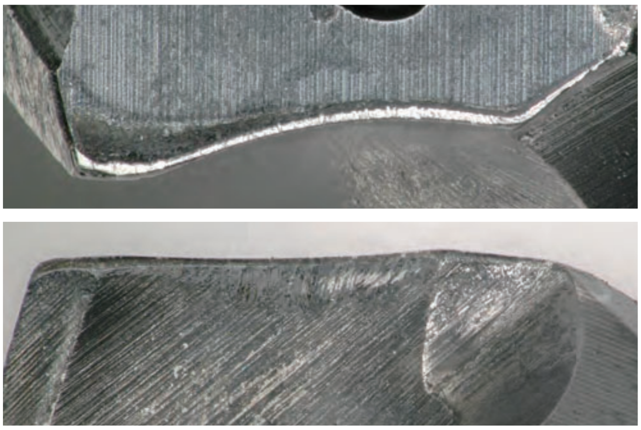


After drilling 900 holes

Work Material: SCM415, Machine: BT30 vertical machining centre, Tool: MDE 0100S03H05 (ø1.0mmx5D), with hole
Cutting Conditions: v_c= 40m/min, f= 0.04mm/rev, H= 5mm (through), internal coolant supply (water soluble)

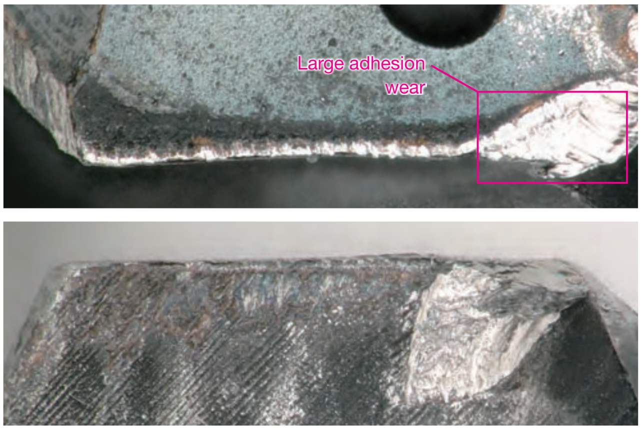
Stainless Steel

NeXEO MDE Type



After drilling 3,840 holes

Conventional Product D



After drilling 3,840 holes

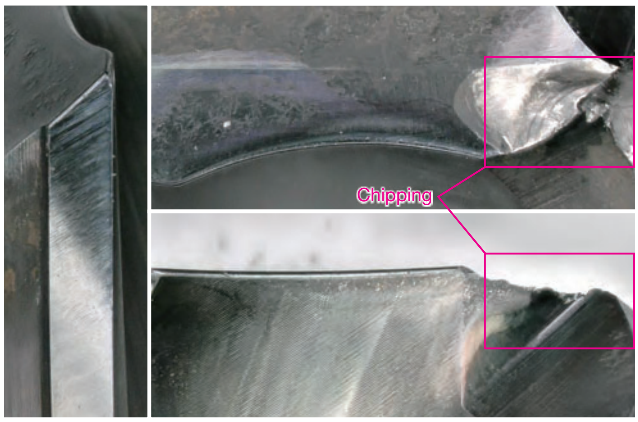
Work Material: SUS304, Machine: BT30 vertical machining centre, Tool: MDE 0200S03H05 (ø2.0mmx5D), with hole
Cutting Conditions: v_c= 40m/min, f= 0.04mm/rev, H= 10mm (through), internal coolant supply (water soluble)

Hole for Press-fitting Bolt in Inner Shaft of Hub

NeXEO MDE Type

After drilling 2,500 workpieces (5 holes per workpiece)

Conventional Product E



After drilling 1,000 workpieces (5 holes per workpiece)

Work Material: S55C equivalent, Machine: Vertical machining centre, Tool: MDE 1397S14E02H (ø13.97mmx2D)
Cutting Conditions: v_c= 75m/min, f= 0.2mm/rev, H= 15mm (through), external coolant supply (water soluble)

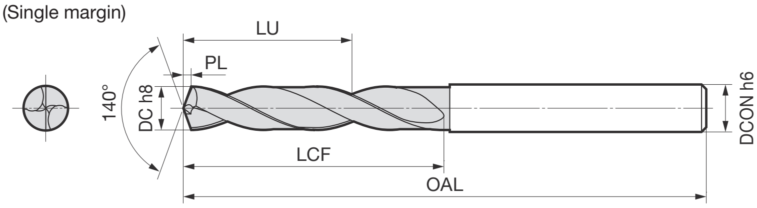
NeXEO MDE-E Type (External Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat-resistant Steel | Cast Iron | Ductile Cast Iron

NX Coat 2D 4D

*Refer to N38 for the tolerance of h6 and h8

Fig 1 (Single margin)



Diameter ø1.0 to 3.0mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
1.0	2	●	MDE 0100S03E02	5.7	7.2	45.2	0.2	3.0	1
	4	●	0100S03E04	7.7	9.2	49.2			1
1.1	2	●	MDE 0110S03E02	5.6	7.2	45.2	0.2	3.0	1
	4	●	0110S03E04	7.6	9.2	49.2			1
1.2	2	●	MDE 0120S03E02	6.4	8.2	45.2	0.2	3.0	1
	4	●	0120S03E04	8.4	10.2	49.2			1
1.3	2	●	MDE 0130S03E02	6.3	8.2	45.2	0.2	3.0	1
	4	●	0130S03E04	9.3	11.2	49.2			1
1.4	2	●	MDE 0140S03E02	7.2	9.3	45.3	0.3	3.0	1
	4	●	0140S03E04	9.2	11.3	49.3			1
1.5	2	●	MDE 0150S03E02	7.1	9.3	45.3	0.3	3.0	1
	4	●	0150S03E04	10.1	12.3	49.3			1
1.6	2	●	MDE 0160S03E02	7.9	10.3	45.3	0.3	3.0	1
	4	●	0160S03E04	10.9	13.3	49.3			1
1.7	2	●	MDE 0170S03E02	7.8	10.3	45.3	0.3	3.0	1
	4	●	0170S03E04	10.8	13.3	49.3			1
1.8	2	●	MDE 0180S03E02	8.6	11.3	45.3	0.3	3.0	1
	4	●	0180S03E04	11.6	14.3	49.3			1
1.9	2	●	MDE 0190S03E02	8.5	11.3	45.3	0.3	3.0	1
	4	●	0190S03E04	12.5	15.3	49.3			1
2.0	2	●	MDE 0200S03E02	9.4	12.4	45.4	0.4	3.0	1
	4	●	0200S03E04	13.4	16.4	49.4			1
2.1	2	●	MDE 0210S03E02	9.3	12.4	45.4	0.4	3.0	1
	4	●	0210S03E04	13.3	16.4	49.4			1
2.2	2	●	MDE 0220S03E02	10.1	13.4	45.4	0.4	3.0	1
	4	●	0220S03E04	14.1	17.4	49.4			1
2.3	2	●	MDE 0230S03E02	10.0	13.4	45.4	0.4	3.0	1
	4	●	0230S03E04	14.0	17.4	49.4			1
2.4	2	●	MDE 0240S03E02	10.8	14.4	45.4	0.4	3.0	1
	4	●	0240S03E04	14.8	18.4	49.4			1
2.5	2	●	MDE 0250S03E02	10.8	14.5	45.5	0.5	3.0	1
	4	●	0250S03E04	14.8	18.5	49.5			1
2.6	2	●	MDE 0260S03E02	11.6	15.5	45.5	0.5	3.0	1
	4	●	0260S03E04	15.6	19.5	49.5			1
2.7	2	●	MDE 0270S03E02	11.5	15.5	45.5	0.5	3.0	1
	4	●	0270S03E04	15.5	19.5	49.5			1
2.76	2	●	MDE 0276S03E02	11.3	15.5	45.5	0.5	3.0	1
2.78	2	●	0278S03E02	11.3	15.5	45.5			1
2.8	2	●	MDE 0280S03E02	11.3	15.5	45.5	0.5	3.0	1
	4	●	0280S03E04	15.3	19.5	49.5			1
2.9	2	●	MDE 0290S03E02	11.2	15.5	45.5	0.5	3.0	1
	4	●	0290S03E04	15.2	19.5	49.5			1
3.0	2	●	MDE 0300S03E02	9.0	13.5	45.5	0.5	3.0	1
	4	●	0300S03E04	15.0	19.5	49.5			1

Grade: ACT100

Diameter ø3.1 to 5.0mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
3.1	2	●	MDE 0310S04E02	15.0	19.6	54.6	0.6	4.0	1
	4	●	0310S04E04	20.0	24.6	60.6			1
3.2	2	●	MDE 0320S04E02	14.8	19.6	54.6	0.6	4.0	1
	4	●	0320S04E04	19.8	24.6	60.6			1
3.3	2	●	MDE 0330S04E02	14.7	19.6	54.6	0.6	4.0	1
	4	●	0330S04E04	19.7	24.6	60.6			1
3.4	2	●	MDE 0340S04E02	14.5	19.6	54.6	0.6	4.0	1
	4	●	0340S04E04	19.5	24.6	60.6			1
3.5	2	●	MDE 0350S04E02	14.4	19.6	54.6	0.6	4.0	1
	4	●	0350S04E04	19.4	24.6	60.6			1
3.6	2	●	MDE 0360S04E02	16.3	21.7	54.7	0.7	4.0	1
	4	●	0360S04E04	22.3	27.7	60.7			1
3.66	2	●	MDE 0366S04E02	16.2	21.7	54.7	0.7	4.0	1
3.68	2	●	0368S04E02	16.2	21.7	54.7			1
3.7	2	●	MDE 0370S04E02	16.2	21.7	54.7	0.7	4.0	1
	4	●	0370S04E04	22.2	27.7	60.7			1
3.8	2	●	MDE 0380S04E02	16.0	21.7	54.7	0.7	4.0	1
	4	●	0380S04E04	22.0	27.7	60.7			1
3.9	2	●	MDE 0390S04E02	15.9	21.7	54.7	0.7	4.0	1
	4	●	0390S04E04	21.9	27.7	60.7			1
4.0	2	●	MDE 0400S04E02	15.7	21.7	54.7	0.7	4.0	1
	4	●	0400S04E04	21.7	27.7	60.7			1
4.1	2	●	MDE 0410S05E02	17.6	23.7	61.7	0.7	5.0	1
	4	●	0410S05E04	25.6	31.7	76.7			1
4.2	2	●	MDE 0420S05E02	17.5	23.8	61.8	0.8	5.0	1
	4	●	0420S05E04	25.5	31.8	76.8			1
4.3	2	●	MDE 0430S05E02	17.4	23.8	61.8	0.8	5.0	1
	4	●	0430S05E04	25.4	31.8	76.8			1
4.4	2	●	MDE 0440S05E02	17.2	23.8	61.8	0.8	5.0	1
	4	●	0440S05E04	25.2	31.8	76.8			1
4.5	2	●	MDE 0450S05E02	17.1	23.8	61.8	0.8	5.0	1
	4	●	0450S05E04	25.1	31.8	76.8			1
4.6	2	●	MDE 0460S05E02	18.9	25.8	61.8	0.8	5.0	1
	4	●	0460S05E04	31.9	38.8	76.8			1
4.62	2	●	MDE 0462S05E02	18.9	25.8	61.8	0.8	5.0	1
4.64	2	●	0464S05E02	18.9	25.8	61.8			1
4.7	2	●	MDE 0470S05E02	18.9	25.9	61.9	0.9	5.0	1
	4	●	0470S05E04	31.9	38.9	76.9			1
4.8	2	●	MDE 0480S05E02	18.7	25.9	61.9	0.9	5.0	1
	4	●	0480S05E04	31.7	38.9	76.9			1
4.9	2	●	MDE 0490S05E02	18.6	25.9	61.9	0.9	5.0	1
	4	●	0490S05E04	31.6	38.9	76.9			1
5.0	2	●	MDE 0500S05E02	18.4	25.9	61.9	0.9	5.0	1
	4	●	0500S05E04	31.4	38.9	76.9			1

Grade: ACT100

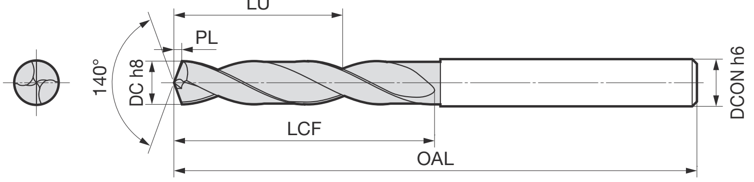
NeXEO MDE-E Type (External Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat-resistant Steel | Cast Iron | Ductile Cast Iron

NX Coat | 2D | 4D

*Refer to N38 for the tolerance of h6 and h8

Fig 1 (Single margin)



Diameter ø5.1 to 7.1mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
5.1	2	●	MDE 0510S06E02	18.3	25.9	65.9	0.9	6.0	1
	4	●	0510S06E04	32.3	39.9	81.9			1
5.2	2	●	MDE 0520S06E02	18.1	25.9	65.9	0.9	6.0	1
	4	●	0520S06E04	32.1	39.9	81.9			1
5.3	2	●	MDE 0530S06E02	18.1	26.0	66.0	1.0	6.0	1
	4	●	0530S06E04	32.1	40.0	82.0			1
5.4	2	●	MDE 0540S06E02	17.9	26.0	66.0	1.0	6.0	1
	4	●	0540S06E04	31.9	40.0	82.0			1
5.5	2	●	MDE 0550S06E02	17.8	26.0	66.0	1.0	6.0	1
	4	●	0550S06E04	31.8	40.0	82.0			1
5.52	2	●	MDE 0552S06E02	19.6	28.0	66.0	1.0	6.0	1
5.54	2	●	0554S06E02	19.6	28.0	66.0			1
5.6	2	●	MDE 0560S06E02	19.6	28.0	66.0	1.0	6.0	1
	4	●	0560S06E04	33.6	42.0	82.0			1
5.7	2	●	MDE 0570S06E02	19.5	28.0	66.0	1.0	6.0	1
	4	●	0570S06E04	33.5	42.0	82.0			1
5.8	2	●	MDE 0580S06E02	19.4	28.1	66.1	1.1	6.0	1
	4	●	0580S06E04	33.4	42.1	82.1			1
5.9	2	●	MDE 0590S06E02	19.3	28.1	66.1	1.1	6.0	1
	4	●	0590S06E04	33.3	42.1	82.1			1
6.0	2	●	MDE 0600S06E02	19.1	28.1	66.1	1.1	6.0	1
	4	●	0600S06E04	33.1	42.1	82.1			1
6.1	2	●	MDE 0610S07E02	23.0	32.1	74.1	1.1	7.0	1
	4	●	0610S07E04	34.0	43.1	84.1			1
6.2	2	●	MDE 0620S07E02	22.8	32.1	74.1	1.1	7.0	1
	4	●	0620S07E04	33.8	43.1	84.1			1
6.3	2	●	MDE 0630S07E02	22.7	32.1	74.1	1.1	7.0	1
	4	●	0630S07E04	33.7	43.1	84.1			1
6.4	2	●	MDE 0640S07E02	22.6	32.2	74.2	1.2	7.0	1
	4	●	0640S07E04	33.6	43.2	84.2			1
6.5	2	●	MDE 0650S07E02	22.5	32.2	74.2	1.2	7.0	1
	4	●	0650S07E04	33.5	43.2	84.2			1
6.6	2	●	MDE 0660S07E02	24.3	34.2	74.2	1.2	7.0	1
	4	●	0660S07E04	34.3	44.2	84.2			1
6.7	2	●	MDE 0670S07E02	24.2	34.2	74.2	1.2	7.0	1
	4	●	0670S07E04	34.2	44.2	84.2			1
6.8	2	●	MDE 0680S07E02	24.0	34.2	74.2	1.2	7.0	1
	4	●	0680S07E04	34.0	44.2	84.2			1
6.9	2	●	MDE 0690S07E02	24.0	34.3	74.3	1.3	7.0	1
	4	●	0690S07E04	34.0	44.3	84.3			1
7.0	2	●	MDE 0700S07E02	23.8	34.3	74.3	1.3	7.0	1
	4	●	0700S07E04	33.8	44.3	84.3			1
7.1	2	●	MDE 0710S08E02	23.7	34.3	79.3	1.3	8.0	1
	4	●	0710S08E04	35.7	46.3	91.3			1

Grade: ACT100

Diameter ø7.2 to 9.1mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
7.2	2	●	MDE 0720S08E02	23.5	34.3	79.3	1.3	8.0	1
	4	●	0720S08E04	35.5	46.3	91.3			1
7.3	2	●	MDE 0730S08E02	23.4	34.3	79.3	1.3	8.0	1
	4	●	0730S08E04	35.4	46.3	91.3			1
7.36	2	●	MDE 0736S08E02	23.2	34.3	79.3	1.3	8.0	1
7.38	2	●	0738S08E02	23.2	34.3	79.3			1
7.4	2	●	MDE 0740S08E02	23.2	34.3	79.3	1.3	8.0	1
	4	●	0740S08E04	35.2	46.3	91.3			1
7.5	2	●	MDE 0750S08E02	23.2	34.4	79.4	1.4	8.0	1
	4	●	0750S08E04	35.2	46.4	91.4			1
7.52	2	●	MDE 0752S08E02	26.0	37.4	79.4	1.4	8.0	1
7.54	2	●	0754S08E02	26.0	37.4	79.4			1
7.6	2	●	MDE 0760S08E02	26.0	37.4	79.4	1.4	8.0	1
	4	●	0760S08E04	38.0	49.4	91.4			1
7.7	2	●	MDE 0770S08E02	25.9	37.4	79.4	1.4	8.0	1
	4	●	0770S08E04	37.9	49.4	91.4			1
7.8	2	●	MDE 0780S08E02	25.7	37.4	79.4	1.4	8.0	1
	4	●	0780S08E04	37.7	49.4	91.4			1
7.9	2	●	MDE 0790S08E02	25.6	37.4	79.4	1.4	8.0	1
	4	●	0790S08E04	37.6	49.4	91.4			1
8.0	2	●	MDE 0800S08E02	25.5	37.5	79.5	1.5	8.0	1
	4	●	0800S08E04	37.5	49.5	91.5			1
8.1	2	●	MDE 0810S09E02	25.4	37.5	83.5	1.5	9.0	1
	4	●	0810S09E04	42.4	54.5	99.5			1
8.2	2	●	MDE 0820S09E02	25.2	37.5	83.5	1.5	9.0	1
	4	●	0820S09E04	42.2	54.5	99.5			1
8.3	2	●	MDE 0830S09E02	25.1	37.5	83.5	1.5	9.0	1
	4	●	0830S09E04	42.1	54.5	99.5			1
8.4	2	●	MDE 0840S09E02	24.9	37.5	83.5	1.5	9.0	1
	4	●	0840S09E04	41.9	54.5	99.5			1
8.5	2	●	MDE 0850S09E02	24.8	37.5	83.5	1.5	9.0	1
	4	●	0850S09E04	41.8	54.5	99.5			1
8.6	2	●	MDE 0860S09E02	26.7	39.6	83.6	1.6	9.0	1
	4	●	0860S09E04	43.7	56.6	99.6			1
8.7	2	●	MDE 0870S09E02	26.6	39.6	83.6	1.6	9.0	1
	4	●	0870S09E04	43.6	56.6	99.6			1
8.8	2	●	MDE 0880S09E02	26.4	39.6	83.6	1.6	9.0	1
	4	●	0880S09E04	43.4	56.6	99.6			1
8.9	2	●	MDE 0890S09E02	26.3	39.6	83.6	1.6	9.0	1
	4	●	0890S09E04	43.3	56.6	99.6			1
9.0	2	●	MDE 0900S09E02	26.1	39.6	83.6	1.6	9.0	1
	4	●	0900S09E04	43.1	56.6	99.6			1
9.1	2	●	MDE 0910S10E02	26.1	39.7	88.7	1.7	10.0	1
	4	●	0910S10E04	46.1	59.7	106.7			1

Grade: ACT100

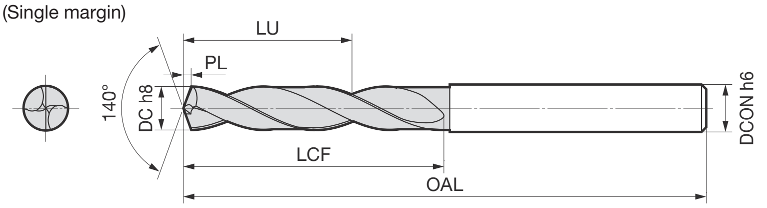
NeXEO MDE-E Type (External Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat-resistant Steel | Cast Iron | Ductile Cast Iron

NX Coat 2D 4D

*Refer to N38 for the tolerance of h6 and h8

Fig 1 (Single margin)



Diameter ø9.2 to 11.0mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
9.2	2	●	MDE 0920S10E02	25.9	39.7	88.7	1.7	10.0	1
	4	●	0920S10E04	45.9	59.7	106.7			1
9.24	2	●	MDE 0924S10E02	25.8	39.7	88.7	1.7	10.0	1
9.26	2	●	0926S10E02	25.8	39.7	88.7			1
9.3	2	●	MDE 0930S10E02	25.8	39.7	88.7	1.7	10.0	1
	4	●	0930S10E04	45.8	59.7	106.7			1
9.36	2	●	MDE 0936S10E02	25.6	39.7	88.7	1.7	10.0	1
9.38	2	●	0938S10E02	25.6	39.7	88.7			1
9.4	2	●	MDE 0940S10E02	25.6	39.7	88.7	1.7	10.0	1
	4	●	0940S10E04	45.6	59.7	106.7			1
9.5	2	●	MDE 0950S10E02	25.5	39.7	88.7	1.7	10.0	1
	4	●	0950S10E04	45.5	59.7	106.7			1
9.52	2	●	MDE 0952S10E02	28.3	42.7	88.7	1.7	10.0	1
9.54	2	●	0954S10E02	28.3	42.7	88.7			1
9.6	2	●	MDE 0960S10E02	28.3	42.7	88.7	1.7	10.0	1
	4	●	0960S10E04	47.3	61.7	106.7			1
9.7	2	●	MDE 0970S10E02	28.3	42.8	88.8	1.8	10.0	1
	4	●	0970S10E04	47.3	61.8	106.8			1
9.8	2	●	MDE 0980S10E02	28.1	42.8	88.8	1.8	10.0	1
	4	●	0980S10E04	47.1	61.8	106.8			1
9.9	2	●	MDE 0990S10E02	28.0	42.8	88.8	1.8	10.0	1
	4	●	0990S10E04	47.0	61.8	106.8			1
10.0	2	●	MDE 1000S10E02	27.8	42.8	88.8	1.8	10.0	1
	4	●	1000S10E04	46.8	61.8	106.8			1
10.1	2	●	MDE 1010S11E02	27.7	42.8	94.8	1.8	11.0	1
	4	●	1010S11E04	52.7	67.8	115.8			1
10.2	2	●	MDE 1020S11E02	27.6	42.9	94.9	1.9	11.0	1
	4	●	1020S11E04	52.6	67.9	115.9			1
10.3	2	●	MDE 1030S11E02	27.5	42.9	94.9	1.9	11.0	1
	4	●	1030S11E04	52.5	67.9	115.9			1
10.4	2	●	MDE 1040S11E02	27.3	42.9	94.9	1.9	11.0	1
	4	●	1040S11E04	52.3	67.9	115.9			1
10.5	2	●	MDE 1050S11E02	27.2	42.9	94.9	1.9	11.0	1
	4	●	1050S11E04	52.2	67.9	115.9			1
10.6	2	●	MDE 1060S11E02	31.0	46.9	94.9	1.9	11.0	1
	4	●	1060S11E04	54.0	69.9	115.9			1
10.7	2	●	MDE 1070S11E02	30.9	46.9	94.9	1.9	11.0	1
	4	●	1070S11E04	53.9	69.9	115.9			1
10.8	2	●	MDE 1080S11E02	30.8	47.0	95.0	2.0	11.0	1
	4	●	1080S11E04	53.8	70.0	116.0			1
10.9	2	●	MDE 1090S11E02	30.7	47.0	95.0	2.0	11.0	1
	4	●	1090S11E04	53.7	70.0	116.0			1
11.0	2	●	MDE 1100S11E02	30.5	47.0	95.0	2.0	11.0	1
	4	●	1100S11E04	53.5	70.0	116.0			1

Grade: ACT100

Diameter ø11.1 to 13.0mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
11.1	2	●	MDE 1110S12E02	30.4	47.0	102.0	2.0	12.0	1
	4	●	1110S12E04	56.4	73.0	123.0			1
11.2	2	●	MDE 1120S12E02	30.2	47.0	102.0	2.0	12.0	1
	4	●	1120S12E04	56.2	73.0	123.0			1
11.22	2	●	MDE 1122S12E02	30.2	47.0	102.0	2.0	12.0	1
11.24	2	●	1124S12E02	30.2	47.0	102.0			1
11.3	2	●	MDE 1130S12E02	30.2	47.1	102.1	2.1	12.0	1
	4	●	1130S12E04	56.2	73.1	123.1			1
11.36	2	●	MDE 1136S12E02	30.0	47.1	102.1	2.1	12.0	1
11.38	2	●	1138S12E02	30.0	47.1	102.1			1
11.4	2	●	MDE 1140S12E02	30.0	47.1	102.1	2.1	12.0	1
	4	●	1140S12E04	56.0	73.1	123.1			1
11.5	2	●	MDE 1150S12E02	29.9	47.1	102.1	2.1	12.0	1
	4	●	1150S12E04	55.9	73.1	123.1			1
11.6	2	●	MDE 1160S12E02	31.7	49.1	102.1	2.1	12.0	1
	4	●	1160S12E04	57.7	75.1	123.1			1
11.7	2	●	MDE 1170S12E02	31.6	49.1	102.1	2.1	12.0	1
	4	●	1170S12E04	57.6	75.1	123.1			1
11.8	2	●	MDE 1180S12E02	31.4	49.1	102.1	2.1	12.0	1
	4	●	1180S12E04	57.4	75.1	123.1			1
11.9	2	●	MDE 1190S12E02	31.4	49.2	102.2	2.2	12.0	1
	4	●	1190S12E04	57.4	75.2	123.2			1
12.0	2	●	MDE 1200S12E02	31.2	49.2	102.2	2.2	12.0	1
	4	●	1200S12E04	57.2	75.2	123.2			1
12.1	2	●	MDE 1210S13E02	31.1	49.2	102.2	2.2	13.0	1
	4	●	1210S13E04	60.1	78.2	139.2			1
12.2	2	●	MDE 1220S13E02	30.9	49.2	102.2	2.2	13.0	1
	4	●	1220S13E04	59.9	78.2	139.2			1
12.3	2	●	MDE 1230S13E02	30.8	49.2	102.2	2.2	13.0	1
	4	●	1230S13E04	59.8	78.2	139.2			1
12.4	2	●	MDE 1240S13E02	30.7	49.3	102.3	2.3	13.0	1
	4	●	1240S13E04	59.7	78.3	139.3			1
12.5	2	●	MDE 1250S13E02	30.6	49.3	102.3	2.3	13.0	1
	4	●	1250S13E04	59.6	78.3	139.3			1
12.6	2	●	MDE 1260S13E02	32.4	51.3	102.3	2.3	13.0	1
	4	●	1260S13E04	61.4	80.3	139.3			1
12.7	2	●	MDE 1270S13E02	32.3	51.3	102.3	2.3	13.0	1
	4	●	1270S13E04	61.3	80.3	139.3			1
12.8	2	●	MDE 1280S13E02	32.1	51.3	102.3	2.3	13.0	1
	4	●	1280S13E04	61.1	80.3	139.3			1
12.9	2	●	MDE 1290S13E02	32.0	51.3	102.3	2.3	13.0	1
	4	●	1290S13E04	61.0	80.3	139.3			1
13.0	2	●	MDE 1300S13E02	31.9	51.4	102.4	2.4	13.0	1
	4	●	1300S13E04	60.9	80.4	139.4			1

Grade: ACT100

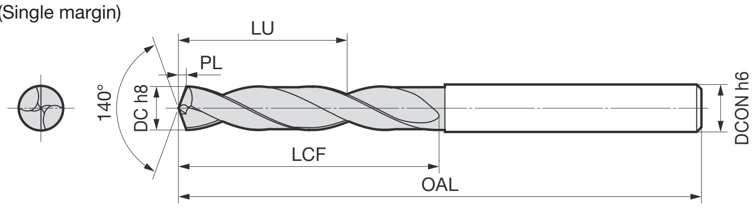
NeXEO MDE-E Type (External Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat-resistant Steel | Cast Iron | Ductile Cast Iron

NX Coat | 2D | 4D

*Refer to N38 for the tolerance of h6 and h8

Fig 1 (Single margin)



Diameter ø13.1 to 15.2mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
13.1	2	●	MDE 1310S14E02	32.8	52.4	107.4	2.4	14.0	1
	4	●	1310S14E04	66.8	86.4	149.4			1
13.2	2	●	MDE 1320S14E02	32.6	52.4	107.4	2.4	14.0	1
	4	●	1320S14E04	66.6	86.4	149.4			1
13.3	2	●	MDE 1330S14E02	32.5	52.4	107.4	2.4	14.0	1
	4	●	1330S14E04	66.5	86.4	149.4			1
13.4	2	●	MDE 1340S14E02	32.3	52.4	107.4	2.4	14.0	1
	4	●	1340S14E04	66.3	86.4	149.4			1
13.5	2	●	MDE 1350S14E02	32.3	52.5	107.5	2.5	14.0	1
	4	●	1350S14E04	66.3	86.5	149.5			1
13.6	2	●	MDE 1360S14E02	34.1	54.5	107.5	2.5	14.0	1
	4	●	1360S14E04	68.1	88.5	149.5			1
13.7	2	●	MDE 1370S14E02	34.0	54.5	107.5	2.5	14.0	1
	4	●	1370S14E04	68.0	88.5	149.5			1
13.8	2	●	MDE 1380S14E02	33.8	54.5	107.5	2.5	14.0	1
	4	●	1380S14E04	67.8	88.5	149.5			1
13.9	2	●	MDE 1390S14E02	33.7	54.5	107.5	2.5	14.0	1
	4	●	1390S14E04	67.7	88.5	149.5			1
14.0	2	●	MDE 1400S14E02	33.5	54.5	107.5	2.5	14.0	1
	4	●	1400S14E04	67.5	88.5	149.5			1
14.1	2	●	MDE 1410S15E02	33.5	54.6	110.6	2.6	15.0	1
	4	●	1410S15E04	70.5	91.6	155.6			1
14.2	2	●	MDE 1420S15E02	33.3	54.6	110.6	2.6	15.0	1
	4	●	1420S15E04	70.3	91.6	155.6			1
14.3	2	●	MDE 1430S15E02	33.2	54.6	110.6	2.6	15.0	1
	4	●	1430S15E04	70.2	91.6	155.6			1
14.4	2	●	MDE 1440S15E02	33.0	54.6	110.6	2.6	15.0	1
	4	●	1440S15E04	70.0	91.6	155.6			1
14.5	2	●	MDE 1450S15E02	32.9	54.6	110.6	2.6	15.0	1
	4	●	1450S15E04	69.9	91.6	155.6			1
14.6	2	●	MDE 1460S15E02	33.8	55.7	110.7	2.7	15.0	1
	4	●	1460S15E04	71.8	93.7	155.7			1
14.7	2	●	MDE 1470S15E02	33.7	55.7	110.7	2.7	15.0	1
	4	●	1470S15E04	71.7	93.7	155.7			1
14.8	2	●	MDE 1480S15E02	33.5	55.7	110.7	2.7	15.0	1
	4	●	1480S15E04	71.5	93.7	155.7			1
14.9	2	●	MDE 1490S15E02	33.4	55.7	110.7	2.7	15.0	1
	4	●	1490S15E04	71.4	93.7	155.7			1
15.0	2	●	MDE 1500S15E02	33.2	55.7	110.7	2.7	15.0	1
	4	●	1500S15E04	71.2	93.7	155.7			1
15.1	2	●	MDE 1510S16E02	33.1	55.7	114.7	2.7	16.0	1
	4	●	1510S16E04	74.1	96.7	162.7			1
15.2	2	●	MDE 1520S16E02	33.0	55.8	114.8	2.8	16.0	1
	4	●	1520S16E04	74.0	96.8	162.8			1

Grade: ACT100

Diameter ø15.3 to 20.0mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
15.3	2	●	MDE 1530S16E02	32.9	55.8	114.8	2.8	16.0	1
	4	●	1530S16E04	73.9	96.8	162.8			1
15.4	2	●	MDE 1540S16E02	32.7	55.8	114.8	2.8	16.0	1
	4	●	1540S16E04	73.7	96.8	162.8			1
15.5	2	●	MDE 1550S16E02	32.6	55.8	114.8	2.8	16.0	1
	4	●	1550S16E04	73.6	96.8	162.8			1
15.6	2	●	MDE 1560S16E02	34.4	57.8	114.8	2.8	16.0	1
	4	●	1560S16E04	75.4	98.8	162.8			1
15.7	2	●	MDE 1570S16E02	34.4	57.9	114.9	2.9	16.0	1
	4	●	1570S16E04	75.4	98.9	162.9			1
15.8	2	●	MDE 1580S16E02	34.2	57.9	114.9	2.9	16.0	1
	4	●	1580S16E04	75.2	98.9	162.9			1
15.9	2	●	MDE 1590S16E02	34.1	57.9	114.9	2.9	16.0	1
	4	●	1590S16E04	75.1	98.9	162.9			1
16.0	2	●	MDE 1600S16E02	33.9	57.9	114.9	2.9	16.0	1
	4	●	1600S16E04	74.9	98.9	162.9			1
16.5	2	●	MDE 1650S17E02	34.3	59.0	119.0	3.0	17.0	1
	4	●	1650S17E04	76.3	101.0	170.0			1
16.8	4	●	MDE 1680S17E04	75.9	101.1	170.1	3.1	17.0	1
17.0	2	●	MDE 1700S17E02	34.6	60.1	119.1	3.1	17.0	1
	4	●	1700S17E04	75.7	101.2	170.2	3.2		1
17.5	2	●	MDE 1750S18E02	35.0	61.2	123.2	3.2	18.0	1
	4	●	1750S18E04	77.0	103.2	170.2			1
18.0	2	●	MDE 1800S18E02	35.3	62.3	123.3	3.3	18.0	1
	4	●	1800S18E04	78.3	105.3	170.3			1
18.5	2	●	MDE 1850S19E02	34.7	62.4	126.4	3.4	19.0	1
	4	●	1850S19E04	79.7	107.4	182.4			1
19.0	2	●	MDE 1900S19E02	35.0	63.5	126.5	3.5	19.0	1
	4	●	1900S19E04	80.9	109.4	182.4	3.4		1
19.5	2	●	MDE 1950S20E02	35.3	64.5	130.5	3.5	20.0	1
	4	●	1950S20E04	84.3	113.5	182.5			1
19.7	4	●	MDE 1970S20E04	88.1	117.6	182.6	3.6	20.0	1
20.0	2	●	MDE 2000S20E02	35.6	65.6	130.6	3.6	20.0	1
	4	●	2000S20E04	87.6	117.6	182.6			1

Grade: ACT100

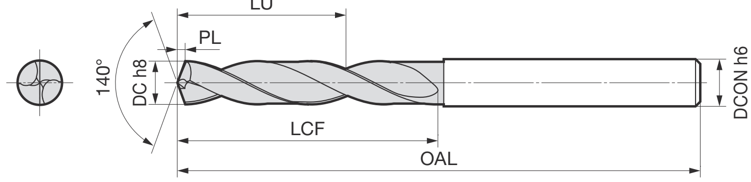
NeXEO MDE-E Type For Hub Drilling (External Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat-resistant Steel | Cast Iron | Ductile Cast Iron

NX Coat | 2D

*Refer to N38 for the tolerance of h6 and h8

Fig 1 (Single margin)



Diameter ø8.8 to 13.97mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
8.80	2	●	**MDE 0880S09E02H**	26.4	39.6	83.6	1.6	9.0	1
10.00	2	●	**1000S10E02H**	27.8	42.8	88.8	1.8	10.0	1
10.80	2	●	**1080S11E02H**	30.8	47.0	95.0	2.0	11.0	1
12.04	2	●	**1204S13E02H**	31.1	49.2	102.2	2.2	13.0	1
12.52	2	●	**1252S13E02H**	32.4	51.3	102.3	2.3	13.0	1
13.85	2	●	**1385S14E02H**	33.7	54.5	107.5	2.5	14.0	1
13.92	2	●	**1392S14E02H**	33.5	54.5	107.5	2.5	14.0	1
13.97	2	●	**1397S14E02H**	33.5	54.5	107.5	2.5	14.0	1

Grade: ACT100

NeXEO MDE-E Type (External Coolant Supply)

Recommended Cutting Conditions (MDE-E Type, External Coolant Supply, 2D/4D) Includes hub drilling

1. The recommended cutting conditions below are for cases where a water soluble coolant is used (excluding drilling of stainless steel).
2. Supply sufficient water soluble coolant to the cutting edge.
3. If using non-water-soluble coolant, reduce the cutting speed by 20-30% and ensure that sufficient coolant is supplied.
4. When mounting the drill in the collet, make sure that runout around the cutting edge is no greater than 0.02mm.
5. Make sure the flute does not enter the collet.
6. If the surface of the workpiece is abnormally shaped (tilted, interrupted etc.), reduce the feed rate to about half when feeding the drill in the workpiece.
   *If stable drilling is still not possible, pre-machining of the flat surface with the MDF Flat MULTIDRILL is recommended.
7. When performing interrupted through drilling, reduce the feed rate to about half the feed rate used prior to this process.

Work Material		Mild Steel/Low Carbon Steel SS400/S15C up to 160HB		Carbon Steel S35C/S50C up to 230HB		Alloy Steel SCM/SCr 20 to 30HRC		Alloy Steel SCM/SCr 30 to 38HRC	
Cutting Speed	Dia. < ø3	30 to 80m/min		30 to 80m/min		30 to 80m/min		30 to 80m/min	
	Dia. ≥ ø3	60 to 100m/min		60 to 120m/min		50 to 100m/min		40 to 80m/min	
Diameter (DC)		Spindle Speed (min^{-1})	Feed Rate (mm/rev)	Spindle Speed (min^{-1})	Feed Rate (mm/rev)	Spindle Speed (min^{-1})	Feed Rate (mm/rev)	Spindle Speed (min^{-1})	Feed Rate (mm/rev)
ø1.0		9,500	0.02 to 0.04	9,500	0.02 to 0.04	9,500	0.02 to 0.04	9,500	0.02 to 0.03
ø1.5		8,500	0.03 to 0.06	8,500	0.03 to 0.06	8,500	0.03 to 0.06	8,500	0.03 to 0.06
ø2.0		9,000	0.04 to 0.08	8,000	0.04 to 0.08	8,000	0.04 to 0.08	8,000	0.04 to 0.08
ø2.5		9,500	0.04 to 0.08	9,000	0.04 to 0.08	8,500	0.04 to 0.08	7,600	0.04 to 0.08
ø3.0		8,500	0.05 to 0.12	8,500	0.05 to 0.12	7,500	0.05 to 0.12	6,400	0.05 to 0.12
ø4.0		6,400	0.07 to 0.17	6,400	0.07 to 0.17	5,600	0.07 to 0.17	4,800	0.07 to 0.17
ø5.0		5,100	0.08 to 0.20	5,100	0.08 to 0.20	4,500	0.08 to 0.20	3,900	0.08 to 0.20
ø6.0		4,300	0.10 to 0.20	4,300	0.10 to 0.20	3,800	0.10 to 0.20	3,200	0.10 to 0.20
ø7.0		3,700	0.12 to 0.23	3,700	0.12 to 0.23	3,200	0.12 to 0.23	2,800	0.12 to 0.23
ø8.0		3,200	0.15 to 0.25	3,200	0.15 to 0.25	2,800	0.15 to 0.25	2,400	0.15 to 0.25
ø9.0		2,900	0.17 to 0.25	2,900	0.17 to 0.25	2,500	0.17 to 0.25	2,200	0.17 to 0.25
ø10.0		2,600	0.18 to 0.28	2,600	0.18 to 0.28	2,300	0.18 to 0.28	2,000	0.18 to 0.28
ø11.0		2,400	0.20 to 0.30	2,400	0.20 to 0.30	2,100	0.20 to 0.30	1,800	0.20 to 0.30
ø12.0		2,200	0.20 to 0.30	2,200	0.20 to 0.30	1,900	0.20 to 0.30	1,600	0.20 to 0.30
ø14.0		1,900	0.20 to 0.30	1,900	0.20 to 0.30	1,600	0.20 to 0.30	1,400	0.20 to 0.30
ø16.0		1,600	0.20 to 0.30	1,600	0.20 to 0.30	1,400	0.20 to 0.30	1,200	0.20 to 0.30
ø18.0		1,500	0.20 to 0.30	1,500	0.20 to 0.30	1,300	0.20 to 0.30	1,100	0.20 to 0.30
ø20.0		1,300	0.20 to 0.30	1,300	0.20 to 0.30	1,200	0.20 to 0.30	1,000	0.20 to 0.30
High-efficiency Product		GS Type		GS Type		GS Type		GS Type	

Work Material		Cast Iron FC250 to 280HB		Ductile Cast Iron FCD450/FCD600 to 270HB		Stainless Steel (oil-based drilling) SUS304/SUS410 to 200HB		Special Steel/Pre-hardened Steel SKS2/SKD61 (non-tempered) 30 to 38 HRC	
Cutting Speed	Dia. < ø3	30 to 80m/min		30 to 80m/min		20 to 50m/min		30 to 60m/min	
	Dia. ≥ ø3	60 to 100m/min		50 to 100m/min		20 to 50m/min		30 to 60m/min	
Diameter (DC)		Spindle Speed (min^{-1})	Feed Rate (mm/rev)	Spindle Speed (min^{-1})	Feed Rate (mm/rev)	Spindle Speed (min^{-1})	Feed Rate (mm/rev)	Spindle Speed (min^{-1})	Feed Rate (mm/rev)
ø1.0		9,500	0.02 to 0.04	9,500	0.02 to 0.04	9,500	0.02 to 0.03	9,500	0.02 to 0.03
ø1.5		8,500	0.03 to 0.06	8,500	0.03 to 0.06	8,500	0.02 to 0.05	8,500	0.02 to 0.04
ø2.0		8,000	0.04 to 0.08	8,000	0.04 to 0.08	6,300	0.03 to 0.06	7,100	0.03 to 0.06
ø2.5		9,000	0.04 to 0.08	8,500	0.04 to 0.08	5,100	0.03 to 0.07	5,700	0.03 to 0.06
ø3.0		8,500	0.06 to 0.15	7,500	0.05 to 0.12	4,300	0.05 to 0.10	5,400	0.05 to 0.12
ø4.0		6,400	0.08 to 0.18	5,600	0.07 to 0.17	3,200	0.05 to 0.10	4,000	0.07 to 0.17
ø5.0		5,100	0.10 to 0.20	4,500	0.08 to 0.20	2,600	0.06 to 0.15	3,200	0.08 to 0.20
ø6.0		4,300	0.12 to 0.23	3,800	0.10 to 0.20	2,200	0.06 to 0.15	2,700	0.10 to 0.20
ø7.0		3,700	0.12 to 0.23	3,200	0.12 to 0.23	1,900	0.06 to 0.18	2,300	0.10 to 0.20
ø8.0		3,200	0.18 to 0.25	2,800	0.15 to 0.25	1,600	0.06 to 0.20	2,000	0.12 to 0.25
ø9.0		2,900	0.17 to 0.25	2,500	0.17 to 0.25	1,500	0.08 to 0.20	1,800	0.12 to 0.25
ø10.0		2,600	0.18 to 0.28	2,300	0.18 to 0.28	1,300	0.08 to 0.20	1,600	0.12 to 0.25
ø11.0		2,400	0.20 to 0.30	2,100	0.20 to 0.30	1,200	0.08 to 0.20	1,500	0.15 to 0.30
ø12.0		2,200	0.20 to 0.30	1,900	0.20 to 0.30	1,100	0.10 to 0.25	1,400	0.15 to 0.30
ø14.0		1,900	0.20 to 0.30	1,600	0.20 to 0.30	1,000	0.10 to 0.25	1,200	0.15 to 0.30
ø16.0		1,600	0.20 to 0.30	1,400	0.20 to 0.30	800	0.10 to 0.25	1,000	0.15 to 0.30
ø18.0		1,500	0.20 to 0.30	1,300	0.20 to 0.30	800	0.10 to 0.25	900	0.15 to 0.30
ø20.0		1,300	0.20 to 0.30	1,200	0.20 to 0.30	700	0.10 to 0.25	800	0.15 to 0.30
High-efficiency Product		GS Type		GS Type		GS Type		GS Type	

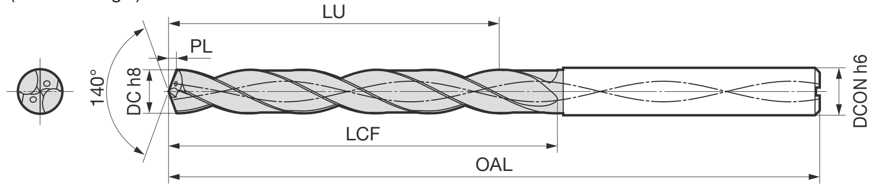
NeXEO MDE-H Type (Internal Coolant Supply)

Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat-resistant Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy | Copper Alloy

NX Coat | Coolant Hole | 3D | 5D | 8D

*Refer to N38 for the tolerance of h6 and h8

Fig 1 (Double margin)



Diameter ø1.0 to 2.4mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
	3	●	MDE 0100S03H03	6.7	8.2	57.2			1
1.0	5	●	0100S03H05	8.7	10.2	59.2	0.2	3.0	1
	8	●	0100S03H08	11.7	13.2	62.2			1
	3	●	MDE 0110S03H03	6.6	8.2	57.2			1
1.1	5	●	0110S03H05	8.6	10.2	59.2	0.2	3.0	1
	8	●	0110S03H08	12.6	14.2	62.2			1
	3	●	MDE 0120S03H03	7.4	9.2	57.2			1
1.2	5	●	0120S03H05	9.4	11.2	59.2	0.2	3.0	1
	8	●	0120S03H08	13.4	15.2	62.2			1
	3	●	MDE 0130S03H03	7.3	9.2	57.2			1
1.3	5	●	0130S03H05	10.3	12.2	59.2	0.2	3.0	1
	8	●	0130S03H08	14.3	16.2	62.2			1
	3	●	MDE 0140S03H03	8.2	10.3	57.3			1
1.4	5	●	0140S03H05	11.2	13.3	59.3	0.3	3.0	1
	8	●	0140S03H08	15.2	17.3	62.3			1
	3	●	MDE 0150S03H03	9.1	11.3	57.3			1
1.5	5	●	0150S03H05	12.1	14.3	59.3	0.3	3.0	1
	8	●	0150S03H08	16.1	18.3	62.3			1
	3	●	MDE 0160S03H03	8.9	11.3	59.3			1
1.6	5	●	0160S03H05	11.9	14.3	62.3	0.3	3.0	1
	8	●	0160S03H08	16.9	19.3	67.3			1
	3	●	MDE 0170S03H03	9.8	12.3	59.3			1
1.7	5	●	0170S03H05	12.8	15.3	62.3	0.3	3.0	1
	8	●	0170S03H08	17.8	20.3	67.3			1
	3	●	MDE 0180S03H03	9.6	12.3	59.3			1
1.8	5	●	0180S03H05	13.6	16.3	62.3	0.3	3.0	1
	8	●	0180S03H08	18.6	21.3	67.3			1
	3	●	MDE 0190S03H03	10.5	13.3	59.3			1
1.9	5	●	0190S03H05	14.5	17.3	62.3	0.3	3.0	1
	8	●	0190S03H08	19.5	22.3	70.3			1
	3	●	MDE 0200S03H03	11.4	14.4	59.4			1
2.0	5	●	0200S03H05	15.4	18.4	62.4	0.4	3.0	1
	8	●	0200S03H08	21.4	24.4	70.4			1
	3	●	MDE 0210S03H03	11.3	14.4	59.4			1
2.1	5	●	0210S03H05	15.3	18.4	62.4	0.4	3.0	1
	8	●	0210S03H08	22.3	25.4	70.4			1
	3	●	MDE 0220S03H03	12.1	15.4	59.4			1
2.2	5	●	0220S03H05	16.1	19.4	62.4	0.4	3.0	1
	8	●	0220S03H08	23.1	26.4	70.4			1
	3	●	MDE 0230S03H03	12.0	15.4	63.4			1
2.3	5	●	0230S03H05	17.0	20.4	68.4	0.4	3.0	1
	8	●	0230S03H08	24.0	27.4	75.4			1
	3	●	MDE 0240S03H03	12.8	16.4	63.4			1
2.4	5	●	0240S03H05	17.8	21.4	68.4	0.4	3.0	1
	8	●	0240S03H08	24.8	28.4	75.4			1

Grade: ACT100

Diameter ø2.5 to 3.7mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
	3	●	MDE 0250S03H03	13.8	17.5	63.5			1
2.5	5	●	0250S03H05	18.8	22.5	68.5	0.5	3.0	1
	8	●	0250S03H08	25.8	29.5	75.5			1
	3	●	MDE 0260S03H03	13.6	17.5	63.5			1
2.6	5	●	0260S03H05	18.6	22.5	68.5	0.5	3.0	1
	8	●	0260S03H08	26.6	30.5	75.5			1
	3	●	MDE 0270S03H03	14.5	18.5	68.5			1
2.7	5	●	0270S03H05	19.5	23.5	78.5	0.5	3.0	1
	8	●	0270S03H08	27.5	31.5	81.5			1
2.76	5	●	MDE 0276S03H05	20.3	24.5	78.5	0.5	3.0	1
2.78	5	●	0278S03H05	20.3	24.5	78.5			1
	3	●	MDE 0280S03H03	14.3	18.5	68.5			1
2.8	5	●	0280S03H05	20.3	24.5	78.5	0.5	3.0	1
	8	●	0280S03H08	28.3	32.5	81.5			1
	3	●	MDE 0290S03H03	15.2	19.5	68.5			1
2.9	5	●	0290S03H05	21.2	25.5	78.5	0.5	3.0	1
	8	●	0290S03H08	29.2	33.5	81.5			1
	3	●	MDE 0300S03H03	14.0	18.5	68.5			1
3.0	5	●	0300S03H05	24.0	28.5	78.5	0.5	3.0	1
	8	●	0300S03H08	29.0	33.5	81.5			1
	3	●	MDE 0310S04H03	16.0	20.6	72.6			1
3.1	5	●	0310S04H05	28.0	32.6	86.6	0.6	4.0	1
	8	●	0310S04H08	34.5	39.1	92.6			1
	3	●	MDE 0320S04H03	15.8	20.6	72.6			1
3.2	5	●	0320S04H05	27.8	32.6	86.6	0.6	4.0	1
	8	●	0320S04H08	34.3	39.1	92.6			1
	3	●	MDE 0330S04H03	15.7	20.6	72.6			1
3.3	5	●	0330S04H05	27.7	32.6	86.6	0.6	4.0	1
	8	●	0330S04H08	34.2	39.1	92.6			1
	3	●	MDE 0340S04H03	15.5	20.6	72.6			1
3.4	5	●	0340S04H05	27.5	32.6	86.6	0.6	4.0	1
	8	●	0340S04H08	34.0	39.1	92.6			1
	3	●	MDE 0350S04H03	15.4	20.6	72.6			1
3.5	5	●	0350S04H05	27.4	32.6	86.6	0.6	4.0	1
	8	●	0350S04H08	33.9	39.1	92.6			1
	3	●	MDE 0360S04H03	17.8	23.2	72.7			1
3.6	5	●	0360S04H05	31.3	36.7	86.7	0.7	4.0	1
	8	●	0360S04H08	39.3	44.7	92.7			1
3.66	5	●	MDE 0366S04H05	31.2	36.7	86.7	0.7	4.0	1
3.68	5	●	0368S04H05	31.2	36.7	86.7			1
	3	●	MDE 0370S04H03	17.7	23.2	72.7			1
3.7	5	●	0370S04H05	31.2	36.7	86.7	0.7	4.0	1
	8	●	0370S04H08	39.2	44.7	92.7			1

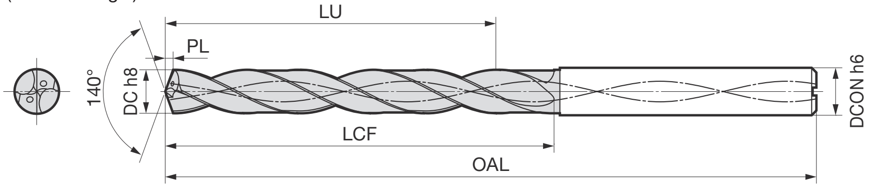
Grade: ACT100

NeXEO MDE-H Type (Internal Coolant Supply)

NX Coat | Coolant Hole | 3D | 5D | 8D

*Refer to N38 for the tolerance of h6 and h8

Fig 1 (Double margin)



Diameter ø3.8 to 5.1mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
	3	●	MDE 0380S04H03	17.5	23.2	72.7			1
3.8	5	●	0380S04H05	31.0	36.7	86.7	0.7	4.0	1
	8	●	0380S04H08	39.0	44.7	92.7			1
	3	●	MDE 0390S04H03	17.4	23.2	72.7			1
3.9	5	●	0390S04H05	30.9	36.7	86.7	0.7	4.0	1
	8	●	0390S04H08	38.9	44.7	92.7			1
	3	●	MDE 0400S04H03	17.2	23.2	72.7			1
4.0	5	●	0400S04H05	30.7	36.7	86.7	0.7	4.0	1
	8	●	0400S04H08	38.7	44.7	92.7			1
	3	●	MDE 0410S05H03	19.6	25.7	80.7			1
4.1	5	●	0410S05H05	34.6	40.7	98.7	0.7	5.0	1
	8	●	0410S05H08	44.1	50.2	105.7			1
	3	●	MDE 0420S05H03	19.5	25.8	80.8			1
4.2	5	●	0420S05H05	34.5	40.8	98.8	0.8	5.0	1
	8	●	0420S05H08	44.0	50.3	105.8			1
	3	●	MDE 0430S05H03	19.4	25.8	80.8			1
4.3	5	●	0430S05H05	34.4	40.8	98.8	0.8	5.0	1
	8	●	0430S05H08	43.9	50.3	105.8			1
	3	●	MDE 0440S05H03	19.2	25.8	80.8			1
4.4	5	●	0440S05H05	34.2	40.8	98.8	0.8	5.0	1
	8	●	0440S05H08	43.7	50.3	105.8			1
	3	●	MDE 0450S05H03	19.1	25.8	80.8			1
4.5	5	●	0450S05H05	34.1	40.8	98.8	0.8	5.0	1
	8	●	0450S05H08	43.6	50.3	105.8			1
	3	●	MDE 0460S05H03	21.4	28.3	80.8			1
4.6	5	●	0460S05H05	37.9	44.8	98.8	0.8	5.0	1
	8	●	0460S05H08	48.9	55.8	105.8			1
4.62	5	●	MDE 0462S05H05	37.9	44.8	98.8	0.8	5.0	1
4.64	5	●	0464S05H05	37.9	44.8	98.8			1
	3	●	MDE 0470S05H03	21.4	28.4	80.9			1
4.7	5	●	0470S05H05	37.9	44.9	98.9	0.9	5.0	1
	8	●	0470S05H08	48.9	55.9	105.9			1
	3	●	MDE 0480S05H03	21.2	28.4	80.9			1
4.8	5	●	0480S05H05	37.7	44.9	98.9	0.9	5.0	1
	8	●	0480S05H08	48.7	55.9	105.9			1
	3	●	MDE 0490S05H03	21.1	28.4	80.9			1
4.9	5	●	0490S05H05	37.6	44.9	98.9	0.9	5.0	1
	8	●	0490S05H08	48.6	55.9	105.9			1
	3	●	MDE 0500S05H03	20.9	28.4	80.9			1
5.0	5	●	0500S05H05	37.4	44.9	98.9	0.9	5.0	1
	8	●	0500S05H08	48.4	55.9	105.9			1
	3	●	MDE 0510S06H03	20.8	28.4	82.9			1
5.1	5	●	0510S06H05	37.3	44.9	100.9	0.9	6.0	1
	8	●	0510S06H08	53.8	61.4	118.9			1

Grade: ACT100

Diameter ø5.2 to 6.5mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
	3	●	MDE 0520S06H03	20.6	28.4	82.9			1
5.2	5	●	0520S06H05	37.1	44.9	100.9	0.9	6.0	1
	8	●	0520S06H08	53.6	61.4	118.9			1
	3	●	MDE 0530S06H03	20.6	28.5	83.0			1
5.3	5	●	0530S06H05	37.1	45.0	101.0	1.0	6.0	1
	8	●	0530S06H08	53.6	61.5	119.0			1
	3	●	MDE 0540S06H03	20.4	28.5	83.0			1
5.4	5	●	0540S06H05	36.9	45.0	101.0	1.0	6.0	1
	8	●	0540S06H08	53.4	61.5	119.0			1
	3	●	MDE 0550S06H03	20.3	28.5	83.0			1
5.5	5	●	0550S06H05	36.8	45.0	101.0	1.0	6.0	1
	8	●	0550S06H08	53.3	61.5	119.0			1
5.52	5	●	MDE 0552S06H05	40.6	49.0	101.0	1.0	6.0	1
5.54	5	●	0554S06H05	40.6	49.0	101.0			1
	3	●	MDE 0560S06H03	22.6	31.0	83.0			1
5.6	5	●	0560S06H05	40.6	49.0	101.0	1.0	6.0	1
	8	●	0560S06H08	58.6	67.0	119.0			1
	3	●	MDE 0570S06H03	22.5	31.0	83.0			1
5.7	5	●	0570S06H05	40.5	49.0	101.0	1.0	6.0	1
	8	●	0570S06H08	58.5	67.0	119.0			1
	3	●	MDE 0580S06H03	22.4	31.1	83.1			1
5.8	5	●	0580S06H05	40.4	49.1	101.1	1.1	6.0	1
	8	●	0580S06H08	58.4	67.1	119.1			1
	3	●	MDE 0590S06H03	22.3	31.1	83.1			1
5.9	5	●	0590S06H05	40.3	49.1	101.1	1.1	6.0	1
	8	●	0590S06H08	58.3	67.1	119.1			1
	3	●	MDE 0600S06H03	22.1	31.1	83.1			1
6.0	5	●	0600S06H05	40.1	49.1	101.1	1.1	6.0	1
	8	●	0600S06H08	58.1	67.1	119.1			1
	3	●	MDE 0610S07H03	24.5	33.6	89.1			1
6.1	5	●	0610S07H05	44.0	53.1	110.1	1.1	7.0	1
	8	●	0610S07H08	63.5	72.6	131.1			1
	3	●	MDE 0620S07H03	24.3	33.6	89.1			1
6.2	5	●	0620S07H05	43.8	53.1	110.1	1.1	7.0	1
	8	●	0620S07H08	63.3	72.6	131.1			1
	3	●	MDE 0630S07H03	24.2	33.6	89.1			1
6.3	5	●	0630S07H05	43.7	53.1	110.1	1.1	7.0	1
	8	●	0630S07H08	63.2	72.6	131.1			1
	3	●	MDE 0640S07H03	24.1	33.7	89.2			1
6.4	5	●	0640S07H05	43.6	53.2	110.2	1.2	7.0	1
	8	●	0640S07H08	63.1	72.7	131.2			1
	3	●	MDE 0650S07H03	24.0	33.7	89.2			1
6.5	5	●	0650S07H05	43.5	53.2	110.2	1.2	7.0	1
	8	●	0650S07H08	63.0	72.7	131.2			1

Grade: ACT100

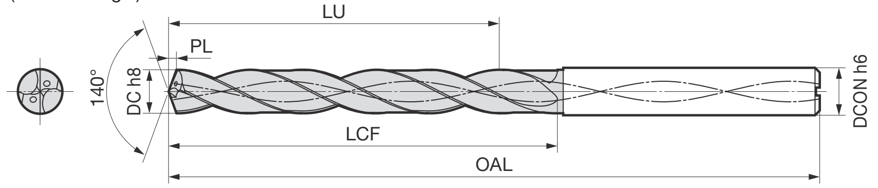
NeXEO MDE-H Type (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat-resistant Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy | Copper Alloy

NX Coat | Coolant Hole | 3D | 5D | 8D

*Refer to N38 for the tolerance of h6 and h8

Fig 1 (Double margin)



Diameter ø6.6 to 7.8mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
6.6	3	●	MDE 0660S07H03	26.3	36.2	89.2	1.2	7.0	1
	5	●	0660S07H05	47.3	57.2	110.2			1
	8	●	0660S07H08	68.3	78.2	131.2			1
6.7	3	●	MDE 0670S07H03	26.2	36.2	89.2	1.2	7.0	1
	5	●	0670S07H05	47.2	57.2	110.2			1
	8	●	0670S07H08	68.2	78.2	131.2			1
6.8	3	●	MDE 0680S07H03	26.0	36.2	89.2	1.2	7.0	1
	5	●	0680S07H05	47.0	57.2	110.2			1
	8	●	0680S07H08	68.0	78.2	131.2			1
6.9	3	●	MDE 0690S07H03	26.0	36.3	89.3	1.3	7.0	1
	5	●	0690S07H05	47.0	57.3	110.3			1
	8	●	0690S07H08	68.0	78.3	131.3			1
7.0	3	●	MDE 0700S07H03	25.8	36.3	89.3	1.3	7.0	1
	5	●	0700S07H05	46.8	57.3	110.3			1
	8	●	0700S07H08	67.8	78.3	131.3			1
7.1	3	●	MDE 0710S08H03	28.2	38.8	95.3	1.3	8.0	1
	5	●	0710S08H05	50.7	61.3	119.3			1
	8	●	0710S08H08	73.2	83.8	143.3			1
7.2	3	●	MDE 0720S08H03	28.0	38.8	95.3	1.3	8.0	1
	5	●	0720S08H05	50.5	61.3	119.3			1
	8	●	0720S08H08	73.0	83.8	143.3			1
7.3	3	●	MDE 0730S08H03	27.9	38.8	95.3	1.3	8.0	1
	5	●	0730S08H05	50.4	61.3	119.3			1
	8	●	0730S08H08	72.9	83.8	143.3			1
7.36	5	●	MDE 0736S08H05	50.2	61.3	119.3	1.3	8.0	1
7.38	5	●	0738S08H05	50.2	61.3	119.3			1
7.4	3	●	MDE 0740S08H03	27.7	38.8	95.3	1.3	8.0	1
	5	●	0740S08H05	50.2	61.3	119.3			1
	8	●	0740S08H08	72.7	83.8	143.3			1
7.5	3	●	MDE 0750S08H03	27.7	38.9	95.4	1.4	8.0	1
	5	●	0750S08H05	50.2	61.4	119.4			1
	8	●	0750S08H08	72.7	83.9	143.4			1
7.52	5	●	MDE 0752S08H05	54.0	65.4	119.4	1.4	8.0	1
7.54	5	●	0754S08H05	54.0	65.4	119.4			1
7.6	3	●	MDE 0760S08H03	30.0	41.4	95.4	1.4	8.0	1
	5	●	0760S08H05	54.0	65.4	119.4			1
	8	●	0760S08H08	78.0	89.4	143.4			1
7.7	3	●	MDE 0770S08H03	29.9	41.4	95.4	1.4	8.0	1
	5	●	0770S08H05	53.9	65.4	119.4			1
	8	●	0770S08H08	77.9	89.4	143.4			1
7.8	3	●	MDE 0780S08H03	29.7	41.4	95.4	1.4	8.0	1
	5	●	0780S08H05	53.7	65.4	119.4			1
	8	●	0780S08H08	77.7	89.4	143.4			1

Grade: ACT100

Diameter ø7.9 to 9.2mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
7.9	3	●	MDE 0790S08H03	29.6	41.4	95.4	1.4	8.0	1
	5	●	0790S08H05	53.6	65.4	119.4			1
	8	●	0790S08H08	77.6	89.4	143.4			1
8.0	3	●	MDE 0800S08H03	29.5	41.5	95.5	1.5	8.0	1
	5	●	0800S08H05	53.5	65.5	119.5			1
	8	●	0800S08H08	77.5	89.5	143.5			1
8.1	3	●	MDE 0810S09H03	31.9	44.0	101.5	1.5	9.0	1
	5	●	0810S09H05	57.4	69.5	128.5			1
	8	●	0810S09H08	82.9	95.0	155.5			1
8.2	3	●	MDE 0820S09H03	31.7	44.0	101.5	1.5	9.0	1
	5	●	0820S09H05	57.2	69.5	128.5			1
	8	●	0820S09H08	82.7	95.0	155.5			1
8.3	3	●	MDE 0830S09H03	31.6	44.0	101.5	1.5	9.0	1
	5	●	0830S09H05	57.1	69.5	128.5			1
	8	●	0830S09H08	82.6	95.0	155.5			1
8.4	3	●	MDE 0840S09H03	31.4	44.0	101.5	1.5	9.0	1
	5	●	0840S09H05	56.9	69.5	128.5			1
	8	●	0840S09H08	82.4	95.0	155.5			1
8.5	3	●	MDE 0850S09H03	31.3	44.0	101.5	1.5	9.0	1
	5	●	0850S09H05	56.8	69.5	128.5			1
	8	●	0850S09H08	82.3	95.0	155.5			1
8.6	3	●	MDE 0860S09H03	33.7	46.6	101.6	1.6	9.0	1
	5	●	0860S09H05	60.7	73.6	128.6			1
	8	●	0860S09H08	87.7	100.6	155.6			1
8.7	3	●	MDE 0870S09H03	33.6	46.6	101.6	1.6	9.0	1
	5	●	0870S09H05	60.6	73.6	128.6			1
	8	●	0870S09H08	87.6	100.6	155.6			1
8.8	3	●	MDE 0880S09H03	33.4	46.6	101.6	1.6	9.0	1
	5	●	0880S09H05	60.4	73.6	128.6			1
	8	●	0880S09H08	87.4	100.6	155.6			1
8.9	3	●	MDE 0890S09H03	33.3	46.6	101.6	1.6	9.0	1
	5	●	0890S09H05	60.3	73.6	128.6			1
	8	●	0890S09H08	87.3	100.6	155.6			1
9.0	3	●	MDE 0900S09H03	33.1	46.6	101.6	1.6	9.0	1
	5	●	0900S09H05	60.1	73.6	128.6			1
	8	●	0900S09H08	87.1	100.6	155.6			1
9.1	3	●	MDE 0910S10H03	35.6	49.2	107.7	1.7	10.0	1
	5	●	0910S10H05	64.1	77.7	137.7			1
	8	●	0910S10H08	92.6	106.2	167.7			1
9.2	3	●	MDE 0920S10H03	35.4	49.2	107.7	1.7	10.0	1
	5	●	0920S10H05	63.9	77.7	137.7			1
	8	●	0920S10H08	92.4	106.2	167.7			1

Grade: ACT100

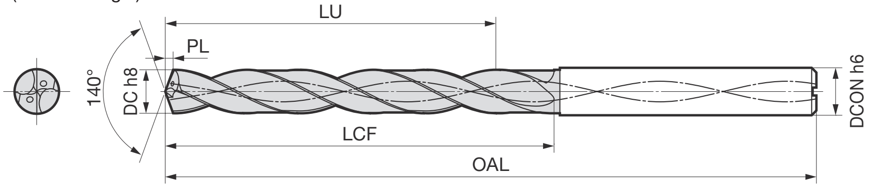
NeXEO MDE-H Type (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat-resistant Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy | Copper Alloy

NX Coat | Coolant Hole | 3D | 5D | 8D

*Refer to N38 for the tolerance of h6 and h8

Fig. 1 (double margin)



Diameter ø9.24 to 10.4mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
9.24	5	●	MDE 0924S10H05	63.8	77.7	137.7	1.7	10.0	1
9.26	5	●	0926S10H05	63.8	77.7	137.7			1
9.3	3	●	MDE 0930S10H03	35.3	49.2	107.7	1.7	10.0	1
	5	●	0930S10H05	63.8	77.7	137.7			1
	8	●	0930S10H08	92.3	106.2	167.7			1
9.36	5	●	MDE 0936S10H05	63.6	77.7	137.7	1.7	10.0	1
9.38	5	●	0938S10H05	63.6	77.7	137.7			1
9.4	3	●	MDE 0940S10H03	35.1	49.2	107.7	1.7	10.0	1
	5	●	0940S10H05	63.6	77.7	137.7			1
	8	●	0940S10H08	92.1	106.2	167.7			1
9.5	3	●	MDE 0950S10H03	35.0	49.2	107.7	1.7	10.0	1
	5	●	0950S10H05	63.5	77.7	137.7			1
	8	●	0950S10H08	92.0	106.2	167.7			1
9.52	5	●	MDE 0952S10H05	67.3	81.7	137.7	1.7	10.0	1
9.54	5	●	0954S10H05	67.3	81.7	137.7			1
9.6	3	●	MDE 0960S10H03	37.3	51.7	107.7	1.7	10.0	1
	5	●	0960S10H05	67.3	81.7	137.7			1
	8	●	0960S10H08	97.3	111.7	167.7			1
9.7	3	●	MDE 0970S10H03	37.3	51.8	107.8	1.8	10.0	1
	5	●	0970S10H05	67.3	81.8	137.8			1
	8	●	0970S10H08	97.3	111.8	167.8			1
9.8	3	●	MDE 0980S10H03	37.1	51.8	107.8	1.8	10.0	1
	5	●	0980S10H05	67.1	81.8	137.8			1
	8	●	0980S10H08	97.1	111.8	167.8			1
9.9	3	●	MDE 0990S10H03	37.0	51.8	107.8	1.8	10.0	1
	5	●	0990S10H05	67.0	81.8	137.8			1
	8	●	0990S10H08	97.0	111.8	167.8			1
10.0	3	●	MDE 1000S10H03	36.8	51.8	107.8	1.8	10.0	1
	5	●	1000S10H05	66.8	81.8	137.8			1
	8	●	1000S10H08	96.8	111.8	167.8			1
10.1	3	●	MDE 1010S11H03	39.2	54.3	117.8	1.8	11.0	1
	5	●	1010S11H05	70.7	85.8	150.8			1
	8	●	1010S11H08	102.2	117.3	183.8			1
10.2	3	●	MDE 1020S11H03	39.1	54.4	117.9	1.9	11.0	1
	5	●	1020S11H05	70.6	85.9	150.9			1
	8	●	1020S11H08	102.1	117.4	183.9			1
10.3	3	●	MDE 1030S11H03	39.0	54.4	117.9	1.9	11.0	1
	5	●	1030S11H05	70.5	85.9	150.9			1
	8	●	1030S11H08	102.0	117.4	183.9			1
10.4	3	●	MDE 1040S11H03	38.8	54.4	117.9	1.9	11.0	1
	5	●	1040S11H05	70.3	85.9	150.9			1
	8	●	1040S11H08	101.8	117.4	183.9			1

Grade: ACT100

Diameter ø10.5 to 11.7mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
10.5	3	●	MDE 1050S11H03	38.7	54.4	117.9	1.9	11.0	1
	5	●	1050S11H05	70.2	85.9	150.9			1
	8	●	1050S11H08	101.7	117.4	183.9			1
10.6	3	●	MDE 1060S11H03	41.0	56.9	117.9	1.9	11.0	1
	5	●	1060S11H05	74.0	89.9	150.9			1
	8	●	1060S11H08	107.0	122.9	183.9			1
10.7	3	●	MDE 1070S11H03	40.9	56.9	117.9	1.9	11.0	1
	5	●	1070S11H05	73.9	89.9	150.9			1
	8	●	1070S11H08	106.9	122.9	183.9			1
10.8	3	●	MDE 1080S11H03	40.8	57.0	118.0	2.0	11.0	1
	5	●	1080S11H05	73.8	90.0	151.0			1
	8	●	1080S11H08	106.8	123.0	184.0			1
10.9	3	●	MDE 1090S11H03	40.7	57.0	118.0	2.0	11.0	1
	5	●	1090S11H05	73.7	90.0	151.0			1
	8	●	1090S11H08	106.7	123.0	184.0			1
11.0	3	●	MDE 1100S11H03	40.5	57.0	118.0	2.0	11.0	1
	5	●	1100S11H05	73.5	90.0	151.0			1
	8	●	1100S11H08	106.5	123.0	184.0			1
11.1	3	●	MDE 1110S12H03	42.9	59.5	124.0	2.0	12.0	1
	5	●	1110S12H05	77.4	94.0	160.0			1
	8	●	1110S12H08	111.9	128.5	196.0			1
11.2	3	●	MDE 1120S12H03	42.7	59.5	124.0	2.0	12.0	1
	5	●	1120S12H05	77.2	94.0	160.0			1
	8	●	1120S12H08	111.7	128.5	196.0			1
11.22	5	●	MDE 1122S12H05	77.2	94.0	160.0	2.0	12.0	1
11.24	5	●	1124S12H05	77.2	94.0	160.0			1
11.3	3	●	MDE 1130S12H03	42.7	59.6	124.1	2.1	12.0	1
	5	●	1130S12H05	77.2	94.1	160.1			1
	8	●	1130S12H08	111.7	128.6	196.1			1
11.36	5	●	MDE 1136S12H05	77.0	94.1	160.1	2.1	12.0	1
11.38	5	●	1138S12H05	77.0	94.1	160.1			1
11.4	3	●	MDE 1140S12H03	42.5	59.6	124.1	2.1	12.0	1
	5	●	1140S12H05	77.0	94.1	160.1			1
	8	●	1140S12H08	111.5	128.6	196.1			1
11.5	3	●	MDE 1150S12H03	42.4	59.6	124.1	2.1	12.0	1
	5	●	1150S12H05	76.9	94.1	160.1			1
	8	●	1150S12H08	111.4	128.6	196.1			1
11.6	3	●	MDE 1160S12H03	44.7	62.1	124.1	2.1	12.0	1
	5	●	1160S12H05	80.7	98.1	160.1			1
	8	●	1160S12H08	116.7	134.1	196.1			1
11.7	3	●	MDE 1170S12H03	44.6	62.1	124.1	2.1	12.0	1
	5	●	1170S12H05	80.6	98.1	160.1			1
	8	●	1170S12H08	116.6	134.1	196.1			1

Grade: ACT100

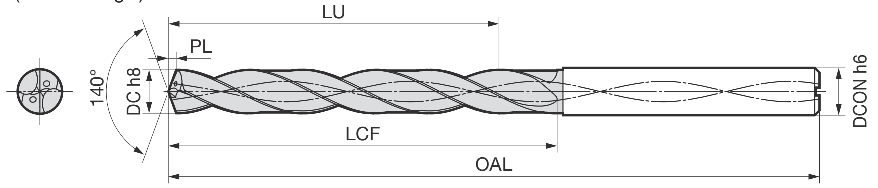
NeXEO MDE-H Type (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat-resistant Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy | Copper Alloy

NX Coat | Coolant Hole | 3D | 5D | 8D

*Refer to N38 for the tolerance of h6 and h8

Fig. 1 (double margin)



Diameter ø11.8 to 13.1mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
	3	●	MDE 1180S12H03	44.4	62.1	124.1			1
11.8	5	●	1180S12H05	80.4	98.1	160.1	2.1	12.0	1
	8	●	1180S12H08	116.4	134.1	196.1			1
	3	●	MDE 1190S12H03	44.4	62.2	124.2			1
11.9	5	●	1190S12H05	80.4	98.2	160.2	2.2	12.0	1
	8	●	1190S12H08	116.4	134.2	196.2			1
	3	●	MDE 1200S12H03	44.2	62.2	124.2			1
12.0	5	●	1200S12H05	80.2	98.2	160.2	2.2	12.0	1
	8	●	1200S12H08	116.2	134.2	196.2			1
	3	●	MDE 1210S13H03	46.6	64.7	130.2			1
12.1	5	●	1210S13H05	84.1	102.2	169.2	2.2	13.0	1
	8	●	1210S13H08	121.6	139.7	208.2			1
	3	●	MDE 1220S13H03	46.4	64.7	130.2			1
12.2	5	●	1220S13H05	83.9	102.2	169.2	2.2	13.0	1
	8	●	1220S13H08	121.4	139.7	208.2			1
	3	●	MDE 1230S13H03	46.3	64.7	130.2			1
12.3	5	●	1230S13H05	83.8	102.2	169.2	2.2	13.0	1
	8	●	1230S13H08	121.3	139.7	208.2			1
	3	●	MDE 1240S13H03	46.2	64.8	130.3			1
12.4	5	●	1240S13H05	83.7	102.3	169.3	2.3	13.0	1
	8	●	1240S13H08	121.2	139.8	208.3			1
	3	●	MDE 1250S13H03	46.1	64.8	130.3			1
12.5	5	●	1250S13H05	83.6	102.3	169.3	2.3	13.0	1
	8	●	1250S13H08	121.1	139.8	208.3			1
	3	●	MDE 1260S13H03	48.4	67.3	130.3			1
12.6	5	●	1260S13H05	87.4	106.3	169.3	2.3	13.0	1
	8	●	1260S13H08	126.4	145.3	208.3			1
	3	●	MDE 1270S13H03	48.3	67.3	130.3			1
12.7	5	●	1270S13H05	87.3	106.3	169.3	2.3	13.0	1
	8	●	1270S13H08	126.3	145.3	208.3			1
	3	●	MDE 1280S13H03	48.1	67.3	130.3			1
12.8	5	●	1280S13H05	87.1	106.3	169.3	2.3	13.0	1
	8	●	1280S13H08	126.1	145.3	208.3			1
	3	●	MDE 1290S13H03	48.0	67.3	130.3			1
12.9	5	●	1290S13H05	87.0	106.3	169.3	2.3	13.0	1
	8	●	1290S13H08	126.0	145.3	208.3			1
	3	●	MDE 1300S13H03	47.9	67.4	130.4			1
13.0	5	●	1300S13H05	86.9	106.4	169.4	2.4	13.0	1
	8	●	1300S13H08	125.9	145.4	208.4			1
	3	●	MDE 1310S14H03	50.3	69.9	136.4			1
13.1	5	●	1310S14H05	90.8	110.4	178.4	2.4	14.0	1
	8	●	1310S14H08	131.3	150.9	220.4			1

Grade: ACT100

Diameter ø13.2 to 14.5mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
	3	●	MDE 1320S14H03	50.1	69.9	136.4			1
13.2	5	●	1320S14H05	90.6	110.4	178.4	2.4	14.0	1
	8	●	1320S14H08	131.1	150.9	220.4			1
	3	●	MDE 1330S14H03	50.0	69.9	136.4			1
13.3	5	●	1330S14H05	90.5	110.4	178.4	2.4	14.0	1
	8	●	1330S14H08	131.0	150.9	220.4			1
	3	●	MDE 1340S14H03	49.8	69.9	136.4			1
13.4	5	●	1340S14H05	90.3	110.4	178.4	2.4	14.0	1
	8	●	1340S14H08	130.8	150.9	220.4			1
	3	●	MDE 1350S14H03	49.8	70.0	136.5			1
13.5	5	●	1350S14H05	90.3	110.5	178.5	2.5	14.0	1
	8	●	1350S14H08	130.8	151.0	220.5			1
	3	●	MDE 1360S14H03	52.1	72.5	136.5			1
13.6	5	●	1360S14H05	94.1	114.5	178.5	2.5	14.0	1
	8	●	1360S14H08	136.1	156.5	220.5			1
	3	●	MDE 1370S14H03	52.0	72.5	136.5			1
13.7	5	●	1370S14H05	94.0	114.5	178.5	2.5	14.0	1
	8	●	1370S14H08	136.0	156.5	220.5			1
	3	●	MDE 1380S14H03	51.8	72.5	136.5			1
13.8	5	●	1380S14H05	93.8	114.5	178.5	2.5	14.0	1
	8	●	1380S14H08	135.8	156.5	220.5			1
	3	●	MDE 1390S14H03	51.7	72.5	136.5			1
13.9	5	●	1390S14H05	93.7	114.5	178.5	2.5	14.0	1
	8	●	1390S14H08	135.7	156.5	220.5			1
	3	●	MDE 1400S14H03	51.5	72.5	136.5			1
14.0	5	●	1400S14H05	93.5	114.5	178.5	2.5	14.0	1
	8	●	1400S14H08	135.5	156.5	220.5			1
	3	●	MDE 1410S15H03	54.0	75.1	142.6			1
14.1	5	●	1410S15H05	97.5	118.6	187.6	2.6	15.0	1
	8	●	1410S15H08	141.0	162.1	232.6			1
	3	●	MDE 1420S15H03	53.8	75.1	142.6			1
14.2	5	●	1420S15H05	97.3	118.6	187.6	2.6	15.0	1
	8	●	1420S15H08	140.8	162.1	232.6			1
	3	●	MDE 1430S15H03	53.7	75.1	142.6			1
14.3	5	●	1430S15H05	97.2	118.6	187.6	2.6	15.0	1
	8	●	1430S15H08	140.7	162.1	232.6			1
	3	●	MDE 1440S15H03	53.5	75.1	142.6			1
14.4	5	●	1440S15H05	97.0	118.6	187.6	2.6	15.0	1
	8	●	1440S15H08	140.5	162.1	232.6			1
	3	●	MDE 1450S15H03	53.4	75.1	142.6			1
14.5	5	●	1450S15H05	96.9	118.6	187.6	2.6	15.0	1
	8	●	1450S15H08	140.4	162.1	232.6			1

Grade: ACT100

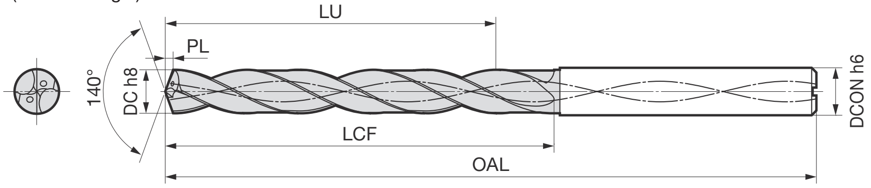
NeXEO MDE-H Type (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat-resistant Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy | Copper Alloy

NX Coat | Coolant Hole | 3D | 5D | 8D

*Refer to N38 for the tolerance of h6 and h8

Fig. 1 (double margin)



Diameter ø14.6 to 15.9mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
14.6	3	●	**MDE 1460S15H03**	55.8	77.7	142.7	2.7	15.0	1
	5	●	**1460S15H05**	100.8	122.7	187.7			1
	8	●	**1460S15H08**	145.8	167.7	232.7			1
14.7	3	●	**MDE 1470S15H03**	55.7	77.7	142.7	2.7	15.0	1
	5	●	**1470S15H05**	100.7	122.7	187.7			1
	8	●	**1470S15H08**	145.7	167.7	232.7			1
14.8	3	●	**MDE 1480S15H03**	55.5	77.7	142.7	2.7	15.0	1
	5	●	**1480S15H05**	100.5	122.7	187.7			1
	8	●	**1480S15H08**	145.5	167.7	232.7			1
14.9	3	●	**MDE 1490S15H03**	55.4	77.7	142.7	2.7	15.0	1
	5	●	**1490S15H05**	100.4	122.7	187.7			1
	8	●	**1490S15H08**	145.4	167.7	232.7			1
15.0	3	●	**MDE 1500S15H03**	55.2	77.7	142.7	2.7	15.0	1
	5	●	**1500S15H05**	100.2	122.7	187.7			1
	8	●	**1500S15H08**	145.2	167.7	232.7			1
15.1	3	●	**MDE 1510S16H03**	57.6	80.2	148.7	2.7	16.0	1
	5	●	**1510S16H05**	104.1	126.7	196.7			1
	8	●	**1510S16H08**	150.6	173.2	244.7			1
15.2	3	●	**MDE 1520S16H03**	57.5	80.3	148.8	2.8	16.0	1
	5	●	**1520S16H05**	104.0	126.8	196.8			1
	8	●	**1520S16H08**	150.5	173.3	244.8			1
15.3	3	●	**MDE 1530S16H03**	57.4	80.3	148.8	2.8	16.0	1
	5	●	**1530S16H05**	103.9	126.8	196.8			1
	8	●	**1530S16H08**	150.4	173.3	244.8			1
15.4	3	●	**MDE 1540S16H03**	57.2	80.3	148.8	2.8	16.0	1
	5	●	**1540S16H05**	103.7	126.8	196.8			1
	8	●	**1540S16H08**	150.2	173.3	244.8			1
15.5	3	●	**MDE 1550S16H03**	57.1	80.3	148.8	2.8	16.0	1
	5	●	**1550S16H05**	103.6	126.8	196.8			1
	8	●	**1550S16H08**	150.1	173.3	244.8			1
15.6	3	●	**MDE 1560S16H03**	59.4	82.8	148.8	2.8	16.0	1
	5	●	**1560S16H05**	107.4	130.8	196.8			1
	8	●	**1560S16H08**	155.4	178.8	244.8			1
15.7	3	●	**MDE 1570S16H03**	59.4	82.9	148.9	2.9	16.0	1
	5	●	**1570S16H05**	107.4	130.9	196.9			1
	8	●	**1570S16H08**	155.4	178.9	244.9			1
15.8	3	●	**MDE 1580S16H03**	59.2	82.9	148.9	2.9	16.0	1
	5	●	**1580S16H05**	107.2	130.9	196.9			1
	8	●	**1580S16H08**	155.2	178.9	244.9			1
15.9	3	●	**MDE 1590S16H03**	59.1	82.9	148.9	2.9	16.0	1
	5	●	**1590S16H05**	107.1	130.9	196.9			1
	8	●	**1590S16H08**	155.1	178.9	244.9			1

Grade: ACT100

Diameter ø16.0 to 20.0mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
16.0	3	●	**MDE 1600S16H03**	58.9	82.9	148.9	2.9	16.0	1
	5	●	**1600S16H05**	106.9	130.9	196.9			1
	8	●	**1600S16H08**	154.9	178.9	244.9			1
16.5	3	●	**MDE 1650S17H03**	60.8	85.5	155.0	3.0	17.0	1
	5	●	**1650S17H05**	110.3	135.0	206.0			1
17.0	3	●	**MDE 1700S17H03**	62.6	88.1	155.1	3.1	17.0	1
	5	●	**1700S17H05**	113.6	139.1	206.1			1
17.5	3	●	**MDE 1750S18H03**	64.5	90.7	161.2	3.2	18.0	1
	5	●	**1750S18H05**	116.9	143.2	217.3			1
18.0	3	●	**MDE 1800S18H03**	66.3	93.3	161.3	3.3	18.0	1
	5	●	**1800S18H05**	120.3	147.3	217.3			1
18.5	3	●	**MDE 1850S19H03**	68.2	95.9	167.4	3.4	19.0	1
	5	●	**1850S19H05**	123.6	151.4	224.4			1
19.0	3	●	**MDE 1900S19H03**	70.0	98.5	167.5	3.5	19.0	1
	5	●	**1900S19H05**	127.0	155.5	224.5			1
19.5	3	●	**MDE 1950S20H03**	71.8	101.0	173.5	3.5	20.0	1
	5	●	**1950S20H05**	130.3	159.5	233.5			1
20.0	3	●	**MDE 2000S20H03**	73.6	103.6	173.6	3.6	20.0	1
	5	●	**2000S20H05**	133.6	163.6	233.6			1

Grade: ACT100

Recommended Cutting Conditions (MDE-H Type Internal Coolant Supply 3D/5D/8D)

1. The recommended cutting conditions below are for cases where a water soluble coolant is used.
2. MQL coolant is also usable. Note that external mixing MQL equipment may not generate MQL with a shank diameter (DCON) of ø16mm or more.
3. When mounting the drill in the collet, make sure that runout around the cutting edge is no greater than 0.02mm.
4. Make sure the flute does not enter the collet.
5. If the surface of the workpiece is abnormally shaped (tilted, interrupted etc.), reduce the feed rate to about half when feeding the drill in the workpiece.
   *If stable drilling is still not possible, pre-machining of the flat surface with the MDF Flat MULTIDRILL is recommended.
6. When performing interrupted through drilling, reduce the feed rate to about half the feed rate used prior to this process.

Work Material		Mild Steel/Low Carbon Steel SS400/S15C up to 160HB		Carbon Steel S35C/S50C up to 230HB		Alloy Steel SCM/SCr 20 to 30HRC		Alloy Steel SCM/SCr 30 to 38HRC	
Cutting Speed	Dia. < ø3	30 to 80m/min		30 to 80m/min		30 to 80m/min		30 to 80m/min	
	Dia. ≥ ø3	60 to 100m/min		60 to 120m/min		50 to 100m/min		40 to 80m/min	
Diameter (DC)		Spindle Speed (min^{-1})	Feed Rate (mm/rev)	Spindle Speed (min^{-1})	Feed Rate (mm/rev)	Spindle Speed (min^{-1})	Feed Rate (mm/rev)	Spindle Speed (min^{-1})	Feed Rate (mm/rev)
ø1.0		9,500	0.02 to 0.04	9,500	0.02 to 0.04	9,500	0.02 to 0.04	9,500	0.02 to 0.03
ø1.5		8,500	0.03 to 0.06	8,500	0.03 to 0.06	8,500	0.03 to 0.06	8,500	0.03 to 0.06
ø2.0		9,000	0.04 to 0.08	8,000	0.04 to 0.08	8,000	0.04 to 0.08	8,000	0.04 to 0.08
ø2.5		9,500	0.04 to 0.08	9,000	0.04 to 0.08	8,500	0.04 to 0.08	7,600	0.04 to 0.08
ø3.0		9,600	0.05 to 0.12	8,500	0.05 to 0.12	7,500	0.05 to 0.12	6,400	0.05 to 0.12
ø4.0		7,200	0.07 to 0.17	6,400	0.07 to 0.17	5,600	0.07 to 0.17	4,800	0.07 to 0.17
ø5.0		5,800	0.08 to 0.20	5,100	0.08 to 0.20	4,500	0.08 to 0.20	3,900	0.08 to 0.20
ø6.0		4,800	0.10 to 0.20	4,300	0.10 to 0.20	3,800	0.10 to 0.20	3,200	0.10 to 0.20
ø7.0		4,100	0.12 to 0.23	3,700	0.12 to 0.23	3,200	0.12 to 0.23	2,800	0.12 to 0.23
ø8.0		3,600	0.12 to 0.25	3,200	0.12 to 0.25	2,800	0.12 to 0.25	2,400	0.12 to 0.25
ø9.0		3,200	0.14 to 0.25	2,900	0.14 to 0.25	2,500	0.14 to 0.25	2,200	0.14 to 0.25
ø10.0		2,900	0.16 to 0.28	2,600	0.16 to 0.28	2,300	0.16 to 0.28	2,000	0.16 to 0.28
ø11.0		2,700	0.18 to 0.30	2,400	0.18 to 0.30	2,100	0.18 to 0.30	1,800	0.18 to 0.30
ø12.0		2,400	0.20 to 0.30	2,200	0.20 to 0.30	1,900	0.20 to 0.30	1,600	0.20 to 0.30
ø14.0		2100	0.20 to 0.30	1,900	0.20 to 0.30	1,600	0.20 to 0.30	1,400	0.20 to 0.30
ø16.0		1,800	0.20 to 0.30	1,600	0.20 to 0.30	1,400	0.20 to 0.30	1,200	0.20 to 0.30
ø18.0		1,600	0.20 to 0.30	1,500	0.20 to 0.30	1,300	0.20 to 0.30	1,100	0.20 to 0.30
ø20.0		1,500	0.20 to 0.30	1,300	0.20 to 0.30	1,200	0.20 to 0.30	1,000	0.20 to 0.30
High-efficiency Product		HGS Type		HGS Type		HGS Type		HGS Type	

Work Material		Cast Iron FC250 to 280HB		Ductile Cast Iron FCD450/FCD600 to 270HB		Stainless Steel SUS304/SUS410 to 200HB		Special Steel/Pre-hardened Steel SKS2/SKD61 (non-tempered) 30 to 38 HRC	
Cutting Speed	Dia. < ø3	30 to 80m/min		30 to 80m/min		30 to 80m/min		30 to 60m/min	
	Dia. ≥ ø3	60 to 100m/min		50 to 100m/min		40 to 80m/min		30 to 60m/min	
Diameter (DC)		Spindle Speed (min^{-1})	Feed Rate (mm/rev)	Spindle Speed (min^{-1})	Feed Rate (mm/rev)	Spindle Speed (min^{-1})	Feed Rate (mm/rev)	Spindle Speed (min^{-1})	Feed Rate (mm/rev)
ø1.0		9,500	0.02 to 0.04	9,500	0.02 to 0.04	9,500	0.02 to 0.03	9,500	0.02 to 0.03
ø1.5		8,500	0.03 to 0.06	8,500	0.03 to 0.06	8,500	0.02 to 0.05	8,500	0.02 to 0.04
ø2.0		8,000	0.04 to 0.08	8,000	0.04 to 0.08	8,000	0.03 to 0.06	7,100	0.03 to 0.06
ø2.5		9,000	0.04 to 0.08	8,500	0.04 to 0.08	7,600	0.03 to 0.07	5,700	0.03 to 0.06
ø3.0		8,500	0.06 to 0.15	7,500	0.05 to 0.12	6,400	0.05 to 0.12	4,800	0.05 to 0.10
ø4.0		6,400	0.08 to 0.18	5,600	0.07 to 0.17	4,800	0.07 to 0.17	3,600	0.06 to 0.13
ø5.0		5,100	0.10 to 0.20	4,500	0.08 to 0.20	3,900	0.08 to 0.20	2,900	0.07 to 0.15
ø6.0		4,300	0.12 to 0.23	3,800	0.10 to 0.20	3,200	0.10 to 0.20	2,400	0.08 to 0.18
ø7.0		3,700	0.12 to 0.23	3,200	0.12 to 0.23	2,800	0.10 to 0.23	2,100	0.10 to 0.20
ø8.0		3,200	0.18 to 0.25	2,800	0.12 to 0.25	2,400	0.10 to 0.20	1,800	0.12 to 0.22
ø9.0		2,900	0.17 to 0.25	2,500	0.14 to 0.25	2,200	0.12 to 0.23	1,600	0.14 to 0.22
ø10.0		2,600	0.18 to 0.28	2,300	0.16 to 0.28	2,000	0.12 to 0.23	1,500	0.16 to 0.25
ø11.0		2,400	0.20 to 0.30	2,100	0.18 to 0.30	1,800	0.15 to 0.25	1,400	0.18 to 0.28
ø12.0		2,200	0.20 to 0.30	1,900	0.20 to 0.30	1,600	0.15 to 0.25	1,200	0.18 to 0.28
ø14.0		1,900	0.20 to 0.30	1,600	0.20 to 0.30	1,400	0.15 to 0.25	1,100	0.18 to 0.30
ø16.0		1,600	0.20 to 0.30	1,400	0.20 to 0.30	1,200	0.15 to 0.25	900	0.18 to 0.30
ø18.0		1,500	0.20 to 0.30	1,300	0.20 to 0.30	1,100	0.15 to 0.25	800	0.18 to 0.30
ø20.0		1,300	0.20 to 0.30	1,200	0.20 to 0.30	1,000	0.15 to 0.25	720	0.18 to 0.30
High-efficiency Product		HX Type (HY Type)		HX Type (HY Type)		MDM Type		HGS Type	

MDM Type

General Features

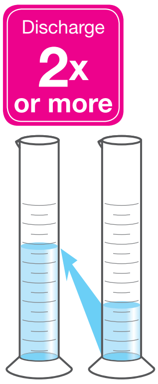
- Oil hole shape for excellent cooling performance achieves longer tool life.
- Effective cooling of the cutting edge created through fluid analysis.
  Reduces adhesion chipping.
- Chip control and work hardening problems resolved.
- Outstanding stability in machining of stainless steel and exotic alloys.

Features and Applications

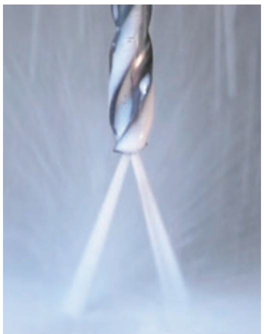
- Greater discharge of coolant for effective cooling of the cutting edge.

Bean Jet Cooling *Utilized for drill diameters of ø4.1mm or larger

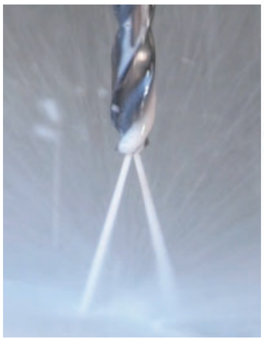
Bean-shaped oil hole supplies coolant on the cutting edge for effective cooling of the cutting edge

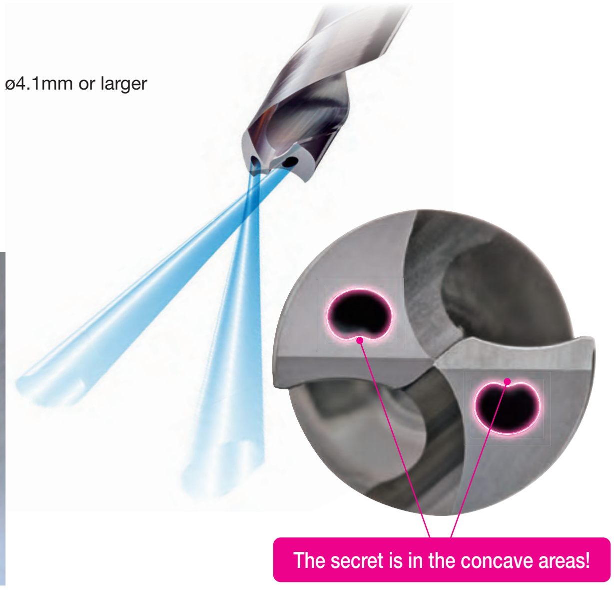


MDM Type

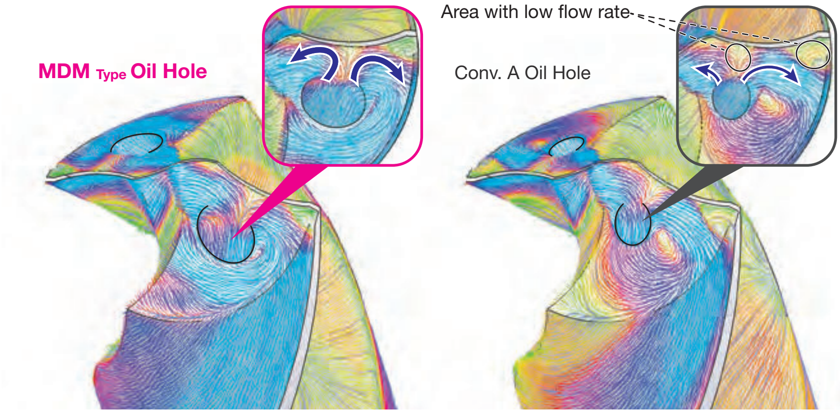


Conventional Drill A





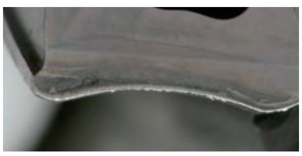
- Effective cooling of the cutting edge created through fluid analysis.



Analysed at tool rotation speed of 3,200min^{-1} Low flow rate ▮▮▮ High flow rate

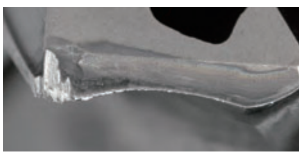
- Significantly reduces adhesion on the cutting edge, preventing adhesion chipping

MDM Type



Minimal Adhesion, Able to Continue

Competitor's Product A

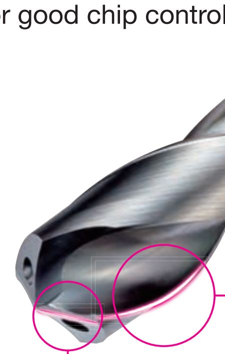


Adhesion breakage in peripheral edge

Work Material	: SUS304
Machine	: BT30 vertical machining centre
Tool	: MDM 0800S08H05 (ø8mmx5D)
Cutting Conditions	: v_c= 80m/min, f= 0.25mm/rev, H= 40mm (through), internal coolant supply (water soluble)
Drilling Distance	: 40m

MDM Type

● New cutting edge design that emphasises sharpness for good chip control

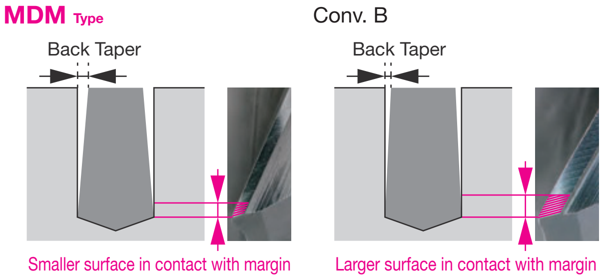


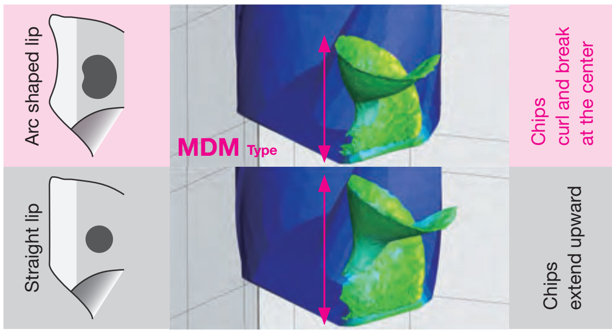
MDM Type	Competitor's Product B

Work Material : SUS304
Machine : BT30 vertical machining centre
Tool : MDM 0400S04H05 (ø4.0mmx5D)
Cutting Conditions : v_c= 80m/min, f= 0.10mm/rev, internal coolant supply (water soluble)

● Narrow margin and large back taper

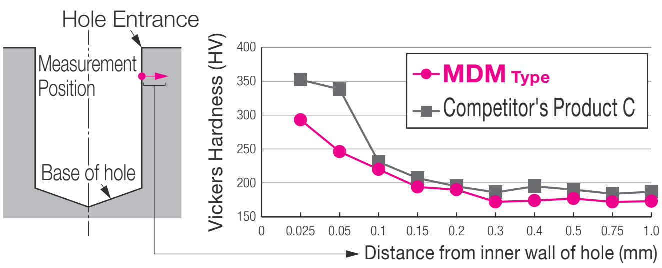
Reducing the contact area with the workpiece, suppressing temperature rise at the margin





● Suppressing work hardening on drilled hole wall

Reduces cutting load, reducing damage to the drill and increasing the life of the reamer and tap used in post-processing



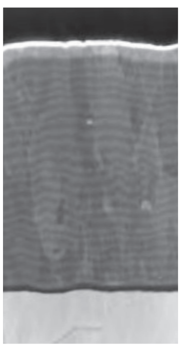
Work Material : SUS304
Machine : BT30 vertical machining centre
Tool : MDM 0800S08H05 (ø8.0mmx5D)
Cutting Conditions : v_c= 80m/min, f= 0.20mm/rev, H= 40mm (through), internal coolant supply (water soluble)

● Grades ideal for stainless steel and exotic alloy drilling

ACT70

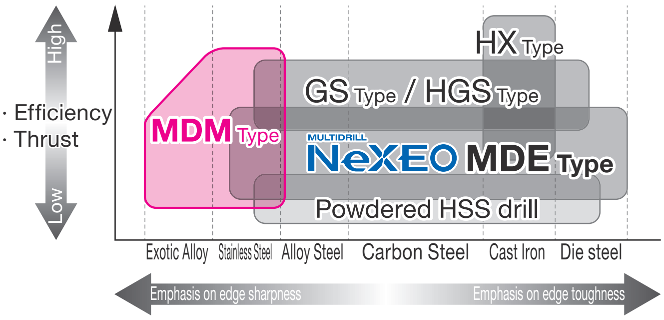
● **NX Coating**

ABSOTECH™ technology for high quality, high hardness, high strength and excellent wear resistance and thermal resistance.



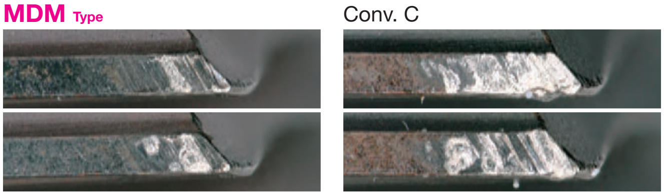
Super multi-layered TiAlCrSi coating
Hardness (HV): 46GPa
Oxidisation Starting Temperature: 1,100°C

Highly Adhesive Layer



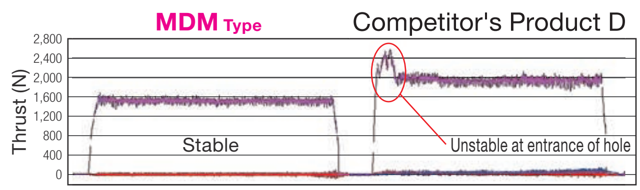
● NX coating reduces margin wear

MDM Type	Conv. C



Work Material : SUS304, Machine: BT30 vertical machining centre
Tool : MDM 0800S08H05 (ø8.0mmx5D)
Cutting Conditions : v_c= 80m/min, f= 0.20mm/rev, H= 40mm (through), internal coolant supply (water soluble)

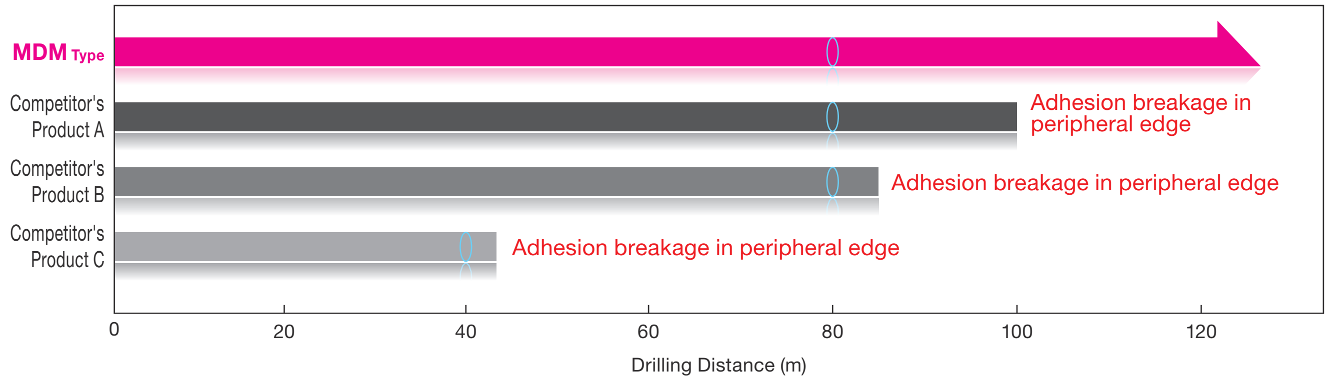
● Reduces thrust for stable drilling from the entrance to the exit of the hole



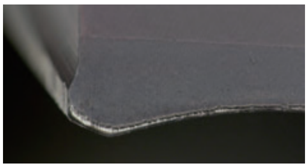
Work Material : SUS304, Machine: BT30 vertical machining centre
Tool : MDM 0800S08H05 (ø8.0mmx5D)
Cutting Conditions : v_c= 80m/min, f= 0.20mm/rev, H= 40mm (through), internal coolant supply (water soluble)

Application Examples

Austenitic Stainless Steel (Machining Centre)

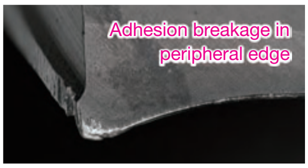


MDM Type After drilling 80m

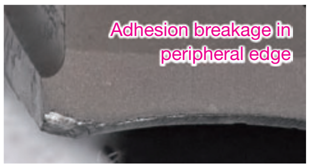


Competitor's Product A After drilling 80m

Competitor's Product B After drilling 80m

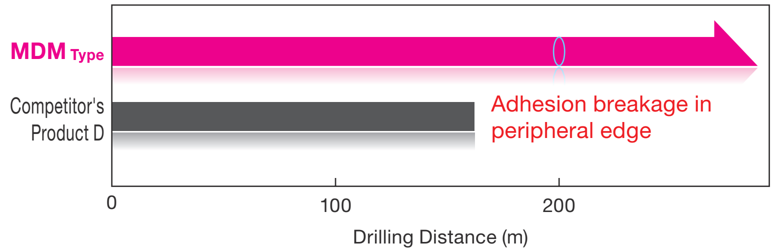


Competitor's Product C After drilling 40m

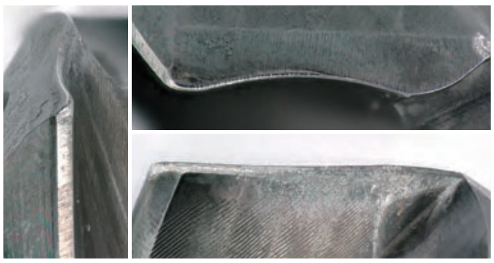


Work Material: SUS304, Machine: BT30 vertical machining centre, Tool: MDM 0800S08H05 (ø8mm×5D)
Cutting Conditions: v_c= 80m/min, f= 0.20mm/rev, H= 40mm (through), internal coolant supply (water soluble)

Austenitic Stainless Steel (Small Lathe)

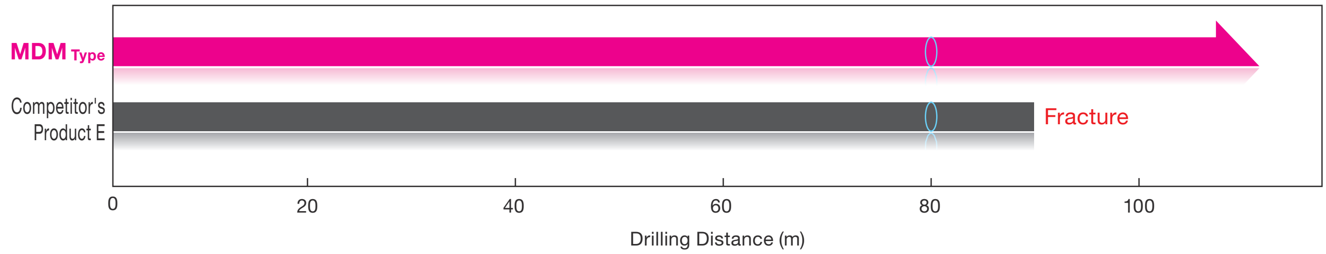


MDM Type After drilling 200m

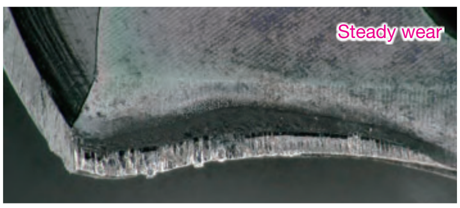


Work Material: SUS304, Machine: CNC autolathe (workpiece rotates), Tool: MDM 0540S06H03 (ø5.4mmx3D)
Cutting Conditions: v_c= 47m/min, f= 0.12mm/rev, H= 25mm (blind), internal coolant supply (non-water-soluble)

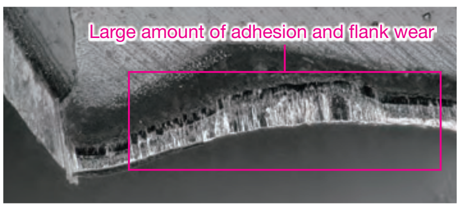
Stainless Steel with Deposition Hardened Structure



MDM Type After drilling 80m

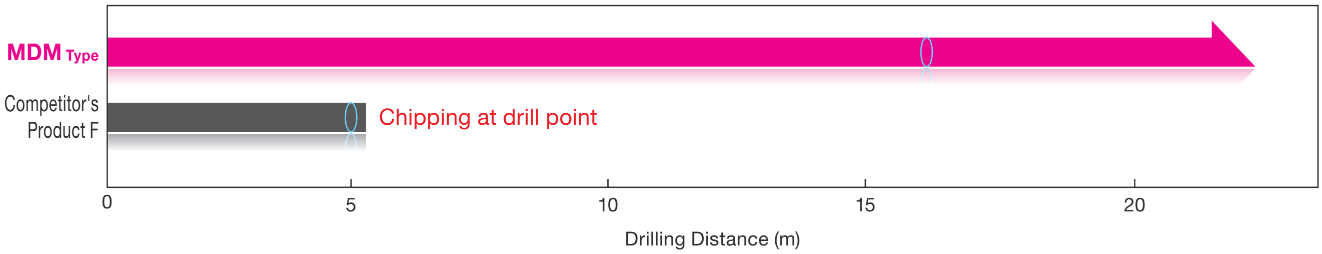


Competitor's Product E After drilling 80m

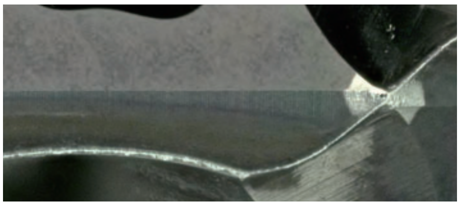


Work Material: SUS630, Machine: BT30 vertical machining centre, Tool: MDM 0400S04H05 (ø4mm×5D)
Cutting Conditions: v_c= 50m/min, f= 0.10mm/rev, H= 14mm (blind), internal coolant supply (water soluble)

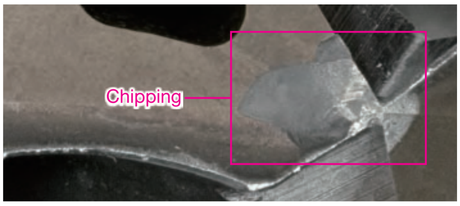
Duplex Stainless Steel



MDM Type After drilling 16m

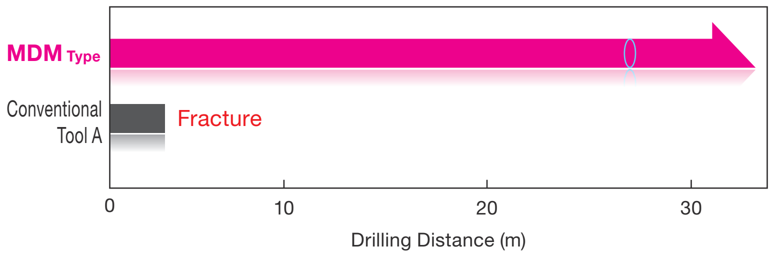


Competitor's Product F After drilling 5m

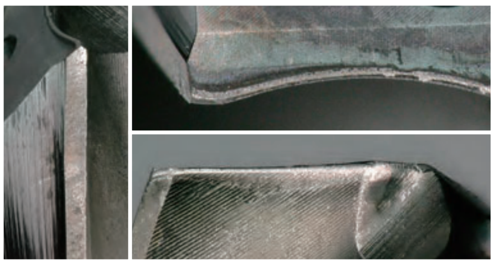


Work Material: SUS329J4L, Machine: BT30 vertical machining centre, Tool: MDM 0800S05H05 (ø8mm×5D)
Cutting Conditions: v_c= 60m/min, f= 0.20mm/rev, H= 30mm (through), internal coolant supply (water soluble)

Titanium Alloy



MDM Type After drilling 27m

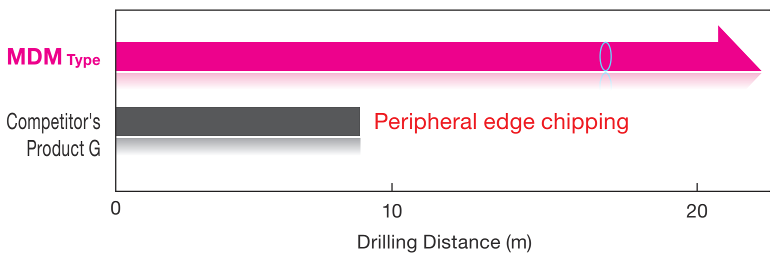


MDM Type

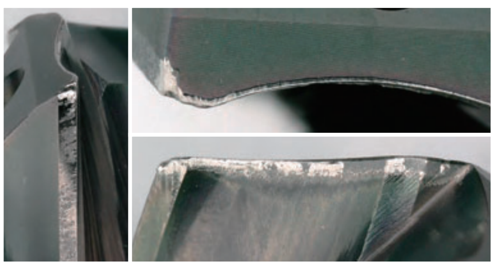
Conventional Tool A

Work Material: Ti-6Al-4V, Machine: BT50 vertical machining centre, Tool: MDM 0500S05H05 (ø5mm×5D)
Cutting Conditions: v_c= 40m/min, f= 0.12mm/rev, H= 19mm (blind), internal coolant supply (water soluble)

Heat-resistant Cast Steel



MDM Type After drilling 17.1m



Work Material: SCH13X equivalent, Machine: BT50 vertical machining centre, Tool: MDM 0880S09H03 (ø8.8mmx3D)
Cutting Conditions: v_c= 50m/min, f= 0.11mm/rev, H= 18mm (blind, through), internal coolant supply (water soluble)

MDM Type (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Stainless Steel | Ti Alloy | Heat-resistant Steel | Cast Iron | Ductile Cast Iron

NX Coat 3D 5D

*Bean Jet Cooling is applicable at diameters of ø4.1mm and up

*Refer to N38 for the tolerance of h6 and h8

Fig. 1 (diameter under ø4.1)

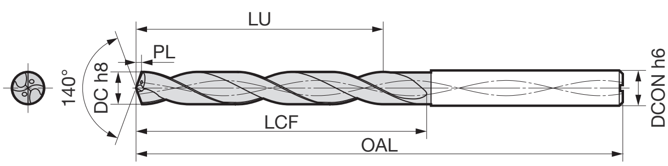
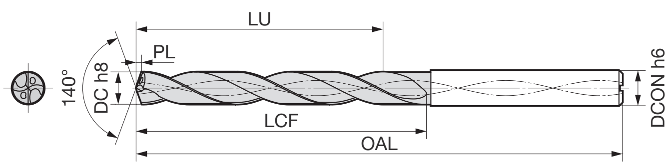


Fig. 2 (diameter ø4.1 or larger) **Bean Jet Cooling**



Diameter ø3.0 to 4.9mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
3.0	3	●	MDM 0300S03H03	14.0	18.5	68.5	0.5	3.0	1
	5	●	0300S03H05	24.0	28.5	78.5			1
3.1	3	●	MDM 0310S04H03	16.0	20.6	72.6	0.6	4.0	1
	5	●	0310S04H05	28.0	32.6	86.6			1
3.2	3	●	MDM 0320S04H03	15.8	20.6	72.6	0.6	4.0	1
	5	●	0320S04H05	27.8	32.6	86.6			1
3.3	3	●	MDM 0330S04H03	15.7	20.6	72.6	0.6	4.0	1
	5	●	0330S04H05	27.7	32.6	86.6			1
3.4	3	●	MDM 0340S04H03	15.5	20.6	72.6	0.6	4.0	1
	5	●	0340S04H05	27.5	32.6	86.6			1
3.5	3	●	MDM 0350S04H03	15.4	20.6	72.6	0.6	4.0	1
	5	●	0350S04H05	27.4	32.6	86.6			1
3.6	3	●	MDM 0360S04H03	17.8	23.2	72.7	0.7	4.0	1
	5	●	0360S04H05	31.3	36.7	86.7			1
3.7	3	●	MDM 0370S04H03	17.7	23.2	72.7	0.7	4.0	1
	5	●	0370S04H05	31.2	36.7	86.7			1
3.8	3	●	MDM 0380S04H03	17.5	23.2	72.7	0.7	4.0	1
	5	●	0380S04H05	31.0	36.7	86.7			1
3.9	3	●	MDM 0390S04H03	17.4	23.2	72.7	0.7	4.0	1
	5	●	0390S04H05	30.9	36.7	86.7			1
4.0	3	●	MDM 0400S04H03	17.2	23.2	72.7	0.7	4.0	1
	5	●	0400S04H05	30.7	36.7	86.7			1
4.1	3	●	MDM 0410S05H03	19.6	25.7	80.7	0.7	5.0	2
	5	●	0410S05H05	34.6	40.7	98.7			2
4.2	3	●	MDM 0420S05H03	19.5	25.8	80.8	0.8	5.0	2
	5	●	0420S05H05	34.5	40.8	98.8			2
4.3	3	●	MDM 0430S05H03	19.4	25.8	80.8	0.8	5.0	2
	5	●	0430S05H05	34.4	40.8	98.8			2
4.4	3	●	MDM 0440S05H03	19.2	25.8	80.8	0.8	5.0	2
	5	●	0440S05H05	34.2	40.8	98.8			2
4.5	3	●	MDM 0450S05H03	19.1	25.8	80.8	0.8	5.0	2
	5	●	0450S05H05	34.1	40.8	98.8			2
4.6	3	●	MDM 0460S05H03	21.4	28.3	80.8	0.8	5.0	2
	5	●	0460S05H05	37.9	44.8	98.8			2
4.7	3	●	MDM 0470S05H03	21.4	28.4	80.9	0.9	5.0	2
	5	●	0470S05H05	37.9	44.9	98.9			2
4.8	3	●	MDM 0480S05H03	21.2	28.4	80.9	0.9	5.0	2
	5	●	0480S05H05	37.7	44.9	98.9			2
4.9	3	●	MDM 0490S05H03	21.1	28.4	80.9	0.9	5.0	2
	5	●	0490S05H05	37.6	44.9	98.9			2

Grade: ACT70

Diameter ø5.0 to 6.9mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
5.0	3	●	MDM 0500S05H03	20.9	28.4	80.9	0.9	5.0	2
	5	●	0500S05H05	37.4	44.9	98.9			2
5.1	3	●	MDM 0510S06H03	20.8	28.4	82.9	0.9	6.0	2
	5	●	0510S06H05	37.3	44.9	100.9			2
5.2	3	●	MDM 0520S06H03	20.6	28.4	82.9	0.9	6.0	2
	5	●	0520S06H05	37.1	44.9	100.9			2
5.3	3	●	MDM 0530S06H03	20.6	28.5	83.0	1.0	6.0	2
	5	●	0530S06H05	37.1	45.0	101.0			2
5.4	3	●	MDM 0540S06H03	20.4	28.5	83.0	1.0	6.0	2
	5	●	0540S06H05	36.9	45.0	101.0			2
5.5	3	●	MDM 0550S06H03	20.3	28.5	83.0	1.0	6.0	2
	5	●	0550S06H05	36.8	45.0	101.0			2
5.6	3	●	MDM 0560S06H03	22.6	31.0	83.0	1.0	6.0	2
	5	●	0560S06H05	40.6	49.0	101.0			2
5.7	3	●	MDM 0570S06H03	22.5	31.0	83.0	1.0	6.0	2
	5	●	0570S06H05	40.5	49.0	101.0			2
5.8	3	●	MDM 0580S06H03	22.4	31.1	83.1	1.1	6.0	2
	5	●	0580S06H05	40.4	49.1	101.1			2
5.9	3	●	MDM 0590S06H03	22.3	31.1	83.1	1.1	6.0	2
	5	●	0590S06H05	40.3	49.1	101.1			2
6.0	3	●	MDM 0600S06H03	22.1	31.1	83.1	1.1	6.0	2
	5	●	0600S06H05	40.1	49.1	101.1			2
6.1	3	●	MDM 0610S07H03	24.5	33.6	89.1	1.1	7.0	2
	5	●	0610S07H05	44.0	53.1	110.1			2
6.2	3	●	MDM 0620S07H03	24.3	33.6	89.1	1.1	7.0	2
	5	●	0620S07H05	43.8	53.1	110.1			2
6.3	3	●	MDM 0630S07H03	24.2	33.6	89.1	1.1	7.0	2
	5	●	0630S07H05	43.7	53.1	110.1			2
6.4	3	●	MDM 0640S07H03	24.1	33.7	89.2	1.2	7.0	2
	5	●	0640S07H05	43.6	53.2	110.2			2
6.5	3	●	MDM 0650S07H03	24.0	33.7	89.2	1.2	7.0	2
	5	●	0650S07H05	43.5	53.2	110.2			2
6.6	3	●	MDM 0660S07H03	26.3	36.2	89.2	1.2	7.0	2
	5	●	0660S07H05	47.3	57.2	110.2			2
6.7	3	●	MDM 0670S07H03	26.2	36.2	89.2	1.2	7.0	2
	5	●	0670S07H05	47.2	57.2	110.2			2
6.8	3	●	MDM 0680S07H03	26.0	36.2	89.2	1.2	7.0	2
	5	●	0680S07H05	47.0	57.2	110.2			2
6.9	3	●	MDM 0690S07H03	26.0	36.3	89.3	1.3	7.0	2
	5	●	0690S07H05	47.0	57.3	110.3			2

Grade: ACT70

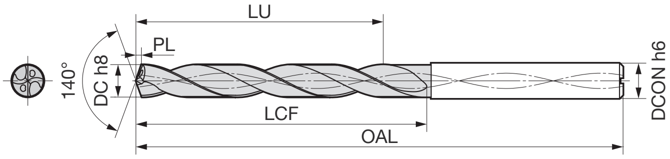
MDM Type (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Stainless Steel | Ti Alloy | Heat-resistant Steel | Cast Iron | Ductile Cast Iron

NX Coat 3D 5D

*Refer to N38 for the tolerance of h6 and h8

Fig 1 ***Bean Jet Cooling***



Diameter ø7.0 to 8.9mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
7.0	3	●	**MDM 0700S07H03**	25.8	36.3	89.3	1.3	7.0	1
	5	●	**0700S07H05**	46.8	57.3	110.3			1
7.1	3	●	**MDM 0710S08H03**	28.2	38.8	95.3	1.3	8.0	1
	5	●	**0710S08H05**	50.7	61.3	119.3			1
7.2	3	●	**MDM 0720S08H03**	28.0	38.8	95.3	1.3	8.0	1
	5	●	**0720S08H05**	50.5	61.3	119.3			1
7.3	3	●	**MDM 0730S08H03**	27.9	38.8	95.3	1.3	8.0	1
	5	●	**0730S08H05**	50.4	61.3	119.3			1
7.4	3	●	**MDM 0740S08H03**	27.7	38.8	95.3	1.3	8.0	1
	5	●	**0740S08H05**	50.2	61.3	119.3			1
7.5	3	●	**MDM 0750S08H03**	27.7	38.9	95.4	1.4	8.0	1
	5	●	**0750S08H05**	50.2	61.4	119.4			1
7.6	3	●	**MDM 0760S08H03**	30.0	41.4	95.4	1.4	8.0	1
	5	●	**0760S08H05**	54.0	65.4	119.4			1
7.7	3	●	**MDM 0770S08H03**	29.9	41.4	95.4	1.4	8.0	1
	5	●	**0770S08H05**	53.9	65.4	119.4			1
7.8	3	●	**MDM 0780S08H03**	29.7	41.4	95.4	1.4	8.0	1
	5	●	**0780S08H05**	53.7	65.4	119.4			1
7.9	3	●	**MDM 0790S08H03**	29.6	41.4	95.4	1.4	8.0	1
	5	●	**0790S08H05**	53.6	65.4	119.4			1
8.0	3	●	**MDM 0800S08H03**	29.5	41.5	95.5	1.5	8.0	1
	5	●	**0800S08H05**	53.5	65.5	119.5			1
8.1	3	●	**MDM 0810S09H03**	31.9	44.0	101.5	1.5	9.0	1
	5	●	**0810S09H05**	57.4	69.5	128.5			1
8.2	3	●	**MDM 0820S09H03**	31.7	44.0	101.5	1.5	9.0	1
	5	●	**0820S09H05**	57.2	69.5	128.5			1
8.3	3	●	**MDM 0830S09H03**	31.6	44.0	101.5	1.5	9.0	1
	5	●	**0830S09H05**	57.1	69.5	128.5			1
8.4	3	●	**MDM 0840S09H03**	31.4	44.0	101.5	1.5	9.0	1
	5	●	**0840S09H05**	56.9	69.5	128.5			1
8.5	3	●	**MDM 0850S09H03**	31.3	44.0	101.5	1.5	9.0	1
	5	●	**0850S09H05**	56.8	69.5	128.5			1
8.6	3	●	**MDM 0860S09H03**	33.7	46.6	101.6	1.6	9.0	1
	5	●	**0860S09H05**	60.7	73.6	128.6			1
8.7	3	●	**MDM 0870S09H03**	33.6	46.6	101.6	1.6	9.0	1
	5	●	**0870S09H05**	60.6	73.6	128.6			1
8.8	3	●	**MDM 0880S09H03**	33.4	46.6	101.6	1.6	9.0	1
	5	●	**0880S09H05**	60.4	73.6	128.6			1
8.9	3	●	**MDM 0890S09H03**	33.3	46.6	101.6	1.6	9.0	1
	5	●	**0890S09H05**	60.3	73.6	128.6			1

Grade: ACT70

Diameter ø9.0 to 10.9mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
9.0	3	●	**MDM 0900S09H03**	33.1	46.6	101.6	1.6	9.0	1
	5	●	**0900S09H05**	60.1	73.6	128.6			1
9.1	3	●	**MDM 0910S10H03**	35.6	49.2	107.7	1.7	10.0	1
	5	●	**0910S10H05**	64.1	77.7	137.7			1
9.2	3	●	**MDM 0920S10H03**	35.4	49.2	107.7	1.7	10.0	1
	5	●	**0920S10H05**	63.9	77.7	137.7			1
9.3	3	●	**MDM 0930S10H03**	35.3	49.2	107.7	1.7	10.0	1
	5	●	**0930S10H05**	63.8	77.7	137.7			1
9.4	3	●	**MDM 0940S10H03**	35.1	49.2	107.7	1.7	10.0	1
	5	●	**0940S10H05**	63.6	77.7	137.7			1
9.5	3	●	**MDM 0950S10H03**	35.0	49.2	107.7	1.7	10.0	1
	5	●	**0950S10H05**	63.5	77.7	137.7			1
9.6	3	●	**MDM 0960S10H03**	37.3	51.7	107.7	1.7	10.0	1
	5	●	**0960S10H05**	67.3	81.7	137.7			1
9.7	3	●	**MDM 0970S10H03**	37.3	51.8	107.8	1.8	10.0	1
	5	●	**0970S10H05**	67.3	81.8	137.8			1
9.8	3	●	**MDM 0980S10H03**	37.1	51.8	107.8	1.8	10.0	1
	5	●	**0980S10H05**	67.1	81.8	137.8			1
9.9	3	●	**MDM 0990S10H03**	37.0	51.8	107.8	1.8	10.0	1
	5	●	**0990S10H05**	67.0	81.8	137.8			1
10.0	3	●	**MDM 1000S10H03**	36.8	51.8	107.8	1.8	10.0	1
	5	●	**1000S10H05**	66.8	81.8	137.8			1
10.1	3	●	**MDM 1010S11H03**	39.2	54.3	117.8	1.8	11.0	1
	5	●	**1010S11H05**	70.7	85.8	150.8			1
10.2	3	●	**MDM 1020S11H03**	39.1	54.4	117.9	1.9	11.0	1
	5	●	**1020S11H05**	70.6	85.9	150.9			1
10.3	3	●	**MDM 1030S11H03**	39.0	54.4	117.9	1.9	11.0	1
	5	●	**1030S11H05**	70.5	85.9	150.9			1
10.4	3	●	**MDM 1040S11H03**	38.8	54.4	117.9	1.9	11.0	1
	5	●	**1040S11H05**	70.3	85.9	150.9			1
10.5	3	●	**MDM 1050S11H03**	38.7	54.4	117.9	1.9	11.0	1
	5	●	**1050S11H05**	70.2	85.9	150.9			1
10.6	3	●	**MDM 1060S11H03**	41.0	56.9	117.9	1.9	11.0	1
	5	●	**1060S11H05**	74.0	89.9	150.9			1
10.7	3	●	**MDM 1070S11H03**	40.9	56.9	117.9	1.9	11.0	1
	5	●	**1070S11H05**	73.9	89.9	150.9			1
10.8	3	●	**MDM 1080S11H03**	40.8	57.0	118.0	2.0	11.0	1
	5	●	**1080S11H05**	73.8	90.0	151.0			1
10.9	3	●	**MDM 1090S11H03**	40.7	57.0	118.0	2.0	11.0	1
	5	●	**1090S11H05**	73.7	90.0	151.0			1

Grade: ACT70

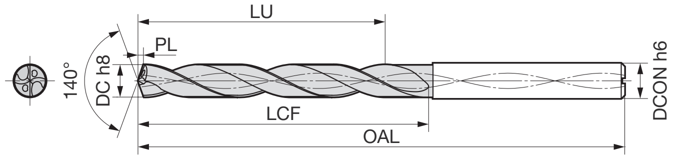
MDM Type (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Stainless Steel | Ti Alloy | Heat-resistant Steel | Cast Iron | Ductile Cast Iron

NX Coat | 3D | 5D

*Refer to N38 for the tolerance of h6 and h8

Fig 1 **Bean Jet Cooling**



Diameter ø11.0 to 12.9mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
11.0	3	●	**MDM 1100S11H03**	40.5	57.0	118.0	2.0	11.0	1
	5	●	**1100S11H05**	73.5	90.0	151.0			1
11.1	3	●	**MDM 1110S12H03**	42.9	59.5	124.0	2.0	12.0	1
	5	●	**1110S12H05**	77.4	94.0	160.0			1
11.2	3	●	**MDM 1120S12H03**	42.7	59.5	124.0	2.0	12.0	1
	5	●	**1120S12H05**	77.2	94.0	160.0			1
11.3	3	●	**MDM 1130S12H03**	42.7	59.6	124.1	2.1	12.0	1
	5	●	**1130S12H05**	77.2	94.1	160.1			1
11.4	3	●	**MDM 1140S12H03**	42.5	59.6	124.1	2.1	12.0	1
	5	●	**1140S12H05**	77.0	94.1	160.1			1
11.5	3	●	**MDM 1150S12H03**	42.4	59.6	124.1	2.1	12.0	1
	5	●	**1150S12H05**	76.9	94.1	160.1			1
11.6	3	●	**MDM 1160S12H03**	44.7	62.1	124.1	2.1	12.0	1
	5	●	**1160S12H05**	80.7	98.1	160.1			1
11.7	3	●	**MDM 1170S12H03**	44.6	62.1	124.1	2.1	12.0	1
	5	●	**1170S12H05**	80.6	98.1	160.1			1
11.8	3	●	**MDM 1180S12H03**	44.4	62.1	124.1	2.1	12.0	1
	5	●	**1180S12H05**	80.4	98.1	160.1			1
11.9	3	●	**MDM 1190S12H03**	44.4	62.2	124.2	2.2	12.0	1
	5	●	**1190S12H05**	80.4	98.2	160.2			1
12.0	3	●	**MDM 1200S12H03**	44.2	62.2	124.2	2.2	12.0	1
	5	●	**1200S12H05**	80.2	98.2	160.2			1
12.1	3	●	**MDM 1210S13H03**	46.6	64.7	130.2	2.2	13.0	1
	5	●	**1210S13H05**	84.1	102.2	169.2			1
12.2	3	●	**MDM 1220S13H03**	46.4	64.7	130.2	2.2	13.0	1
	5	●	**1220S13H05**	83.9	102.2	169.2			1
12.3	3	●	**MDM 1230S13H03**	46.3	64.7	130.2	2.2	13.0	1
	5	●	**1230S13H05**	83.8	102.2	169.2			1
12.4	3	●	**MDM 1240S13H03**	46.2	64.8	130.3	2.3	13.0	1
	5	●	**1240S13H05**	83.7	102.3	169.3			1
12.5	3	●	**MDM 1250S13H03**	46.1	64.8	130.3	2.3	13.0	1
	5	●	**1250S13H05**	83.6	102.3	169.3			1
12.6	3	●	**MDM 1260S13H03**	48.4	67.3	130.3	2.3	13.0	1
	5	●	**1260S13H05**	87.4	106.3	169.3			1
12.7	3	●	**MDM 1270S13H03**	48.3	67.3	130.3	2.3	13.0	1
	5	●	**1270S13H05**	87.3	106.3	169.3			1
12.8	3	●	**MDM 1280S13H03**	48.1	67.3	130.3	2.3	13.0	1
	5	●	**1280S13H05**	87.1	106.3	169.3			1
12.9	3	●	**MDM 1290S13H03**	48.0	67.3	130.3	2.3	13.0	1
	5	●	**1290S13H05**	87.0	106.3	169.3			1

Grade: ACT70

Diameter ø13.0 to 14.9mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
13.0	3	●	**MDM 1300S13H03**	47.9	67.4	130.4	2.4	13.0	1
	5	●	**1300S13H05**	86.9	106.4	169.4			1
13.1	3	●	**MDM 1310S14H03**	50.3	69.9	136.4	2.4	14.0	1
	5	●	**1310S14H05**	90.8	110.4	178.4			1
13.2	3	●	**MDM 1320S14H03**	50.1	69.9	136.4	2.4	14.0	1
	5	●	**1320S14H05**	90.6	110.4	178.4			1
13.3	3	●	**MDM 1330S14H03**	50.0	69.9	136.4	2.4	14.0	1
	5	●	**1330S14H05**	90.5	110.4	178.4			1
13.4	3	●	**MDM 1340S14H03**	49.8	69.9	136.4	2.4	14.0	1
	5	●	**1340S14H05**	90.3	110.4	178.4			1
13.5	3	●	**MDM 1350S14H03**	49.8	70.0	136.5	2.5	14.0	1
	5	●	**1350S14H05**	90.3	110.5	178.5			1
13.6	3	●	**MDM 1360S14H03**	52.1	72.5	136.5	2.5	14.0	1
	5	●	**1360S14H05**	94.1	114.5	178.5			1
13.7	3	●	**MDM 1370S14H03**	52.0	72.5	136.5	2.5	14.0	1
	5	●	**1370S14H05**	94.0	114.5	178.5			1
13.8	3	●	**MDM 1380S14H03**	51.8	72.5	136.5	2.5	14.0	1
	5	●	**1380S14H05**	93.8	114.5	178.5			1
13.9	3	●	**MDM 1390S14H03**	51.7	72.5	136.5	2.5	14.0	1
	5	●	**1390S14H05**	93.7	114.5	178.5			1
14.0	3	●	**MDM 1400S14H03**	51.5	72.5	136.5	2.5	14.0	1
	5	●	**1400S14H05**	93.5	114.5	178.5			1
14.1	3	●	**MDM 1410S15H03**	54.0	75.1	142.6	2.6	15.0	1
	5	●	**1410S15H05**	97.5	118.6	187.6			1
14.2	3	●	**MDM 1420S15H03**	53.8	75.1	142.6	2.6	15.0	1
	5	●	**1420S15H05**	97.3	118.6	187.6			1
14.3	3	●	**MDM 1430S15H03**	53.7	75.1	142.6	2.6	15.0	1
	5	●	**1430S15H05**	97.2	118.6	187.6			1
14.4	3	●	**MDM 1440S15H03**	53.5	75.1	142.6	2.6	15.0	1
	5	●	**1440S15H05**	97.0	118.6	187.6			1
14.5	3	●	**MDM 1450S15H03**	53.4	75.1	142.6	2.6	15.0	1
	5	●	**1450S15H05**	96.9	118.6	187.6			1
14.6	3	●	**MDM 1460S15H03**	55.8	77.7	142.7	2.7	15.0	1
	5	●	**1460S15H05**	100.8	122.7	187.7			1
14.7	3	●	**MDM 1470S15H03**	55.7	77.7	142.7	2.7	15.0	1
	5	●	**1470S15H05**	100.7	122.7	187.7			1
14.8	3	●	**MDM 1480S15H03**	55.5	77.7	142.7	2.7	15.0	1
	5	●	**1480S15H05**	100.5	122.7	187.7			1
14.9	3	●	**MDM 1490S15H03**	55.4	77.7	142.7	2.7	15.0	1
	5	●	**1490S15H05**	100.4	122.7	187.7			1

Grade: ACT70

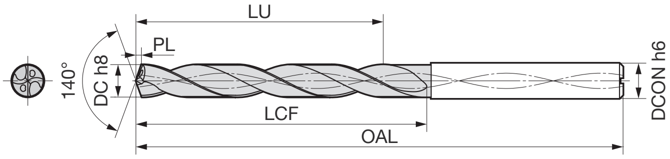
MDM Type (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Stainless Steel | Ti Alloy | Heat-resistant Steel | Cast Iron | Ductile Cast Iron

NX Coat | 3D | 5D

*Refer to N38 for the tolerance of h6 and h8

Fig 1 **Bean Jet Cooling**



Diameter ø15.0 to 16.0mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
15.0	3	●	**MDM 1500S15H03**	55.2	77.7	142.7	2.7	15.0	1
	5	●	**1500S15H05**	100.2	122.7	187.7			1
15.1	3	●	**MDM 1510S16H03**	57.6	80.2	148.7	2.7	16.0	1
	5	●	**1510S16H05**	104.1	126.7	196.7			1
15.2	3	●	**MDM 1520S16H03**	57.5	80.3	148.8	2.8	16.0	1
	5	●	**1520S16H05**	104.0	126.8	196.8			1
15.3	3	●	**MDM 1530S16H03**	57.4	80.3	148.8	2.8	16.0	1
	5	●	**1530S16H05**	103.9	126.8	196.8			1
15.4	3	●	**MDM 1540S16H03**	57.2	80.3	148.8	2.8	16.0	1
	5	●	**1540S16H05**	103.7	126.8	196.8			1
15.5	3	●	**MDM 1550S16H03**	57.1	80.3	148.8	2.8	16.0	1
	5	●	**1550S16H05**	103.6	126.8	196.8			1
15.6	3	●	**MDM 1560S16H03**	59.4	82.8	148.8	2.8	16.0	1
	5	●	**1560S16H05**	107.4	130.8	196.8			1
15.7	3	●	**MDM 1570S16H03**	59.4	82.9	148.9	2.9	16.0	1
	5	●	**1570S16H05**	107.4	130.9	196.9			1
15.8	3	●	**MDM 1580S16H03**	59.2	82.9	148.9	2.9	16.0	1
	5	●	**1580S16H05**	107.2	130.9	196.9			1
15.9	3	●	**MDM 1590S16H03**	59.1	82.9	148.9	2.9	16.0	1
	5	●	**1590S16H05**	107.1	130.9	196.9			1
16.0	3	●	**MDM 1600S16H03**	58.9	82.9	148.9	2.9	16.0	1
	5	●	**1600S16H05**	106.9	130.9	196.9			1

Grade: ACT70

Metals Symbols Chart

Work Material	Hardness	Japanese Industrial Standards JIS	International Standard ISO 15510	European Standards EN	US Standards AISI
Ferritic / Martensitic Stainless Steel	≤ 200HB	SUS405	X6CrAl13	1.4002	405
		SUS410	X12Cr13	1.4006	410
		SUS410S	X6Cr13	1.4000	—
		SUS430	X6Cr17	1.4016	430
		SUS434	X6CrMo17-1	1.4113	434
	> 200HB	SUS420J1	X20Cr13	1.4021	420
		SUS420J2	X30Cr13	1.4028	420
		SUS431	X17CrNi16-2	1.4057	431
Austenitic Stainless Steel	≤ 200HB	SUS304	X5CrNi18-10	1.4301	304
		SUS305	X6CrNi18-12	1.4303	305
		SUS303	X10CrNiS18-9	1.4305	303
		SUS304L	X2CrNi18-9	1.4307	304L
		SUS316	X5CrNiMo17-12-2	1.4401	316
		SUS316L	X2CrNiMo17-12-2	1.4404	316L
		SUS317L	X2CrNiMo19-14-4	1.4438	317L
		SUS321	X6CrNiTi18-10	1.4541	321
		SUS347	X6CrNiNb18-10	1.4550	347
		SUS316Ti	X6CrNiMoTi17-12-2	1.4571	—
		SUS309S	X6CrNi23-13	1.4950	309S
		SUS310S	X6CrNi25-20	1.4951	310S
	> 200HB	SUS304N1	X5CrNiN19-9	1.4315	304N
		SUS301	X5CrNi17-7	1.4319	301
		SUS301L	X2CrNiN18-7	1.4318	—
Deposition Hardened Structures Stainless Steel	≤ 340HB	SUS630	X5CrNiCuNb16-4	1.4542	17-4PH (S17400)
		—	—	—	15-5PH (S15500)
		SUS631	X7CrNiAl17-7	1.4568	17-7PH (S17700)
Duplex Stainless Steel	≤ 310HB	SUS329J1	X6CrNiMo26-4-2	—	329
		SUS329J3L	X2CrNiMoN22-5-3	1.4462	—
		SUS329J4L	X2CrNiMoN25-7-3	—	—

MDM Type (Internal Coolant Supply)

Recommended Cutting Conditions

1. The recommended cutting conditions below are for cases where an internal supply of a water soluble coolant is used.
2. If using non-water-soluble coolant, reduce the cutting speed by 20-30% and ensure that sufficient coolant is supplied.
3. When mounting the drill in the collet, make sure that runout around the cutting edge is no greater than 0.02mm
4. Make sure the flute does not enter the collet.
5. If the surface of the workpiece is abnormally shaped (tilted, interrupted etc.), reduce the feed rate to about half when feeding the drill in the workpiece.
   *If stable drilling is still not possible, pre-machining of the flat surface with the MDF Flat MULTIDRILL is recommended.
6. When performing interrupted through drilling, reduce the feed rate to about half the feed rate used prior to this process.

Work Material	Ferritic/Martensitic Stainless Steel				Austenitic Stainless Steel			
	≤ 200HB		> 200HB		≤ 200HB		> 200HB	
Cutting Speed	60 to 100m/min		40 to 80m/min		60 to 100m/min		40 to 80m/min	
Dia.DC(mm)	Spindle Speed(min^{-1})	Feed Rate(mm/rev)	Spindle Speed(min^{-1})	Feed Rate(mm/rev)	Spindle Speed(min^{-1})	Feed Rate(mm/rev)	Spindle Speed(min^{-1})	Feed Rate(mm/rev)
ø3	8,500	0.06 to 0.12	6,400	0.06 to 0.12	8,500	0.06 to 0.12	6,400	0.06 to 0.12
ø4	6,400	0.08 to 0.17	4,800	0.08 to 0.17	6,400	0.08 to 0.17	4,800	0.08 to 0.17
ø5	5,100	0.08 to 0.20	3,900	0.08 to 0.20	5,100	0.08 to 0.20	3,900	0.08 to 0.20
ø6	4,300	0.10 to 0.20	3,200	0.10 to 0.20	4,300	0.10 to 0.20	3,200	0.10 to 0.20
ø7	3,700	0.12 to 0.23	2,800	0.12 to 0.23	3,700	0.12 to 0.23	2,800	0.12 to 0.23
ø8	3,200	0.15 to 0.25	2,400	0.15 to 0.25	3,200	0.15 to 0.25	2,400	0.15 to 0.25
ø9	2,900	0.17 to 0.25	2,200	0.17 to 0.25	2,900	0.17 to 0.25	2,200	0.17 to 0.25
ø10	2,600	0.18 to 0.28	2,000	0.18 to 0.28	2,600	0.18 to 0.28	2,000	0.18 to 0.28
ø11	2,400	0.20 to 0.30	1,800	0.20 to 0.30	2,400	0.20 to 0.30	1,800	0.20 to 0.30
ø12	2,200	0.20 to 0.30	1,600	0.20 to 0.30	2,200	0.20 to 0.30	1,600	0.20 to 0.30
ø13	2,000	0.20 to 0.30	1,500	0.20 to 0.30	2,000	0.20 to 0.30	1,500	0.20 to 0.30
ø14	1,900	0.20 to 0.30	1,400	0.20 to 0.30	1,900	0.20 to 0.30	1,400	0.20 to 0.30
ø15	1,700	0.20 to 0.30	1,300	0.20 to 0.30	1,700	0.20 to 0.30	1,300	0.20 to 0.30
ø16	1,600	0.20 to 0.30	1,200	0.20 to 0.30	1,600	0.20 to 0.30	1,200	0.20 to 0.30

Work Material	Stainless steel with deposition hardened structure ≤ 340HB		Duplex stainless steel ≤ 310HB		Titanium Alloy 260HB to 340HB		Ni-based Heat-resistant Alloy (Inconel 718) 38 to 45HRC	
Cutting Speed	40 to 60m/min		40 to 60m/min		30 to 50m/min		10 to 30m/min	
Dia.DC(mm)	Spindle Speed(min^{-1})	Feed Rate(mm/rev)	Spindle Speed(min^{-1})	Feed Rate(mm/rev)	Spindle Speed(min^{-1})	Feed Rate(mm/rev)	Spindle Speed(min^{-1})	Feed Rate(mm/rev)
ø3	5,300	0.06 to 0.12	5,300	0.06 to 0.12	4,200	0.06 to 0.12	4,200	0.05 to 0.08
ø4	4,000	0.08 to 0.17	4,000	0.08 to 0.17	3,200	0.08 to 0.17	3,200	0.06 to 0.10
ø5	3,200	0.08 to 0.20	3,200	0.08 to 0.20	2,500	0.08 to 0.20	2,500	0.07 to 0.12
ø6	2,700	0.10 to 0.20	2,700	0.10 to 0.20	2,100	0.10 to 0.20	2,100	0.08 to 0.15
ø7	2,300	0.12 to 0.23	2,300	0.12 to 0.23	1,800	0.12 to 0.23	1,800	0.08 to 0.15
ø8	2,000	0.15 to 0.25	2,000	0.15 to 0.25	1,600	0.15 to 0.25	1,600	0.10 to 0.18
ø9	1,800	0.17 to 0.25	1,800	0.17 to 0.25	1,400	0.17 to 0.25	1,400	0.12 to 0.18
ø10	1,600	0.18 to 0.28	1,600	0.18 to 0.28	1,300	0.18 to 0.28	1,300	0.12 to 0.18
ø11	1,400	0.20 to 0.30	1,400	0.20 to 0.30	1,200	0.20 to 0.30	1,200	0.15 to 0.20
ø12	1,300	0.20 to 0.30	1,300	0.20 to 0.30	1,100	0.20 to 0.30	1,100	0.15 to 0.20
ø13	1,200	0.20 to 0.30	1,200	0.20 to 0.30	1,000	0.20 to 0.30	1,000	0.15 to 0.20
ø14	1,100	0.20 to 0.30	1,100	0.20 to 0.30	900	0.20 to 0.30	900	0.15 to 0.20
ø15	1,050	0.20 to 0.30	1,050	0.20 to 0.30	850	0.20 to 0.30	850	0.15 to 0.20
ø16	1,000	0.20 to 0.30	1,000	0.20 to 0.30	800	0.20 to 0.30	800	0.15 to 0.20

MEMO

MDF Type

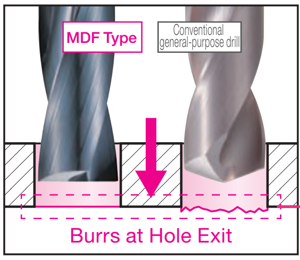
■ General Features

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

■ Features and Applications

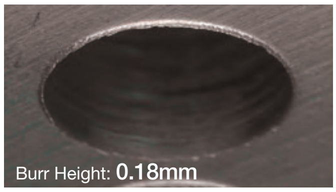
- Suited to various types of drilling thanks to a point angle of 180°
  Can be used for high-efficiency spot facing, drilling on non-horizontal surfaces such as inclined and cylindrical surfaces, and interrupted drilling. Also reduces burrs at the hole exit.
- Improves machining stability
  Achieves high rigidity by employing RS THINNING, which ensures thick web.
- Excellent chip evacuation
  Achieves excellent chip evacuation thanks to the wide chip pocket and high-quality rake face shape.
- Excellent cutting edge strength
  Achieves excellent cutting edge strength through optimised cutting edge design.
- Coolant can now be supplied internally
  This enables deeper drilling.

■ Reduction of Burrs at Hole Exit

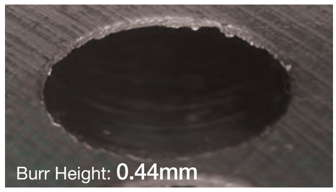


Work Material: SCM415
Machine: BT40 Vertical Machining Centre
Tool: MDF 0500S2D (ø5.0mm x 2D)
Cutting Conditions: v_c= 65m/min, f= 0.12mm/rev, H= 10mm, 150 Holes Wet

Reduces exit burrs by **half** compared with general-purpose drills

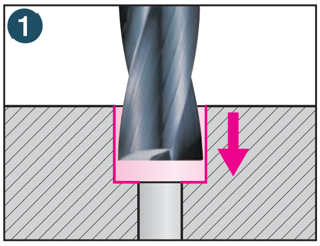


Flat MULTIDRILL MDF Type

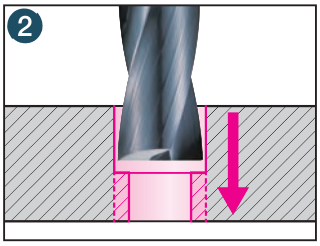


Conventional general-purpose drill

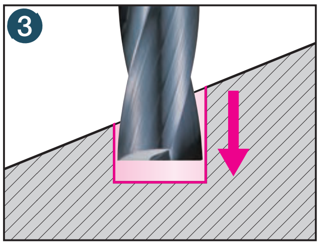
■ Machining Applications



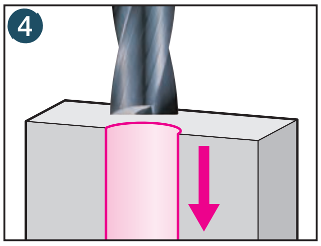
High-efficiency spot facing



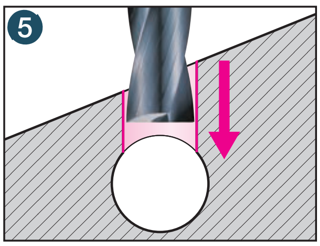
Hole Expansion Milling



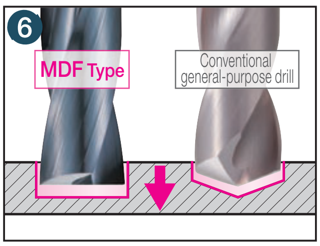
Drilling in non-horizontal surface (inclined surface, cylindrical surface, etc.)



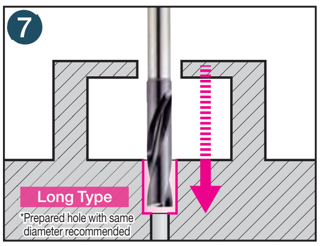
Interrupted drilling



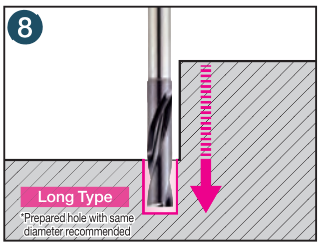
Cross drilling



Pre-tap hole drilling in thin plates



Spot facing in deep positions



Avoids interference with work material

MDF Type

Long shanked type (MDF-L Type 2D) for flat base drilling, hole expansion and burr control in long overhang conditions

● For drilling with long overhang and to avoid interference with the work material.

*A prepared hole with the same diameter or centring hole with a larger diameter than the tool is needed.

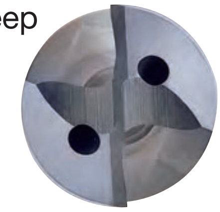
DC< 6mm, stepped shank

DC≥ 6mm, relief shank

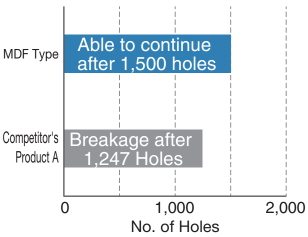
With Oil Hole (MDF-H Type 3D/5D) for up to 5D deep hole applications

● Internal coolant supply enables deep flat hole drilling.

*A prepared hole with the same diameter or centring hole with a larger diameter than the tool is needed.

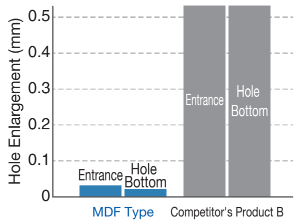


Deep Spot Facing



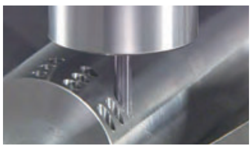
Work Material: S50C
Tool: MDF 0600H5D (ø6)
Cutting Conditions:
v_c= 140m/min, f = 0.15 mm/rev
H= 30mm (5D), Internal Coolant Supply
45mm overhang, prepared hole depth 3mm (ø6)

Long Overhang Spot Facing



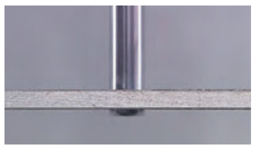
Work Material: S50C
Tool: MDF 0600H3D (ø6)
Cutting Conditions:
v_c= 90m/min, f = 0.1 mm/rev
H= 18mm (3D), Internal Coolant Supply
Overhang 35mm

Drilling on slanted surfaces



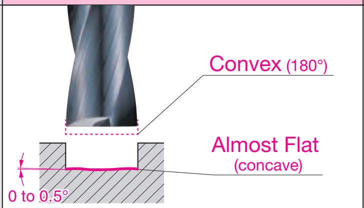
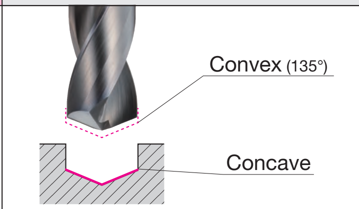
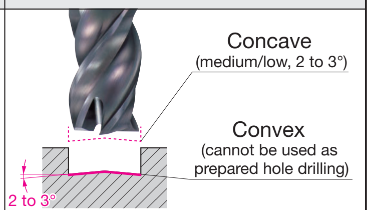
Work Material: SCM415
Tool: MDF 0500S2D (ø5)
Cutting Conditions:
v_c= 65m/min, f = 0.08 mm/rev
H= 10mm, External MQL

Prevents burrs and conical remnants on tool withdrawal



Work Material: SS400
Tool: MDF 1000S2D (ø10)
Cutting Conditions:
v_c= 75m/min, f = 0.12 mm/rev
H= 5mm, External MQL

■ Distinguishing flat drills, general-purpose drills and endmills

Tool	Flat Drill MDF Type		General-Purpose Drill GS Type / HGS Type		Endmill for Spot Facing GSXMILL Slot	
Shape of hole base						
Drilling in flat surfaces	○	Approx. 1/2 the feed of a general-purpose drill	◎	Best	△	Only for low feed 1D or smaller ≤1/5 the feed of a general-purpose drill
Drilling non-flat surfaces	◎	Ideal (2D or smaller recommended)	×	Impossible	○	Only for low feed 1D or smaller ≤1/2 the feed of a flat drill
Traverse Cutting	×	Impossible	×	Impossible	◎	Best

■ Product Range

Coolant Supply	Cat. No.	Diameter Range (mm)	Hole Depth (L/D)	Description
External	MDF□□□□S2D	ø0.3 to 20.0	up to 2	188 items in stock
	MDF□□□□L2D	ø3.0 to 20.0	up to 2	115 items in stock
Internal	MDF□□□□H3D	ø3.0 to 16.0	up to 3	99 items in stock
	MDF□□□□H5D	ø3.0 to 16.0	up to 5	99 items in stock

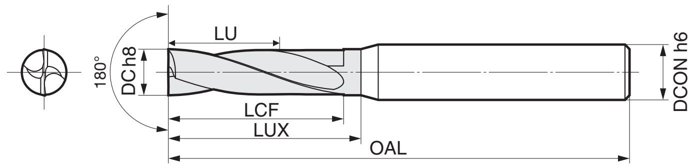
MDF-S Type (External Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat-resistant Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

PVD Coat | 2D

*Refer to N38 for the tolerance of h6 and h8

Fig 1



Diameter ø0.3 to 5.1mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Neck Length LUX	Overall Length OAL	Shank Dia. DCON	Fig
0.3*		●	MDF 0030S2D*	0.9	1.0	1.3			1
0.4*		●	0040S2D*	1.2	1.4	1.8			1
0.5		●	0050S2D	1.5	2.0	2.2			1
0.6	2	●	0060S2D	1.8	2.4	2.6	40	3.0	1
0.7		●	0070S2D	2.1	2.8	3.1			1
0.8		●	0080S2D	2.4	3.2	3.5			1
0.9		●	0090S2D	2.7	3.6	4.0			1
1.0		●	MDF 0100S2D	3.0	4.0	4.4			1
1.1		●	0110S2D	3.3	4.4	4.8			1
1.2		●	0120S2D	3.6	4.8	5.3			1
1.3		●	0130S2D	3.9	5.2	5.7			1
1.4	2	●	0140S2D	4.2	5.6	6.2	45	3.0	1
1.5		●	0150S2D	4.5	6.0	6.6			1
1.6		●	0160S2D	4.8	6.4	7.0			1
1.7		●	0170S2D	5.1	6.8	7.5			1
1.8		●	0180S2D	5.4	7.2	7.9			1
1.9		●	0190S2D	5.7	7.6	8.4			1
2.0		●	MDF 0200S2D	6.0	8.0	8.8			1
2.1		●	0210S2D	6.3	8.4	9.2			1
2.2		●	0220S2D	6.6	8.8	9.7			1
2.3		●	0230S2D	6.9	9.2	10.1			1
2.4		●	0240S2D	7.2	9.6	10.6			1
2.5		●	0250S2D	7.5	10.0	11.0		4.0	1
2.6		●	0260S2D	7.8	10.4	11.4			1
2.7		●	0270S2D	8.1	10.8	11.9			1
2.76		●	0276S2D	6.9	11.0	12.0			1
2.78		●	0278S2D	6.9	11.1	12.1			1
2.8		●	0280S2D	8.4	11.2	12.3			1
2.9		●	0290S2D	8.7	11.6	12.8			1
3.0	2	●	0300S2D	9.0	12.0	13.2	50		1
3.1		●	0310S2D	9.3	12.4	13.6			1
3.2		●	0320S2D	9.6	12.8	14.1			1
3.3		●	0330S2D	9.9	13.2	14.5		6.0	1
3.4		●	0340S2D	10.2	13.6	15.0			1
3.5		●	0350S2D	10.5	14.0	15.4			1
3.6		●	0360S2D	10.8	14.4	15.8			1
3.66		●	0366S2D	9.1	14.6	15.3		4.0	1
3.68		●	0368S2D	9.2	14.7	15.4			1
3.7		●	0370S2D	11.1	14.8	16.3			1
3.8		●	0380S2D	11.4	15.2	16.7		6.0	1
3.9		●	0390S2D	11.7	15.6	17.2			1
4.0		●	0400S2D	12.0	16.0	17.6			1
4.1		●	MDF 0410S2D	12.3	16.4	18.0			1
4.2		●	0420S2D	12.6	16.8	18.5			1
4.3		●	0430S2D	12.9	17.2	18.9			1
4.4		●	0440S2D	13.2	17.6	19.4			1
4.5		●	0450S2D	13.5	18.0	19.8			1
4.6		●	0460S2D	13.8	18.4	20.2			1
4.62	2	●	0462S2D	11.5	18.4	20.9	60	6.0	1
4.64		●	0464S2D	11.6	18.5	21.0			1
4.7		●	0470S2D	14.1	18.8	20.7			1
4.8		●	0480S2D	14.4	19.2	21.1			1
4.9		●	0490S2D	14.7	19.6	21.6			1
5.0		●	0500S2D	15.0	20.0	22.0			1
5.1		●	0510S2D	15.3	20.4	22.4			1

*RS thinning is used for ø0.5mm and larger sizes.
Grade: ACF75

Diameter ø5.2 to 9.52mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Neck Length LUX	Overall Length OAL	Shank Dia. DCON	Fig
5.2		●	MDF 0520S2D	15.6	20.8	22.9			1
5.3		●	0530S2D	15.9	21.2	23.3			1
5.4		●	0540S2D	16.2	21.6	23.8			1
5.5		●	0550S2D	16.5	22.0	24.2			1
5.52	2	●	0552S2D	13.8	22.0	26.1	60	6.0	1
5.54		●	0554S2D	13.8	22.1	26.2			1
5.6		●	0560S2D	16.8	22.4	24.6			1
5.7		●	0570S2D	17.1	22.8	25.1			1
5.8		●	0580S2D	17.4	23.2	25.5			1
5.9		●	0590S2D	17.7	23.6	26.0			1
6.0		●	MDF 0600S2D	18.0	24.0	26.4			1
6.1		●	0610S2D	18.3	24.4	26.8			1
6.2		●	0620S2D	18.6	24.8	27.3			1
6.3		●	0630S2D	18.9	25.2	27.7			1
6.4		●	0640S2D	19.2	25.6	28.2			1
6.5		●	0650S2D	19.5	26.0	28.6			1
6.6		●	0660S2D	19.8	26.4	29.0			1
6.7		●	0670S2D	20.1	26.8	29.5			1
6.8		●	0680S2D	20.4	27.2	29.9			1
6.9		●	0690S2D	20.7	27.6	30.4			1
7.0		●	0700S2D	21.0	28.0	30.8			1
7.1		●	0710S2D	21.3	28.4	31.2			1
7.2	2	●	0720S2D	21.6	28.8	31.7	70	8.0	1
7.3		●	0730S2D	21.9	29.2	32.1			1
7.36		●	0736S2D	18.4	29.4	34.7			1
7.38		●	0738S2D	18.4	29.5	34.8			1
7.4		●	0740S2D	22.2	29.6	32.6			1
7.5		●	0750S2D	22.5	30.0	33.0			1
7.52		●	0752S2D	18.8	30.0	35.7			1
7.54		●	0754S2D	18.8	30.1	35.8			1
7.6		●	0760S2D	22.8	30.4	33.4			1
7.7		●	0770S2D	23.1	30.8	33.9			1
7.8		●	0780S2D	23.4	31.2	34.3			1
7.9		●	0790S2D	23.7	31.6	34.8			1
8.0		●	0800S2D	24.0	32.0	35.2			1
8.1		●	MDF 0810S2D	24.3	32.4	35.6			1
8.2		●	0820S2D	24.6	32.8	36.1			1
8.3		●	0830S2D	24.9	33.2	36.5			1
8.4		●	0840S2D	25.2	33.6	37.0			1
8.5		●	0850S2D	25.5	34.0	37.4			1
8.6		●	0860S2D	25.8	34.4	37.8			1
8.7		●	0870S2D	26.1	34.8	38.3			1
8.8		●	0880S2D	26.4	35.2	38.7			1
8.9		●	0890S2D	26.7	35.6	39.2			1
9.0	2	●	0900S2D	27.0	36.0	39.6	80	10.0	1
9.1		●	0910S2D	27.3	36.4	40.0			1
9.2		●	0920S2D	27.6	36.8	40.5			1
9.24		●	0924S2D	23.1	36.9	43.6			1
9.26		●	0926S2D	23.1	37.0	43.7			1
9.3		●	0930S2D	27.9	37.2	40.9			1
9.36		●	0936S2D	23.4	37.4	44.3			1
9.38		●	0938S2D	23.4	37.5	44.4			1
9.4		●	0940S2D	28.2	37.6	41.4			1
9.5		●	0950S2D	28.5	38.0	41.8			1
9.52		●	0952S2D	23.8	38.0	45.3			1

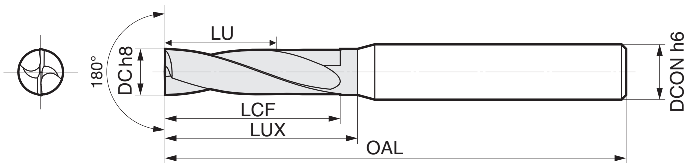
Grade: ACF75

MDF-S Type (External Coolant Supply)

PVD Coat 2D

*Refer to N38 for the tolerance of h6 and h8

Fig 1



Diameter ø9.54 to 14.5mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Neck Length LUX	Overall Length OAL	Shank Dia. DCON	Fig
9.54		●	MDF 0954S2D	23.8	38.1	45.4			1
9.6		●	0960S2D	28.8	38.4	42.2			1
9.7	2	●	0970S2D	29.1	38.8	42.7			1
9.8		●	0980S2D	29.4	39.2	43.1	80	10.0	1
9.9		●	0990S2D	29.7	39.6	43.6			1
10.0		●	1000S2D	30.0	40.0	44.0			1
10.1		●	MDF 1010S2D	30.3	40.4	44.4			1
10.2		●	1020S2D	30.6	40.8	44.9			1
10.3		●	1030S2D	30.9	41.2	45.3			1
10.4		●	1040S2D	31.2	41.6	45.8			1
10.5		●	1050S2D	31.5	42.0	46.2			1
10.6		●	1060S2D	31.8	42.4	46.6			1
10.7		●	1070S2D	32.1	42.8	47.1			1
10.8		●	1080S2D	32.4	43.2	47.5			1
10.9		●	1090S2D	32.7	43.6	48.0			1
11.0		●	1100S2D	33.0	44.0	48.4			1
11.1		●	1110S2D	33.3	44.4	48.8			1
11.2		●	1120S2D	33.6	44.8	49.3			1
11.22	2	●	1122S2D	28.0	44.8	53.1	90	12.0	1
11.24		●	1124S2D	28.1	44.9	53.2			1
11.3		●	1130S2D	33.9	45.2	49.7			1
11.36		●	1136S2D	28.4	45.4	53.9			1
11.38		●	1138S2D	28.4	45.5	54.0			1
11.4		●	1140S2D	34.2	45.6	50.2			1
11.5		●	1150S2D	34.5	46.0	50.6			1
11.6		●	1160S2D	34.8	46.4	51.0			1
11.7		●	1170S2D	35.1	46.8	51.5			1
11.8		●	1180S2D	35.4	47.2	51.9			1
11.9		●	1190S2D	35.7	47.6	52.4			1
12.0		●	1200S2D	36.0	48.0	52.8			1
12.1		●	MDF 1210S2D	30.2	48.4	52.2			1
12.2		●	1220S2D	30.5	48.8	52.7			1
12.3		●	1230S2D	30.7	49.2	53.1			1
12.4		●	1240S2D	31.0	49.6	53.5			1
12.5		●	1250S2D	37.5	50.0	54.0	100		1
12.6		●	1260S2D	31.5	50.4	55.0			1
12.7		●	1270S2D	31.7	50.8	55.4			1
12.8		●	1280S2D	32.0	51.2	55.9			1
12.9		●	1290S2D	32.2	51.6	56.3			1
13.0		●	1300S2D	39.0	52.0	56.8		14.0	1
13.1		●	1310S2D	32.7	52.4	57.8			1
13.2		●	1320S2D	33.0	52.8	58.2			1
13.3	2	●	1330S2D	33.2	53.2	58.7			1
13.4		●	1340S2D	33.5	53.6	59.1			1
13.5		●	1350S2D	40.5	54.0	59.6			1
13.6		●	1360S2D	34.0	54.4	60.6			1
13.7		●	1370S2D	34.2	54.8	61.0			1
13.8		●	1380S2D	34.5	55.2	61.5	110		1
13.9		●	1390S2D	34.7	55.6	61.9			1
14.0		●	1400S2D	42.0	56.0	62.4			1
14.1		●	1410S2D	35.2	56.4	63.4			1
14.2		●	1420S2D	35.5	56.8	63.8			1
14.3		●	1430S2D	35.7	57.2	64.3		16.0	1
14.4		●	1440S2D	36.0	57.6	64.7			1
14.5		●	1450S2D	43.5	58.0	65.2			1

Grade: ACF75

Diameter ø14.6 to 20.0mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Neck Length LUX	Overall Length OAL	Shank Dia. DCON	Fig
14.6		●	MDF 1460S2D	36.5	58.4	66.1			1
14.7		●	1470S2D	36.7	58.8	66.6			1
14.8	2	●	1480S2D	37.0	59.2	67.0	110	16.0	1
14.9		●	1490S2D	37.2	59.6	67.5			1
15.0		●	1500S2D	45.0	60.0	68.0			1
15.1		●	MDF 1510S2D	37.7	60.4	68.9			1
15.2		●	1520S2D	38.0	60.8	69.4			1
15.3		●	1530S2D	38.2	61.2	69.8			1
15.4		●	1540S2D	38.5	61.6	70.3			1
15.5	2	●	1550S2D	46.5	62.0	70.8	115	16.0	1
15.6		●	1560S2D	39.0	62.4	71.7			1
15.7		●	1570S2D	39.2	62.8	72.2			1
15.8		●	1580S2D	39.5	63.2	72.6			1
15.9		●	1590S2D	39.7	63.6	73.1			1
16.0		●	1600S2D	48.0	64.0	73.6			1
16.5	2	●	MDF 1650S2D	49.5	66.0	72.4	125	18.0	1
17.0		●	1700S2D	51.0	68.0	75.2			1
17.5	2	●	MDF 1750S2D	52.5	70.0	78.0	130	18.0	1
18.0		●	1800S2D	54.0	72.0	80.8			1
18.5		●	MDF 1850S2D	55.5	74.0	83.6			1
19.0	2	●	1900S2D	57.0	76.0	86.4	140	20.0	1
19.5		●	1950S2D	58.5	78.0	89.2			1
20.0		●	2000S2D	60.0	80.0	92.0			1

Grade: ACF75

MDF-S Type (External Coolant Supply)

Recommended Cutting Conditions (for 2D)

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

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

Diameter DC (mm)	Cutting Conditions	Mild Steel / General Steel (Up to 250 HB)	Alloy Steel (up to 300HB)	Hardened Steel (up to 50HRC)	Stainless Steel (Up to 200HB)	Gray Cast Iron FC250	Ductile Cast Iron FCD450	Aluminum Alloy
ø0.5	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
ø1.0	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
ø2.0	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
ø4.0	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
ø6.0	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
ø8.0	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
ø10.0	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
ø12.0	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
ø16.0	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
ø20.0	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.

MEMO

MDF-L Type Long Type (External Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

PVD Coat | 2D

*Refer to N38 for the tolerance of h6 and h8

Fig 1 (DC ≤ DCON)

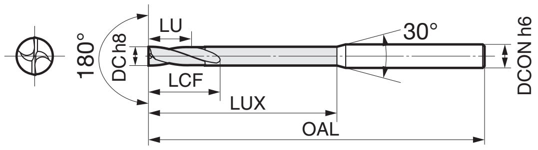
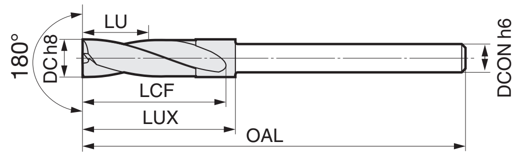


Fig 2 (DC > DCON)



Diameter ø3.0 to 8.5mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Neck Length LUX	Overall Length OAL	Shank Dia. DCON	Fig
3.0		●	MDF 0300L2D	9.0	13.5	30.0			1
3.1		●	0310L2D	9.3	14.0	31.0			1
3.2		●	0320L2D	9.6	14.4	32.0			1
3.3		●	0330L2D	9.9	14.9	33.0			1
3.4		●	0340L2D	10.2	15.3	34.0			1
3.5		●	0350L2D	10.5	15.8	35.0			1
3.6		●	0360L2D	10.8	16.2	36.0			1
3.7		●	0370L2D	11.1	16.7	37.0			1
3.8		●	0380L2D	11.4	17.1	38.0			1
3.9		●	0390L2D	11.7	17.6	39.0			1
4.0	2	●	0400L2D	12.0	18.0	40.0	100		1
4.1		●	0410L2D	12.3	18.5	41.0			1
4.2		●	0420L2D	12.6	18.9	42.0			1
4.3		●	0430L2D	12.9	19.4	43.0			1
4.4		●	0440L2D	13.2	19.8	44.0			1
4.5		●	0450L2D	13.5	20.3	45.0		6.0	1
4.6		●	0460L2D	13.8	20.7	46.0			1
4.7		●	0470L2D	14.1	21.2	47.0			1
4.8		●	0480L2D	14.4	21.6	48.0			1
4.9		●	0490L2D	14.7	22.1	49.0			1
5.0		●	0500L2D	15.0	22.5	50.0			1
5.1		●	MDF 0510L2D	15.3	23.0	51.0			1
5.2		●	0520L2D	15.6	23.4	52.0			1
5.3		●	0530L2D	15.9	23.9	53.0			1
5.4		●	0540L2D	16.2	24.3	54.0			1
5.5	2	●	0550L2D	16.5	24.8	55.0	110		1
5.6		●	0560L2D	16.8	25.2	56.0			1
5.7		●	0570L2D	17.1	25.7	57.0			1
5.8		●	0580L2D	17.4	26.1	58.0			1
5.9		●	0590L2D	17.7	26.6	59.0			1
6.0	2	●	MDF 0600L2D-S5	18.0	27.0	30.0	110	5.0	1
6.0	2	●	MDF 0600L2D	18.0	27.0	60.0	110	6.0	1
6.1		●	MDF 0610L2D	18.3	27.5	30.5			2
6.2		●	0620L2D	18.6	27.9	30.9			2
6.3		●	0630L2D	18.9	28.4	31.4			2
6.4		●	0640L2D	19.2	28.8	31.8			2
6.5	2	●	0650L2D	19.5	29.3	32.3	120		2
6.6		●	0660L2D	19.8	29.7	32.7			2
6.7		●	0670L2D	20.1	30.2	33.2			2
6.8		●	0680L2D	20.4	30.6	33.6			2
6.9		●	0690L2D	20.7	31.1	34.1			2
7.0		●	0700L2D	21.0	31.5	34.5		6.0	2
7.1		●	MDF 0710L2D	21.3	32.0	35.0			2
7.2		●	0720L2D	21.6	32.4	35.4			2
7.3		●	0730L2D	21.9	32.9	35.9			2
7.4		●	0740L2D	22.2	33.3	36.3			2
7.5	2	●	0750L2D	22.5	33.8	36.8	130		2
7.6		●	0760L2D	22.8	34.2	37.2			2
7.7		●	0770L2D	23.1	34.7	37.7			2
7.8		●	0780L2D	23.4	35.1	38.1			2
7.9		●	0790L2D	23.7	35.6	38.6			2
8.0		●	0800L2D-S6	24.0	36.0	39.0			2
8.0	2	●	MDF 0800L2D	24.0	36.0	80.0	130	8.0	1
8.1		●	MDF 0810L2D	24.3	36.5	39.5			2
8.2		●	0820L2D	24.6	36.9	39.9			2
8.3	2	●	0830L2D	24.9	37.4	40.4	140	8.0	2
8.4		●	0840L2D	25.2	37.8	40.8			2
8.5		●	0850L2D	25.5	38.3	41.3			2

Grade: ACF75

Diameter ø8.6 to 20.0mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Neck Length LUX	Overall Length OAL	Shank Dia. DCON	Fig
8.6		●	MDF 0860L2D	25.8	38.7	41.7			2
8.7		●	0870L2D	26.1	39.2	42.2			2
8.8	2	●	0880L2D	26.4	39.6	42.6	140		2
8.9		●	0890L2D	26.7	40.1	43.1			2
9.0		●	0900L2D	27.0	40.5	43.5			2
9.1		●	MDF 0910L2D	27.3	41.0	44.0			2
9.2		●	0920L2D	27.6	41.4	44.4			2
9.3		●	0930L2D	27.9	41.9	44.9		8.0	2
9.4		●	0940L2D	28.2	42.3	45.3			2
9.5	2	●	0950L2D	28.5	42.8	45.8	150		2
9.6		●	0960L2D	28.8	43.2	46.2			2
9.7		●	0970L2D	29.1	43.7	46.7			2
9.8		●	0980L2D	29.4	44.1	47.1			2
9.9		●	0990L2D	29.7	44.6	47.6			2
10.0		●	1000L2D-S8	30.0	45.0	48.0			2
10.0	2	●	MDF 1000L2D	30.0	45.0	100.0	150		1
10.1		●	MDF 1010L2D	30.3	45.5	48.5			2
10.2		●	1020L2D	30.6	45.9	48.9			2
10.3		●	1030L2D	30.9	46.4	49.4			2
10.4		●	1040L2D	31.2	46.8	49.8			2
10.5	2	●	1050L2D	31.5	47.3	50.3	160		2
10.6		●	1060L2D	31.8	47.7	50.7			2
10.7		●	1070L2D	32.1	48.2	51.2			2
10.8		●	1080L2D	32.4	48.6	51.6			2
10.9		●	1090L2D	32.7	49.1	52.1			2
11.0		●	1100L2D	33.0	49.5	52.5		10.0	2
11.1		●	MDF 1110L2D	33.3	50.0	53.0			2
11.2		●	1120L2D	33.6	50.4	53.4			2
11.3		●	1130L2D	33.9	50.9	53.9			2
11.4		●	1140L2D	34.2	51.3	54.3			2
11.5	2	●	1150L2D	34.5	51.8	54.8	170		2
11.6		●	1160L2D	34.8	52.2	55.2			2
11.7		●	1170L2D	35.1	52.7	55.7			2
11.8		●	1180L2D	35.4	53.1	56.1			2
11.9		●	1190L2D	35.7	53.6	56.6			2
12.0		●	1200L2D-S10	36.0	54.0	57.0			2
12.0	2	●	MDF 1200L2D	36.0	54.0	120.0	170		1
12.5	2	●	MDF 1250L2D	37.5	56.3	59.3	180		2
13.0		●	1300L2D	39.0	58.5	61.5		12.0	2
13.5	2	●	MDF 1350L2D	40.5	60.8	63.8	190		2
14.0		●	1400L2D-S12	42.0	63.0	66.0			2
14.0	2	●	MDF 1400L2D	42.0	63.0	140.0	190		2
14.5	2	●	MDF 1450L2D	43.5	65.3	68.3	200		2
15.0		●	1500L2D	45.0	67.5	70.5		14.0	2
15.5	2	●	MDF 1550L2D	46.5	69.8	72.8	210		2
16.0		●	1600L2D-S14	48.0	72.0	75.0			2
16.0	2	●	MDF 1600L2D	48.0	72.0	160.0	210		1
16.5	2	●	MDF 1650L2D	49.5	74.3	77.3	220		2
17.0		●	1700L2D	51.0	76.5	79.5		16.0	2
17.5	2	●	MDF 1750L2D	52.5	78.8	81.8	230		2
18.0		●	1800L2D-S16	54.0	81.0	84.0			2
18.0	2	●	MDF 1800L2D	54.0	81.0	180.0	230		1
18.5	2	●	MDF 1850L2D	55.5	83.3	86.3	240		2
19.0		●	1900L2D	57.0	85.5	88.5		18.0	2
19.5	2	●	MDF 1950L2D	58.5	87.8	90.8	250		2
20.0		●	2000L2D-S18	60.0	90.0	93.0			2
20.0	2	●	MDF 2000L2D	60.0	90.0	200.0	250	20.0	1

Grade: ACF75

*A prepared hole with the same diameter or centring hole with a larger diameter than the tool is needed for drilling with this tool.

Drilling | J | Solid | Indexable Head Type | Indexable Insert Type | Reamers | Brazed | Others

Flat MULTIDRILLs

MDF-L Type Long Type (External Coolant Supply)

Recommended Cutting Conditions (for 2D)

1. A prepared hole with the same diameter is needed for drilling with this tool.
2. A prepared hole with the same diameter is recommended for the cutting conditions.
3. The recommended hole depth is 5 x DC. The depth is measured from the highest point of the work material when drilling in inclined surfaces.
4. This product is a drilling tool. Do not use it for traverse cutting or helical milling.

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

Diameter DC (mm)	Cutting Conditions	Mild Steel / General Steel (up to 250 HB)	Alloy Steel (up to 300HB)	Hardened Steel (up to 50HRC)	Stainless Steel (up to 200HB)	Gray Cast Iron FC250	Ductile Cast Iron FCD450	Aluminum Alloy
ø4.0	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
ø6.0	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
ø8.0	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
ø10.0	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
ø12.0	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
ø16.0	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
ø20.0	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.

MDF-H Type (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

PVD Coat | 3D | 5D

*Refer to N38 for the tolerance of h6 and h8

Fig 1 (3D single margin)

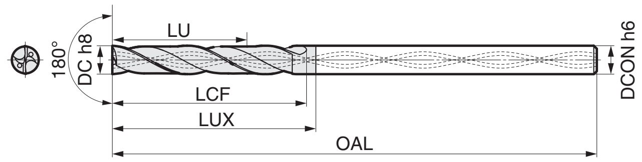
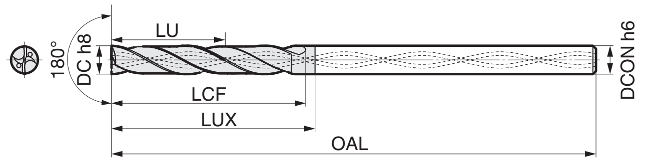


Fig 2 (5D double margin)



Diameter ø3.0 to 5.7mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Neck Length LUX	Overall Length OAL	Shank Dia. DCON	Fig
3.0	3	●	MDF 0300H3D	12.0	13.5	16.5	68	3.0	1
	5	●	0300H5D	18.0	20.1	23.1	78		2
3.1	3	●	MDF 0310H3D	12.4	14.0	17.0	72	4.0	1
	5	●	0310H5D	18.6	20.8	23.8	86		2
3.2	3	●	MDF 0320H3D	12.8	14.4	17.4	72	4.0	1
	5	●	0320H5D	19.2	21.4	24.4	86		2
3.3	3	●	MDF 0330H3D	13.2	14.9	17.9	72	4.0	1
	5	●	0330H5D	19.8	22.1	25.1	86		2
3.4	3	●	MDF 0340H3D	13.6	15.3	18.3	72	4.0	1
	5	●	0340H5D	20.4	22.8	25.8	86		2
3.5	3	●	MDF 0350H3D	14.0	15.8	18.8	72	4.0	1
	5	●	0350H5D	21.0	23.5	26.5	86		2
3.6	3	●	MDF 0360H3D	14.4	16.2	19.2	72	4.0	1
	5	●	0360H5D	21.6	24.1	27.1	86		2
3.7	3	●	MDF 0370H3D	14.8	16.7	19.7	72	4.0	1
	5	●	0370H5D	22.2	24.8	27.8	86		2
3.8	3	●	MDF 0380H3D	15.2	17.1	20.1	72	4.0	1
	5	●	0380H5D	22.8	25.5	28.5	86		2
3.9	3	●	MDF 0390H3D	15.6	17.6	20.6	72	4.0	1
	5	●	0390H5D	23.4	26.1	29.1	86		2
4.0	3	●	MDF 0400H3D	16.0	18.0	21.0	72	4.0	1
	5	●	0400H5D	24.0	26.8	29.8	86		2
4.1	3	●	MDF 0410H3D	16.4	18.5	21.5	80	5.0	1
	5	●	0410H5D	24.6	27.5	30.5	98		2
4.2	3	●	MDF 0420H3D	16.8	18.9	21.9	80	5.0	1
	5	●	0420H5D	25.2	28.1	31.1	98		2
4.3	3	●	MDF 0430H3D	17.2	19.4	22.4	80	5.0	1
	5	●	0430H5D	25.8	28.8	31.8	98		2
4.4	3	●	MDF 0440H3D	17.6	19.8	22.8	80	5.0	1
	5	●	0440H5D	26.4	29.5	32.5	98		2
4.5	3	●	MDF 0450H3D	18.0	20.3	23.3	80	5.0	1
	5	●	0450H5D	27.0	30.2	33.2	98		2
4.6	3	●	MDF 0460H3D	18.4	20.7	23.7	80	5.0	1
	5	●	0460H5D	27.6	30.8	33.8	98		2
4.7	3	●	MDF 0470H3D	18.8	21.2	24.2	80	5.0	1
	5	●	0470H5D	28.2	31.5	34.5	98		2
4.8	3	●	MDF 0480H3D	19.2	21.6	24.6	80	5.0	1
	5	●	0480H5D	28.8	32.2	35.2	98		2
4.9	3	●	MDF 0490H3D	19.6	22.1	25.1	80	5.0	1
	5	●	0490H5D	29.4	32.8	35.8	98		2
5.0	3	●	MDF 0500H3D	20.0	22.5	25.5	80	5.0	1
	5	●	0500H5D	30.0	33.5	36.5	98		2
5.1	3	●	MDF 0510H3D	20.4	23.0	26.0	82	6.0	1
	5	●	0510H5D	30.6	34.2	37.2	100		2
5.2	3	●	MDF 0520H3D	20.8	23.4	26.4	82	6.0	1
	5	●	0520H5D	31.2	34.8	37.8	100		2
5.3	3	●	MDF 0530H3D	21.2	23.9	26.9	82	6.0	1
	5	●	0530H5D	31.8	35.5	38.5	100		2
5.4	3	●	MDF 0540H3D	21.6	24.3	27.3	82	6.0	1
	5	●	0540H5D	32.4	36.2	39.2	100		2
5.5	3	●	MDF 0550H3D	22.0	24.8	27.8	82	6.0	1
	5	●	0550H5D	33.0	36.9	39.9	100		2
5.6	3	●	MDF 0560H3D	22.4	25.2	28.2	82	6.0	1
	5	●	0560H5D	33.6	37.5	40.5	100		2
5.7	3	●	MDF 0570H3D	22.8	25.7	28.7	82	6.0	1
	5	●	0570H5D	34.2	38.2	41.2	100		2

Grade: ACF75

Diameter ø5.8 to 8.5mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Neck Length LUX	Overall Length OAL	Shank Dia. DCON	Fig
5.8	3	●	MDF 0580H3D	23.2	26.1	29.1	82	6.0	1
	5	●	0580H5D	34.8	38.9	41.9	100		2
5.9	3	●	MDF 0590H3D	23.6	26.6	29.6	82	6.0	1
	5	●	0590H5D	35.4	39.5	42.5	100		2
6.0	3	●	MDF 0600H3D	24.0	27.0	30.0	82	6.0	1
	5	●	0600H5D	36.0	40.2	43.2	100		2
6.1	3	●	MDF 0610H3D	24.4	27.5	30.5	88	7.0	1
	5	●	0610H5D	36.6	40.9	43.9	109		2
6.2	3	●	MDF 0620H3D	24.8	27.9	30.9	88	7.0	1
	5	●	0620H5D	37.2	41.5	44.5	109		2
6.3	3	●	MDF 0630H3D	25.2	28.4	31.4	88	7.0	1
	5	●	0630H5D	37.8	42.2	45.2	109		2
6.4	3	●	MDF 0640H3D	25.6	28.8	31.8	88	7.0	1
	5	●	0640H5D	38.4	42.9	45.9	109		2
6.5	3	●	MDF 0650H3D	26.0	29.3	32.3	88	7.0	1
	5	●	0650H5D	39.0	43.6	46.6	109		2
6.6	3	●	MDF 0660H3D	26.4	29.7	32.7	88	7.0	1
	5	●	0660H5D	39.6	44.2	47.2	109		2
6.7	3	●	MDF 0670H3D	26.8	30.2	33.2	88	7.0	1
	5	●	0670H5D	40.2	44.9	47.9	109		2
6.8	3	●	MDF 0680H3D	27.2	30.6	33.6	88	7.0	1
	5	●	0680H5D	40.8	45.6	48.6	109		2
6.9	3	●	MDF 0690H3D	27.6	31.1	34.1	88	7.0	1
	5	●	0690H5D	41.4	46.2	49.2	109		2
7.0	3	●	MDF 0700H3D	28.0	31.5	34.5	88	7.0	1
	5	●	0700H5D	42.0	46.9	49.9	109		2
7.1	3	●	MDF 0710H3D	28.4	32.0	35.0	94	8.0	1
	5	●	0710H5D	42.6	47.6	50.6	118		2
7.2	3	●	MDF 0720H3D	28.8	32.4	35.4	94	8.0	1
	5	●	0720H5D	43.2	48.2	51.2	118		2
7.3	3	●	MDF 0730H3D	29.2	32.9	35.9	94	8.0	1
	5	●	0730H5D	43.8	48.9	51.9	118		2
7.4	3	●	MDF 0740H3D	29.6	33.3	36.3	94	8.0	1
	5	●	0740H5D	44.4	49.6	52.6	118		2
7.5	3	●	MDF 0750H3D	30.0	33.8	36.8	94	8.0	1
	5	●	0750H5D	45.0	50.3	53.3	118		2
7.6	3	●	MDF 0760H3D	30.4	34.2	37.2	94	8.0	1
	5	●	0760H5D	45.6	50.9	53.9	118		2
7.7	3	●	MDF 0770H3D	30.8	34.7	37.7	94	8.0	1
	5	●	0770H5D	46.2	51.6	54.6	118		2
7.8	3	●	MDF 0780H3D	31.2	35.1	38.1	94	8.0	1
	5	●	0780H5D	46.8	52.3	55.3	118		2
7.9	3	●	MDF 0790H3D	31.6	35.6	38.6	94	8.0	1
	5	●	0790H5D	47.4	52.9	55.9	118		2
8.0	3	●	MDF 0800H3D	32.0	36.0	39.0	94	8.0	1
	5	●	0800H5D	48.0	53.6	56.6	118		2
8.1	3	●	MDF 0810H3D	32.4	36.5	39.5	100	9.0	1
	5	●	0810H5D	48.6	54.3	57.3	127		2
8.2	3	●	MDF 0820H3D	32.8	36.9	39.9	100	9.0	1
	5	●	0820H5D	49.2	54.9	57.9	127		2
8.3	3	●	MDF 0830H3D	33.2	37.4	40.4	100	9.0	1
	5	●	0830H5D	49.8	55.6	58.6	127		2
8.4	3	●	MDF 0840H3D	33.6	37.8	40.8	100	9.0	1
	5	●	0840H5D	50.4	56.3	59.3	127		2
8.5	3	●	MDF 0850H3D	34.0	38.3	41.3	100	9.0	1
	5	●	0850H5D	51.0	57.0	60.0	127		2

Grade: ACF75

*A prepared hole with the same diameter or centring hole with a larger diameter than the tool is needed for drilling with the 5D tool.

Flat MULTIDRILLs

MDF-H Type (Internal Coolant Supply)

Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

PVD Coat | 3D | 5D

*Refer to N38 for the tolerance of h6 and h8

Fig 1 (3D single margin)

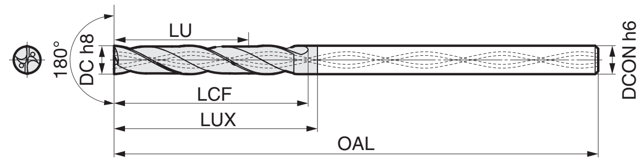
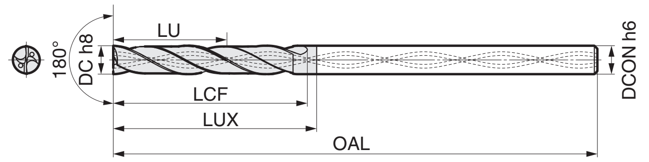


Fig 2 (5D double margin)



Diameter ø8.6 to 11.3mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Neck Length LUX	Overall Length OAL	Shank Dia. DCON	Fig
8.6	3	●	MDF 0860H3D	34.4	38.7	41.7	100	9.0	1
	5	●	0860H5D	51.6	57.6	60.6	127		2
8.7	3	●	MDF 0870H3D	34.8	39.2	42.2	100	9.0	1
	5	●	0870H5D	52.2	58.3	61.3	127		2
8.8	3	●	MDF 0880H3D	35.2	39.6	42.6	100	9.0	1
	5	●	0880H5D	52.8	59.0	62.0	127		2
8.9	3	●	MDF 0890H3D	35.6	40.1	43.1	100	9.0	1
	5	●	0890H5D	53.4	59.6	62.6	127		2
9.0	3	●	MDF 0900H3D	36.0	40.5	43.5	100	9.0	1
	5	●	0900H5D	54.0	60.3	63.3	127		2
9.1	3	●	MDF 0910H3D	36.4	41.0	44.0	106	10.0	1
	5	●	0910H5D	54.6	61.0	64.0	136		2
9.2	3	●	MDF 0920H3D	36.8	41.4	44.4	106	10.0	1
	5	●	0920H5D	55.2	61.6	64.6	136		2
9.3	3	●	MDF 0930H3D	37.2	41.9	44.9	106	10.0	1
	5	●	0930H5D	55.8	62.3	65.3	136		2
9.4	3	●	MDF 0940H3D	37.6	42.3	45.3	106	10.0	1
	5	●	0940H5D	56.4	63.0	66.0	136		2
9.5	3	●	MDF 0950H3D	38.0	42.8	45.8	106	10.0	1
	5	●	0950H5D	57.0	63.7	66.7	136		2
9.6	3	●	MDF 0960H3D	38.4	43.2	46.2	106	10.0	1
	5	●	0960H5D	57.6	64.3	67.3	136		2
9.7	3	●	MDF 0970H3D	38.8	43.7	46.7	106	10.0	1
	5	●	0970H5D	58.2	65.0	68.0	136		2
9.8	3	●	MDF 0980H3D	39.2	44.1	47.1	106	10.0	1
	5	●	0980H5D	58.8	65.7	68.7	136		2
9.9	3	●	MDF 0990H3D	39.6	44.6	47.6	106	10.0	1
	5	●	0990H5D	59.4	66.3	69.3	136		2
10.0	3	●	MDF 1000H3D	40.0	45.0	48.0	106	10.0	1
	5	●	1000H5D	60.0	67.0	70.0	136		2
10.1	3	●	MDF 1010H3D	40.4	45.5	48.5	116	11.0	1
	5	●	1010H5D	60.6	67.7	70.7	149		2
10.2	3	●	MDF 1020H3D	40.8	45.9	48.9	116	11.0	1
	5	●	1020H5D	61.2	68.3	71.3	149		2
10.3	3	●	MDF 1030H3D	41.2	46.4	49.4	116	11.0	1
	5	●	1030H5D	61.8	69.0	72.0	149		2
10.4	3	●	MDF 1040H3D	41.6	46.8	49.8	116	11.0	1
	5	●	1040H5D	62.4	69.7	72.7	149		2
10.5	3	●	MDF 1050H3D	42.0	47.3	50.3	116	11.0	1
	5	●	1050H5D	63.0	70.4	73.4	149		2
10.6	3	●	MDF 1060H3D	42.4	47.7	50.7	116	11.0	1
	5	●	1060H5D	63.6	71.0	74.0	149		2
10.7	3	●	MDF 1070H3D	42.8	48.2	51.2	116	11.0	1
	5	●	1070H5D	64.2	71.7	74.7	149		2
10.8	3	●	MDF 1080H3D	43.2	48.6	51.6	116	11.0	1
	5	●	1080H5D	64.8	72.4	75.4	149		2
10.9	3	●	MDF 1090H3D	43.6	49.1	52.1	116	11.0	1
	5	●	1090H5D	65.4	73.0	76.0	149		2
11.0	3	●	MDF 1100H3D	44.0	49.5	52.5	116	11.0	1
	5	●	1100H5D	66.0	73.7	76.7	149		2
11.1	3	●	MDF 1110H3D	44.4	50.0	53.0	122	12.0	1
	5	●	1110H5D	66.6	74.4	77.4	158		2
11.2	3	●	MDF 1120H3D	44.8	50.4	53.4	122	12.0	1
	5	●	1120H5D	67.2	75.0	78.0	158		2
11.3	3	●	MDF 1130H3D	45.2	50.9	53.9	122	12.0	1
	5	●	1130H5D	67.8	75.7	78.7	158		2

Grade: ACF75

Diameter ø11.4 to 16.0mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Neck Length LUX	Overall Length OAL	Shank Dia. DCON	Fig
11.4	3	●	MDF 1140H3D	45.6	51.3	54.3	122	12.0	1
	5	●	1140H5D	68.4	76.4	79.4	158		2
11.5	3	●	MDF 1150H3D	46.0	51.8	54.8	122	12.0	1
	5	●	1150H5D	69.0	77.1	80.1	158		2
11.6	3	●	MDF 1160H3D	46.4	52.2	55.2	122	12.0	1
	5	●	1160H5D	69.6	77.7	80.7	158		2
11.7	3	●	MDF 1170H3D	46.8	52.7	55.7	122	12.0	1
	5	●	1170H5D	70.2	78.4	81.4	158		2
11.8	3	●	MDF 1180H3D	47.2	53.1	56.1	122	12.0	1
	5	●	1180H5D	70.8	79.1	82.1	158		2
11.9	3	●	MDF 1190H3D	47.6	53.6	56.6	122	12.0	1
	5	●	1190H5D	71.4	79.7	82.7	158		2
12.0	3	●	MDF 1200H3D	48.0	54.0	57.0	122	12.0	1
	5	●	1200H5D	72.0	80.4	83.4	158		2
12.5	3	●	MDF 1250H3D	50.0	56.3	59.3	128	13.0	1
	5	●	1250H5D	75.0	83.8	86.8	167		2
13.0	3	●	MDF 1300H3D	52.0	58.5	61.5	128	13.0	1
	5	●	1300H5D	78.0	87.1	90.1	167		2
13.5	3	●	MDF 1350H3D	54.0	60.8	63.8	134	14.0	1
	5	●	1350H5D	81.0	90.5	93.5	176		2
14.0	3	●	MDF 1400H3D	56.0	63.0	66.0	134	14.0	1
	5	●	1400H5D	84.0	93.8	96.8	176		2
14.5	3	●	MDF 1450H3D	58.0	65.3	68.3	140	15.0	1
	5	●	1450H5D	87.0	97.2	100.2	185		2
15.0	3	●	MDF 1500H3D	60.0	67.5	70.5	140	15.0	1
	5	●	1500H5D	90.0	100.5	103.5	185		2
15.5	3	●	MDF 1550H3D	62.0	69.8	72.8	146	16.0	1
	5	●	1550H5D	93.0	103.9	106.9	194		2
16.0	3	●	MDF 1600H3D	64.0	72.0	75.0	146	16.0	1
	5	●	1600H5D	96.0	107.2	110.2	194		2

Grade: ACF75

*A prepared hole with the same diameter or centring hole with a larger diameter than the tool is needed for drilling with the 5D tool.

MDF-H Type (Internal Coolant Supply)

Recommended Cutting Conditions (for 3D)

1. The recommended hole depth is 3 x DC. The depth is measured from the highest point of the work material when drilling in inclined surfaces.
2. The recommended cutting conditions are those for drilling in flat horizontal surfaces.
3. Adjust the feed rate according to the inclination angle when drilling in an inclined surface.
4. Set the feed rate at 70% or lower when the inclination angle is 30° or less.
5. Set the feed rate at 50% or lower when the inclination angle is larger than 30°.
6. This product is a drilling tool. Do not use it for traverse cutting or helical milling.
7. A prepared hole with the same diameter is recommended for machining of stainless steel.

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

Diameter DC (mm)	Cutting Conditions	Mild Steel / General Steel (up to 250 HB)	Alloy Steel (up to 300HB)	Hardened Steel (up to 50HRC)	Stainless Steel (up to 200HB)	Gray Cast Iron FC250	Ductile Cast Iron FCD450	Aluminum Alloy
ø4.0	v_c	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
ø6.0	v_c	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
ø8.0	v_c	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
ø10.0	v_c	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
ø12.0	v_c	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
ø16.0	v_c	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.

Recommended Cutting Conditions (for 5D)

1. A prepared hole with the same diameter is needed for drilling with this tool.
2. A prepared hole with the same diameter is recommended for the cutting conditions.
3. The recommended hole depth is 5 x DC. The depth is measured from the highest point of the work material when drilling in inclined surfaces.
4. This product is a drilling tool. Do not use it for traverse cutting or helical milling.

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

Diameter DC (mm)	Cutting Conditions	Mild Steel / General Steel (up to 250 HB)	Alloy Steel (up to 300HB)	Hardened Steel (up to 50HRC)	Stainless Steel (up to 200HB)	Gray Cast Iron FC250	Ductile Cast Iron FCD450	Aluminum Alloy
ø4.0	v_c	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
ø6.0	v_c	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
ø8.0	v_c	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
ø10.0	v_c	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
ø12.0	v_c	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
ø16.0	v_c	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.

M E M O

GS/HGS Type

General Features

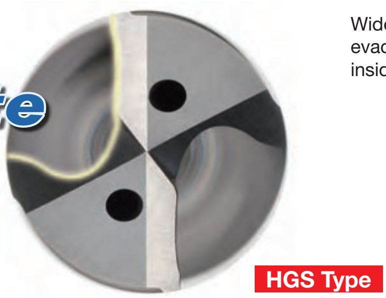
The GS and HGS types of the Super MULTIDRILL are solid carbide drills that employ J-flutes with a proprietary flute design and wide chip pocket to achieve excellent chip control and evacuation.
DEX Coat enables long, stable tool life over a wide cutting range, with various work materials and applications.

Features and Applications

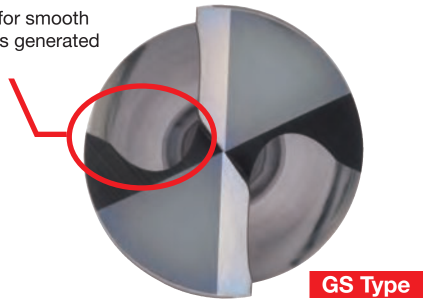
- **Long Tool Life**
  J-flute and special DEX Coat provide long tool life for a wide variety of work materials.
- **Stable chip evacuation**
  J-flute shape significantly improves chip control and evacuation.
- **Quiet drilling and stable drilling force**
  Stable drilling with minimal drill deflection even in small machine applications.
- **Environmentally Friendly**
  Also compatible with the MQL (Minimum Quantity Lubrication) system.

J flute

*"J flute" is a registered trademark.



Wide chip pocket for smooth evacuation of chips generated inside.



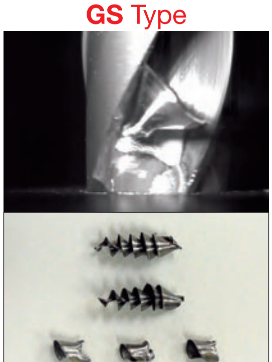
Product Range

Coolant Supply	Cat. No.	Diameter Range (mm)	Hole Depth (L/D)
External (GS Type)	MDW□□□□GS2	ø1.0 to ø20.0	up to 2
	MDW□□□□GS4		up to 4
Internal (HGS Type)	MDW□□□□HGS3	ø1.5 to ø20.0	up to 3
	MDW□□□□HGS5		up to 5
	MDW□□□□HGS8	ø1.5 to ø16.0	up to 8

Performance

Chip Control

GS Type

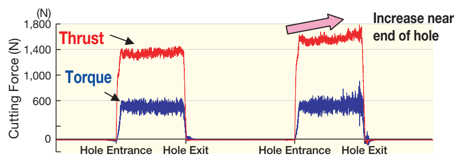


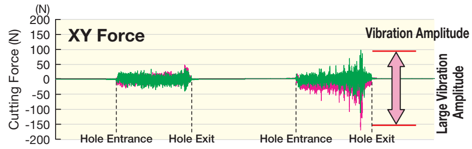
Compact chips

Conventional Tool

Comparison of Cutting Force

GS Type | Conventional Tool



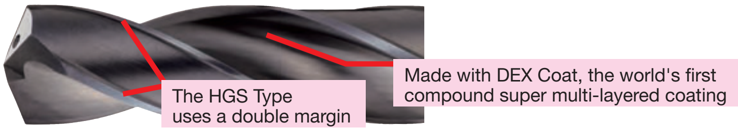


GS type provides stable drill behaviour throughout the drilling process

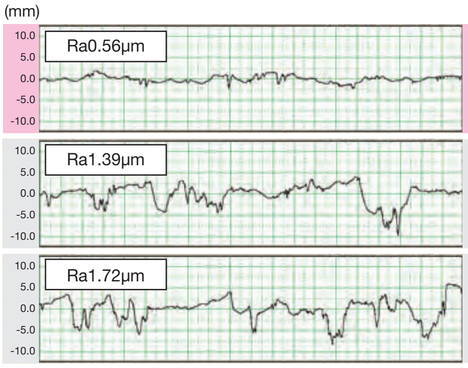
Tool: MDW 0800GS4
Work Material: S50C (200HB)
Cutting Conditions: v_c=80m/min, f=0.25mm/rev, H=24mm, external coolant supply (water soluble)

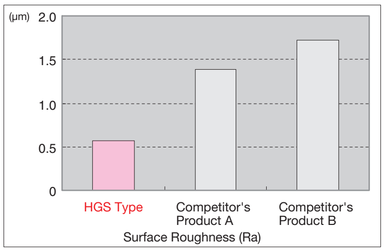
■ Uses double margin (HGS Type) (excluding ø1.5 to ø2.4mm sizes)

The HGS Type uses a double margin for greater stability and hole precision in deep hole drilling



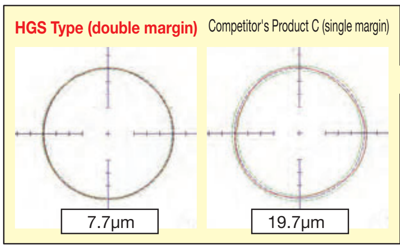
● Surface Roughness Comparison

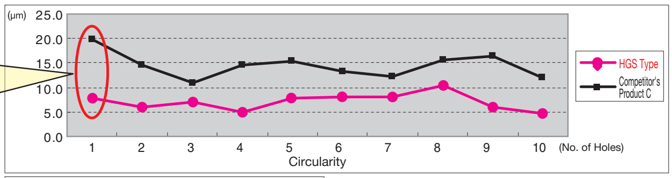




Work Material : SCM415 (120HB)
Tool : MDW0800HGS5
Cutting Conditions : v_c=80m/min, f=0.25mm/rev, H=38mm
Internal coolant supply: Water soluble

● Circularity Comparison



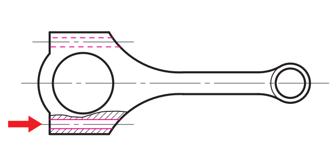


Work Material : S50C (200HB)
Tool : MDW 0800HGS8
Cutting Conditions : v_c=80m/min, f=0.25mm/rev
H=64mm, internal coolant supply (water soluble)

4-point guide design thanks to double margin reduces runout for improved stability. Good surface roughness and circularity.

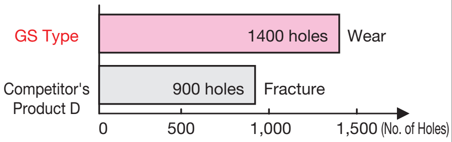
■ Application Examples (Super MULTIDRILL GS Type)

● S43C (250HB) automotive components

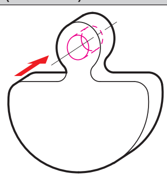


·Tool : MDW 0970GS4
·Cutting Conditions : v_c=80m/min, f=0.25mm/rev
H=25mm, external coolant supply (water soluble)

Achieves 1.5 times the tool life!
Reduces wear on peripheral cutting edge

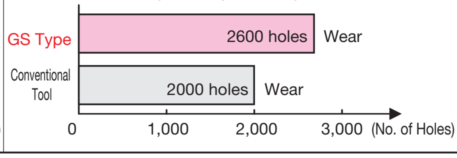


● Boron steel (30HRC) machine components

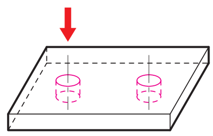


·Tool : MDW 0980GS2
·Cutting Conditions : v_c=70m/min, f=0.15mm/rev
H=7mm, external coolant supply (water soluble)

1.3 times longer tool life than conventional tools.
Good circularity and cylindricity.

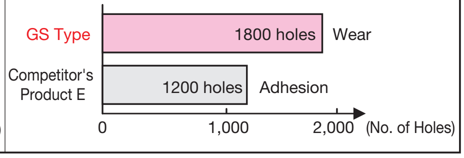


● SS400 machine components



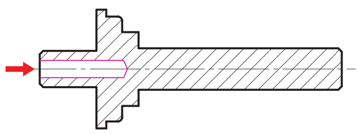
·Tool : MDW 1050GS4
·Cutting Conditions : v_c=150m/min, f=0.3mm/rev
H=12mm, external coolant supply (water soluble)

Achieves 1.5 times the tool life!
Good chip control



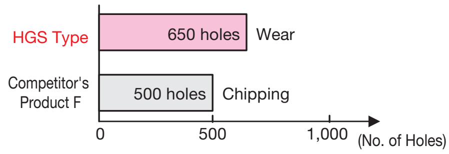
■ Application Examples (Super MULTIDRILL HGS Type)

● SCr440H automotive components

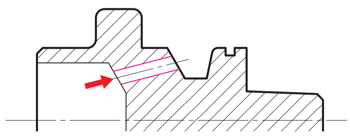


·Tool : MDW 0600HGS8
·Cutting Conditions : v_c=80m/min, f=0.25mm/rev
H=48mm, internal coolant supply (oil-based)

Achieves 1.3 times the tool life!

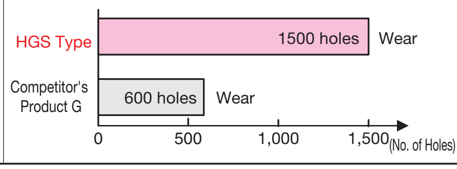


● SUJ2 automotive components

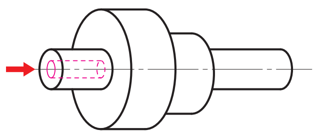


·Tool : MDW 0570HGS5
·Cutting Conditions : v_c=80m/min, f=0.1mm/rev
H=35mm, internal coolant supply (water soluble)

Achieves 2.5 times the tool life!

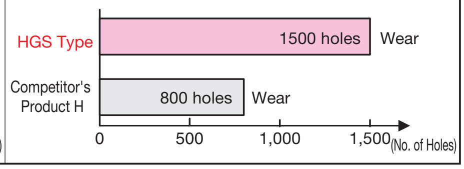


● SCM415 machine components



·Tool : MDW 0860HGS3
·Cutting Conditions : v_c=52m/min, f=0.2mm/rev
H=25mm, internal coolant supply (water soluble)

Achieves 1.8 times the tool life!



Drilling
J
Solid
Indexable Head Type
Indexable Insert Type
Reamers
Brazed
Others

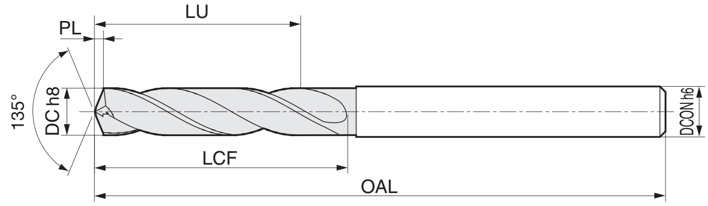
GS Type (External Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Hardened Steel from 46HRC | Stainless Steel | Ti Alloy | Heat-resistant Steel | Cast Iron | Ductile Cast Iron

DEX Coat | 2D | 4D

*Refer to N38 for the tolerance of h6 and h8

Fig 1



Diameter ø1.0 to 3.7mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
1.0	2	●	**MDW 0100GS2**	4.7	6.2	45.2	0.2	3.0	1
	4	●	**0100GS4**	10.7	12.2	49.2			1
1.1	2	●	**MDW 0110GS2**	4.6	6.2	45.2	0.2	3.0	1
	4	●	**0110GS4**	10.6	12.2	49.2			1
1.2	2	●	**MDW 0120GS2**	4.4	6.2	45.2	0.2	3.0	1
	4	●	**0120GS4**	10.4	12.2	49.2			1
1.3	2	●	**MDW 0130GS2**	4.4	6.3	45.3	0.3	3.0	1
	4	●	**0130GS4**	10.4	12.3	49.3			1
1.4	2	●	**MDW 0140GS2**	4.2	6.3	45.3	0.3	3.0	1
	4	●	**0140GS4**	10.2	12.3	49.3			1
1.5	2	●	**MDW 0150GS2**	4.1	6.3	45.3	0.3	3.0	1
	4	●	**0150GS4**	10.1	12.3	49.3			1
1.6	2	●	**MDW 0160GS2**	5.9	8.3	45.3	0.3	3.0	1
	4	●	**0160GS4**	12.9	15.3	49.3			1
1.7	2	●	**MDW 0170GS2**	5.9	8.4	45.4	0.4	3.0	1
	4	●	**0170GS4**	12.9	15.4	49.4			1
1.8	2	●	**MDW 0180GS2**	5.7	8.4	45.4	0.4	3.0	1
	4	●	**0180GS4**	12.7	15.4	49.4			1
1.9	2	●	**MDW 0190GS2**	5.6	8.4	45.4	0.4	3.0	1
	4	●	**0190GS4**	12.6	15.4	49.4			1
2.0	2	●	**MDW 0200GS2**	5.4	8.4	45.4	0.4	3.0	1
	4	●	**0200GS4**	12.4	15.4	49.4			1
2.1	2	●	**MDW 0210GS2**	7.3	10.4	45.4	0.4	3.0	1
	4	●	**0210GS4**	14.3	17.4	49.4			1
2.2	2	●	**MDW 0220GS2**	7.2	10.5	45.5	0.5	3.0	1
	4	●	**0220GS4**	14.2	17.5	49.5			1
2.3	2	●	**MDW 0230GS2**	7.1	10.5	45.5	0.5	3.0	1
	4	●	**0230GS4**	14.1	17.5	49.5			1
2.4	2	●	**MDW 0240GS2**	6.9	10.5	45.5	0.5	3.0	1
	4	●	**0240GS4**	13.9	17.5	49.5			1
2.5	2	●	**MDW 0250GS2**	6.8	10.5	45.5	0.5	3.0	1
	4	●	**0250GS4**	13.8	17.5	49.5			1
2.6	2	●	**MDW 0260GS2**	9.6	13.5	45.5	0.5	3.0	1
	4	●	**0260GS4**	15.6	19.5	49.5			1
2.7	2	●	**MDW 0270GS2**	9.6	13.6	45.6	0.6	3.0	1
	4	●	**0270GS4**	15.6	19.6	49.6			1
2.8	2	●	**MDW 0280GS2**	9.4	13.6	45.6	0.6	3.0	1
	4	●	**0280GS4**	15.4	19.6	49.6			1
2.9	2	●	**MDW 0290GS2**	9.3	13.6	45.6	0.6	3.0	1
	4	●	**0290GS4**	15.3	19.6	49.6			1
3.0	2	●	**MDW 0300GS2**	9.1	13.6	45.6	0.6	3.0	1
	4	●	**0300GS4**	15.1	19.6	49.6			1
3.1	2	●	**MDW 0310GS2**	15.0	19.6	54.6	0.6	4.0	1
	4	●	**0310GS4**	20.0	24.6	60.6			1
3.2	2	●	**MDW 0320GS2**	14.9	19.7	54.7	0.7	4.0	1
	4	●	**0320GS4**	19.9	24.7	60.7			1
3.3	2	●	**MDW 0330GS2**	14.8	19.7	54.7	0.7	4.0	1
	4	●	**0330GS4**	19.8	24.7	60.7			1
3.4	2	●	**MDW 0340GS2**	14.6	19.7	54.7	0.7	4.0	1
	4	●	**0340GS4**	19.6	24.7	60.7			1
3.5	2	●	**MDW 0350GS2**	14.5	19.7	54.7	0.7	4.0	1
	4	●	**0350GS4**	19.5	24.7	60.7			1
3.6	2	●	**MDW 0360GS2**	16.3	21.7	54.7	0.7	4.0	1
	4	●	**0360GS4**	22.3	27.7	60.7			1
3.7	2	●	**MDW 0370GS2**	16.3	21.8	54.8	0.8	4.0	1
	4	●	**0370GS4**	22.3	27.8	60.8			1

Grade: ACX70

Diameter ø3.8 to 6.5mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
3.8	2	●	**MDW 0380GS2**	16.1	21.8	54.8	0.8	4.0	1
	4	●	**0380GS4**	22.1	27.8	60.8			1
3.9	2	●	**MDW 0390GS2**	16.0	21.8	54.8	0.8	4.0	1
	4	●	**0390GS4**	22.0	27.8	60.8			1
4.0	2	●	**MDW 0400GS2**	15.8	21.8	54.8	0.8	4.0	1
	4	●	**0400GS4**	21.8	27.8	60.8			1
4.1	2	●	**MDW 0410GS2**	17.7	23.8	61.8	0.8	5.0	1
	4	●	**0410GS4**	25.7	31.8	76.8			1
4.2	2	●	**MDW 0420GS2**	17.6	23.9	61.9	0.9	5.0	1
	4	●	**0420GS4**	25.6	31.9	76.9			1
4.3	2	●	**MDW 0430GS2**	17.5	23.9	61.9	0.9	5.0	1
	4	●	**0430GS4**	25.5	31.9	76.9			1
4.4	2	●	**MDW 0440GS2**	17.3	23.9	61.9	0.9	5.0	1
	4	●	**0440GS4**	25.3	31.9	76.9			1
4.5	2	●	**MDW 0450GS2**	17.2	23.9	61.9	0.9	5.0	1
	4	●	**0450GS4**	25.2	31.9	76.9			1
4.6	2	●	**MDW 0460GS2**	19.1	26.0	62.0	1.0	5.0	1
	4	●	**0460GS4**	32.1	39.0	77.0			1
4.7	2	●	**MDW 0470GS2**	19.0	26.0	62.0	1.0	5.0	1
	4	●	**0470GS4**	32.0	39.0	77.0			1
4.8	2	●	**MDW 0480GS2**	18.8	26.0	62.0	1.0	5.0	1
	4	●	**0480GS4**	31.8	39.0	77.0			1
4.9	2	●	**MDW 0490GS2**	18.7	26.0	62.0	1.0	5.0	1
	4	●	**0490GS4**	31.7	39.0	77.0			1
5.0	2	●	**MDW 0500GS2**	18.5	26.0	62.0	1.0	5.0	1
	4	●	**0500GS4**	31.5	39.0	77.0			1
5.1	2	●	**MDW 0510GS2**	18.5	26.1	66.1	1.1	6.0	1
	4	●	**0510GS4**	32.5	40.1	82.1			1
5.2	2	●	**MDW 0520GS2**	18.3	26.1	66.1	1.1	6.0	1
	4	●	**0520GS4**	32.3	40.1	82.1			1
5.3	2	●	**MDW 0530GS2**	18.2	26.1	66.1	1.1	6.0	1
	4	●	**0530GS4**	32.2	40.1	82.1			1
5.4	2	●	**MDW 0540GS2**	18.0	26.1	66.1	1.1	6.0	1
	4	●	**0540GS4**	32.0	40.1	82.1			1
5.5	2	●	**MDW 0550GS2**	17.9	26.1	66.1	1.1	6.0	1
	4	●	**0550GS4**	31.9	40.1	82.1			1
5.6	2	●	**MDW 0560GS2**	19.8	28.2	66.2	1.2	6.0	1
	4	●	**0560GS4**	33.8	42.2	82.2			1
5.7	2	●	**MDW 0570GS2**	19.7	28.2	66.2	1.2	6.0	1
	4	●	**0570GS4**	33.7	42.2	82.2			1
5.8	2	●	**MDW 0580GS2**	19.5	28.2	66.2	1.2	6.0	1
	4	●	**0580GS4**	33.5	42.2	82.2			1
5.9	2	●	**MDW 0590GS2**	19.4	28.2	66.2	1.2	6.0	1
	4	●	**0590GS4**	33.4	42.2	82.2			1
6.0	2	●	**MDW 0600GS2**	19.2	28.2	66.2	1.2	6.0	1
	4	●	**0600GS4**	33.2	42.2	82.2			1
6.1	2	●	**MDW 0610GS2**	23.2	32.3	74.3	1.3	7.0	1
	4	●	**0610GS4**	34.2	43.3	84.3			1
6.2	2	●	**MDW 0620GS2**	23.0	32.3	74.3	1.3	7.0	1
	4	●	**0620GS4**	34.0	43.3	84.3			1
6.3	2	●	**MDW 0630GS2**	22.9	32.3	74.3	1.3	7.0	1
	4	●	**0630GS4**	33.9	43.3	84.3			1
6.4	2	●	**MDW 0640GS2**	22.7	32.3	74.3	1.3	7.0	1
	4	●	**0640GS4**	33.7	43.3	84.3			1
6.5	2	●	**MDW 0650GS2**	22.6	32.3	74.3	1.3	7.0	1
	4	●	**0650GS4**	33.6	43.3	84.3			1

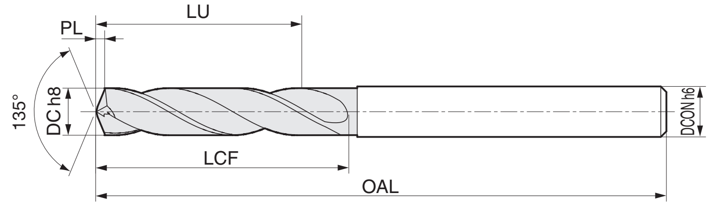
Grade: ACX70

GS Type (External Coolant Supply)

DEX Coat 2D 4D

*Refer to N38 for the tolerance of h6 and h8

Fig 1



Diameter ø6.6 to 9.3mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
6.6	2	●	MDW 0660GS2	24.5	34.4	74.4	1.4	7.0	1
	4	●	0660GS4	34.5	44.4	84.4			1
6.7	2	●	MDW 0670GS2	24.4	34.4	74.4	1.4	7.0	1
	4	●	0670GS4	34.4	44.4	84.4			1
6.8	2	●	MDW 0680GS2	24.2	34.4	74.4	1.4	7.0	1
	4	●	0680GS4	34.2	44.4	84.4			1
6.9	2	●	MDW 0690GS2	24.1	34.4	74.4	1.4	7.0	1
	4	●	0690GS4	34.1	44.4	84.4			1
7.0	2	●	MDW 0700GS2	23.9	34.4	74.4	1.4	7.0	1
	4	●	0700GS4	33.9	44.4	84.4			1
7.1	2	●	MDW 0710GS2	23.9	34.5	79.5	1.5	8.0	1
	4	●	0710GS4	35.9	46.5	91.5			1
7.2	2	●	MDW 0720GS2	23.7	34.5	79.5	1.5	8.0	1
	4	●	0720GS4	35.7	46.5	91.5			1
7.3	2	●	MDW 0730GS2	23.6	34.5	79.5	1.5	8.0	1
	4	●	0730GS4	35.6	46.5	91.5			1
7.4	2	●	MDW 0740GS2	23.4	34.5	79.5	1.5	8.0	1
	4	●	0740GS4	35.4	46.5	91.5			1
7.5	2	●	MDW 0750GS2	23.4	34.6	79.6	1.6	8.0	1
	4	●	0750GS4	35.4	46.6	91.6			1
7.6	2	●	MDW 0760GS2	26.2	37.6	79.6	1.6	8.0	1
	4	●	0760GS4	38.2	49.6	91.6			1
7.7	2	●	MDW 0770GS2	26.1	37.6	79.6	1.6	8.0	1
	4	●	0770GS4	38.1	49.6	91.6			1
7.8	2	●	MDW 0780GS2	25.9	37.6	79.6	1.6	8.0	1
	4	●	0780GS4	37.9	49.6	91.6			1
7.9	2	●	MDW 0790GS2	25.8	37.6	79.6	1.6	8.0	1
	4	●	0790GS4	37.8	49.6	91.6			1
8.0	2	●	MDW 0800GS2	25.7	37.7	79.7	1.7	8.0	1
	4	●	0800GS4	37.7	49.7	91.7			1
8.1	2	●	MDW 0810GS2	25.6	37.7	83.7	1.7	9.0	1
	4	●	0810GS4	42.6	54.7	99.7			1
8.2	2	●	MDW 0820GS2	25.4	37.7	83.7	1.7	9.0	1
	4	●	0820GS4	42.4	54.7	99.7			1
8.3	2	●	MDW 0830GS2	25.3	37.7	83.7	1.7	9.0	1
	4	●	0830GS4	42.3	54.7	99.7			1
8.4	2	●	MDW 0840GS2	25.1	37.7	83.7	1.7	9.0	1
	4	●	0840GS4	42.1	54.7	99.7			1
8.5	2	●	MDW 0850GS2	25.1	37.8	83.8	1.8	9.0	1
	4	●	0850GS4	42.1	54.8	99.8			1
8.6	2	●	MDW 0860GS2	26.9	39.8	83.8	1.8	9.0	1
	4	●	0860GS4	43.9	56.8	99.8			1
8.7	2	●	MDW 0870GS2	26.8	39.8	83.8	1.8	9.0	1
	4	●	0870GS4	43.8	56.8	99.8			1
8.8	2	●	MDW 0880GS2	26.6	39.8	83.8	1.8	9.0	1
	4	●	0880GS4	43.6	56.8	99.8			1
8.9	2	●	MDW 0890GS2	26.5	39.8	83.8	1.8	9.0	1
	4	●	0890GS4	43.5	56.8	99.8			1
9.0	2	●	MDW 0900GS2	26.4	39.9	83.9	1.9	9.0	1
	4	●	0900GS4	43.4	56.9	99.9			1
9.1	2	●	MDW 0910GS2	26.3	39.9	88.9	1.9	10.0	1
	4	●	0910GS4	46.3	59.9	106.9			1
9.2	2	●	MDW 0920GS2	26.1	39.9	88.9	1.9	10.0	1
	4	●	0920GS4	46.1	59.9	106.9			1
9.3	2	●	MDW 0930GS2	26.0	39.9	88.9	1.9	10.0	1
	4	●	0930GS4	46.0	59.9	106.9			1

Grade: ACX70

Diameter ø9.4 to 12.1mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
9.4	2	●	MDW 0940GS2	25.8	39.9	88.9	1.9	10.0	1
	4	●	0940GS4	45.8	59.9	106.9			1
9.5	2	●	MDW 0950GS2	25.8	40.0	89.0	2.0	10.0	1
	4	●	0950GS4	45.8	60.0	107.0			1
9.6	2	●	MDW 0960GS2	28.6	43.0	89.0	2.0	10.0	1
	4	●	0960GS4	47.6	62.0	107.0			1
9.7	2	●	MDW 0970GS2	28.5	43.0	89.0	2.0	10.0	1
	4	●	0970GS4	47.5	62.0	107.0			1
9.8	2	●	MDW 0980GS2	28.3	43.0	89.0	2.0	10.0	1
	4	●	0980GS4	47.3	62.0	107.0			1
9.9	2	●	MDW 0990GS2	28.2	43.0	89.0	2.0	10.0	1
	4	●	0990GS4	47.2	62.0	107.0			1
10.0	2	●	MDW 1000GS2	28.1	43.1	89.1	2.1	10.0	1
	4	●	1000GS4	47.1	62.1	107.1			1
10.1	2	●	MDW 1010GS2	28.0	43.1	95.1	2.1	11.0	1
	4	●	1010GS4	53.0	68.1	116.1			1
10.2	2	●	MDW 1020GS2	27.8	43.1	95.1	2.1	11.0	1
	4	●	1020GS4	52.8	68.1	116.1			1
10.3	2	●	MDW 1030GS2	27.7	43.1	95.1	2.1	11.0	1
	4	●	1030GS4	52.7	68.1	116.1			1
10.4	2	●	MDW 1040GS2	27.6	43.2	95.2	2.2	11.0	1
	4	●	1040GS4	52.6	68.2	116.2			1
10.5	2	●	MDW 1050GS2	27.5	43.2	95.2	2.2	11.0	1
	4	●	1050GS4	52.5	68.2	116.2			1
10.6	2	●	MDW 1060GS2	31.3	47.2	95.2	2.2	11.0	1
	4	●	1060GS4	54.3	70.2	116.2			1
10.7	2	●	MDW 1070GS2	31.2	47.2	95.2	2.2	11.0	1
	4	●	1070GS4	54.2	70.2	116.2			1
10.8	2	●	MDW 1080GS2	31.0	47.2	95.2	2.2	11.0	1
	4	●	1080GS4	54.0	70.2	116.2			1
10.9	2	●	MDW 1090GS2	31.0	47.3	95.3	2.3	11.0	1
	4	●	1090GS4	54.0	70.3	116.3			1
11.0	2	●	MDW 1100GS2	30.8	47.3	95.3	2.3	11.0	1
	4	●	1100GS4	53.8	70.3	116.3			1
11.1	2	●	MDW 1110GS2	30.7	47.3	102.3	2.3	12.0	1
	4	●	1110GS4	56.7	73.3	123.3			1
11.2	2	●	MDW 1120GS2	30.5	47.3	102.3	2.3	12.0	1
	4	●	1120GS4	56.5	73.3	123.3			1
11.3	2	●	MDW 1130GS2	30.4	47.3	102.3	2.3	12.0	1
	4	●	1130GS4	56.4	73.3	123.3			1
11.4	2	●	MDW 1140GS2	30.3	47.4	102.4	2.4	12.0	1
	4	●	1140GS4	56.3	73.4	123.4			1
11.5	2	●	MDW 1150GS2	30.2	47.4	102.4	2.4	12.0	1
	4	●	1150GS4	56.2	73.4	123.4			1
11.6	2	●	MDW 1160GS2	32.0	49.4	102.4	2.4	12.0	1
	4	●	1160GS4	58.0	75.4	123.4			1
11.7	2	●	MDW 1170GS2	31.9	49.4	102.4	2.4	12.0	1
	4	●	1170GS4	57.9	75.4	123.4			1
11.8	2	●	MDW 1180GS2	31.7	49.4	102.4	2.4	12.0	1
	4	●	1180GS4	57.7	75.4	123.4			1
11.9	2	●	MDW 1190GS2	31.7	49.5	102.5	2.5	12.0	1
	4	●	1190GS4	57.7	75.5	123.5			1
12.0	2	●	MDW 1200GS2	31.5	49.5	102.5	2.5	12.0	1
	4	●	1200GS4	57.5	75.5	123.5			1
12.1	2	●	MDW 1210GS2	31.4	49.5	102.5	2.5	13.0	1
	4	●	1210GS4	60.4	78.5	139.5			1

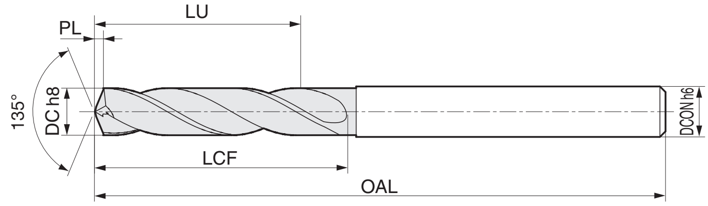
Grade: ACX70

GS Type (External Coolant Supply)

DEX Coat 2D 4D

*Refer to N38 for the tolerance of h6 and h8

Fig 1



Diameter ø12.2 to 14.9mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
12.2	2	●	MDW 1220GS2	31.2	49.5	102.5	2.5	13.0	1
	4	●	1220GS4	60.2	78.5	139.5			1
12.3	2	●	MDW 1230GS2	31.1	49.5	102.5	2.5	13.0	1
	4	●	1230GS4	60.1	78.5	139.5			1
12.4	2	●	MDW 1240GS2	31.0	49.6	102.6	2.6	13.0	1
	4	●	1240GS4	60.0	78.6	139.6			1
12.5	2	●	MDW 1250GS2	30.9	49.6	102.6	2.6	13.0	1
	4	●	1250GS4	59.9	78.6	139.6			1
12.6	2	●	MDW 1260GS2	32.7	51.6	102.6	2.6	13.0	1
	4	●	1260GS4	61.7	80.6	139.6			1
12.7	2	●	MDW 1270GS2	32.6	51.6	102.6	2.6	13.0	1
	4	●	1270GS4	61.6	80.6	139.6			1
12.8	2	●	MDW 1280GS2	32.4	51.6	102.6	2.6	13.0	1
	4	●	1280GS4	61.4	80.6	139.6			1
12.9	2	●	MDW 1290GS2	32.4	51.7	102.7	2.7	13.0	1
	4	●	1290GS4	61.4	80.7	139.7			1
13.0	2	●	MDW 1300GS2	32.2	51.7	102.7	2.7	13.0	1
	4	●	1300GS4	61.2	80.7	139.7			1
13.1	2	●	MDW 1310GS2	33.1	52.7	107.7	2.7	14.0	1
	4	●	1310GS4	67.1	86.7	149.7			1
13.2	2	●	MDW 1320GS2	32.9	52.7	107.7	2.7	14.0	1
	4	●	1320GS4	66.9	86.7	149.7			1
13.3	2	●	MDW 1330GS2	32.9	52.8	107.8	2.8	14.0	1
	4	●	1330GS4	66.9	86.8	149.8			1
13.4	2	●	MDW 1340GS2	32.7	52.8	107.8	2.8	14.0	1
	4	●	1340GS4	66.7	86.8	149.8			1
13.5	2	●	MDW 1350GS2	32.6	52.8	107.8	2.8	14.0	1
	4	●	1350GS4	66.6	86.8	149.8			1
13.6	2	●	MDW 1360GS2	34.4	54.8	107.8	2.8	14.0	1
	4	●	1360GS4	68.4	88.8	149.8			1
13.7	2	●	MDW 1370GS2	34.3	54.8	107.8	2.8	14.0	1
	4	●	1370GS4	68.3	88.8	149.8			1
13.8	2	●	MDW 1380GS2	34.2	54.9	107.9	2.9	14.0	1
	4	●	1380GS4	68.2	88.9	149.9			1
13.9	2	●	MDW 1390GS2	34.1	54.9	107.9	2.9	14.0	1
	4	●	1390GS4	68.1	88.9	149.9			1
14.0	2	●	MDW 1400GS2	33.9	54.9	107.9	2.9	14.0	1
	4	●	1400GS4	67.9	88.9	149.9			1
14.1	2	●	MDW 1410GS2	33.8	54.9	110.9	2.9	15.0	1
	4	●	1410GS4	70.8	91.9	155.9			1
14.2	2	●	MDW 1420GS2	33.6	54.9	110.9	2.9	15.0	1
	4	●	1420GS4	70.6	91.9	155.9			1
14.3	2	●	MDW 1430GS2	33.6	55.0	111.0	3.0	15.0	1
	4	●	1430GS4	70.6	92.0	156.0			1
14.4	2	●	MDW 1440GS2	33.4	55.0	111.0	3.0	15.0	1
	4	●	1440GS4	70.4	92.0	156.0			1
14.5	2	●	MDW 1450GS2	33.3	55.0	111.0	3.0	15.0	1
	4	●	1450GS4	70.3	92.0	156.0			1
14.6	2	●	MDW 1460GS2	34.1	56.0	111.0	3.0	15.0	1
	4	●	1460GS4	72.1	94.0	156.0			1
14.7	2	●	MDW 1470GS2	34.0	56.0	111.0	3.0	15.0	1
	4	●	1470GS4	72.0	94.0	156.0			1
14.8	2	●	MDW 1480GS2	33.9	56.1	111.1	3.1	15.0	1
	4	●	1480GS4	71.9	94.1	156.1			1
14.9	2	●	MDW 1490GS2	33.8	56.1	111.1	3.1	15.0	1
	4	●	1490GS4	71.8	94.1	156.1			1

Grade: ACX70

Diameter ø15.0 to 17.7mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
15.0	2	●	MDW 1500GS2	33.6	56.1	111.1	3.1	15.0	1
	4	●	1500GS4	71.6	94.1	156.1			1
15.1	2	●	MDW 1510GS2	33.5	56.1	115.1	3.1	16.0	1
	4	●	1510GS4	74.5	97.1	163.1			1
15.2	2	●	MDW 1520GS2	33.3	56.1	115.1	3.1	16.0	1
	4	●	1520GS4	74.3	97.1	163.1			1
15.3	2	●	MDW 1530GS2	33.3	56.2	115.2	3.2	16.0	1
	4	●	1530GS4	74.3	97.2	163.2			1
15.4	2	●	MDW 1540GS2	33.1	56.2	115.2	3.2	16.0	1
	4	●	1540GS4	74.1	97.2	163.2			1
15.5	2	●	MDW 1550GS2	33.0	56.2	115.2	3.2	16.0	1
	4	●	1550GS4	74.0	97.2	163.2			1
15.6	2	●	MDW 1560GS2	34.8	58.2	115.2	3.2	16.0	1
	4	●	1560GS4	75.8	99.2	163.2			1
15.7	2	●	MDW 1570GS2	34.7	58.2	115.2	3.2	16.0	1
	4	●	1570GS4	75.7	99.2	163.2			1
15.8	2	●	MDW 1580GS2	34.6	58.3	115.3	3.3	16.0	1
	4	●	1580GS4	75.6	99.3	163.3			1
15.9	2	●	MDW 1590GS2	34.5	58.3	115.3	3.3	16.0	1
	4	●	1590GS4	75.5	99.3	163.3			1
16.0	2	●	MDW 1600GS2	34.3	58.3	115.3	3.3	16.0	1
	4	●	1600GS4	75.3	99.3	163.3			1
16.1	2		MDW 1610GS2	35.2	59.3	119.3	3.3	17.0	1
	4		1610GS4	77.2	101.3	170.3			1
16.2	2		MDW 1620GS2	35.1	59.4	119.4	3.4	17.0	1
	4		1620GS4	77.1	101.4	170.4			1
16.3	2		MDW 1630GS2	35.0	59.4	119.4	3.4	17.0	1
	4		1630GS4	77.0	101.4	170.4			1
16.4	2		MDW 1640GS2	34.8	59.4	119.4	3.4	17.0	1
	4		1640GS4	76.8	101.4	170.4			1
16.5	2	●	MDW 1650GS2	34.7	59.4	119.4	3.4	17.0	1
	4	●	1650GS4	76.7	101.4	170.4			1
16.6	2		MDW 1660GS2	35.5	60.4	119.4	3.4	17.0	1
	4		1660GS4	76.5	101.4	170.4			1
16.7	2		MDW 1670GS2	35.5	60.5	119.5	3.5	17.0	1
	4		1670GS4	76.5	101.5	170.5			1
16.8	2		MDW 1680GS2	35.3	60.5	119.5	3.5	17.0	1
	4		1680GS4	76.3	101.5	170.5			1
16.9	2		MDW 1690GS2	35.2	60.5	119.5	3.5	17.0	1
	4		1690GS4	76.2	101.5	170.5			1
17.0	2	●	MDW 1700GS2	35.0	60.5	119.5	3.5	17.0	1
	4	●	1700GS4	76.0	101.5	170.5			1
17.1	2		MDW 1710GS2	35.9	61.5	123.5	3.5	18.0	1
	4		1710GS4	77.9	103.5	170.5			1
17.2	2		MDW 1720GS2	35.8	61.6	123.6	3.6	18.0	1
	4		1720GS4	77.8	103.6	170.6			1
17.3	2		MDW 1730GS2	35.7	61.6	123.6	3.6	18.0	1
	4		1730GS4	77.7	103.6	170.6			1
17.4	2		MDW 1740GS2	35.5	61.6	123.6	3.6	18.0	1
	4		1740GS4	77.5	103.6	170.6			1
17.5	2	●	MDW 1750GS2	35.4	61.6	123.6	3.6	18.0	1
	4	●	1750GS4	77.4	103.6	170.6			1
17.6	2		MDW 1760GS2	36.2	62.6	123.6	3.6	18.0	1
	4		1760GS4	79.2	105.6	170.6			1
17.7	2		MDW 1770GS2	36.2	62.7	123.7	3.7	18.0	1
	4		1770GS4	79.2	105.7	170.7			1

Grade: ACX70

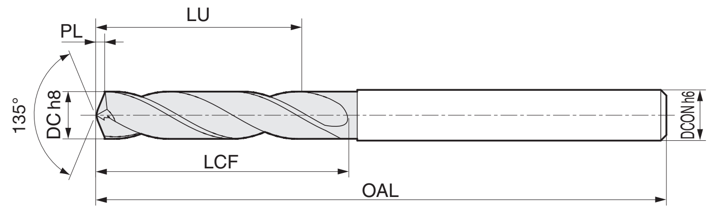
GS Type (External Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Hardened Steel from 46HRC | Stainless Steel | Ti Alloy | Heat-resistant Steel | Cast Iron | Ductile Cast Iron

DEX Coat | 2D | 4D

*Refer to N38 for the tolerance of h6 and h8

Fig 1



Diameter ø17.8 to 18.9mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
17.8	2		**MDW 1780GS2**	36.0	62.7	123.7	3.7	18.0	1
	4		**1780GS4**	79.0	105.7	170.7			1
17.9	2		**MDW 1790GS2**	35.9	62.7	123.7	3.7	18.0	1
	4		**1790GS4**	78.9	105.7	170.7			1
18.0	2	●	**MDW 1800GS2**	35.7	62.7	123.7	3.7	18.0	1
	4	●	**1800GS4**	78.7	105.7	170.7			1
18.1	2		**MDW 1810GS2**	35.6	62.7	126.7	3.7	19.0	1
	4		**1810GS4**	80.6	107.7	182.7			1
18.2	2		**MDW 1820GS2**	35.5	62.8	126.8	3.8	19.0	1
	4		**1820GS4**	80.5	107.8	182.8			1
18.3	2		**MDW 1830GS2**	35.4	62.8	126.8	3.8	19.0	1
	4		**1830GS4**	80.4	107.8	182.8			1
18.4	2		**MDW 1840GS2**	35.2	62.8	126.8	3.8	19.0	1
	4		**1840GS4**	80.2	107.8	182.8			1
18.5	2	●	**MDW 1850GS2**	35.1	62.8	126.8	3.8	19.0	1
	4	●	**1850GS4**	80.1	107.8	182.8			1
18.6	2		**MDW 1860GS2**	36.0	63.9	126.9	3.9	19.0	1
	4		**1860GS4**	82.0	109.9	182.9			1
18.7	2		**MDW 1870GS2**	35.9	63.9	126.9	3.9	19.0	1
	4		**1870GS4**	81.9	109.9	182.9			1
18.8	2		**MDW 1880GS2**	35.7	63.9	126.9	3.9	19.0	1
	4		**1880GS4**	81.7	109.9	182.9			1
18.9	2		**MDW 1890GS2**	35.6	63.9	126.9	3.9	19.0	1
	4		**1890GS4**	81.6	109.9	182.9			1

Grade: ACX70

Diameter ø19.0 to 20.0mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
19.0	2	●	**MDW 1900GS2**	35.4	63.9	126.9	3.9	19.0	1
	4	●	**1900GS4**	81.4	109.9	182.9			1
19.1	2		**MDW 1910GS2**	36.4	65.0	131.0	4.0	20.0	1
	4		**1910GS4**	85.4	114.0	183.0			1
19.2	2		**MDW 1920GS2**	36.2	65.0	131.0	4.0	20.0	1
	4		**1920GS4**	85.2	114.0	183.0			1
19.3	2		**MDW 1930GS2**	36.1	65.0	131.0	4.0	20.0	1
	4		**1930GS4**	85.1	114.0	183.0			1
19.4	2		**MDW 1940GS2**	35.9	65.0	131.0	4.0	20.0	1
	4		**1940GS4**	84.9	114.0	183.0			1
19.5	2	●	**MDW 1950GS2**	35.8	65.0	131.0	4.0	20.0	1
	4	●	**1950GS4**	84.8	114.0	183.0			1
19.6	2		**MDW 1960GS2**	36.7	66.1	131.1	4.1	20.0	1
	4		**1960GS4**	88.7	118.1	183.1			1
19.7	2		**MDW 1970GS2**	36.6	66.1	131.1	4.1	20.0	1
	4		**1970GS4**	88.6	118.1	183.1			1
19.8	2		**MDW 1980GS2**	36.4	66.1	131.1	4.1	20.0	1
	4		**1980GS4**	88.4	118.1	183.1			1
19.9	2		**MDW 1990GS2**	36.3	66.1	131.1	4.1	20.0	1
	4		**1990GS4**	88.3	118.1	183.1			1
20.0	2	●	**MDW 2000GS2**	36.1	66.1	131.1	4.1	20.0	1
	4	●	**2000GS4**	88.1	118.1	183.1			1

Grade: ACX70

Recommended Cutting Conditions

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

Diameter DC (mm)	Cutting Conditions	Mild Steel/General Steel (up to 300HB)	Hardened Steel (up to 45HRC)	Hardened Steel (46HRC up)	Stainless Steel (up to 200HB)	Gray Cast Iron FC250	Ductile Cast Iron FCD450
ø3.0	v_c	30 - **60** - 70	20 - **30** - 40	10 - **15** - 20	10 - **25** - 40	40 - **50** - 70	35 - **45** - 60
	f	0.1 - **0.15** - 0.2	0.06 - **0.07** - 0.08	0.05 - **0.07** - 0.08	0.06 - **0.08** - 0.12	0.15 - **0.2** - 0.25	0.12 - **0.15** - 0.2
ø4.0	v_c	30 - **60** - 80	20 - **30** - 40	10 - **15** - 20	10 - **25** - 45	40 - **50** - 70	35 - **45** - 60
	f	0.12 - **0.17** - 0.22	0.07 - **0.08** - 0.09	0.05 - **0.07** - 0.08	0.07 - **0.09** - 0.13	0.15 - **0.2** - 0.27	0.13 - **0.17** - 0.22
ø5.0	v_c	40 - **60** - 100	20 - **30** - 40	10 - **15** - 20	15 - **30** - 55	40 - **50** - 70	40 - **50** - 60
	f	0.15 - **0.2** - 0.25	0.08 - **0.09** - 0.1	0.05 - **0.07** - 0.08	0.08 - **0.1** - 0.15	0.15 - **0.2** - 0.3	0.15 - **0.2** - 0.25
ø8.0	v_c	40 - **80** - 120	20 - **40** - 40	10 - **15** - 20	15 - **35** - 55	40 - **50** - 80	50 - **60** - 70
	f	0.18 - **0.23** - 0.3	0.09 - **0.1** - 0.13	0.06 - **0.08** - 0.1	0.09 - **0.12** - 0.17	0.18 - **0.23** - 0.33	0.18 - **0.23** - 0.3
ø10.0	v_c	50 - **80** - 130	20 - **40** - 40	10 - **15** - 20	15 - **40** - 60	50 - **60** - 80	50 - **60** - 70
	f	0.2 - **0.25** - 0.35	0.1 - **0.12** - 0.15	0.06 - **0.08** - 0.1	0.1 - **0.15** - 0.2	0.2 - **0.3** - 0.35	0.2 - **0.25** - 0.35
ø12.0	v_c	50 - **80** - 130	20 - **40** - 40	10 - **15** - 20	15 - **40** - 60	50 - **65** - 80	50 - **60** - 70
	f	0.2 - **0.25** - 0.35	0.1 - **0.12** - 0.15	0.06 - **0.08** - 0.1	0.1 - **0.15** - 0.2	0.2 - **0.3** - 0.35	0.2 - **0.25** - 0.35
ø16.0	v_c	50 - **90** - 130	20 - **40** - 40	10 - **15** - 20	20 - **40** - 60	60 - **80** - 90	50 - **60** - 75
	f	0.22 - **0.26** - 0.35	0.1 - **0.12** - 0.15	0.07 - **0.09** - 0.11	0.1 - **0.15** - 0.2	0.22 - **0.3** - 0.35	0.22 - **0.28** - 0.35
ø20.0	v_c	60 - **100** - 140	20 - **40** - 40	10 - **15** - 20	20 - **40** - 60	60 - **80** - 100	50 - **60** - 80
	f	0.25 - **0.3** - 0.35	0.1 - **0.12** - 0.15	0.08 - **0.1** - 0.12	0.1 - **0.15** - 0.2	0.25 - **0.3** - 0.35	0.25 - **0.3** - 0.35

Min. - **Optimum** - Max.

HGS Type (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Hardened Steel from 46HRC | Stainless Steel | Ti Alloy | Heat-resistant Steel | Cast Iron | Ductile Cast Iron | Copper Alloy

DEX Coat | Coolant Hole | 3D | 5D | 8D

*Refer to N38 for the tolerance of h6 and h8

Fig 1 (Diameter ø1.5 to 2.4mm, single margin)

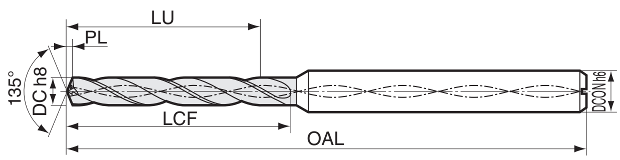
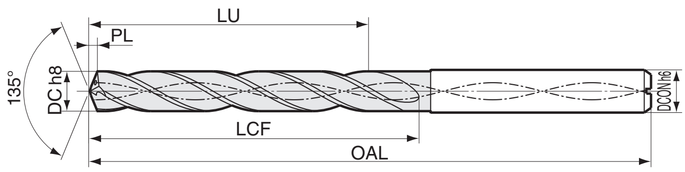


Fig 2 (Diameter ø2.5 to 20.0mm, double margin)



Diameter ø1.5 to 3.2mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
	3	●	MDW 0150HGS3	8.1	10.3	63.3			1
1.5	5	●	0150HGS5	12.1	14.3	70.3	0.3	3.0	1
	8	●	0150HGS8	16.6	18.8	76.3			1
	3	●	MDW 0160HGS3	10.4	12.8	63.3			1
1.6	5	●	0160HGS5	16.9	19.3	70.3	0.3	3.0	1
	8	●	0160HGS8	21.9	24.3	76.3			1
	3	●	MDW 0170HGS3	10.4	12.9	63.4			1
1.7	5	●	0170HGS5	16.9	19.4	70.4	0.4	3.0	1
	8	●	0170HGS8	21.9	24.4	76.4			1
	3	●	MDW 0180HGS3	10.2	12.9	63.4			1
1.8	5	●	0180HGS5	16.7	19.4	70.4	0.4	3.0	1
	8	●	0180HGS8	21.7	24.4	76.4			1
	3	●	MDW 0190HGS3	10.1	12.9	63.4			1
1.9	5	●	0190HGS5	16.6	19.4	70.4	0.4	3.0	1
	8	●	0190HGS8	21.6	24.4	76.4			1
	3	●	MDW 0200HGS3	9.9	12.9	63.4			1
2.0	5	●	0200HGS5	16.4	19.4	70.4	0.4	3.0	1
	8	●	0200HGS8	21.4	24.4	76.4			1
	3	●	MDW 0210HGS3	12.3	15.4	68.4			1
2.1	5	●	0210HGS5	21.3	24.4	78.4	0.4	3.0	1
	8	●	0210HGS8	24.8	27.9	81.4			1
	3	●	MDW 0220HGS3	12.2	15.5	68.5			1
2.2	5	●	0220HGS5	21.2	24.5	78.5	0.5	3.0	1
	8	●	0220HGS8	24.7	28.0	81.5			1
	3	●	MDW 0230HGS3	12.1	15.5	68.5			1
2.3	5	●	0230HGS5	21.1	24.5	78.5	0.5	3.0	1
	8	●	0230HGS8	24.6	28.0	81.5			1
	3	●	MDW 0240HGS3	11.9	15.5	68.5			1
2.4	5	●	0240HGS5	20.9	24.5	78.5	0.5	3.0	1
	8	●	0240HGS8	24.4	28.0	81.5			1
	3	●	MDW 0250HGS3	11.8	15.5	68.5			2
2.5	5	●	0250HGS5	20.8	24.5	78.5	0.5	3.0	2
	8	●	0250HGS8	24.3	28.0	81.5			2
	3	●	MDW 0260HGS3	14.1	18.0	68.5			2
2.6	5	●	0260HGS5	24.6	28.5	78.5	0.5	3.0	2
	8	●	0260HGS8	29.6	33.5	81.5			2
	3	●	MDW 0270HGS3	14.1	18.1	68.6			2
2.7	5	●	0270HGS5	24.6	28.6	78.6	0.6	3.0	2
	8	●	0270HGS8	29.6	33.6	81.6			2
	3	●	MDW 0280HGS3	13.9	18.1	68.6			2
2.8	5	●	0280HGS5	24.4	28.6	78.6	0.6	3.0	2
	8	●	0280HGS8	29.4	33.6	81.6			2
	3	●	MDW 0290HGS3	13.8	18.1	68.6			2
2.9	5	●	0290HGS5	24.3	28.6	78.6	0.6	3.0	2
	8	●	0290HGS8	29.3	33.6	81.6			2
	3	●	MDW 0300HGS3	13.6	18.1	68.6			2
3.0	5	●	0300HGS5	24.1	28.6	78.6	0.6	3.0	2
	8	●	0300HGS8	29.1	33.6	81.6			2
	3	●	MDW 0310HGS3	16.0	20.6	72.6			2
3.1	5	●	0310HGS5	28.0	32.6	86.6	0.6	4.0	2
	8	●	0310HGS8	34.5	39.1	92.6			2
	3	●	MDW 0320HGS3	15.9	20.7	72.7			2
3.2	5	●	0320HGS5	27.9	32.7	86.7	0.7	4.0	2
	8	●	0320HGS8	34.4	39.2	92.7			2

Grade: ACX70

Diameter ø3.3 to 5.0mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
	3	●	MDW 0330HGS3	15.8	20.7	72.7			2
3.3	5	●	0330HGS5	27.8	32.7	86.7	0.7	4.0	2
	8	●	0330HGS8	34.3	39.2	92.7			2
	3	●	MDW 0340HGS3	15.6	20.7	72.7			2
3.4	5	●	0340HGS5	27.6	32.7	86.7	0.7	4.0	2
	8	●	0340HGS8	34.1	39.2	92.7			2
	3	●	MDW 0350HGS3	15.5	20.7	72.7			2
3.5	5	●	0350HGS5	27.5	32.7	86.7	0.7	4.0	2
	8	●	0350HGS8	34.0	39.2	92.7			2
	3	●	MDW 0360HGS3	17.8	23.2	72.7			2
3.6	5	●	0360HGS5	31.3	36.7	86.7	0.7	4.0	2
	8	●	0360HGS8	39.3	44.7	92.7			2
	3	●	MDW 0370HGS3	17.8	23.3	72.8			2
3.7	5	●	0370HGS5	31.3	36.8	86.8	0.8	4.0	2
	8	●	0370HGS8	39.3	44.8	92.8			2
	3	●	MDW 0380HGS3	17.6	23.3	72.8			2
3.8	5	●	0380HGS5	31.1	36.8	86.8	0.8	4.0	2
	8	●	0380HGS8	39.1	44.8	92.8			2
	3	●	MDW 0390HGS3	17.5	23.3	72.8			2
3.9	5	●	0390HGS5	31.0	36.8	86.8	0.8	4.0	2
	8	●	0390HGS8	39.0	44.8	92.8			2
	3	●	MDW 0400HGS3	17.3	23.3	72.8			2
4.0	5	●	0400HGS5	30.8	36.8	86.8	0.8	4.0	2
	8	●	0400HGS8	38.8	44.8	92.8			2
	3	●	MDW 0410HGS3	19.7	25.8	80.8			2
4.1	5	●	0410HGS5	34.7	40.8	98.8	0.8	5.0	2
	8	●	0410HGS8	44.2	50.3	105.8			2
	3	●	MDW 0420HGS3	19.6	25.9	80.9			2
4.2	5	●	0420HGS5	34.6	40.9	98.9	0.9	5.0	2
	8	●	0420HGS8	44.1	50.4	105.9			2
	3	●	MDW 0430HGS3	19.5	25.9	80.9			2
4.3	5	●	0430HGS5	34.5	40.9	98.9	0.9	5.0	2
	8	●	0430HGS8	44.0	50.4	105.9			2
	3	●	MDW 0440HGS3	19.3	25.9	80.9			2
4.4	5	●	0440HGS5	34.3	40.9	98.9	0.9	5.0	2
	8	●	0440HGS8	43.8	50.4	105.9			2
	3	●	MDW 0450HGS3	19.2	25.9	80.9			2
4.5	5	●	0450HGS5	34.2	40.9	98.9	0.9	5.0	2
	8	●	0450HGS8	43.7	50.4	105.9			2
	3	●	MDW 0460HGS3	21.6	28.5	81.0			2
4.6	5	●	0460HGS5	38.1	45.0	99.0	1.0	5.0	2
	8	●	0460HGS8	49.1	56.0	106.0			2
	3	●	MDW 0470HGS3	21.5	28.5	81.0			2
4.7	5	●	0470HGS5	38.0	45.0	99.0	1.0	5.0	2
	8	●	0470HGS8	49.0	56.0	106.0			2
	3	●	MDW 0480HGS3	21.3	28.5	81.0			2
4.8	5	●	0480HGS5	37.8	45.0	99.0	1.0	5.0	2
	8	●	0480HGS8	48.8	56.0	106.0			2
	3	●	MDW 0490HGS3	21.2	28.5	81.0			2
4.9	5	●	0490HGS5	37.7	45.0	99.0	1.0	5.0	2
	8	●	0490HGS8	48.7	56.0	106.0			2
	3	●	MDW 0500HGS3	21.0	28.5	81.0			2
5.0	5	●	0500HGS5	37.5	45.0	99.0	1.0	5.0	2
	8	●	0500HGS8	48.5	56.0	106.0			2

Grade: ACX70

Super MULTIDRILLs

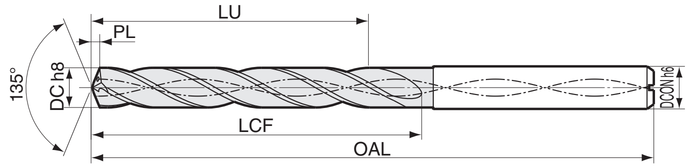
HGS Type (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Hardened Steel from 46HRC | Stainless Steel | Ti Alloy | Heat-resistant Steel | Cast Iron | Ductile Cast Iron | Copper Alloy

DEX Coat | Coolant Hole | 3D | 5D | 8D

*Refer to N38 for the tolerance of h6 and h8

Fig 2 (Diameter ø2.5 to 20.0mm, double margin)



Diameter ø5.1 to 6.8mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
	3	●	MDW 0510HGS3	21.0	28.6	83.1			2
5.1	5	●	0510HGS5	37.5	45.1	101.1	1.1	6.0	2
	8	●	0510HGS8	54.0	61.6	119.1			2
	3	●	MDW 0520HGS3	20.8	28.6	83.1			2
5.2	5	●	0520HGS5	37.3	45.1	101.1	1.1	6.0	2
	8	●	0520HGS8	53.8	61.6	119.1			2
	3	●	MDW 0530HGS3	20.7	28.6	83.1			2
5.3	5	●	0530HGS5	37.2	45.1	101.1	1.1	6.0	2
	8	●	0530HGS8	53.7	61.6	119.1			2
	3	●	MDW 0540HGS3	20.5	28.6	83.1			2
5.4	5	●	0540HGS5	37.0	45.1	101.1	1.1	6.0	2
	8	●	0540HGS8	53.5	61.6	119.1			2
	3	●	MDW 0550HGS3	20.4	28.6	83.1			2
5.5	5	●	0550HGS5	36.9	45.1	101.1	1.1	6.0	2
	8	●	0550HGS8	53.4	61.6	119.1			2
	3	●	MDW 0560HGS3	22.8	31.2	83.2			2
5.6	5	●	0560HGS5	40.8	49.2	101.2	1.2	6.0	2
	8	●	0560HGS8	58.8	67.2	119.2			2
	3	●	MDW 0570HGS3	22.7	31.2	83.2			2
5.7	5	●	0570HGS5	40.7	49.2	101.2	1.2	6.0	2
	8	●	0570HGS8	58.7	67.2	119.2			2
	3	●	MDW 0580HGS3	22.5	31.2	83.2			2
5.8	5	●	0580HGS5	40.5	49.2	101.2	1.2	6.0	2
	8	●	0580HGS8	58.5	67.2	119.2			2
	3	●	MDW 0590HGS3	22.4	31.2	83.2			2
5.9	5	●	0590HGS5	40.4	49.2	101.2	1.2	6.0	2
	8	●	0590HGS8	58.4	67.2	119.2			2
	3	●	MDW 0600HGS3	22.2	31.2	83.2			2
6.0	5	●	0600HGS5	40.2	49.2	101.2	1.2	6.0	2
	8	●	0600HGS8	58.2	67.2	119.2			2
	3	●	MDW 0610HGS3	24.7	33.8	89.3			2
6.1	5	●	0610HGS5	44.2	53.3	110.3	1.3	7.0	2
	8	●	0610HGS8	63.7	72.8	131.3			2
	3	●	MDW 0620HGS3	24.5	33.8	89.3			2
6.2	5	●	0620HGS5	44.0	53.3	110.3	1.3	7.0	2
	8	●	0620HGS8	63.5	72.8	131.3			2
	3	●	MDW 0630HGS3	24.4	33.8	89.3			2
6.3	5	●	0630HGS5	43.9	53.3	110.3	1.3	7.0	2
	8	●	0630HGS8	63.4	72.8	131.3			2
	3	●	MDW 0640HGS3	24.2	33.8	89.3			2
6.4	5	●	0640HGS5	43.7	53.3	110.3	1.3	7.0	2
	8	●	0640HGS8	63.2	72.8	131.3			2
	3	●	MDW 0650HGS3	24.1	33.8	89.3			2
6.5	5	●	0650HGS5	43.6	53.3	110.3	1.3	7.0	2
	8	●	0650HGS8	63.1	72.8	131.3			2
	3	●	MDW 0660HGS3	26.5	36.4	89.4			2
6.6	5	●	0660HGS5	47.5	57.4	110.4	1.4	7.0	2
	8	●	0660HGS8	68.5	78.4	131.4			2
	3	●	MDW 0670HGS3	26.4	36.4	89.4			2
6.7	5	●	0670HGS5	47.4	57.4	110.4	1.4	7.0	2
	8	●	0670HGS8	68.4	78.4	131.4			2
	3	●	MDW 0680HGS3	26.2	36.4	89.4			2
6.8	5	●	0680HGS5	47.2	57.4	110.4	1.4	7.0	2
	8	●	0680HGS8	68.2	78.4	131.4			2

Grade: ACX70

Diameter ø6.9 to 8.6mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
	3	●	MDW 0690HGS3	26.1	36.4	89.4			2
6.9	5	●	0690HGS5	47.1	57.4	110.4	1.4	7.0	2
	8	●	0690HGS8	68.1	78.4	131.4			2
	3	●	MDW 0700HGS3	25.9	36.4	89.4			2
7.0	5	●	0700HGS5	46.9	57.4	110.4	1.4	7.0	2
	8	●	0700HGS8	67.9	78.4	131.4			2
	3	●	MDW 0710HGS3	28.4	39.0	95.5			2
7.1	5	●	0710HGS5	50.9	61.5	119.5	1.5	8.0	2
	8	●	0710HGS8	73.4	84.0	143.5			2
	3	●	MDW 0720HGS3	28.2	39.0	95.5			2
7.2	5	●	0720HGS5	50.7	61.5	119.5	1.5	8.0	2
	8	●	0720HGS8	73.2	84.0	143.5			2
	3	●	MDW 0730HGS3	28.1	39.0	95.5			2
7.3	5	●	0730HGS5	50.6	61.5	119.5	1.5	8.0	2
	8	●	0730HGS8	73.1	84.0	143.5			2
	3	●	MDW 0740HGS3	27.9	39.0	95.5			2
7.4	5	●	0740HGS5	50.4	61.5	119.5	1.5	8.0	2
	8	●	0740HGS8	72.9	84.0	143.5			2
	3	●	MDW 0750HGS3	27.9	39.1	95.6			2
7.5	5	●	0750HGS5	50.4	61.6	119.6	1.6	8.0	2
	8	●	0750HGS8	72.9	84.1	143.6			2
	3	●	MDW 0760HGS3	30.2	41.6	95.6			2
7.6	5	●	0760HGS5	54.2	65.6	119.6	1.6	8.0	2
	8	●	0760HGS8	78.2	89.6	143.6			2
	3	●	MDW 0770HGS3	30.1	41.6	95.6			2
7.7	5	●	0770HGS5	54.1	65.6	119.6	1.6	8.0	2
	8	●	0770HGS8	78.1	89.6	143.6			2
	3	●	MDW 0780HGS3	29.9	41.6	95.6			2
7.8	5	●	0780HGS5	53.9	65.6	119.6	1.6	8.0	2
	8	●	0780HGS8	77.9	89.6	143.6			2
	3	●	MDW 0790HGS3	29.8	41.6	95.6			2
7.9	5	●	0790HGS5	53.8	65.6	119.6	1.6	8.0	2
	8	●	0790HGS8	77.8	89.6	143.6			2
	3	●	MDW 0800HGS3	29.7	41.7	95.7			2
8.0	5	●	0800HGS5	53.7	65.7	119.7	1.7	8.0	2
	8	●	0800HGS8	77.7	89.7	143.7			2
	3	●	MDW 0810HGS3	32.1	44.2	101.7			2
8.1	5	●	0810HGS5	57.6	69.7	128.7	1.7	9.0	2
	8	●	0810HGS8	83.1	95.2	155.7			2
	3	●	MDW 0820HGS3	31.9	44.2	101.7			2
8.2	5	●	0820HGS5	57.4	69.7	128.7	1.7	9.0	2
	8	●	0820HGS8	82.9	95.2	155.7			2
	3	●	MDW 0830HGS3	31.8	44.2	101.7			2
8.3	5	●	0830HGS5	57.3	69.7	128.7	1.7	9.0	2
	8	●	0830HGS8	82.8	95.2	155.7			2
	3	●	MDW 0840HGS3	31.6	44.2	101.7			2
8.4	5	●	0840HGS5	57.1	69.7	128.7	1.7	9.0	2
	8	●	0840HGS8	82.6	95.2	155.7			2
	3	●	MDW 0850HGS3	31.6	44.3	101.8			2
8.5	5	●	0850HGS5	57.1	69.8	128.8	1.8	9.0	2
	8	●	0850HGS8	82.6	95.3	155.8			2
	3	●	MDW 0860HGS3	33.9	46.8	101.8			2
8.6	5	●	0860HGS5	60.9	73.8	128.8	1.8	9.0	2
	8	●	0860HGS8	87.9	100.8	155.8			2

Grade: ACX70

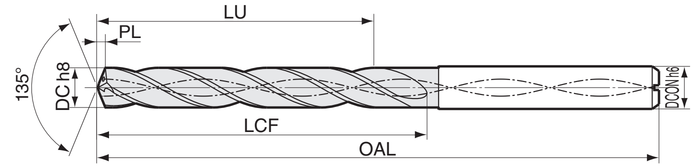
HGS Type (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Hardened Steel from 46HRC | Stainless Steel | Ti Alloy | Heat-resistant Steel | Cast Iron | Ductile Cast Iron | Copper Alloy

DEX Coat | Coolant Hole | 3D | 5D | 8D

*Refer to N38 for the tolerance of h6 and h8

Fig 2 (Diameter ø2.5 to 20.0mm, double margin)



Diameter ø8.7 to 10.4mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
	3	●	MDW 0870HGS3	33.8	46.8	101.8			2
8.7	5	●	0870HGS5	60.8	73.8	128.8	1.8	9.0	2
	8	●	0870HGS8	87.8	100.8	155.8			2
	3	●	MDW 0880HGS3	33.6	46.8	101.8			2
8.8	5	●	0880HGS5	60.6	73.8	128.8	1.8	9.0	2
	8	●	0880HGS8	87.6	100.8	155.8			2
	3	●	MDW 0890HGS3	33.5	46.8	101.8			2
8.9	5	●	0890HGS5	60.5	73.8	128.8	1.8	9.0	2
	8	●	0890HGS8	87.5	100.8	155.8			2
	3	●	MDW 0900HGS3	33.4	46.9	101.9			2
9.0	5	●	0900HGS5	60.4	73.9	128.9	1.9	9.0	2
	8	●	0900HGS8	87.4	100.9	155.9			2
	3	●	MDW 0910HGS3	35.8	49.4	107.9			2
9.1	5	●	0910HGS5	64.3	77.9	137.9	1.9	10.0	2
	8	●	0910HGS8	92.8	106.4	167.9			2
	3	●	MDW 0920HGS3	35.6	49.4	107.9			2
9.2	5	●	0920HGS5	64.1	77.9	137.9	1.9	10.0	2
	8	●	0920HGS8	92.6	106.4	167.9			2
	3	●	MDW 0930HGS3	35.5	49.4	107.9			2
9.3	5	●	0930HGS5	64.0	77.9	137.9	1.9	10.0	2
	8	●	0930HGS8	92.5	106.4	167.9			2
	3	●	MDW 0940HGS3	35.3	49.4	107.9			2
9.4	5	●	0940HGS5	63.8	77.9	137.9	1.9	10.0	2
	8	●	0940HGS8	92.3	106.4	167.9			2
	3	●	MDW 0950HGS3	35.3	49.5	108.0			2
9.5	5	●	0950HGS5	63.8	78.0	138.0	2.0	10.0	2
	8	●	0950HGS8	92.3	106.5	168.0			2
	3	●	MDW 0960HGS3	37.6	52.0	108.0			2
9.6	5	●	0960HGS5	67.6	82.0	138.0	2.0	10.0	2
	8	●	0960HGS8	97.6	112.0	168.0			2
	3	●	MDW 0970HGS3	37.5	52.0	108.0			2
9.7	5	●	0970HGS5	67.5	82.0	138.0	2.0	10.0	2
	8	●	0970HGS8	97.5	112.0	168.0			2
	3	●	MDW 0980HGS3	37.3	52.0	108.0			2
9.8	5	●	0980HGS5	67.3	82.0	138.0	2.0	10.0	2
	8	●	0980HGS8	97.3	112.0	168.0			2
	3	●	MDW 0990HGS3	37.2	52.0	108.0			2
9.9	5	●	0990HGS5	67.2	82.0	138.0	2.0	10.0	2
	8	●	0990HGS8	97.2	112.0	168.0			2
	3	●	MDW 1000HGS3	37.1	52.1	108.1			2
10.0	5	●	1000HGS5	67.1	82.1	138.1	2.1	10.0	2
	8	●	1000HGS8	97.1	112.1	168.1			2
	3	●	MDW 1010HGS3	39.5	54.6	118.1			2
10.1	5	●	1010HGS5	71.0	86.1	151.1	2.1	11.0	2
	8	●	1010HGS8	102.5	117.6	184.1			2
	3	●	MDW 1020HGS3	39.3	54.6	118.1			2
10.2	5	●	1020HGS5	70.8	86.1	151.1	2.1	11.0	2
	8	●	1020HGS8	102.3	117.6	184.1			2
	3	●	MDW 1030HGS3	39.2	54.6	118.1			2
10.3	5	●	1030HGS5	70.7	86.1	151.1	2.1	11.0	2
	8	●	1030HGS8	102.2	117.6	184.1			2
	3	●	MDW 1040HGS3	39.1	54.7	118.2			2
10.4	5	●	1040HGS5	70.6	86.2	151.2	2.2	11.0	2
	8	●	1040HGS8	102.1	117.7	184.2			2

Grade: ACX70

Diameter ø10.5 to 12.2mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
	3	●	MDW 1050HGS3	39.0	54.7	118.2			2
10.5	5	●	1050HGS5	70.5	86.2	151.2	2.2	11.0	2
	8	●	1050HGS8	102.0	117.7	184.2			2
	3	●	MDW 1060HGS3	41.3	57.2	118.2			2
10.6	5	●	1060HGS5	74.3	90.2	151.2	2.2	11.0	2
	8	●	1060HGS8	107.3	123.2	184.2			2
	3	●	MDW 1070HGS3	41.2	57.2	118.2			2
10.7	5	●	1070HGS5	74.2	90.2	151.2	2.2	11.0	2
	8	●	1070HGS8	107.2	123.2	184.2			2
	3	●	MDW 1080HGS3	41.0	57.2	118.2			2
10.8	5	●	1080HGS5	74.0	90.2	151.2	2.2	11.0	2
	8	●	1080HGS8	107.0	123.2	184.2			2
	3	●	MDW 1090HGS3	41.0	57.3	118.3			2
10.9	5	●	1090HGS5	74.0	90.3	151.3	2.3	11.0	2
	8	●	1090HGS8	107.0	123.3	184.3			2
	3	●	MDW 1100HGS3	40.8	57.3	118.3			2
11.0	5	●	1100HGS5	73.8	90.3	151.3	2.3	11.0	2
	8	●	1100HGS8	106.8	123.3	184.3			2
	3	●	MDW 1110HGS3	43.2	59.8	124.3			2
11.1	5	●	1110HGS5	77.7	94.3	160.3	2.3	12.0	2
	8	●	1110HGS8	112.2	128.8	196.3			2
	3	●	MDW 1120HGS3	43.0	59.8	124.3			2
11.2	5	●	1120HGS5	77.5	94.3	160.3	2.3	12.0	2
	8	●	1120HGS8	112.0	128.8	196.3			2
	3	●	MDW 1130HGS3	42.9	59.8	124.3			2
11.3	5	●	1130HGS5	77.4	94.3	160.3	2.3	12.0	2
	8	●	1130HGS8	111.9	128.8	196.3			2
	3	●	MDW 1140HGS3	42.8	59.9	124.4			2
11.4	5	●	1140HGS5	77.3	94.4	160.4	2.4	12.0	2
	8	●	1140HGS8	111.8	128.9	196.4			2
	3	●	MDW 1150HGS3	42.7	59.9	124.4			2
11.5	5	●	1150HGS5	77.2	94.4	160.4	2.4	12.0	2
	8	●	1150HGS8	111.7	128.9	196.4			2
	3	●	MDW 1160HGS3	45.0	62.4	124.4			2
11.6	5	●	1160HGS5	81.0	98.4	160.4	2.4	12.0	2
	8	●	1160HGS8	117.0	134.4	196.4			2
	3	●	MDW 1170HGS3	44.9	62.4	124.4			2
11.7	5	●	1170HGS5	80.9	98.4	160.4	2.4	12.0	2
	8	●	1170HGS8	116.9	134.4	196.4			2
	3	●	MDW 1180HGS3	44.7	62.4	124.4			2
11.8	5	●	1180HGS5	80.7	98.4	160.4	2.4	12.0	2
	8	●	1180HGS8	116.7	134.4	196.4			2
	3	●	MDW 1190HGS3	44.7	62.5	124.5			2
11.9	5	●	1190HGS5	80.7	98.5	160.5	2.5	12.0	2
	8	●	1190HGS8	116.7	134.5	196.5			2
	3	●	MDW 1200HGS3	44.5	62.5	124.5			2
12.0	5	●	1200HGS5	80.5	98.5	160.5	2.5	12.0	2
	8	●	1200HGS8	116.5	134.5	196.5			2
	3	●	MDW 1210HGS3	46.9	65.0	130.5			2
12.1	5	●	1210HGS5	84.4	102.5	169.5	2.5	13.0	2
	8		1210HGS8	121.9	140.0	208.5			2
	3	●	MDW 1220HGS3	46.7	65.0	130.5			2
12.2	5	●	1220HGS5	84.2	102.5	169.5	2.5	13.0	2
	8		1220HGS8	121.7	140.0	208.5			2

Grade: ACX70

Drilling
J
Solid
Indexable Head Type
Indexable Insert Type
Reamers
Brazed
Others

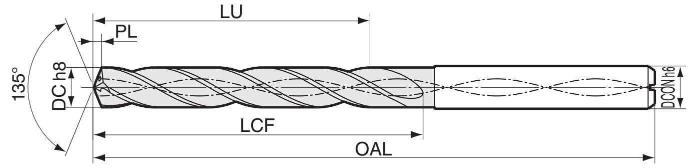
HGS Type (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Hardened Steel from 46HRC | Stainless Steel | Ti Alloy | Heat-resistant Steel | Cast Iron | Ductile Cast Iron | Copper Alloy

DEX Coat | Coolant Hole | 3D | 5D | 8D

*Refer to N38 for the tolerance of h6 and h8

Fig 2 (Diameter ø2.5 to 20.0mm, double margin)



Diameter ø12.3 to 14.0mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
	3	●	MDW 1230HGS3	46.6	65.0	130.5			2
12.3	5	●	1230HGS5	84.1	102.5	169.5	2.5	13.0	2
	8		1230HGS8	121.6	140.0	208.5			2
	3	●	MDW 1240HGS3	46.5	65.1	130.6			2
12.4	5	●	1240HGS5	84.0	102.6	169.6	2.6	13.0	2
	8		1240HGS8	121.5	140.1	208.6			2
	3	●	MDW 1250HGS3	46.4	65.1	130.6			2
12.5	5	●	1250HGS5	83.9	102.6	169.6	2.6	13.0	2
	8	●	1250HGS8	121.4	140.1	208.6			2
	3	●	MDW 1260HGS3	48.7	67.6	130.6			2
12.6	5	●	1260HGS5	87.7	106.6	169.6	2.6	13.0	2
	8		1260HGS8	126.7	145.6	208.6			2
	3	●	MDW 1270HGS3	48.6	67.6	130.6			2
12.7	5	●	1270HGS5	87.6	106.6	169.6	2.6	13.0	2
	8		1270HGS8	126.6	145.6	208.6			2
	3	●	MDW 1280HGS3	48.4	67.6	130.6			2
12.8	5	●	1280HGS5	87.4	106.6	169.6	2.6	13.0	2
	8		1280HGS8	126.4	145.6	208.6			2
	3	●	MDW 1290HGS3	48.4	67.7	130.7			2
12.9	5	●	1290HGS5	87.4	106.7	169.7	2.7	13.0	2
	8		1290HGS8	126.4	145.7	208.7			2
	3	●	MDW 1300HGS3	48.2	67.7	130.7			2
13.0	5	●	1300HGS5	87.2	106.7	169.7	2.7	13.0	2
	8	●	1300HGS8	126.2	145.7	208.7			2
	3	●	MDW 1310HGS3	50.6	70.2	136.7			2
13.1	5	●	1310HGS5	91.1	110.7	178.7	2.7	14.0	2
	8		1310HGS8	131.6	151.2	220.7			2
	3	●	MDW 1320HGS3	50.4	70.2	136.7			2
13.2	5	●	1320HGS5	90.9	110.7	178.7	2.7	14.0	2
	8		1320HGS8	131.4	151.2	220.7			2
	3	●	MDW 1330HGS3	50.4	70.3	136.8			2
13.3	5	●	1330HGS5	90.9	110.8	178.8	2.8	14.0	2
	8		1330HGS8	131.4	151.3	220.8			2
	3	●	MDW 1340HGS3	50.2	70.3	136.8			2
13.4	5	●	1340HGS5	90.7	110.8	178.8	2.8	14.0	2
	8		1340HGS8	131.2	151.3	220.8			2
	3	●	MDW 1350HGS3	50.1	70.3	136.8			2
13.5	5	●	1350HGS5	90.6	110.8	178.8	2.8	14.0	2
	8	●	1350HGS8	131.1	151.3	220.8			2
	3	●	MDW 1360HGS3	52.4	72.8	136.8			2
13.6	5	●	1360HGS5	94.4	114.8	178.8	2.8	14.0	2
	8		1360HGS8	136.4	156.8	220.8			2
	3	●	MDW 1370HGS3	52.3	72.8	136.8			2
13.7	5	●	1370HGS5	94.3	114.8	178.8	2.8	14.0	2
	8		1370HGS8	136.3	156.8	220.8			2
	3	●	MDW 1380HGS3	52.2	72.9	136.9			2
13.8	5	●	1380HGS5	94.2	114.9	178.9	2.9	14.0	2
	8		1380HGS8	136.2	156.9	220.9			2
	3	●	MDW 1390HGS3	52.1	72.9	136.9			2
13.9	5	●	1390HGS5	94.1	114.9	178.9	2.9	14.0	2
	8		1390HGS8	136.1	156.9	220.9			2
	3	●	MDW 1400HGS3	51.9	72.9	136.9			2
14.0	5	●	1400HGS5	93.9	114.9	178.9	2.9	14.0	2
	8	●	1400HGS8	135.9	156.9	220.9			2

Grade: ACX70

Diameter ø14.1 to 15.8mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
	3	●	MDW 1410HGS3	54.3	75.4	142.9			2
14.1	5	●	1410HGS5	97.8	118.9	187.9	2.9	15.0	2
	8		1410HGS8	141.3	162.4	232.9			2
	3	●	MDW 1420HGS3	54.1	75.4	142.9			2
14.2	5	●	1420HGS5	97.6	118.9	187.9	2.9	15.0	2
	8		1420HGS8	141.1	162.4	232.9			2
	3	●	MDW 1430HGS3	54.1	75.5	143.0			2
14.3	5	●	1430HGS5	97.6	119.0	188.0	3.0	15.0	2
	8		1430HGS8	141.1	162.5	233.0			2
	3	●	MDW 1440HGS3	53.9	75.5	143.0			2
14.4	5	●	1440HGS5	97.4	119.0	188.0	3.0	15.0	2
	8		1440HGS8	140.9	162.5	233.0			2
	3	●	MDW 1450HGS3	53.8	75.5	143.0			2
14.5	5	●	1450HGS5	97.3	119.0	188.0	3.0	15.0	2
	8	●	1450HGS8	140.8	162.5	233.0			2
	3	●	MDW 1460HGS3	56.1	78.0	143.0			2
14.6	5	●	1460HGS5	101.1	123.0	188.0	3.0	15.0	2
	8		1460HGS8	146.1	168.0	233.0			2
	3	●	MDW 1470HGS3	56.0	78.0	143.0			2
14.7	5	●	1470HGS5	101.0	123.0	188.0	3.0	15.0	2
	8		1470HGS8	146.0	168.0	233.0			2
	3	●	MDW 1480HGS3	55.9	78.1	143.1			2
14.8	5	●	1480HGS5	100.9	123.1	188.1	3.1	15.0	2
	8		1480HGS8	145.9	168.1	233.1			2
	3	●	MDW 1490HGS3	55.8	78.1	143.1			2
14.9	5	●	1490HGS5	100.8	123.1	188.1	3.1	15.0	2
	8		1490HGS8	145.8	168.1	233.1			2
	3	●	MDW 1500HGS3	55.6	78.1	143.1			2
15.0	5	●	1500HGS5	100.6	123.1	188.1	3.1	15.0	2
	8	●	1500HGS8	145.6	168.1	233.1			2
	3	●	MDW 1510HGS3	58.0	80.6	149.1			2
15.1	5	●	1510HGS5	104.5	127.1	197.1	3.1	16.0	2
	8		1510HGS8	151.0	173.6	245.1			2
	3	●	MDW 1520HGS3	57.8	80.6	149.1			2
15.2	5	●	1520HGS5	104.3	127.1	197.1	3.1	16.0	2
	8		1520HGS8	150.8	173.6	245.1			2
	3	●	MDW 1530HGS3	57.8	80.7	149.2			2
15.3	5	●	1530HGS5	104.3	127.2	197.2	3.2	16.0	2
	8		1530HGS8	150.8	173.7	245.2			2
	3	●	MDW 1540HGS3	57.6	80.7	149.2			2
15.4	5	●	1540HGS5	104.1	127.2	197.2	3.2	16.0	2
	8		1540HGS8	150.6	173.7	245.2			2
	3	●	MDW 1550HGS3	57.5	80.7	149.2			2
15.5	5	●	1550HGS5	104.0	127.2	197.2	3.2	16.0	2
	8	●	1550HGS8	150.5	173.7	245.2			2
	3	●	MDW 1560HGS3	59.8	83.2	149.2			2
15.6	5	●	1560HGS5	107.8	131.2	197.2	3.2	16.0	2
	8		1560HGS8	155.8	179.2	245.2			2
	3	●	MDW 1570HGS3	59.7	83.2	149.2			2
15.7	5	●	1570HGS5	107.7	131.2	197.2	3.2	16.0	2
	8		1570HGS8	155.7	179.2	245.2			2
	3	●	MDW 1580HGS3	59.6	83.3	149.3			2
15.8	5	●	1580HGS5	107.6	131.3	197.3	3.3	16.0	2
	8		1580HGS8	155.6	179.3	245.3			2

Grade: ACX70

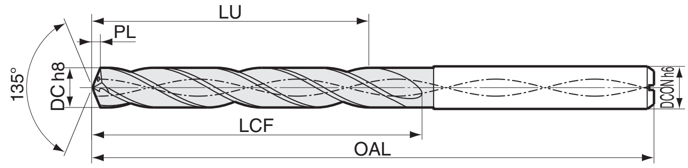
HGS Type (Internal Coolant Supply)

Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Hardened Steel from 46HRC | Stainless Steel | Ti Alloy | Heat-resistant Steel | Cast Iron | Ductile Cast Iron | Copper Alloy

DEX Coat | Coolant Hole | 3D | 5D | 8D

*Refer to N38 for the tolerance of h6 and h8

Fig 2 (Diameter ø2.5 to 20.0mm, double margin)



Diameter ø15.9 to 18.4mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
15.9	3	●	MDW 1590HGS3	59.5	83.3	149.3	3.3	16.0	2
	5	●	1590HGS5	107.5	131.3	197.3			2
	8		1590HGS8	155.5	179.3	245.3			2
16.0	3	●	MDW 1600HGS3	59.3	83.3	149.3	3.3	16.0	2
	5	●	1600HGS5	107.3	131.3	197.3			2
	8	●	1600HGS8	155.3	179.3	245.3			2
16.1	3		MDW 1610HGS3	61.7	85.8	155.3	3.3	17.0	2
	5		1610HGS5	111.2	135.3	206.3			2
16.2	3		MDW 1620HGS3	61.6	85.9	155.4	3.4	17.0	2
	5		1620HGS5	111.1	135.4	206.4			2
16.3	3		MDW 1630HGS3	61.5	85.9	155.4	3.4	17.0	2
	5		1630HGS5	111.0	135.4	206.4			2
16.4	3		MDW 1640HGS3	61.3	85.9	155.4	3.4	17.0	2
	5		1640HGS5	110.8	135.4	206.4			2
16.5	3	●	MDW 1650HGS3	61.2	85.9	155.4	3.4	17.0	2
	5	●	1650HGS5	110.7	135.4	206.4			2
16.6	3		MDW 1660HGS3	63.5	88.4	155.4	3.4	17.0	2
	5		1660HGS5	114.5	139.4	206.4			2
16.7	3		MDW 1670HGS3	63.5	88.5	155.5	3.5	17.0	2
	5		1670HGS5	114.5	139.5	206.5			2
16.8	3		MDW 1680HGS3	63.3	88.5	155.5	3.5	17.0	2
	5		1680HGS5	114.3	139.5	206.5			2
16.9	3		MDW 1690HGS3	63.2	88.5	155.5	3.5	17.0	2
	5		1690HGS5	114.2	139.5	206.5			2
17.0	3	●	MDW 1700HGS3	63.0	88.5	155.5	3.5	17.0	2
	5	●	1700HGS5	114.0	139.5	206.5			2
17.1	3		MDW 1710HGS3	65.4	91.0	161.5	3.5	18.0	2
	5		1710HGS5	117.9	143.5	217.5			2
17.2	3		MDW 1720HGS3	65.3	91.1	161.6	3.6	18.0	2
	5		1720HGS5	117.8	143.6	217.6			2
17.3	3		MDW 1730HGS3	65.2	91.1	161.6	3.6	18.0	2
	5		1730HGS5	117.7	143.6	217.6			2
17.4	3		MDW 1740HGS3	65.0	91.1	161.6	3.6	18.0	2
	5		1740HGS5	117.5	143.6	217.6			2
17.5	3	●	MDW 1750HGS3	64.9	91.1	161.6	3.6	18.0	2
	5	●	1750HGS5	117.4	143.6	217.6			2
17.6	3		MDW 1760HGS3	67.2	93.6	161.6	3.6	18.0	2
	5		1760HGS5	121.2	147.6	217.6			2
17.7	3		MDW 1770HGS3	67.2	93.7	161.7	3.7	18.0	2
	5		1770HGS5	121.2	147.7	217.7			2
17.8	3		MDW 1780HGS3	67.0	93.7	161.7	3.7	18.0	2
	5		1780HGS5	121.0	147.7	217.7			2
17.9	3		MDW 1790HGS3	66.9	93.7	161.7	3.7	18.0	2
	5		1790HGS5	120.9	147.7	217.7			2
18.0	3	●	MDW 1800HGS3	66.7	93.7	161.7	3.7	18.0	2
	5	●	1800HGS5	120.7	147.7	217.7			2
18.1	3		MDW 1810HGS3	69.1	96.2	167.7	3.7	19.0	2
	5		1810HGS5	124.6	151.7	224.7			2
18.2	3		MDW 1820HGS3	69.0	96.3	167.8	3.8	19.0	2
	5		1820HGS5	124.5	151.8	224.8			2
18.3	3		MDW 1830HGS3	68.9	96.3	167.8	3.8	19.0	2
	5		1830HGS5	124.4	151.8	224.8			2
18.4	3		MDW 1840HGS3	68.7	96.3	167.8	3.8	19.0	2
	5		1840HGS5	124.2	151.8	224.8			2

Grade: ACX70

Diameter ø18.5 to 20.0mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
18.5	3	●	MDW 1850HGS3	68.6	96.3	167.8	3.8	19.0	2
	5	●	1850HGS5	124.1	151.8	224.8			2
18.6	3		MDW 1860HGS3	71.0	98.9	167.9	3.9	19.0	2
	5		1860HGS5	128.0	155.9	224.9			2
18.7	3		MDW 1870HGS3	70.9	98.9	167.9	3.9	19.0	2
	5		1870HGS5	127.9	155.9	224.9			2
18.8	3		MDW 1880HGS3	70.7	98.9	167.9	3.9	19.0	2
	5		1880HGS5	127.7	155.9	224.9			2
18.9	3		MDW 1890HGS3	70.6	98.9	167.9	3.9	19.0	2
	5		1890HGS5	127.6	155.9	224.9			2
19.0	3	●	MDW 1900HGS3	70.4	98.9	167.9	3.9	19.0	2
	5	●	1900HGS5	127.4	155.9	224.9			2
19.1	3		MDW 1910HGS3	72.9	101.5	174.0	4.0	20.0	2
	5		1910HGS5	131.4	160.0	234.0			2
19.2	3		MDW 1920HGS3	72.7	101.5	174.0	4.0	20.0	2
	5		1920HGS5	131.2	160.0	234.0			2
19.3	3		MDW 1930HGS3	72.6	101.5	174.0	4.0	20.0	2
	5		1930HGS5	131.1	160.0	234.0			2
19.4	3		MDW 1940HGS3	72.4	101.5	174.0	4.0	20.0	2
	5		1940HGS5	130.9	160.0	234.0			2
19.5	3	●	MDW 1950HGS3	72.3	101.5	174.0	4.0	20.0	2
	5	●	1950HGS5	130.8	160.0	234.0			2
19.6	3		MDW 1960HGS3	74.7	104.1	174.1	4.1	20.0	2
	5		1960HGS5	134.7	164.1	234.1			2
19.7	3		MDW 1970HGS3	74.6	104.1	174.1	4.1	20.0	2
	5		1970HGS5	134.6	164.1	234.1			2
19.8	3		MDW 1980HGS3	74.4	104.1	174.1	4.1	20.0	2
	5		1980HGS5	134.4	164.1	234.1			2
19.9	3		MDW 1990HGS3	74.3	104.1	174.1	4.1	20.0	2
	5		1990HGS5	134.3	164.1	234.1			2
20.0	3	●	MDW 2000HGS3	74.1	104.1	174.1	4.1	20.0	2
	5	●	2000HGS5	134.1	164.1	234.1			2

Grade: ACX70

HGS Type (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Hardened Steel from 46HRC | Stainless Steel | Ti Alloy | Heat-resistant Steel | Cast Iron | Ductile Cast Iron | Copper Alloy

DEX Coat | Coolant Hole | 3D | 5D | 8D

*Refer to N38 for the tolerance of h6 and h8

Fig 1 (Diameter ø1.5 to 2.4mm, single margin)

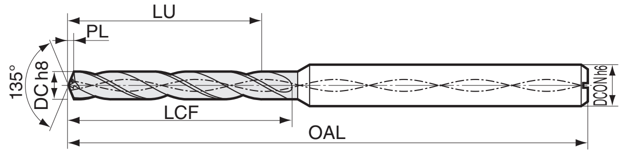
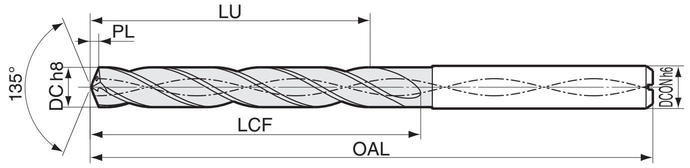


Fig 2 (Diameter ø2.5 to 20.0mm, double margin)



Recommended Cutting Conditions

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

Diameter DC (mm)	Cutting Conditions	Mild Steel/General Steel (up to 300HB)	Hardened Steel (up to 45HRC)	Hardened Steel (46HRC up)	Stainless Steel (up to 200HB)	Gray Cast Iron FC250	Ductile Cast Iron FCD450	Titanium Alloy 6Al-4V-Ti	Ni-based Heat-resistant Alloy (Inconel 718)
ø3.0	v_c	30 - **60** - 100	20 - **30** - 40	10 - **15** - 20	30 - **40** - 50	50 - **70** - 90	40 - **50** - 80	20 - **30** - 40	10 - **10** - 30
	f	0.1 - **0.15** - 0.2	0.06 - **0.07** - 0.08	0.05 - **0.07** - 0.08	0.06 - **0.08** - 0.12	0.15 - **0.2** - 0.25	0.12 - **0.15** - 0.2	0.08 - **0.09** - 0.1	0.05 - **0.06** - 0.08
ø4.0	v_c	40 - **70** - 110	20 - **30** - 40	10 - **15** - 20	30 - **40** - 55	50 - **70** - 90	40 - **50** - 80	20 - **30** - 40	10 - **10** - 30
	f	0.15 - **0.2** - 0.25	0.07 - **0.08** - 0.09	0.05 - **0.07** - 0.08	0.07 - **0.10** - 0.13	0.15 - **0.2** - 0.25	0.13 - **0.18** - 0.23	0.08 - **0.09** - 0.1	0.05 - **0.06** - 0.08
ø5.0	v_c	50 - **80** - 120	20 - **30** - 40	10 - **15** - 20	30 - **40** - 60	50 - **70** - 90	40 - **50** - 80	20 - **30** - 40	10 - **10** - 30
	f	0.15 - **0.2** - 0.25	0.08 - **0.09** - 0.1	0.05 - **0.07** - 0.08	0.08 - **0.12** - 0.15	0.15 - **0.2** - 0.3	0.15 - **0.2** - 0.25	0.08 - **0.09** - 0.1	0.05 - **0.06** - 0.08
ø8.0	v_c	60 - **90** - 140	20 - **40** - 40	10 - **15** - 20	30 - **45** - 70	60 - **80** - 100	50 - **60** - 90	20 - **30** - 40	15 - **15** - 30
	f	0.18 - **0.25** - 0.30	0.09 - **0.1** - 0.13	0.06 - **0.08** - 0.1	0.09 - **0.14** - 0.18	0.18 - **0.23** - 0.33	0.18 - **0.23** - 0.3	0.08 - **0.09** - 0.1	0.07 - **0.08** - 0.09
ø10.0	v_c	70 - **100** - 150	20 - **40** - 40	10 - **15** - 20	40 - **50** - 80	60 - **80** - 100	50 - **60** - 90	20 - **30** - 40	15 - **15** - 30
	f	0.2 - **0.25** - 0.35	0.1 - **0.12** - 0.15	0.06 - **0.08** - 0.1	0.1 - **0.15** - 0.2	0.2 - **0.3** - 0.35	0.2 - **0.25** - 0.35	0.08 - **0.1** - 0.12	0.08 - **0.09** - 0.1
ø12.0	v_c	70 - **100** - 150	20 - **40** - 40	10 - **15** - 20	40 - **50** - 80	60 - **80** - 100	50 - **60** - 90	20 - **30** - 40	15 - **15** - 30
	f	0.2 - **0.25** - 0.35	0.1 - **0.12** - 0.15	0.06 - **0.08** - 0.1	0.1 - **0.15** - 0.2	0.2 - **0.3** - 0.35	0.2 - **0.25** - 0.35	0.08 - **0.1** - 0.12	0.08 - **0.09** - 0.1
ø16.0	v_c	75 - **110** - 150	20 - **40** - 40	10 - **15** - 20	45 - **60** - 80	65 - **90** - 110	55 - **70** - 95	25 - **30** - 40	20 - **20** - 35
	f	0.22 - **0.22** - 0.35	0.1 - **0.12** - 0.15	0.07 - **0.09** - 0.11	0.1 - **0.15** - 0.2	0.25 - **0.3** - 0.35	0.22 - **0.27** - 0.37	0.09 - **0.11** - 0.13	0.08 - **0.09** - 0.1
ø20.0	v_c	80 - **120** - 160	20 - **40** - 40	10 - **15** - 20	45 - **60** - 80	70 - **100** - 120	60 - **80** - 100	25 - **30** - 40	20 - **20** - 35
	f	0.25 - **0.3** - 0.35	0.1 - **0.12** - 0.15	0.08 - **0.1** - 0.12	0.1 - **0.15** - 0.2	0.25 - **0.3** - 0.35	0.25 - **0.3** - 0.35	0.1 - **0.12** - 0.15	0.08 - **0.09** - 0.1

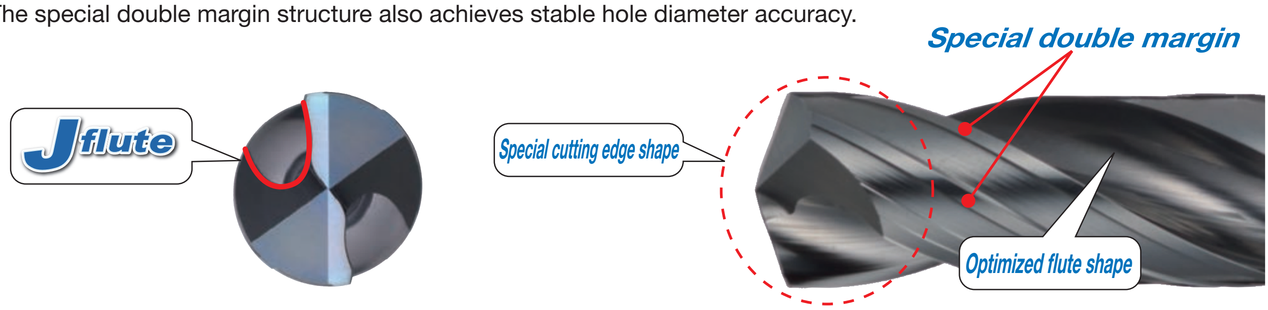
Min. - **Optimum** - Max.

■ General Features

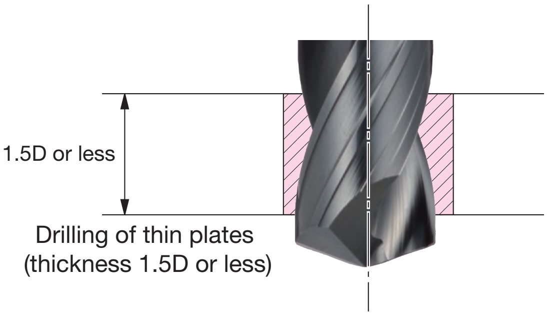
The J flutes of the Super MULTIDRILL WGS have been tuned for improved chip breaking capabilities during drilling of thin plates. Excellent sharpness prevents work hardening.
The special double margin structure also achieves stable hole diameter accuracy.

■ Features and Applications

J flutes (groove shape) have been tuned to create a specialized shape for drilling of thin plates.
The special double margin structure also achieves stable hole diameter accuracy.



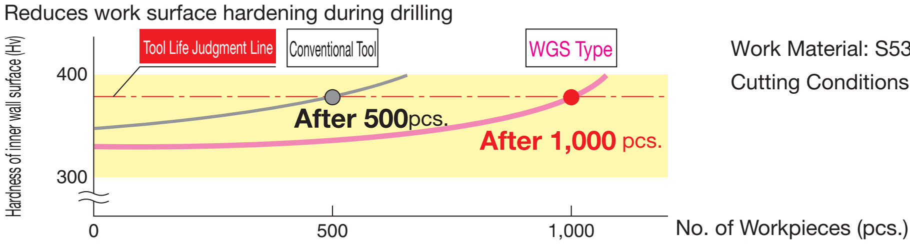
■ Target Workpieces



[Common automotive components]
· Bearing hub (inner and outer rings)
· Knuckle
· Differential ring
· Components such as bolt holes in automobile flange parts

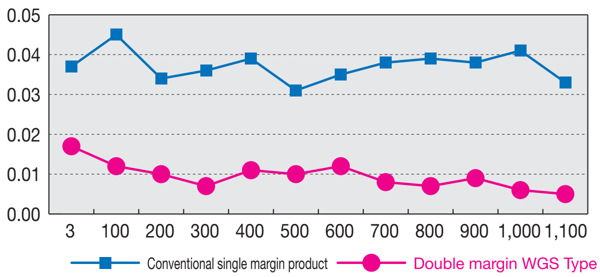
■ Cutting Performance

● Reduces work surface hardening during drilling



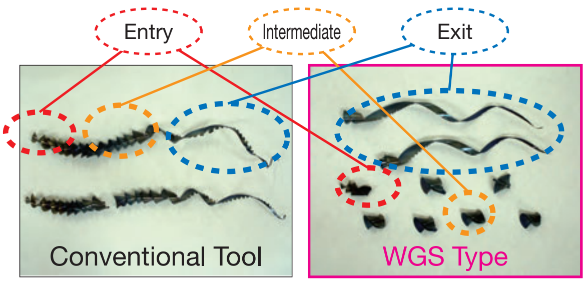
Work Material: S53C
Cutting Conditions: v_c=70m/min, f =0.2mm/rev
H=13mm

● Stable hole expansion tolerance



Work Material: S50C
Cutting Conditions: v_c=80m/min, f =0.25mm/rev
H=16mm

● Better chip breaking capabilities



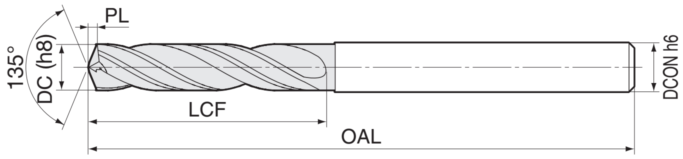
Work Material: SUJ2
Cutting Conditions: v_c=80m/min, f =0.25mm/rev
H=13mm

WGS Type (External Coolant Supply)

DEX Coat 2D

*Refer to N38 for the tolerance of h6 and h8

Fig 1



Body

Dimensions (mm)

Dia. DC	Cat. No.	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
6.8 to 7.0	MDW 0680 to 0700WGS2	34	74	1.4	7.0	1
7.1 to 7.5	MDW 0710 to 0750WGS2	35	80	1.5	8.0	1
7.6 to 8.0	0760 to 0800WGS2	38		1.6		1
8.1 to 8.5	MDW 0810 to 0850WGS2	38	84	1.7	9.0	1
8.6 to 9.0	0860 to 0900WGS2	40		1.8		1
9.1 to 9.5	MDW 0910 to 0950WGS2	40	89	1.9	10.0	1
9.6 to 10.0	0960 to 1000WGS2	43		2.0		1
10.1 to 10.5	MDW 1010 to 1050WGS2	43	95	2.1	11.0	1
10.6 to 11.0	1060 to 1100WGS2	47		2.2		1
11.1 to 11.5	MDW 1110 to 1150WGS2	47	102	2.3	12.0	1
11.6 to 12.0	1160 to 1200WGS2	49		2.4		1
12.1 to 12.5	MDW 1210 to 1250WGS2	50	103	2.6	13.0	1
12.6 to 13.0	1260 to 1300WGS2	52		2.7		1
13.1 to 13.5	MDW 1310 to 1350WGS2	53	108	2.8	14.0	1
13.6 to 14.0	1360 to 1400WGS2	55		2.9		1
14.1 to 14.5	MDW 1410 to 1450WGS2	55	111	3.0	15.0	1
14.6 to 15.0	1460 to 1500WGS2	56		3.1		1
15.1 to 15.5	MDW 1510 to 1550WGS2	56	115	3.2	16.0	1
15.6 to 16.0	1560 to 1600WGS2	58		3.3		1

Grade: ACX70

This product is a made-to-order item. Please specify the hole diameter (including tolerance) when ordering.

Recommended Cutting Conditions

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

Diameter DC (mm)	Cutting Conditions	Mild Steel/General Steel (up to 300HB)	Stainless Steel (up to 200HB)	Gray Cast Iron FC250	Ductile Cast Iron FCD450
ø10.0	v_c	50 - **80** - 130	15 - **40** - 60	50 - **60** - 80	50 - **60** - 70
	f	0.20 - **0.25** - 0.35	0.10 - **0.15** - 0.20	0.20 - **0.30** - 0.35	0.20 - **0.25** - 0.35
ø16.0	v_c	60 - **100** - 140	20 - **40** - 60	60 - **80** - 100	50 - **60** - 80
	f	0.25 - **0.30** - 0.35	0.10 - **0.15** - 0.20	0.25 - **0.30** - 0.35	0.25 - **0.30** - 0.35

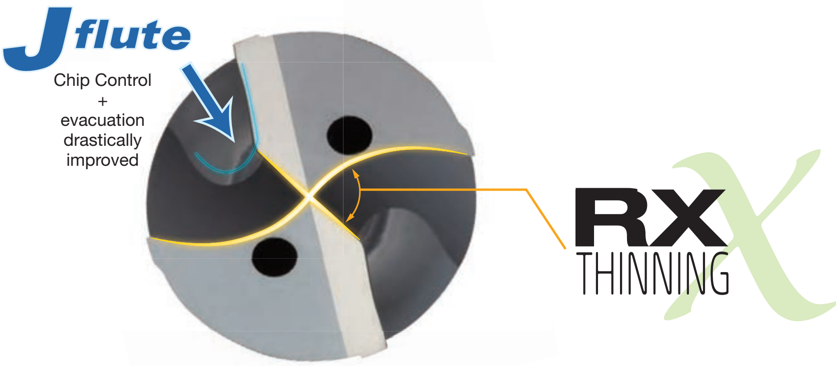
Min. - **Optimum** - Max.

* The recommended cutting conditions are also affected by factors such as machine rigidity and the workpiece clamping. Please adjust the cutting conditions according to your work environment.
* If work hardening occurs during drilling, it is recommended to use a lower speed than the recommended cutting conditions.

HX Type

General Features

Strong MULTIDRILL HX Type is a special drill for cast iron that combines reduced cutting resistance and improved drill strength to achieve stable and high efficiency drilling of cast iron.



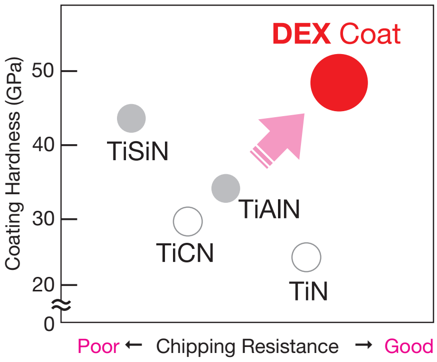
Features and Applications

- High-efficiency Drilling of Cast Iron

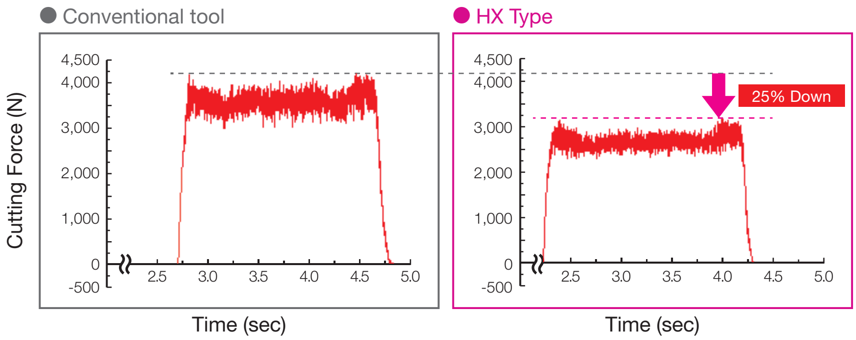
Thick web and special double margin design ensure stable behaviour even in high-efficiency drilling.
Furthermore, RX THINNING drastically reduces cutting force and ensures more stable and efficient drilling.
Enables high-efficiency drilling at feedrates of over v_f=1,000mm/min. (for ø10 mm sizes)

- Long Tool Life

DEX Coat for drills utilises nano-coating technology that provides more than double the tool life of conventional coatings. The drill guide function is enhanced through optimisation of the margin position to prevent breakage due to hole bending.

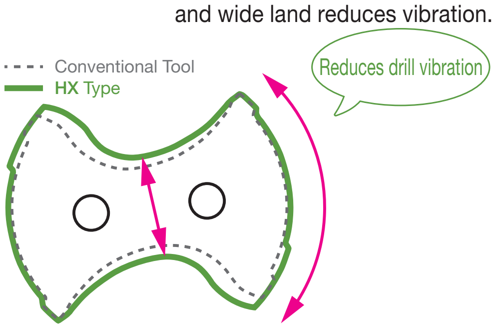


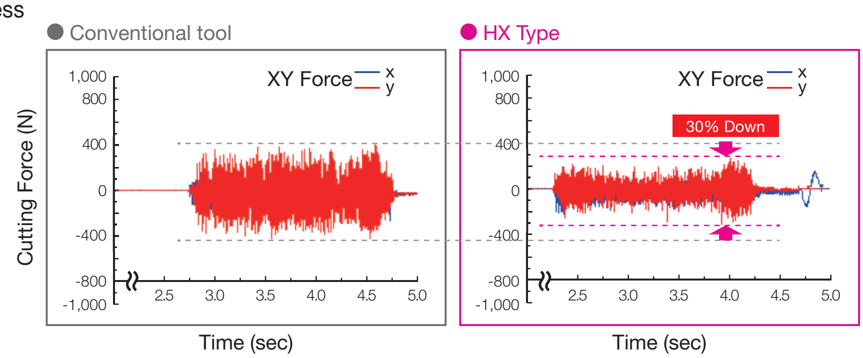
Low Resistance Wide chip pocket reduces thrust resistance.



Work Material : FC250, Tool: Conventional tool, MDW 1250HX5 (ø12.5mm 5D)
Cutting Conditions : v_c=100m/min, f=0.60mm/rev, H=50mm, internal coolant supply (water soluble)

High Rigidity Combination of large web thickness and wide land reduces vibration.



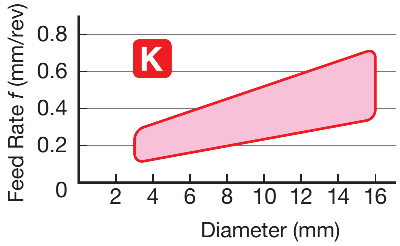


Work Material : FC250, Tool: Conventional tool, MDW 1250HX5 (ø12.5mm 5D)
Cutting Conditions : v_c=100m/min, f=0.60mm/rev, H=50mm, internal coolant supply (water soluble)

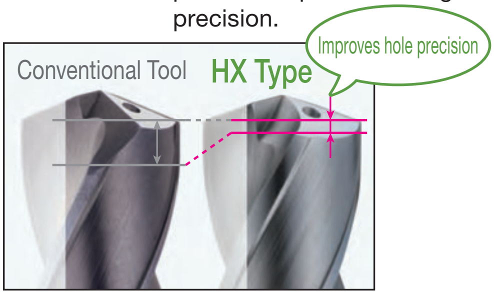
Product Range

Coolant Supply	Cat. No.	Diameter Range (mm)	Hole Depth (L/D)	Number of items
Internal	MDW□□□□HX3	ø3.0 to ø20.0	up to 3	108 items in stock
	MDW□□□□HX5	ø3.0 to ø20.0	up to 5	108 items in stock
	MDW□□□□HX8	ø3.0 to ø18.0	up to 8	32 items in stock

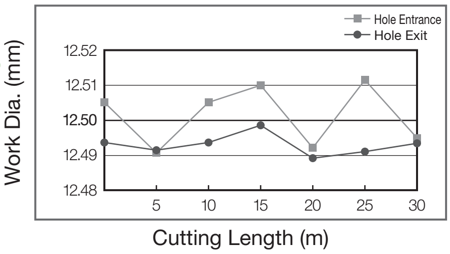
● Machining of gray cast iron



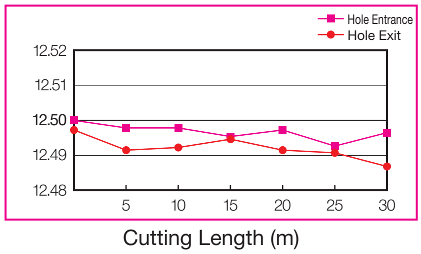
High-precision Improved margin point provides improved drilling precision.



● Conventional tool



● HX Type



Work Material : FC250, Tool: Conventional tool, MDW 1250HX5 (ø12.5mm 5D)
Cutting Conditions: v_c=100m/min, f=0.60mm/rev, H=50mm, internal coolant supply (water soluble)

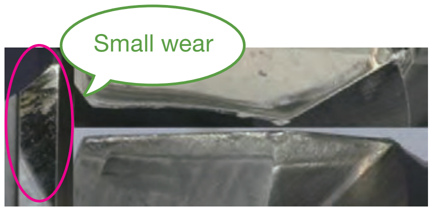
Longer Tool Life High-feed cutting reduces margin wear and extends tool life.
→ Maintains replacement frequency (drilling time) and enables high-efficiency drilling.

● Conventional tool

Cutting Conditions: f =0.30mm/rev, cutting length: 30m (Drilling time 39 minutes)

● HX Type

Cutting Conditions: f =0.30mm/rev, cutting length: 30m (Drilling time 39 minutes)



Cutting Conditions: f =0.60mm/rev, cutting length: 60m (Drilling time 39 minutes)

Work Material : FC250, Tool: Conventional tool, MDW 1250HX5 (ø12.5mm 5D)
Cutting Conditions: v_c=100m/min, f=0.60mm/rev, H=50mm, internal coolant supply (water soluble)

Double the feed

Application Examples

Machine Component (FC250)

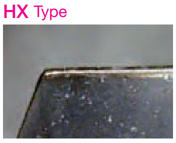
·Tool: MDW 1850HX5 (ø18.5mm 5D)
·Drilling Distance: 50m
·Cutting Conditions: v_c=70m/min, f =0.9mm/rev, H=27mm (blind), internal coolant supply (water soluble)

Reduced cutting edge wear in ultra-high-speed drilling.

Cutting Edge Rake Face Condition after Preset Tool Life

Competitor's High-efficiency Drill

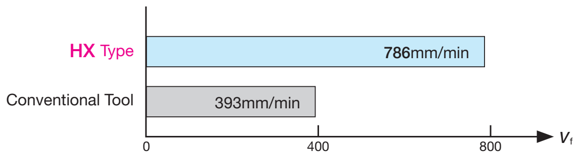
HX Type



Facility Component (FCD450)

·Tool: MDW 0850HX5 (ø8.5mm 5D)
·Drilling Distance: 60m
·Cutting Conditions: v_c=70m/min, f=0.30mm/rev, v_f=786mm/min, H=27mm (blind), internal coolant supply (water soluble)

Double the drilling efficiency of conventional tools.



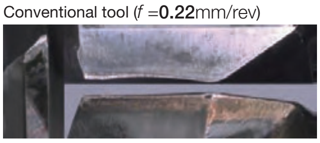
Engine Component (FCD700)

·Tool: MDW 1200HX3 (ø12.0mm 3D)
·Drilling Distance: 60m
·Cutting Conditions: Conventional Tool: v_c=50m/min, f =0.22mm/rev, v_f=291.7mm/min
HX Type: v_c=50m/min, f =0.40mm/rev, v_f =530.4mm/min
H=28mm (blind), internal coolant supply (water soluble)

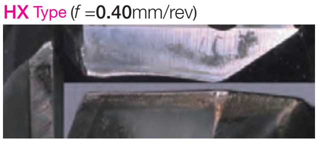
Stable cutting performance with 1.8 times the drilling efficiency of conventional tools.

Cutting Edge Wear Comparison after Fixed Tool Life

Conventional tool (f =0.22mm/rev)



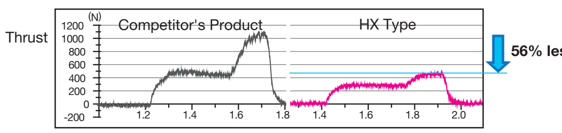
HX Type (f =0.40mm/rev)



Machine Components (Sintered Material)

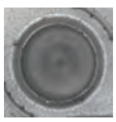
·Tool: MDW 0570HX3
·Cutting Conditions: v_c=70m/min, f=0.9mm/rev, H=27mm (blind), internal coolant supply (water soluble)

Less resistance and edge chipping than competitor's products!



Hole Entrance

Competitor's Product



HX Type

No edge chipping

Drilling
J
Solid
Indexable Head Type
Indexable Insert Type
Reamers
Brazed
Others

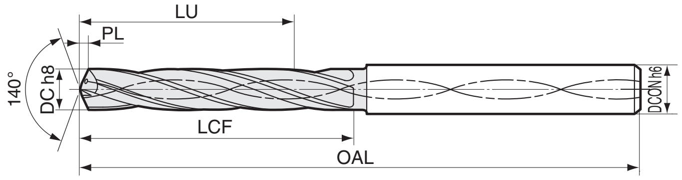
HX Type (Internal Coolant Supply)

Cast Iron | Ductile Cast Iron

DEX Coat | Coolant Hole | 3D | 5D | 8D

*Refer to N38 for the tolerance of h6 and h8

Fig 1



Diameter ø3.0 to 4.7mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
3.0	3	●	MDW 0300HX3	13.5	18.0	68.5	0.5	3.0	1
	5	●	0300HX5	24.0	28.5	78.5			1
	8	●	0300HX8	29.0	33.5	81.5			1
3.1	3	●	MDW 0310HX3	16.0	20.6	72.6	0.6	4.0	1
	5	●	0310HX5	28.0	32.6	86.6			1
	8		0310HX8	34.5	39.1	92.6			1
3.2	3	●	MDW 0320HX3	15.8	20.6	72.6	0.6	4.0	1
	5	●	0320HX5	27.8	32.6	86.6			1
	8		0320HX8	34.3	39.1	92.6			1
3.3	3	●	MDW 0330HX3	15.7	20.6	72.6	0.6	4.0	1
	5	●	0330HX5	27.7	32.6	86.6			1
	8		0330HX8	34.2	39.1	92.6			1
3.4	3	●	MDW 0340HX3	15.5	20.6	72.6	0.6	4.0	1
	5	●	0340HX5	27.5	32.6	86.6			1
	8		0340HX8	34.0	39.1	92.6			1
3.5	3	●	MDW 0350HX3	15.4	20.6	72.6	0.6	4.0	1
	5	●	0350HX5	27.4	32.6	86.6			1
	8	●	0350HX8	33.9	39.1	92.6			1
3.6	3	●	MDW 0360HX3	17.8	23.2	72.7	0.7	4.0	1
	5	●	0360HX5	31.3	36.7	86.7			1
	8		0360HX8	39.3	44.7	92.7			1
3.7	3	●	MDW 0370HX3	17.7	23.2	72.7	0.7	4.0	1
	5	●	0370HX5	31.2	36.7	86.7			1
	8		0370HX8	39.2	44.7	92.7			1
3.8	3	●	MDW 0380HX3	17.5	23.2	72.7	0.7	4.0	1
	5	●	0380HX5	31.0	36.7	86.7			1
	8		0380HX8	39.0	44.7	92.7			1
3.9	3	●	MDW 0390HX3	17.4	23.2	72.7	0.7	4.0	1
	5	●	0390HX5	30.9	36.7	86.7			1
	8		0390HX8	38.9	44.7	92.7			1
4.0	3	●	MDW 0400HX3	17.2	23.2	72.7	0.7	4.0	1
	5	●	0400HX5	30.7	36.7	86.7			1
	8	●	0400HX8	38.7	44.7	92.7			1
4.1	3	●	MDW 0410HX3	19.6	25.7	80.7	0.7	5.0	1
	5	●	0410HX5	34.6	40.7	98.7			1
	8		0410HX8	44.1	50.2	105.7			1
4.2	3	●	MDW 0420HX3	19.5	25.8	80.8	0.8	5.0	1
	5	●	0420HX5	34.5	40.8	98.8			1
	8		0420HX8	44.0	50.3	105.8			1
4.3	3	●	MDW 0430HX3	19.4	25.8	80.8	0.8	5.0	1
	5	●	0430HX5	34.4	40.8	98.8			1
	8		0430HX8	43.9	50.3	105.8			1
4.4	3	●	MDW 0440HX3	19.2	25.8	80.8	0.8	5.0	1
	5	●	0440HX5	34.2	40.8	98.8			1
	8		0440HX8	43.7	50.3	105.8			1
4.5	3	●	MDW 0450HX3	19.1	25.8	80.8	0.8	5.0	1
	5	●	0450HX5	34.1	40.8	98.8			1
	8	●	0450HX8	43.6	50.3	105.8			1
4.6	3	●	MDW 0460HX3	21.4	28.3	80.8	0.8	5.0	1
	5	●	0460HX5	37.9	44.8	98.8			1
	8		0460HX8	48.9	55.8	105.8			1
4.7	3	●	MDW 0470HX3	21.4	28.4	80.9	0.9	5.0	1
	5	●	0470HX5	37.9	44.9	98.9			1
	8		0470HX8	48.9	55.9	105.9			1

Grade: ACX70

Diameter ø4.8 to 6.5mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
4.8	3	●	MDW 0480HX3	21.2	28.4	80.9	0.9	5.0	1
	5	●	0480HX5	37.7	44.9	98.9			1
	8		0480HX8	48.7	55.9	105.9			1
4.9	3	●	MDW 0490HX3	21.1	28.4	80.9	0.9	5.0	1
	5	●	0490HX5	37.6	44.9	98.9			1
	8		0490HX8	48.6	55.9	105.9			1
5.0	3	●	MDW 0500HX3	20.9	28.4	80.9	0.9	5.0	1
	5	●	0500HX5	37.4	44.9	98.9			1
	8	●	0500HX8	48.4	55.9	105.9			1
5.1	3	●	MDW 0510HX3	20.8	28.4	82.9	0.9	6.0	1
	5	●	0510HX5	37.3	44.9	100.9			1
	8	●	0510HX8	53.8	61.4	118.9			1
5.2	3	●	MDW 0520HX3	20.6	28.4	82.9	0.9	6.0	1
	5	●	0520HX5	37.1	44.9	100.9			1
	8		0520HX8	53.6	61.4	118.9			1
5.3	3	●	MDW 0530HX3	20.6	28.5	83.0	1.0	6.0	1
	5	●	0530HX5	37.1	45.0	101.0			1
	8		0530HX8	53.6	61.5	119.0			1
5.4	3	●	MDW 0540HX3	20.4	28.5	83.0	1.0	6.0	1
	5	●	0540HX5	36.9	45.0	101.0			1
	8		0540HX8	53.4	61.5	119.0			1
5.5	3	●	MDW 0550HX3	20.3	28.5	83.0	1.0	6.0	1
	5	●	0550HX5	36.8	45.0	101.0			1
	8	●	0550HX8	53.3	61.5	119.0			1
5.6	3	●	MDW 0560HX3	22.6	31.0	83.0	1.0	6.0	1
	5	●	0560HX5	40.6	49.0	101.0			1
	8		0560HX8	58.6	67.0	119.0			1
5.7	3	●	MDW 0570HX3	22.5	31.0	83.0	1.0	6.0	1
	5	●	0570HX5	40.5	49.0	101.0			1
	8		0570HX8	58.5	67.0	119.0			1
5.8	3	●	MDW 0580HX3	22.4	31.1	83.1	1.1	6.0	1
	5	●	0580HX5	40.4	49.1	101.1			1
	8	●	0580HX8	58.4	67.1	119.1			1
5.9	3	●	MDW 0590HX3	22.3	31.1	83.1	1.1	6.0	1
	5	●	0590HX5	40.3	49.1	101.1			1
	8	●	0590HX8	58.3	67.1	119.1			1
6.0	3	●	MDW 0600HX3	22.1	31.1	83.1	1.1	6.0	1
	5	●	0600HX5	40.1	49.1	101.1			1
	8	●	0600HX8	58.1	67.1	119.1			1
6.1	3	●	MDW 0610HX3	24.5	33.6	89.1	1.1	7.0	1
	5	●	0610HX5	44.0	53.1	110.1			1
	8		0610HX8	63.5	72.6	131.1			1
6.2	3	●	MDW 0620HX3	24.3	33.6	89.1	1.1	7.0	1
	5	●	0620HX5	43.8	53.1	110.1			1
	8		0620HX8	63.3	72.6	131.1			1
6.3	3	●	MDW 0630HX3	24.2	33.6	89.1	1.1	7.0	1
	5	●	0630HX5	43.7	53.1	110.1			1
	8		0630HX8	63.2	72.6	131.1			1
6.4	3	●	MDW 0640HX3	24.1	33.7	89.2	1.2	7.0	1
	5	●	0640HX5	43.6	53.2	110.2			1
	8		0640HX8	63.1	72.7	131.2			1
6.5	3	●	MDW 0650HX3	24.0	33.7	89.2	1.2	7.0	1
	5	●	0650HX5	43.5	53.2	110.2			1
	8	●	0650HX8	63.0	72.7	131.2			1

Grade: ACX70

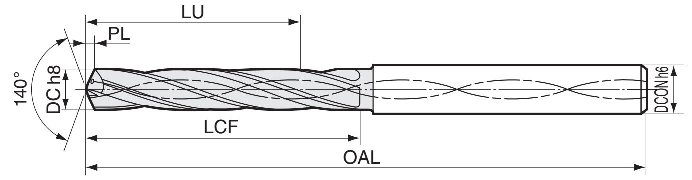
HX Type (Internal Coolant Supply)

Cast Iron | Ductile Cast Iron

DEX Coat | Coolant Hole | 3D | 5D | 8D

*Refer to N38 for the tolerance of h6 and h8

Fig 1



Diameter ø6.6 to 8.3mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
	3	●	MDW 0660HX3	26.3	36.2	89.2			1
6.6	5	●	0660HX5	47.3	57.2	110.2	1.2	7.0	1
	8		0660HX8	68.3	78.2	131.2			1
	3	●	MDW 0670HX3	26.2	36.2	89.2			1
6.7	5	●	0670HX5	47.2	57.2	110.2	1.2	7.0	1
	8	●	0670HX8	68.2	78.2	131.2			1
	3	●	MDW 0680HX3	26.0	36.2	89.2			1
6.8	5	●	0680HX5	47.0	57.2	110.2	1.2	7.0	1
	8	●	0680HX8	68.0	78.2	131.2			1
	3	●	MDW 0690HX3	26.0	36.3	89.3			1
6.9	5	●	0690HX5	47.0	57.3	110.3	1.3	7.0	1
	8	●	0690HX8	68.0	78.3	131.3			1
	3	●	MDW 0700HX3	25.8	36.3	89.3			1
7.0	5	●	0700HX5	46.8	57.3	110.3	1.3	7.0	1
	8	●	0700HX8	67.8	78.3	131.3			1
	3	●	MDW 0710HX3	28.2	38.8	95.3			1
7.1	5	●	0710HX5	50.7	61.3	119.3	1.3	8.0	1
	8		0710HX8	73.2	83.8	143.3			1
	3	●	MDW 0720HX3	28.0	38.8	95.3			1
7.2	5	●	0720HX5	50.5	61.3	119.3	1.3	8.0	1
	8		0720HX8	73.0	83.8	143.3			1
	3	●	MDW 0730HX3	27.9	38.8	95.3			1
7.3	5	●	0730HX5	50.4	61.3	119.3	1.3	8.0	1
	8		0730HX8	72.9	83.8	143.3			1
	3	●	MDW 0740HX3	27.7	38.8	95.3			1
7.4	5	●	0740HX5	50.2	61.3	119.3	1.3	8.0	1
	8		0740HX8	72.7	83.8	143.3			1
	3	●	MDW 0750HX3	27.7	38.9	95.4			1
7.5	5	●	0750HX5	50.2	61.4	119.4	1.4	8.0	1
	8	●	0750HX8	72.7	83.9	143.4			1
	3	●	MDW 0760HX3	30.0	41.4	95.4			1
7.6	5	●	0760HX5	54.0	65.4	119.4	1.4	8.0	1
	8		0760HX8	78.0	89.4	143.4			1
	3	●	MDW 0770HX3	29.9	41.4	95.4			1
7.7	5	●	0770HX5	53.9	65.4	119.4	1.4	8.0	1
	8		0770HX8	77.9	89.4	143.4			1
	3	●	MDW 0780HX3	29.7	41.4	95.4			1
7.8	5	●	0780HX5	53.7	65.4	119.4	1.4	8.0	1
	8		0780HX8	77.7	89.4	143.4			1
	3	●	MDW 0790HX3	29.6	41.4	95.4			1
7.9	5	●	0790HX5	53.6	65.4	119.4	1.4	8.0	1
	8		0790HX8	77.6	89.4	143.4			1
	3	●	MDW 0800HX3	29.5	41.5	95.5			1
8.0	5	●	0800HX5	53.5	65.5	119.5	1.5	8.0	1
	8	●	0800HX8	77.5	89.5	143.5			1
	3	●	MDW 0810HX3	31.9	44.0	101.5			1
8.1	5	●	0810HX5	57.4	69.5	128.5	1.5	9.0	1
	8		0810HX8	82.9	95.0	155.5			1
	3	●	MDW 0820HX3	31.7	44.0	101.5			1
8.2	5	●	0820HX5	57.2	69.5	128.5	1.5	9.0	1
	8		0820HX8	82.7	95.0	155.5			1
	3	●	MDW 0830HX3	31.6	44.0	101.5			1
8.3	5	●	0830HX5	57.1	69.5	128.5	1.5	9.0	1
	8		0830HX8	82.6	95.0	155.5			1

Grade: ACX70

Diameter ø8.4 to 10.1mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
	3	●	MDW 0840HX3	31.4	44.0	101.5			1
8.4	5	●	0840HX5	56.9	69.5	128.5	1.5	9.0	1
	8		0840HX8	82.4	95.0	155.5			1
	3	●	MDW 0850HX3	31.3	44.0	101.5			1
8.5	5	●	0850HX5	56.8	69.5	128.5	1.5	9.0	1
	8	●	0850HX8	82.3	95.0	155.5			1
	3	●	MDW 0860HX3	33.7	46.6	101.6			1
8.6	5	●	0860HX5	60.7	73.6	128.6	1.6	9.0	1
	8		0860HX8	87.7	100.6	155.6			1
	3	●	MDW 0870HX3	33.6	46.6	101.6			1
8.7	5	●	0870HX5	60.6	73.6	128.6	1.6	9.0	1
	8		0870HX8	87.6	100.6	155.6			1
	3	●	MDW 0880HX3	33.4	46.6	101.6			1
8.8	5	●	0880HX5	60.4	73.6	128.6	1.6	9.0	1
	8	●	0880HX8	87.4	100.6	155.6			1
	3	●	MDW 0890HX3	33.3	46.6	101.6			1
8.9	5	●	0890HX5	60.3	73.6	128.6	1.6	9.0	1
	8		0890HX8	87.3	100.6	155.6			1
	3	●	MDW 0900HX3	33.1	46.6	101.6			1
9.0	5	●	0900HX5	60.1	73.6	128.6	1.6	9.0	1
	8	●	0900HX8	87.1	100.6	155.6			1
	3	●	MDW 0910HX3	35.6	49.2	107.7			1
9.1	5	●	0910HX5	64.1	77.7	137.7	1.7	10.0	1
	8		0910HX8	92.6	106.2	167.7			1
	3	●	MDW 0920HX3	35.4	49.2	107.7			1
9.2	5	●	0920HX5	63.9	77.7	137.7	1.7	10.0	1
	8		0920HX8	92.4	106.2	167.7			1
	3	●	MDW 0930HX3	35.3	49.2	107.7			1
9.3	5	●	0930HX5	63.8	77.7	137.7	1.7	10.0	1
	8		0930HX8	92.3	106.2	167.7			1
	3	●	MDW 0940HX3	35.1	49.2	107.7			1
9.4	5	●	0940HX5	63.6	77.7	137.7	1.7	10.0	1
	8		0940HX8	92.1	106.2	167.7			1
	3	●	MDW 0950HX3	35.0	49.2	107.7			1
9.5	5	●	0950HX5	63.5	77.7	137.7	1.7	10.0	1
	8	●	0950HX8	92.0	106.2	167.7			1
	3	●	MDW 0960HX3	37.3	51.7	107.7			1
9.6	5	●	0960HX5	67.3	81.7	137.7	1.7	10.0	1
	8		0960HX8	97.3	111.7	167.7			1
	3	●	MDW 0970HX3	37.3	51.8	107.8			1
9.7	5	●	0970HX5	67.3	81.8	137.8	1.8	10.0	1
	8		0970HX8	97.3	111.8	167.8			1
	3	●	MDW 0980HX3	37.1	51.8	107.8			1
9.8	5	●	0980HX5	67.1	81.8	137.8	1.8	10.0	1
	8		0980HX8	97.1	111.8	167.8			1
	3	●	MDW 0990HX3	37.0	51.8	107.8			1
9.9	5	●	0990HX5	67.0	81.8	137.8	1.8	10.0	1
	8		0990HX8	97.0	111.8	167.8			1
	3	●	MDW 1000HX3	36.8	51.8	107.8			1
10.0	5	●	1000HX5	66.8	81.8	137.8	1.8	10.0	1
	8	●	1000HX8	96.8	111.8	167.8			1
	3	●	MDW 1010HX3	39.2	54.3	117.8			1
10.1	5	●	1010HX5	70.7	85.8	150.8	1.8	11.0	1
	8		1010HX8	102.2	117.3	183.8			1

Grade: ACX70

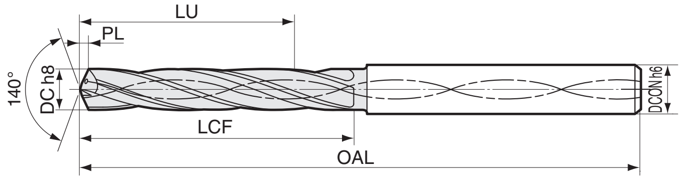
HX Type (Internal Coolant Supply)

Cast Iron | Ductile Cast Iron

DEX Coat | Coolant Hole | 3D | 5D | 8D

*Refer to N38 for the tolerance of h6 and h8

Fig 1



Diameter ø10.2 to 11.9mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
	3	●	MDW 1020HX3	39.1	54.4	117.9			1
10.2	5	●	1020HX5	70.6	85.9	150.9	1.9	11.0	1
	8		1020HX8	102.1	117.4	183.9			1
	3	●	MDW 1030HX3	39.0	54.4	117.9			1
10.3	5	●	1030HX5	70.5	85.9	150.9	1.9	11.0	1
	8	●	1030HX8	102.0	117.4	183.9			1
	3	●	MDW 1040HX3	38.8	54.4	117.9			1
10.4	5	●	1040HX5	70.3	85.9	150.9	1.9	11.0	1
	8		1040HX8	101.8	117.4	183.9			1
	3	●	MDW 1050HX3	38.7	54.4	117.9			1
10.5	5	●	1050HX5	70.2	85.9	150.9	1.9	11.0	1
	8	●	1050HX8	101.7	117.4	183.9			1
	3	●	MDW 1060HX3	41.0	56.9	117.9			1
10.6	5	●	1060HX5	74.0	89.9	150.9	1.9	11.0	1
	8		1060HX8	107.0	122.9	183.9			1
	3	●	MDW 1070HX3	40.9	56.9	117.9			1
10.7	5	●	1070HX5	73.9	89.9	150.9	1.9	11.0	1
	8		1070HX8	106.9	122.9	183.9			1
	3	●	MDW 1080HX3	40.8	57.0	118.0			1
10.8	5	●	1080HX5	73.8	90.0	151.0	2.0	11.0	1
	8		1080HX8	106.8	123.0	184.0			1
	3	●	MDW 1090HX3	40.7	57.0	118.0			1
10.9	5	●	1090HX5	73.7	90.0	151.0	2.0	11.0	1
	8		1090HX8	106.7	123.0	184.0			1
	3	●	MDW 1100HX3	40.5	57.0	118.0			1
11.0	5	●	1100HX5	73.5	90.0	151.0	2.0	11.0	1
	8	●	1100HX8	106.5	123.0	184.0			1
	3	●	MDW 1110HX3	42.9	59.5	124.0			1
11.1	5	●	1110HX5	77.4	94.0	160.0	2.0	12.0	1
	8		1110HX8	111.9	128.5	196.0			1
	3	●	MDW 1120HX3	42.7	59.5	124.0			1
11.2	5	●	1120HX5	77.2	94.0	160.0	2.0	12.0	1
	8		1120HX8	111.7	128.5	196.0			1
	3	●	MDW 1130HX3	42.7	59.6	124.1			1
11.3	5	●	1130HX5	77.2	94.1	160.1	2.1	12.0	1
	8		1130HX8	111.7	128.6	196.1			1
	3	●	MDW 1140HX3	42.5	59.6	124.1			1
11.4	5	●	1140HX5	77.0	94.1	160.1	2.1	12.0	1
	8		1140HX8	111.5	128.6	196.1			1
	3	●	MDW 1150HX3	42.4	59.6	124.1			1
11.5	5	●	1150HX5	76.9	94.1	160.1	2.1	12.0	1
	8	●	1150HX8	111.4	128.6	196.1			1
	3	●	MDW 1160HX3	44.7	62.1	124.1			1
11.6	5	●	1160HX5	80.7	98.1	160.1	2.1	12.0	1
	8		1160HX8	116.7	134.1	196.1			1
	3	●	MDW 1170HX3	44.6	62.1	124.1			1
11.7	5	●	1170HX5	80.6	98.1	160.1	2.1	12.0	1
	8		1170HX8	116.6	134.1	196.1			1
	3	●	MDW 1180HX3	44.4	62.1	124.1			1
11.8	5	●	1180HX5	80.4	98.1	160.1	2.1	12.0	1
	8		1180HX8	116.4	134.1	196.1			1
	3	●	MDW 1190HX3	44.4	62.2	124.2			1
11.9	5	●	1190HX5	80.4	98.2	160.2	2.2	12.0	1
	8		1190HX8	116.4	134.2	196.2			1

Grade: ACX70

Diameter ø12.0 to 13.7mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
	3	●	MDW 1200HX3	44.2	62.2	124.2			1
12.0	5	●	1200HX5	80.2	98.2	160.2	2.2	12.0	1
	8	●	1200HX8	116.2	134.2	196.2			1
	3		MDW 1210HX3	46.6	64.7	130.2			1
12.1	5		1210HX5	84.1	102.2	169.2	2.2	13.0	1
	8		1210HX8	121.6	139.7	208.2			1
	3		MDW 1220HX3	46.4	64.7	130.2			1
12.2	5		1220HX5	83.9	102.2	169.2	2.2	13.0	1
	8		1220HX8	121.4	139.7	208.2			1
	3		MDW 1230HX3	46.3	64.7	130.2			1
12.3	5		1230HX5	83.8	102.2	169.2	2.2	13.0	1
	8		1230HX8	121.3	139.7	208.2			1
	3		MDW 1240HX3	46.2	64.8	130.3			1
12.4	5		1240HX5	83.7	102.3	169.3	2.3	13.0	1
	8		1240HX8	121.2	139.8	208.3			1
	3	●	MDW 1250HX3	46.1	64.8	130.3			1
12.5	5	●	1250HX5	83.6	102.3	169.3	2.3	13.0	1
	8	●	1250HX8	121.1	139.8	208.3			1
	3		MDW 1260HX3	48.4	67.3	130.3			1
12.6	5		1260HX5	87.4	106.3	169.3	2.3	13.0	1
	8		1260HX8	126.4	145.3	208.3			1
	3		MDW 1270HX3	48.3	67.3	130.3			1
12.7	5		1270HX5	87.3	106.3	169.3	2.3	13.0	1
	8		1270HX8	126.3	145.3	208.3			1
	3		MDW 1280HX3	48.1	67.3	130.3			1
12.8	5		1280HX5	87.1	106.3	169.3	2.3	13.0	1
	8		1280HX8	126.1	145.3	208.3			1
	3		MDW 1290HX3	48.0	67.3	130.3			1
12.9	5		1290HX5	87.0	106.3	169.3	2.3	13.0	1
	8		1290HX8	126.0	145.3	208.3			1
	3	●	MDW 1300HX3	47.9	67.4	130.4			1
13.0	5	●	1300HX5	86.9	106.4	169.4	2.4	13.0	1
	8	●	1300HX8	125.9	145.4	208.4			1
	3		MDW 1310HX3	50.3	69.9	136.4			1
13.1	5		1310HX5	90.8	110.4	178.4	2.4	14.0	1
	8		1310HX8	131.3	150.9	220.4			1
	3		MDW 1320HX3	50.1	69.9	136.4			1
13.2	5		1320HX5	90.6	110.4	178.4	2.4	14.0	1
	8		1320HX8	131.1	150.9	220.4			1
	3		MDW 1330HX3	50.0	69.9	136.4			1
13.3	5		1330HX5	90.5	110.4	178.4	2.4	14.0	1
	8		1330HX8	131.0	150.9	220.4			1
	3		MDW 1340HX3	49.8	69.9	136.4			1
13.4	5		1340HX5	90.3	110.4	178.4	2.4	14.0	1
	8		1340HX8	130.8	150.9	220.4			1
	3	●	MDW 1350HX3	49.8	70.0	136.5			1
13.5	5	●	1350HX5	90.3	110.5	178.5	2.5	14.0	1
	8	●	1350HX8	130.8	151.0	220.5			1
	3		MDW 1360HX3	52.1	72.5	136.5			1
13.6	5		1360HX5	94.1	114.5	178.5	2.5	14.0	1
	8		1360HX8	136.1	156.5	220.5			1
	3		MDW 1370HX3	52.0	72.5	136.5			1
13.7	5		1370HX5	94.0	114.5	178.5	2.5	14.0	1
	8		1370HX8	136.0	156.5	220.5			1

Grade: ACX70

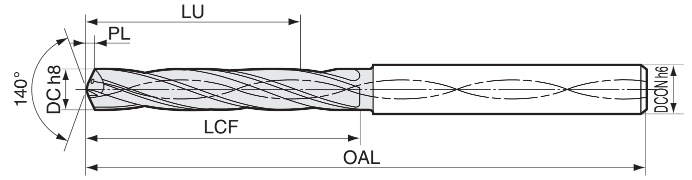
HX Type (Internal Coolant Supply)

Cast Iron | Ductile Cast Iron

DEX Coat | Coolant Hole | 3D | 5D | 8D

*Refer to N38 for the tolerance of h6 and h8

Fig 1



Diameter ø13.8 to 15.5mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
	3		MDW 1380HX3	51.8	72.5	136.5			1
13.8	5		1380HX5	93.8	114.5	178.5	2.5	14.0	1
	8		1380HX8	135.8	156.5	220.5			1
	3		MDW 1390HX3	51.7	72.5	136.5			1
13.9	5		1390HX5	93.7	114.5	178.5	2.5	14.0	1
	8		1390HX8	135.7	156.5	220.5			1
	3	●	MDW 1400HX3	51.5	72.5	136.5			1
14.0	5	●	1400HX5	93.5	114.5	178.5	2.5	14.0	1
	8		1400HX8	135.5	156.5	220.5			1
	3		MDW 1410HX3	54.0	75.1	142.6			1
14.1	5		1410HX5	97.5	118.6	187.6	2.6	15.0	1
	8		1410HX8	141.0	162.1	232.6			1
	3		MDW 1420HX3	53.8	75.1	142.6			1
14.2	5		1420HX5	97.3	118.6	187.6	2.6	15.0	1
	8		1420HX8	140.8	162.1	232.6			1
	3		MDW 1430HX3	53.7	75.1	142.6			1
14.3	5		1430HX5	97.2	118.6	187.6	2.6	15.0	1
	8		1430HX8	140.7	162.1	232.6			1
	3		MDW 1440HX3	53.5	75.1	142.6			1
14.4	5		1440HX5	97.0	118.6	187.6	2.6	15.0	1
	8		1440HX8	140.5	162.1	232.6			1
	3	●	MDW 1450HX3	53.4	75.1	142.6			1
14.5	5	●	1450HX5	96.9	118.6	187.6	2.6	15.0	1
	8		1450HX8	140.4	162.1	232.6			1
	3		MDW 1460HX3	55.8	77.7	142.7			1
14.6	5		1460HX5	100.8	122.7	187.7	2.7	15.0	1
	8		1460HX8	145.8	167.7	232.7			1
	3		MDW 1470HX3	55.7	77.7	142.7			1
14.7	5		1470HX5	100.7	122.7	187.7	2.7	15.0	1
	8		1470HX8	145.7	167.7	232.7			1
	3		MDW 1480HX3	55.5	77.7	142.7			1
14.8	5		1480HX5	100.5	122.7	187.7	2.7	15.0	1
	8		1480HX8	145.5	167.7	232.7			1
	3		MDW 1490HX3	55.4	77.7	142.7			1
14.9	5		1490HX5	100.4	122.7	187.7	2.7	15.0	1
	8		1490HX8	145.4	167.7	232.7			1
	3	●	MDW 1500HX3	55.2	77.7	142.7			1
15.0	5	●	1500HX5	100.2	122.7	187.7	2.7	15.0	1
	8	●	1500HX8	145.2	167.7	232.7			1
	3		MDW 1510HX3	57.6	80.2	148.7			1
15.1	5		1510HX5	104.1	126.7	196.7	2.7	16.0	1
	8		1510HX8	150.6	173.2	244.7			1
	3		MDW 1520HX3	57.5	80.3	148.8			1
15.2	5		1520HX5	104.0	126.8	196.8	2.8	16.0	1
	8		1520HX8	150.5	173.3	244.8			1
	3		MDW 1530HX3	57.4	80.3	148.8			1
15.3	5		1530HX5	103.9	126.8	196.8	2.8	16.0	1
	8		1530HX8	150.4	173.3	244.8			1
	3		MDW 1540HX3	57.2	80.3	148.8			1
15.4	5		1540HX5	103.7	126.8	196.8	2.8	16.0	1
	8		1540HX8	150.2	173.3	244.8			1
	3	●	MDW 1550HX3	57.1	80.3	148.8			1
15.5	5	●	1550HX5	103.6	126.8	196.8	2.8	16.0	1
	8		1550HX8	150.1	173.3	244.8			1

Grade: ACX70

Diameter ø15.6 to 17.3mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
	3		MDW 1560HX3	59.4	82.8	148.8			1
15.6	5		1560HX5	107.4	130.8	196.8	2.8	16.0	1
	8		1560HX8	155.4	178.8	244.8			1
	3		MDW 1570HX3	59.4	82.9	148.9			1
15.7	5		1570HX5	107.4	130.9	196.9	2.9	16.0	1
	8		1570HX8	155.4	178.9	244.9			1
	3		MDW 1580HX3	59.2	82.9	148.9			1
15.8	5		1580HX5	107.2	130.9	196.9	2.9	16.0	1
	8		1580HX8	155.2	178.9	244.9			1
	3		MDW 1590HX3	59.1	82.9	148.9			1
15.9	5		1590HX5	107.1	130.9	196.9	2.9	16.0	1
	8		1590HX8	155.1	178.9	244.9			1
	3	●	MDW 1600HX3	58.9	82.9	148.9			1
16.0	5	●	1600HX5	106.9	130.9	196.9	2.9	16.0	1
	8		1600HX8	154.9	178.9	244.9			1
	3		MDW 1610HX3	61.3	85.4	154.9			1
16.1	5		1610HX5	110.8	134.9	205.9	2.9	17.0	1
	8		1610HX8	160.3	184.4	256.9			1
	3		MDW 1620HX3	61.1	85.4	154.9			1
16.2	5		1620HX5	110.6	134.9	205.9	2.9	17.0	1
	8		1620HX8	160.1	184.4	256.9			1
	3		MDW 1630HX3	61.1	85.5	155.0			1
16.3	5		1630HX5	110.6	135.0	206.0	3.0	17.0	1
	8		1630HX8	160.1	184.5	257.0			1
	3		MDW 1640HX3	60.9	85.5	155.0			1
16.4	5		1640HX5	110.4	135.0	206.0	3.0	17.0	1
	8		1640HX8	159.9	184.5	257.0			1
	3	●	MDW 1650HX3	60.8	85.5	155.0			1
16.5	5	●	1650HX5	110.3	135.0	206.0	3.0	17.0	1
	8		1650HX8	159.8	184.5	257.0			1
	3		MDW 1660HX3	63.1	88.0	155.0			1
16.6	5		1660HX5	114.1	139.0	206.0	3.0	17.0	1
	8		1660HX8	165.1	190.0	257.0			1
	3		MDW 1670HX3	63.0	88.0	155.0			1
16.7	5		1670HX5	114.0	139.0	206.0	3.0	17.0	1
	8		1670HX8	165.0	190.0	257.0			1
	3		MDW 1680HX3	62.9	88.1	155.1			1
16.8	5		1680HX5	113.9	139.1	206.1	3.1	17.0	1
	8		1680HX8	164.9	190.1	257.1			1
	3		MDW 1690HX3	62.8	88.1	155.1			1
16.9	5		1690HX5	113.8	139.1	206.1	3.1	17.0	1
	8		1690HX8	164.8	190.1	257.1			1
	3	●	MDW 1700HX3	62.6	88.1	155.1			1
17.0	5	●	1700HX5	113.6	139.1	206.1	3.1	17.0	1
	8		1700HX8	164.6	190.1	257.1			1
	3	●	MDW 1710HX3	65.0	90.6	161.1			1
17.1	5	●	1710HX5	117.5	143.1	217.1	3.1	18.0	1
	8	●	1710HX8	170.0	195.6	269.1			1
	3		MDW 1720HX3	64.8	90.6	161.1			1
17.2	5		1720HX5	117.3	143.1	217.1	3.1	18.0	1
	8		1720HX8	169.8	195.6	269.1			1
	3		MDW 1730HX3	64.7	90.6	161.1			1
17.3	5		1730HX5	117.2	143.1	217.1	3.1	18.0	1
	8		1730HX8	169.7	195.6	269.1			1

Grade: ACX70

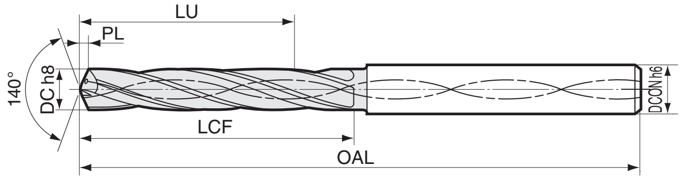
HX Type (Internal Coolant Supply)

Cast Iron | Ductile Cast Iron

DEX Coat | Coolant Hole | 3D | 5D | 8D

*Refer to N38 for the tolerance of h6 and h8

Fig 1



Drilling
J
Solid
Indexable Head Type
Indexable Insert Type
Reamers
Brazed
Others

Diameter ø17.4 to 18.3mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
17.4	3		MDW 1740HX3	64.6	90.7	161.2	3.2	18.0	1
	5		1740HX5	117.1	143.2	217.2			1
	8		1740HX8	169.6	195.7	269.2			1
17.5	3	●	MDW 1750HX3	64.5	90.7	161.2	3.2	18.0	1
	5	●	1750HX5	117.0	143.2	217.2			1
	8		1750HX8	169.5	195.7	269.2			1
17.6	3		MDW 1760HX3	66.8	93.2	161.2	3.2	18.0	1
	5		1760HX5	120.8	147.2	217.2			1
	8		1760HX8	174.8	201.2	269.2			1
17.7	3		MDW 1770HX3	66.7	93.2	161.2	3.2	18.0	1
	5		1770HX5	120.7	147.2	217.2			1
	8		1770HX8	174.7	201.2	269.2			1
17.8	3		MDW 1780HX3	66.5	93.2	161.2	3.2	18.0	1
	5		1780HX5	120.5	147.2	217.2			1
	8		1780HX8	174.5	201.2	269.2			1
17.9	3		MDW 1790HX3	66.5	93.3	161.3	3.3	18.0	1
	5		1790HX5	120.5	147.3	217.3			1
	8		1790HX8	174.5	201.3	269.3			1
18.0	3	●	MDW 1800HX3	66.3	93.3	161.3	3.3	18.0	1
	5	●	1800HX5	120.3	147.3	217.3			1
	8		1800HX8	174.3	201.3	269.3			1
18.1	3		MDW 1810HX3	68.7	95.8	167.3	3.3	19.0	1
	5		1810HX5	124.2	151.3	224.3			1
18.2	3		MDW 1820HX3	68.5	95.8	167.3	3.3	19.0	1
	5		1820HX5	124.0	151.3	224.3			1
18.3	3		MDW 1830HX3	68.4	95.8	167.3	3.3	19.0	1
	5		1830HX5	123.9	151.3	224.3			1

Grade: ACX70

Diameter ø18.4 to 20.0mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
18.4	3		MDW 1840HX3	68.2	95.8	167.3	3.3	19.0	1
	5		1840HX5	123.7	151.3	224.3			1
18.5	3	●	MDW 1850HX3	68.2	95.9	167.4	3.4	19.0	1
	5	●	1850HX5	123.7	151.4	224.4			1
18.6	3		MDW 1860HX3	70.5	98.4	167.4	3.4	19.0	1
	5		1860HX5	127.5	155.4	224.4			1
18.7	3		MDW 1870HX3	70.4	98.4	167.4	3.4	19.0	1
	5		1870HX5	127.4	155.4	224.4			1
18.8	3		MDW 1880HX3	70.2	98.4	167.4	3.4	19.0	1
	5		1880HX5	127.2	155.4	224.4			1
18.9	3		MDW 1890HX3	70.1	98.4	167.4	3.4	19.0	1
	5		1890HX5	127.1	155.4	224.4			1
19.0	3	●	MDW 1900HX3	70.0	98.5	167.5	3.5	19.0	1
	5	●	1900HX5	127.0	155.5	224.5			1
19.1	3		MDW 1910HX3	72.4	101.0	173.5	3.5	20.0	1
	5		1910HX5	130.9	159.5	233.5			1
19.2	3		MDW 1920HX3	72.2	101.0	173.5	3.5	20.0	1
	5		1920HX5	130.7	159.5	233.5			1
19.3	3		MDW 1930HX3	72.1	101.0	173.5	3.5	20.0	1
	5		1930HX5	130.6	159.5	233.5			1
19.4	3		MDW 1940HX3	71.9	101.0	173.5	3.5	20.0	1
	5		1940HX5	130.4	159.5	233.5			1
19.5	3	●	MDW 1950HX3	71.8	101.0	173.5	3.5	20.0	1
	5	●	1950HX5	130.3	159.5	233.5			1
19.6	3		MDW 1960HX3	74.2	103.6	173.6	3.6	20.0	1
	5		1960HX5	134.2	163.6	233.6			1
19.7	3		MDW 1970HX3	74.1	103.6	173.6	3.6	20.0	1
	5		1970HX5	134.1	163.6	233.6			1
19.8	3		MDW 1980HX3	73.9	103.6	173.6	3.6	20.0	1
	5		1980HX5	133.9	163.6	233.6			1
19.9	3		MDW 1990HX3	73.8	103.6	173.6	3.6	20.0	1
	5		1990HX5	133.8	163.6	233.6			1
20.0	3	●	MDW 2000HX3	73.6	103.6	173.6	3.6	20.0	1
	5	●	2000HX5	133.6	163.6	233.6			1

Grade: ACX70

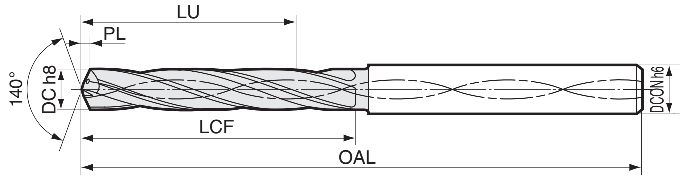
HX Type (Internal Coolant Supply)

Cast Iron | Ductile Cast Iron

DEX Coat | Coolant Hole | 3D | 5D | 8D

*Refer to N38 for the tolerance of h6 and h8

Fig 1



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

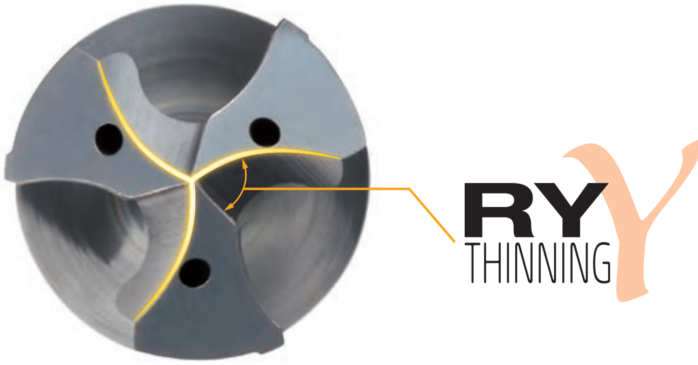
Diameter DC (mm)	Cutting Conditions	Gray Cast Iron FC250	Ductile Cast Iron FCD450
ø3.0	v_c	50 - **70** - 90	40 - **50** - 80
	f	0.10 - **0.20** - 0.30	0.12 - **0.18** - 0.24
ø5.0	v_c	50 - **70** - 90	40 - **50** - 80
	f	0.15 - **0.25** - 0.35	0.15 - **0.22** - 0.30
ø10.0	v_c	60 - **80** - 100	50 - **60** - 90
	f	0.20 - **0.35** - 0.50	0.20 - **0.30** - 0.40
ø20.0	v_c	70 - **100** - 120	60 - **80** - 100
	f	0.25 - **0.50** - 0.70	0.25 - **0.45** - 0.60

Min. - **Optimum** - Max.

HY Type

■ General Features

Strong MULTIDRILL HY Type is a 3-flute drill that achieves stability and high-efficiency in machining of steel and cast iron, reducing the load on each flute and extending the tool life.



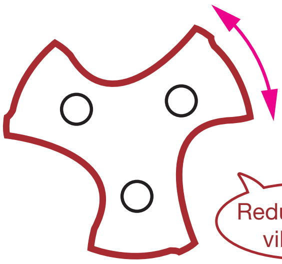
■ Features and Applications

● High-efficiency Drilling of Steel and Cast Iron

Thick web and 3-point margin design ensure stable hole diameter accuracy in high-efficiency drilling.
RY THINNING also reduces cutting force in high-efficiency drilling.
Applicable to cutting conditions exceeding v_f=800mm/min in steel drilling and v_f=1,000mm/min in cast iron drilling. (for ø10mm sizes)

● Long Tool Life

DEX Coat for drills utilises nano-coating technology to provide more than double the tool life of conventional coatings.
3-point margin design gives excellent guide performance for vibration control and long, stable tool life.



Reduces drill vibration

High Rigidity

Retains high rigidity with wide land.

J flute

Evacuation

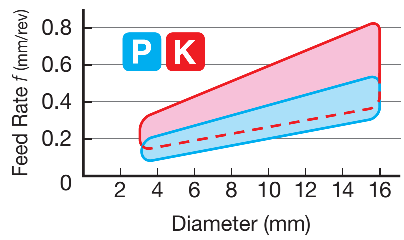
Drastically improved chip control and evacuation

Improves chip evacuation

■ Product Range

Coolant Supply	Cat. No.	Diameter Range (mm)	Hole Depth (L/D)	Number of items
Internal	MDW□□□□HY3	ø5.0 to ø16.0	up to 3	23 items in stock
	MDW□□□□HY5		up to 5	23 items in stock
	MDW□□□□HY8		up to 8	6 items in stock

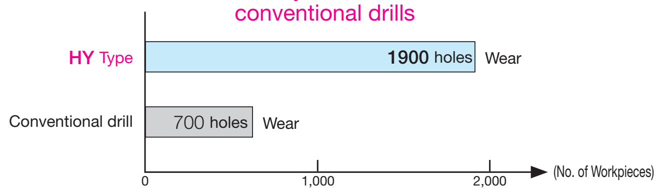
● Machining of general steel and gray cast iron



■ Application Examples

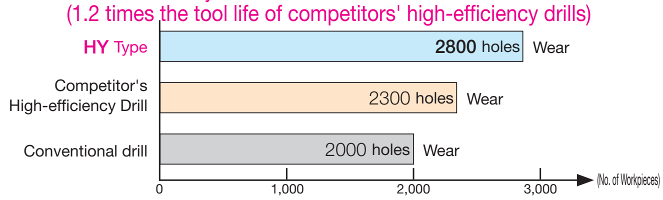
Machine components (**SCM420**)
·Tool : MDW 1250HY3 (ø12.5mm 3D)
·Cutting Conditions : Conventional Tool: v_c=90m/min, f =0.25mm/rev, v_f=573mm/min
HY Type : v_c=70m/min, f =0.40mm/rev, v_f=713mm/min
H=12mm (through), internal coolant supply (water soluble)

1.25 times the efficiency and 2.7 times the tool life of conventional drills



Machine components (**FCD450**)
·Tool : MDW 1020HY3 (ø10.2mm 3D)
·Cutting Conditions : Conventional Tool : v_c=70m/min, f =0.28mm/rev, v_f=610mm/min
HY Type : v_c=80m/min, f =0.60mm/rev, v_f=1,500mm/min
H=28mm (blind), internal coolant supply (water soluble)

2.5 times the efficiency and +1.4 times the tool life of conventional drills
(1.2 times the tool life of competitors' high-efficiency drills)



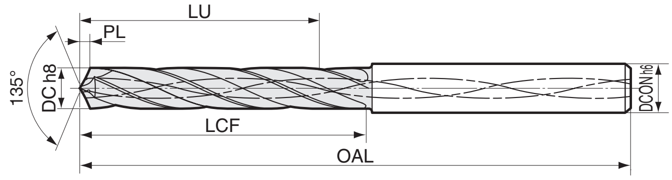
HY Type (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Cast Iron | Ductile Cast Iron

DEX Coat | Coolant Hole | 3D | 5D | 8D

*Refer to N38 for the tolerance of h6 and h8

Fig 1



Diameter ø5.0 to 9.5mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
	3	●	MDW 0500HY3	21.0	28.5	81.0			1
5.0	5	●	0500HY5	37.5	45.0	99.0	1.0	5.0	1
	8	●	0500HY8	48.5	56.0	106.0			1
	3	●	MDW 0510HY3	21.0	28.6	83.1			1
5.1	5	●	0510HY5	37.5	45.1	101.1	1.1	6.0	1
	8		0510HY8	54.0	61.6	119.1			1
	3	●	MDW 0600HY3	22.2	31.2	83.2			1
6.0	5	●	0600HY5	40.2	49.2	101.2	1.2	6.0	1
	8	●	0600HY8	58.2	67.2	119.2			1
	3	●	MDW 0650HY3	24.1	33.8	89.3			1
6.5	5	●	0650HY5	43.6	53.3	110.3	1.3	7.0	1
	8		0650HY8	63.1	72.8	131.3			1
	3	●	MDW 0680HY3	26.2	36.4	89.4			1
6.8	5	●	0680HY5	47.2	57.4	110.4	1.4	7.0	1
	8	●	0680HY8	68.2	78.4	131.4			1
	3	●	MDW 0700HY3	25.9	36.4	89.4			1
7.0	5	●	0700HY5	46.9	57.4	110.4	1.4	7.0	1
	8		0700HY8	67.9	78.4	131.4			1
	3	●	MDW 0800HY3	29.7	41.7	95.7			1
8.0	5	●	0800HY5	53.7	65.7	119.7	1.7	8.0	1
	8		0800HY8	77.7	89.7	143.7			1
	3	●	MDW 0850HY3	31.6	44.3	101.8			1
8.5	5	●	0850HY5	57.1	69.8	128.8	1.8	9.0	1
	8	●	0850HY8	82.6	95.3	155.8			1
	3	●	MDW 0860HY3	33.9	46.8	101.8			1
8.6	5	●	0860HY5	60.9	73.8	128.8	1.8	9.0	1
	8		0860HY8	87.9	100.8	155.8			1
	3	●	MDW 0880HY3	33.6	46.8	101.8			1
8.8	5	●	0880HY5	60.6	73.8	128.8	1.8	9.0	1
	8		0880HY8	87.6	100.8	155.8			1
	3	●	MDW 0900HY3	33.4	46.9	101.9			1
9.0	5	●	0900HY5	60.4	73.9	128.9	1.9	9.0	1
	8		0900HY8	87.4	100.9	155.9			1
	3	●	MDW 0950HY3	35.3	49.5	108.0			1
9.5	5	●	0950HY5	63.8	78.0	138.0	2.0	10.0	1
	8		0950HY8	92.3	106.5	168.0			1

Grade: ACX70

Diameter ø10.0 to 16.0mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
	3	●	MDW 1000HY3	37.1	52.1	108.1			1
10.0	5	●	1000HY5	67.1	82.1	138.1	2.1	10.0	1
	8		1000HY8	97.1	112.1	168.1			1
	3	●	MDW 1020HY3	39.3	54.6	118.1			1
10.2	5	●	1020HY5	70.8	86.1	151.1	2.1	11.0	1
	8		1020HY8	102.3	117.6	184.1			1
	3	●	MDW 1030HY3	39.2	54.6	118.1			1
10.3	5	●	1030HY5	70.7	86.1	151.1	2.1	11.0	1
	8	●	1030HY8	102.2	117.6	184.1			1
	3	●	MDW 1100HY3	40.8	57.3	118.3			1
11.0	5	●	1100HY5	73.8	90.3	151.3	2.3	11.0	1
	8		1100HY8	106.8	123.3	184.3			1
	3	●	MDW 1140HY3	42.8	59.9	124.4			1
11.4	5	●	1140HY5	77.3	94.4	160.4	2.4	12.0	1
	8		1140HY8	111.8	128.9	196.4			1
	3	●	MDW 1150HY3	42.7	59.9	124.4			1
11.5	5	●	1150HY5	77.2	94.4	160.4	2.4	12.0	1
	8		1150HY8	111.7	128.9	196.4			1
	3	●	MDW 1200HY3	44.5	62.5	124.5			1
12.0	5	●	1200HY5	80.5	98.5	160.5	2.5	12.0	1
	8		1200HY8	116.5	134.5	196.5			1
	3	●	MDW 1250HY3	46.4	65.1	130.6			1
12.5	5	●	1250HY5	83.9	102.6	169.6	2.6	13.0	1
	8	●	1250HY8	121.4	140.1	208.6			1
	3	●	MDW 1300HY3	48.2	67.7	130.7			1
13.0	5	●	1300HY5	87.2	106.7	169.7	2.7	13.0	1
	8		1300HY8	126.2	145.7	208.7			1
	3	●	MDW 1400HY3	51.9	72.9	136.9			1
14.0	5	●	1400HY5	93.9	114.9	178.9	2.9	14.0	1
	8		1400HY8	135.9	156.9	220.9			1
	3	●	MDW 1600HY3	59.3	83.3	149.3			1
16.0	5	●	1600HY5	107.3	131.3	197.3	3.3	16.0	1
	8		1600HY8	155.3	179.3	245.3			1

Grade: ACX70

Recommended Cutting Conditions

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

Diameter DC (mm)	Cutting Conditions	Mild Steel/General Steel (up to 300HB)	Gray Cast Iron FC250	Ductile Cast Iron FCD450
ø5.0	v_c	50 - **80** - 120	50 - **70** - 90	40 - **50** - 80
	f	0.15 - **0.20** - 0.25	0.20 - **0.30** - 0.45	0.18 - **0.24** - 0.30
ø10.0	v_c	70 - **100** - 150	60 - **80** - 100	50 - **60** - 90
	f	0.20 - **0.30** - 0.40	0.30 - **0.45** - 0.60	0.30 - **0.40** - 0.50
ø16.0	v_c	80 - **120** - 160	70 - **100** - 120	60 - **80** - 100
	f	0.35 - **0.45** - 0.55	0.40 - **0.60** - 0.80	0.40 - **0.55** - 0.70

Min. - **Optimum** - Max.

D Type (External Coolant Supply/Standard Type)

Hardened Steel up to 45HRC | Hardened Steel from 46HRC | Ti Alloy

ZX Coat | 3D

*Refer to N38 for the tolerance of h8

Fig 1 (ø1.9 or less)

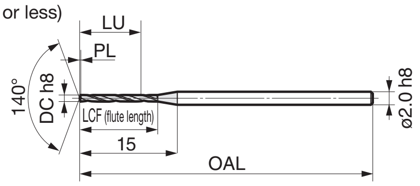
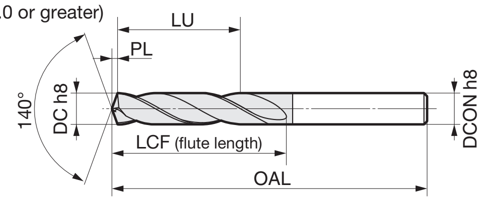


Fig 2 (ø2.0 or greater)



Diameter ø1.0 to 6.5mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
1.0	3	●	MDS 010MD	10.7	12.2	45.2	0.2	2.0	1
1.1			011MD	11.6	13.2				1
1.2		●	012MD	12.4	14.2				1
1.3			013MD	12.3					1
1.4	3	●	MDS 014MD	13.2	15.3	45.3	0.3	2.0	1
1.5		●	015MD	13.1					1
1.6		●	016MD	12.9					1
1.7			017MD	12.8					1
1.8		●	018MD	12.6					1
1.9			019MD	12.5					1
2.0	3	●	MDS 020MD	12.4	15.4	45.4	0.4	2.0	2
2.1			021MD	12.3				2.1	2
2.2		●	022MD	13.1	16.4	46.4		2.2	2
2.3			023MD	13.0				2.3	2
2.4		●	024MD	13.8	17.4	47.4		2.4	2
2.5	3	●	MDS 025MD	13.8	17.5	47.5	0.5	2.5	2
2.6		●	026MD	13.6				2.6	2
2.7			027MD	15.5	19.5	49.5		2.7	2
2.8		●	028MD	15.3				2.8	2
2.9			029MD	15.2				2.9	2
3.0		●	030MD	15.0				3.0	2
3.1	3		MDS 031MD	17.0	21.6	52.6	0.6	3.1	2
3.2		●	032MD	16.8				3.2	2
3.3			033MD	16.7				3.3	2
3.4		●	034MD	19.5	24.6	56.6		3.4	2
3.5		●	035MD	19.4				3.5	2
3.6	3	●	MDS 036MD	19.3	24.7	56.7	0.7	3.6	2
3.7			037MD	19.2				3.7	2
3.8		●	038MD	22.0	27.7	60.7		3.8	2
3.9			039MD	21.9				3.9	2
4.0		●	040MD	21.7				4.0	2
4.1			041MD	21.6				4.1	2
4.2	3	●	MDS 042MD	21.5	27.8	60.8	0.8	4.2	2
4.3		●	043MD	25.4	31.8	65.8		4.3	2
4.4		●	044MD	25.2				4.4	2
4.5		●	045MD	25.1				4.5	2
4.6		●	046MD	24.9				4.6	2
4.7	3		MDS 047MD	24.9	31.9	65.9	0.9	4.7	2
4.8		●	048MD	26.7	33.9	69.9		4.8	2
4.9			049MD	26.6				4.9	2
5.0		●	050MD	31.4	38.9	76.9		5.0	2
5.1		●	051MD	31.3				5.1	2
5.2		●	052MD	31.1				5.2	2
5.3	3		MDS 053MD	31.1	39.0	77.0	1.0	5.3	2
5.4		●	054MD	30.9				5.4	2
5.5		●	055MD	30.8				5.5	2
5.6		●	056MD	33.6	42.0	82.0		5.6	2
5.7			057MD	33.5				5.7	2
5.8	3	●	MDS 058MD	33.4	42.1	82.1	1.1	5.8	2
5.9			059MD	33.3				5.9	2
6.0		●	060MD	33.1				6.0	2
6.1			061MD	33.0				6.1	2
6.2			062MD	32.8				6.2	2
6.3			063MD	32.7				6.3	2
6.4	3		MDS 064MD	32.6	42.2	82.2	1.2	6.4	2
6.5		●	065MD	32.5				6.5	2

Grade: ACZ51S

Diameter ø6.6 to 12.1mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
6.6	3		MDS 066MD	34.3	44.2	84.2	1.2	6.6	2
6.7			067MD	34.2				6.7	2
6.8		●	068MD	34.0				6.8	2
6.9	3		MDS 069MD	34.0	44.3	84.3	1.3	6.9	2
7.0		●	070MD	33.8				7.0	2
7.1			071MD	35.7	46.3	88.3		7.1	2
7.2			072MD	35.5				7.2	2
7.3			073MD	35.4				7.3	2
7.4			074MD	35.2				7.4	2
7.5	3	●	MDS 075MD	35.2	46.4	88.4	1.4	7.5	2
7.6			076MD	38.0	49.4	91.4		7.6	2
7.7			077MD	37.9				7.7	2
7.8			078MD	37.7				7.8	2
7.9			079MD	37.6				7.9	2
8.0	3	●	MDS 080MD	37.5	49.5	91.5	1.5	8.0	2
8.1			081MD	42.4	54.5	97.5		8.1	2
8.2			082MD	42.2				8.2	2
8.3			083MD	42.1				8.3	2
8.4			084MD	41.9				8.4	2
8.5		●	085MD	41.8				8.5	2
8.6	3	●	MDS 086MD	43.7	56.6	99.6	1.6	8.6	2
8.7			087MD	43.6				8.7	2
8.8			088MD	43.4				8.8	2
8.9			089MD	43.3				8.9	2
9.0		●	090MD	43.1				9.0	2
9.1	3		MDS 091MD	46.1	59.7	103.7	1.7	9.1	2
9.2			092MD	45.9				9.2	2
9.3			093MD	45.8				9.3	2
9.4			094MD	45.6				9.4	2
9.5		●	095MD	45.5				9.5	2
9.6			096MD	47.3	61.7	106.7		9.6	2
9.7	3		MDS 097MD	47.3	61.8	106.8	1.8	9.7	2
9.8			098MD	47.1				9.8	2
9.9			099MD	47.0				9.9	2
10.0		●	100MD	46.8				10.0	2
10.1			101MD	52.7	67.8	113.8		10.1	2
10.2	3		MDS 102MD	52.6	67.9	113.9	1.9	10.2	2
10.3		●	103MD	52.5				10.3	2
10.4			104MD	52.3				10.4	2
10.5		●	105MD	52.2				10.5	2
10.6			106MD	54.0	69.9	115.9		10.6	2
10.7			107MD	53.9				10.7	2
10.8	3		MDS 108MD	53.8	70.0	116.0	2.0	10.8	2
10.9			109MD	53.7				10.9	2
11.0		●	110MD	53.5				11.0	2
11.1			111MD	56.4	73.0	120.0		11.1	2
11.2			112MD	56.2				11.2	2
11.3	3		MDS 113MD	56.2	73.1	120.1	2.1	11.3	2
11.4			114MD	56.0				11.4	2
11.5		●	115MD	55.9				11.5	2
11.6			116MD	57.7	75.1	123.1		11.6	2
11.7			117MD	57.6				11.7	2
11.8			118MD	57.4				11.8	2
11.9	3		MDS 119MD	57.4	75.2	123.2	2.2	11.9	2
12.0		●	120MD	57.2				12.0	2
12.1			121MD	60.1	78.2	137.2		12.1	2

Grade: ACZ51S

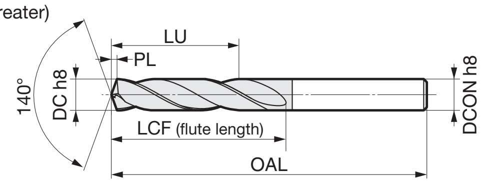
D Type (External Coolant Supply/Standard Type)

Hardened Steel up to 45HRC | Hardened Steel from 46HRC | Ti Alloy

ZX Coat | 3D

*Refer to N38 for the tolerance of h8

Fig 2 (ø2.0 or greater)



Diameter ø12.2 to 16.1mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
12.2	3		**MDS 122MD**	59.9	78.2	137.2	2.2	12.2	2
12.3			**123MD**	59.8				12.3	2
12.4	3		**MDS 124MD**	59.7	78.3	137.3	2.3	12.4	2
12.5		●	**125MD**	59.6				12.5	2
12.6		●	**126MD**	61.4	80.3	139.3		12.6	2
12.7			**127MD**	61.3				12.7	2
12.8			**128MD**	61.1				12.8	2
12.9			**129MD**	61.0				12.9	2
13.0	3	●	**MDS 130MD**	60.9	80.4	139.4	2.4	13.0	2
13.1			**131MD**	66.8	86.4	146.4		13.1	2
13.2			**132MD**	66.6				13.2	2
13.3			**133MD**	66.5				13.3	2
13.4			**134MD**	66.3				13.4	2
13.5	3	●	**MDS 135MD**	66.3	86.5	146.5	2.5	13.5	2
13.6			**136MD**	68.1	88.5	149.5		13.6	2
13.7			**137MD**	68.0				13.7	2
13.8			**138MD**	67.8				13.8	2
13.9			**139MD**	67.7				13.9	2
14.0		●	**140MD**	67.5				14.0	2
14.1	3	●	**MDS 141MD**	70.5	91.6	153.6	2.6	14.1	2
14.2			**142MD**	70.3				14.2	2
14.3			**143MD**	70.2				14.3	2
14.4			**144MD**	70.0				14.4	2
14.5		●	**145MD**	69.9				14.5	2
14.6	3	●	**MDS 146MD**	71.8	93.7	155.7	2.7	14.6	2
14.7			**147MD**	71.7				14.7	2
14.8			**148MD**	71.5				14.8	2
14.9			**149MD**	71.4				14.9	2
15.0		●	**150MD**	71.2				15.0	2
15.1			**151MD**	74.1	96.7	159.7		15.1	2
15.2	3		**MDS 152MD**	74.0	96.8	159.8	2.8	15.2	2
15.3			**153MD**	73.9				15.3	2
15.4			**154MD**	73.7				15.4	2
15.5		●	**155MD**	73.6				15.5	2
15.6		●	**156MD**	75.4	98.8	162.8		15.6	2
15.7	3		**MDS 157MD**	75.4	98.9	162.9	2.9	15.7	2
15.8			**158MD**	75.2				15.8	2
15.9			**159MD**	75.1				15.9	2
16.0		●	**160MD**	74.9				16.0	2
16.1		●	**161MD**	80.8	104.9	169.9		16.1	2

Grade: ACZ51S

Diameter ø16.2 to 20.0mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
16.2	3		**MDS 162MD**	80.6	104.9	169.9	2.9	16.2	2
16.3	3		**MDS 163MD**	80.6	105.0	170.0	3.0	16.3	2
16.4			**164MD**	80.4				16.4	2
16.5			**165MD**	80.3				16.5	2
16.6			**166MD**	80.1				16.6	2
16.7			**167MD**	80.0				16.7	2
16.8	3		**MDS 168MD**	79.9	105.1	170.1	3.1	16.8	2
16.9			**169MD**	79.8				16.9	2
17.0			**170MD**	79.6				17.0	2
17.1			**171MD**	79.5				17.1	2
17.2			**172MD**	79.3				17.2	2
17.3			**173MD**	79.2				17.3	2
17.4	3		**MDS 174MD**	79.1	105.2	170.2	3.2	17.4	2
17.5			**175MD**	79.0				17.5	2
17.6			**176MD**	78.8				17.6	2
17.7			**177MD**	78.7				17.7	2
17.8			**178MD**	78.5				17.8	2
17.9	3		**MDS 179MD**	78.5	105.3	170.3	3.3	17.9	2
18.0			**180MD**	78.3				18.0	2
18.1			**181MD**	90.2	117.3	182.3		18.1	2
18.2			**182MD**	90.0				18.2	2
18.3			**183MD**	89.9				18.3	2
18.4			**184MD**	89.7				18.4	2
18.5	3		**MDS 185MD**	89.7	117.4	182.4	3.4	18.5	2
18.6			**186MD**	89.5				18.6	2
18.7			**187MD**	89.4				18.7	2
18.8			**188MD**	89.2				18.8	2
18.9			**189MD**	89.1				18.9	2
19.0	3		**MDS 190MD**	89.0	117.5	182.5	3.5	19.0	2
19.1			**191MD**	88.9				19.1	2
19.2			**192MD**	88.7				19.2	2
19.3			**193MD**	88.6				19.3	2
19.4			**194MD**	88.4				19.4	2
19.5			**195MD**	88.3				19.5	2
19.6	3		**MDS 196MD**	88.2	117.6	182.6	3.6	19.6	2
19.7			**197MD**	88.1				19.7	2
19.8			**198MD**	87.9				19.8	2
19.9			**199MD**	87.8				19.9	2
20.0			**200MD**	87.6				20.0	2

Grade: ACZ51S

Recommended Cutting Conditions (D Type)

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

Diameter DC (mm)	Cutting Conditions	Hardened Steel (up to 45HRC)	Hardened Steel (up to 60HRC)	Titanium Alloy 6Al-4V-Ti
ø3.0	v_c	20 - **30** - 40	10 - **15** - 20	10 - **10** - 25
	f	0.06 - **0.07** - 0.08	0.05 - **0.06** - 0.08	0.05 - **0.06** - 0.08
ø5.0	v_c	20 - **30** - 40	10 - **15** - 20	10 - **10** - 25
	f	0.08 - **0.09** - 0.10	0.05 - **0.06** - 0.08	0.05 - **0.06** - 0.08
ø10.0	v_c	20 - **30** - 40	10 - **15** - 20	10 - **15** - 30
	f	0.10 - **0.12** - 0.15	0.06 - **0.08** - 0.10	0.07 - **0.09** - 0.10
ø16.0	v_c	20 - **30** - 40	10 - **15** - 20	10 - **15** - 30
	f	0.10 - **0.13** - 0.15	0.08 - **0.10** - 0.12	0.07 - **0.09** - 0.10
ø20.0	v_c	20 - **30** - 40	10 - **15** - 20	10 - **15** - 30
	f	0.10 - **0.13** - 0.15	0.08 - **0.10** - 0.12	0.07 - **0.09** - 0.10

Min. - **Optimum** - Max.

SGS Type

■ General Features

SGS type drills for heat-resistant alloys employ a sharp cutting edge to reduce heat during drilling (reduce cutting force) and provide a long, stable tool life.

■ Features and Applications

● Long tool life

· Combination of optimised cutting edge design and dedicated grade significantly reduces wear.
· Minute honing (edge treatment) amount and special thinning shape reduce cutting force. This reduces cutting edge breakage.
· Perfect for drilling Ni-based heat-resistant alloys (Inconel/Waspaloy/Hastelloy).

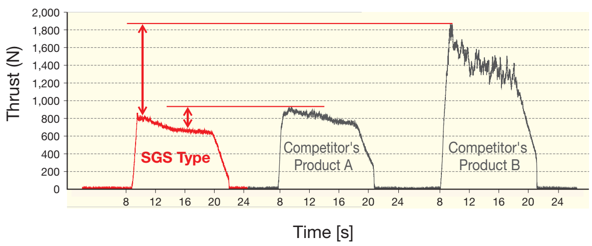
■ Product Range

Cat. No.	Diameter Range (mm)	Hole Depth (L/D)
MDW□□□□SGS3	ø3.0 to 12.0	up to 3

■ Performance

Comparison of Cutting Force (Thrust)

Low Resistance (Reduced Load on Cutting Edge)



Tool Diameter : ø6.0
Work Material : Inconel 718
Cutting Conditions : v_c=10m/min, f =0.08mm/rev, H=8mm (through), external coolant supply

Tool Life Comparison

Long Tool Life (No Fracturing or Breakage)

Tool	SGS Type	Competitor's Product A	Competitor's Product B
No. of Workpieces	Able to Continue after 50 Holes	Breakage after 30 Holes	Breakage after 5 Holes
Photo			

Tool Diameter : ø6.0
Work Material : Inconel 718
Cutting Conditions : v_c=10m/min, f =0.08mm/rev, H =16mm (blind hole), external coolant supply

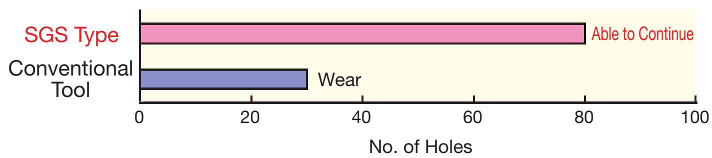
■ Application Examples

Comparison of Cutting Edge Wear after 30 Holes

Significantly Reduced Flank Wear

SGS Type

Conventional Tool



Tool : MDW 0600SGS3
Work Material : Inconel 718 (aerospace components)
Cutting Conditions : v_c=10m/min, f =0.06mm/rev, H=3mm (through), external coolant supply

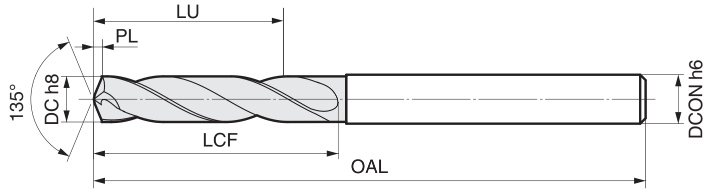
SGS Type (External Coolant Supply)

Stainless Steel | Ti Alloy | Heat-resistant Steel

PVD Coat 3D

*Refer to N38 for the tolerance of h6 and h8

Fig 1



Diameter ø3.0 to 12.0mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
3.0	3	●	**MDW 0300SGS3**	13.6	18.1	49.6	0.6	3.0	1
3.5	3	●	**MDW 0350SGS3**	15.5	20.7	60.7	0.7	4.0	1
4.0		●	**0400SGS3**	17.3	23.3	60.8	0.8		1
4.5	3	●	**MDW 0450SGS3**	19.2	25.9	76.9	0.9	5.0	1
5.0		●	**0500SGS3**	21.0	28.5	77.0	1.0		1
5.5	3	●	**MDW 0550SGS3**	20.4	28.6	82.1	1.1	6.0	1
6.0		●	**0600SGS3**	22.2	31.2	82.2	1.2		1
6.5	3	●	**MDW 0650SGS3**	24.1	33.8	84.3	1.3	7.0	1
7.0		●	**0700SGS3**	25.9	36.4	84.4	1.4		1
7.5	3	●	**MDW 0750SGS3**	27.9	39.1	91.6	1.6	8.0	1
8.0		●	**0800SGS3**	29.7	41.7	91.7	1.7		1
8.5	3	●	**MDW 0850SGS3**	31.6	44.3	99.8	1.8	9.0	1
9.0		●	**0900SGS3**	33.4	46.9	99.9	1.9		1
9.5	3	●	**MDW 0950SGS3**	35.3	49.5	107.0	2.0	10.0	1
10.0		●	**1000SGS3**	37.1	52.1	107.1	2.1		1
10.5	3	●	**MDW 1050SGS3**	39.0	54.7	116.2	2.2	11.0	1
11.0		●	**1100SGS3**	40.8	57.3	116.3	2.3		1
11.5	3	●	**MDW 1150SGS3**	42.7	59.9	123.4	2.4	12.0	1
12.0		●	**1200SGS3**	44.5	62.5	123.5	2.5		1

Grade ACW52S

Recommended Cutting Conditions

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

Diameter DC (mm)	Cutting Conditions	Titanium Alloy Ti	Heat-Resistant Alloy Inconel
ø6.0	v_c	10 - **20** - 30	10 - **10** - 30
	f	0.05 - **0.08** - 0.10	0.05 - **0.08** - 0.10
ø10.0	v_c	10 - **20** - 30	10 - **15** - 30
	f	0.07 - **0.10** - 0.12	0.07 - **0.10** - 0.12
ø12.0	v_c	10 - **20** - 30	15 - **20** - 30
	f	0.07 - **0.10** - 0.12	0.07 - **0.10** - 0.12

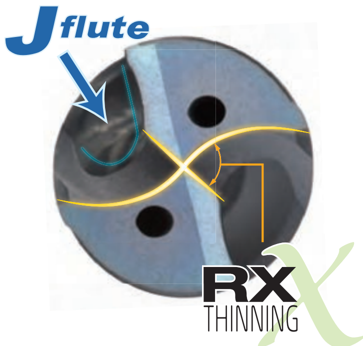
Min. - **Optimum** - Max.

■ General Features

Super MULTIDRILL XHGS type, a next-generation drill specialized for deep hole drilling, features high drill strength and stable chip control to further enhance efficiency of deep hole drilling.

■ Features

- ● Deep hole drilling
  - · J-flute groove shape achieves improved chip control during deep hole drilling
  - · High-efficiency drilling at over v_f=1,000mm/min at depths 20 times the drill diameter (diameter ø5, equivalent to S48C)
  - · Special web thinning shape (RX thinning) reduces cutting force during high-efficiency drilling
- ● Long tool life
  - · Special DEX Coat provides long tool life on a wide variety of work materials.
  - · Improved chip evacuation makes it possible to reduce spindle load fluctuation, ensuring long, stable tool life.
- ● Eco-friendly
  - · Compatible with the MQL (Minimum Quantity Lubrication) system
  - · Compatible with dual-fluid mist (simultaneous spray of oil and water)



■ Product Range

Applications	Cat. No.	Diameter Range (mm)	Hole Depth (L/D)	Number of items
Deep Hole Drilling	MDW□□□□XHGS10	ø2.1 to 16.0	up to 10	76 items in stock
	MDW□□□□XHGS12	ø2.5 to 16.0	up to 12	28 items in stock
	MDW□□□□XHGS15	ø2.1 to 16.0	up to 15	76 items in stock
	MDW□□□□XHGS20	ø2.1 to 14.0	up to 20	72 items in stock
	MDW□□□□XHGS25	ø2.1 to 12.0	up to 25	68 items in stock
	MDW□□□□XHGS30	ø2.1 to 10.0	up to 30	64 items in stock
For Guide Holes	MDW□□□□PHT	ø2.1 to 16.0	up to 2	76 items in stock

■ Application Examples

● Automotive components (equivalent to S38C)

Tool : ø5.0x115mm (PHT Type), ø5.0x170mm (XHGS Type)
Machine : Horizontal single-spindle NC machine
Coolant : MQL (air pressure 0.5MPa, volume approx. 4cc/h)
Cutting Conditions : v_c=80m/min, f =0.28mm/rev, H =85mm per hole (3 holes per unit)
Tool life : 500 units (113m)

● Automotive components (equivalent to S43C)

Tool : ø6.0x170mm (PHT Type), ø6.0x230mm (XHGS Type)
Machine : Horizontal single-spindle NC machine
Coolant : MQL (air pressure 0.5MPa, volume approx. 40cc/h)
Cutting Conditions : v_c=80m/min, f =0.18mm/rev, H =110mm per hole (4 holes per unit)
Tool life : 150 units (113m)

● Automotive components (equivalent to FCD700)

Tool : ø5.0x105mm (PHT Type), ø5.0x155mm (XHGS Type)
Machine : Horizontal single-spindle NC machine
Coolant : MQL (air pressure 0.4MPa, volume approx. 4cc/h)
Cutting Conditions : v_c=50m/min, f =0.18mm/rev, H =60mm per hole (5 holes per unit)
Tool life : 400 units (120m)

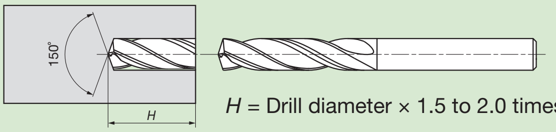
● Machine components (equivalent to S45C)

Tool : ø6.0x90mm (PHT Type), ø6.0x145mm (XHGS Type)
Machine : Horizontal single-spindle NC machine
Coolant : MQL (air pressure 0.5MPa, volume approx. 60cc/h)
Cutting Conditions : v_c=80m/min, f =0.20mm/rev, H =62mm per hole (3 holes per unit)
Tool life : 550 units (104m)

■ Recommended Drilling Method

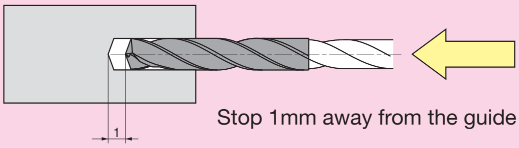
(1) Make a guide hole using the PHT type

- Select the same nominal diameter for the PHT type dedicated guide hole drill as the XHGS type deep hole drill. (The guide drill diameter is designed to be 0.02 mm to 0.05 mm larger than the long drill diameter.)



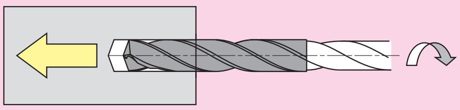
(2) Feed the XHGS type deep hole drill through the guide hole at low rotation speed

- Spindle Speed: 500min^{-1}
- Feed Rate: 1000 to 2000mm/min



* If the drill is inserted into the guide hole at the set cutting speed, peripheral run-out may cause damage to the drill's peripheral edges.

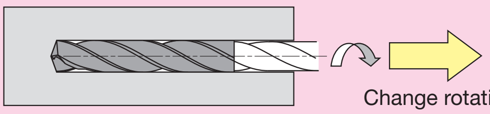
(3) Increase rotation speed until the set cutting speed is reached, then start normal drilling operation



*On some NC machines, the feed command may be activated before the set spindle speed is reached, so it is recommended to enter a dwell sequence before the feed command.

(4) After drilling, rotation speed is reduced and the drill is retracted from the work material

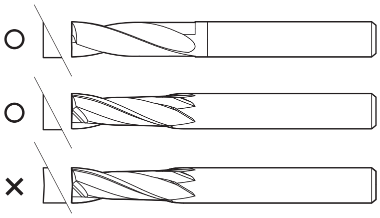
- Spindle speed: 500min^{-1} Feed rate: 1,000 to 2,000mm/min



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

(5) Other notes

- A flat base should be prepared first if the entry side is a non-flat surface (slanted surface, cylindrical surface, etc.).



Spot facing using an endmill or flat MULTIDRILL MDF type (see page J36)

Concave ended endmills cannot be used.

- If the exit side is a non-flat surface, reduce the feed rate to *f*=0.05mm/rev immediately before the breakthrough point to prevent the drill from breaking or burrs from forming.

■ Coolant

(1) Internal coolant supply

- Use coolant equivalent to JIS A1-1 (emulsion).
- Pump pressure Steel: 1. 5 to 2. 0MPa (higher pressure results in a stronger cooling effect, which affects chips and wear)
  Cast iron and aluminum alloy: 4. 0 to 6. 0MPa (prioritize cooling performance)

(2) Internal MQL

- Air pressure : 0.5MPa or greater
- Evacuation volume : It is recommended to set the maximum evacuation volume for your equipment.
  *Consult the manufacturer if you intend to machine aluminum alloy.

(3) Internal dual-fluid mist

- Air pressure : 0.5MPa or greater
- Evacuation volume : It is recommended to use the optimal setting for your equipment.

XHGS Type/PHT Type (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron

DEX Coat | Coolant Hole | 10D | 12D | 15D | 20D | 25D | 30D | Pilot 3D

*Refer to N38 for the tolerance of h6, h8 and e8

Fig 1 (PHT Type)

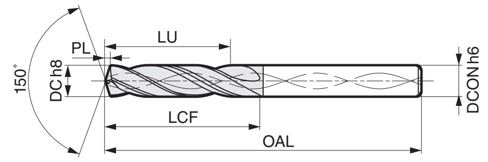
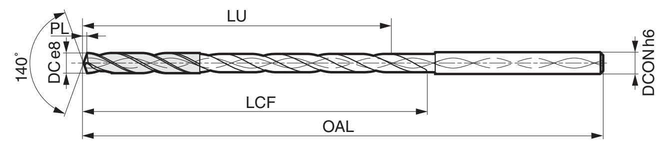


Fig 2 (XHGS Type)



Diameter ø2.1 to 2.8mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
2.1	3	●	MDW 0210PHT	12.2	15.3	68.3	0.3	3.0	1
	10	●	0210XHGS10	35.3	38.4	88.4	0.4		2
	15	●	0210XHGS15	45.3	48.4	98.4			2
	20	●	0210XHGS20	58.3	61.4	111.4			2
	25	●	0210XHGS25	70.3	73.4	123.4			2
	30	●	0210XHGS30	83.3	86.4	136.4			2
2.2	3	●	MDW 0220PHT	12.0	15.3	68.3	0.3	3.0	1
	10	●	0220XHGS10	35.1	38.4	88.4	0.4		2
	15	●	0220XHGS15	45.1	48.4	98.4			2
	20	●	0220XHGS20	58.1	61.4	111.4			2
	25	●	0220XHGS25	70.1	73.4	123.4			2
	30	●	0220XHGS30	83.1	86.4	136.4			2
2.3	3	●	MDW 0230PHT	11.9	15.3	68.3	0.3	3.0	1
	10	●	0230XHGS10	35.0	38.4	88.4	0.4		2
	15	●	0230XHGS15	45.0	48.4	98.4			2
	20	●	0230XHGS20	58.0	61.4	111.4			2
	25	●	0230XHGS25	70.0	73.4	123.4			2
	30	●	0230XHGS30	83.0	86.4	136.4			2
2.4	3	●	MDW 0240PHT	11.7	15.3	68.3	0.3	3.0	1
	10	●	0240XHGS10	34.8	38.4	88.4	0.4		2
	15	●	0240XHGS15	44.8	48.4	98.4			2
	20	●	0240XHGS20	57.8	61.4	111.4			2
	25	●	0240XHGS25	69.8	73.4	123.4			2
	30	●	0240XHGS30	82.8	86.4	136.4			2
2.5	3	●	MDW 0250PHT	11.6	15.3	68.3	0.3	3.0	1
	10	●	0250XHGS10	34.8	38.5	88.5	0.5		2
	12	●	0250XHGS12	37.8	41.5	91.5			2
	15	●	0250XHGS15	44.8	48.5	98.5			2
	20	●	0250XHGS20	57.8	61.5	111.5			2
	25	●	0250XHGS25	69.8	73.5	123.5			2
	30	●	0250XHGS30	82.8	86.5	136.5			2
2.6	3	●	MDW 0260PHT	13.9	17.8	68.3	0.3	3.0	1
	10	●	0260XHGS10	41.6	45.5	93.5	0.5		2
	12		0260XHGS12	47.6	51.5	99.5			2
	15	●	0260XHGS15	56.6	60.5	108.5			2
	20	●	0260XHGS20	71.6	75.5	123.5			2
	25	●	0260XHGS25	86.6	90.5	138.5			2
	30	●	0260XHGS30	101.6	105.5	153.5			2
2.7	3	●	MDW 0270PHT	13.9	17.9	68.4	0.4	3.0	1
	10	●	0270XHGS10	41.5	45.5	93.5	0.5		2
	12		0270XHGS12	47.5	51.5	99.5			2
	15	●	0270XHGS15	56.5	60.5	108.5			2
	20	●	0270XHGS20	71.5	75.5	123.5			2
	25	●	0270XHGS25	86.5	90.5	138.5			2
	30	●	0270XHGS30	101.5	105.5	153.5			2
2.8	3	●	MDW 0280PHT	13.7	17.9	68.4	0.4	3.0	1
	10	●	0280XHGS10	41.3	45.5	93.5	0.5		2
	12		0280XHGS12	47.3	51.5	99.5			2
	15	●	0280XHGS15	56.3	60.5	108.5			2
	20	●	0280XHGS20	71.3	75.5	123.5			2
	25	●	0280XHGS25	86.3	90.5	138.5			2
	30	●	0280XHGS30	101.3	105.5	153.5			2

Part Number Suffix PHT: For Guide Hole
Grade: ACX70 (XHGS Type) / ACX20 (PHT Type)

Diameter ø2.9 to 3.6mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
2.9	3	●	MDW 0290PHT	13.6	17.9	68.4	0.4	3.0	1
	10	●	0290XHGS10	41.2	45.5	93.5	0.5		2
	12		0290XHGS12	47.2	51.5	99.5			2
	15	●	0290XHGS15	56.2	60.5	108.5			2
	20	●	0290XHGS20	71.2	75.5	123.5			2
	25	●	0290XHGS25	86.2	90.5	138.5			2
	30	●	0290XHGS30	101.2	105.5	153.5			2
3.0	3	●	MDW 0300PHT	13.4	17.9	68.4	0.4	3.0	1
	10	●	0300XHGS10	41.0	45.5	93.5	0.5		2
	12	●	0300XHGS12	47.0	51.5	99.5			2
	15	●	0300XHGS15	56.0	60.5	108.5			2
	20	●	0300XHGS20	71.0	75.5	123.5			2
	25	●	0300XHGS25	86.0	90.5	138.5			2
	30	●	0300XHGS30	101.0	105.5	153.5			2
3.1	3	●	MDW 0310PHT	15.8	20.4	72.4	0.4	4.0	1
	10	●	0310XHGS10	49.0	53.6	103.6	0.6		2
	12		0310XHGS12	54.0	58.6	108.6			2
	15	●	0310XHGS15	64.0	68.6	118.6			2
	20	●	0310XHGS20	82.0	86.6	136.6			2
	25	●	0310XHGS25	99.0	103.6	153.6			2
	30	●	0310XHGS30	117.0	121.6	171.6			2
3.2	3	●	MDW 0320PHT	15.6	20.4	72.4	0.4	4.0	1
	10	●	0320XHGS10	48.8	53.6	103.6	0.6		2
	12		0320XHGS12	53.8	58.6	108.6			2
	15	●	0320XHGS15	63.8	68.6	118.6			2
	20	●	0320XHGS20	81.8	86.6	136.6			2
	25	●	0320XHGS25	98.8	103.6	153.6			2
	30	●	0320XHGS30	116.8	121.6	171.6			2
3.3	3	●	MDW 0330PHT	15.5	20.4	72.4	0.4	4.0	1
	10	●	0330XHGS10	48.7	53.6	103.6	0.6		2
	12		0330XHGS12	53.7	58.6	108.6			2
	15	●	0330XHGS15	63.7	68.6	118.6			2
	20	●	0330XHGS20	81.7	86.6	136.6			2
	25	●	0330XHGS25	98.7	103.6	153.6			2
	30	●	0330XHGS30	116.7	121.6	171.6			2
3.4	3	●	MDW 0340PHT	15.4	20.5	72.5	0.5	4.0	1
	10	●	0340XHGS10	48.5	53.6	103.6	0.6		2
	12		0340XHGS12	53.5	58.6	108.6			2
	15	●	0340XHGS15	63.5	68.6	118.6			2
	20	●	0340XHGS20	81.5	86.6	136.6			2
	25	●	0340XHGS25	98.5	103.6	153.6			2
	30	●	0340XHGS30	116.5	121.6	171.6			2
3.5	3	●	MDW 0350PHT	15.3	20.5	72.5	0.5	4.0	1
	10	●	0350XHGS10	48.4	53.6	103.6	0.6		2
	12	●	0350XHGS12	53.4	58.6	108.6			2
	15	●	0350XHGS15	63.4	68.6	118.6			2
	20	●	0350XHGS20	81.4	86.6	136.6			2
	25	●	0350XHGS25	98.4	103.6	153.6			2
	30	●	0350XHGS30	116.4	121.6	171.6			2
3.6	3	●	MDW 0360PHT	17.6	23.0	72.5	0.5	4.0	1
	10	●	0360XHGS10	55.3	60.7	108.7	0.7		2
	12		0360XHGS12	63.3	68.7	116.7			2
	15	●	0360XHGS15	75.3	80.7	128.7			2
	20	●	0360XHGS20	95.3	100.7	148.7			2
	25	●	0360XHGS25	115.3	120.7	168.7			2
	30	●	0360XHGS30	135.3	140.7	188.7			2

Part Number Suffix PHT: For Guide Hole
Grade: ACX70 (XHGS Type) / ACX20 (PHT Type)

XHGS Type/PHT Type (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron

DEX Coat | Coolant Hole | 10D | 12D | 15D | 20D | 25D | 30D | Pilot 3D

*Refer to N38 for the tolerance of h6, h8 and e8

Fig 1 (PHT Type)

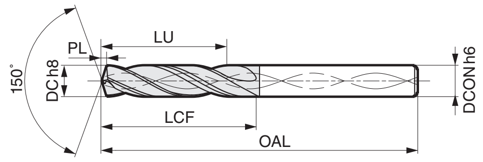
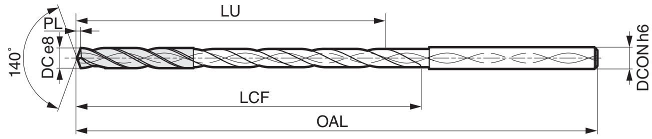


Fig 2 (XHGS Type)



Diameter ø3.7 to 4.4mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
3.7	3	●	MDW 0370PHT	17.5	23.0	72.5	0.5	4.0	1
	10	●	0370XHGS10	55.2	60.7	108.7	0.7		2
	12		0370XHGS12	63.2	68.7	116.7			2
	15	●	0370XHGS15	75.2	80.7	128.7			2
	20	●	0370XHGS20	95.2	100.7	148.7			2
	25	●	0370XHGS25	115.2	120.7	168.7			2
	30	●	0370XHGS30	135.2	140.7	188.7			2
3.8	3	●	MDW 0380PHT	17.3	23.0	72.5	0.5	4.0	1
	10	●	0380XHGS10	55.0	60.7	108.7	0.7		2
	12		0380XHGS12	63.0	68.7	116.7			2
	15	●	0380XHGS15	75.0	80.7	128.7			2
	20	●	0380XHGS20	95.0	100.7	148.7			2
	25	●	0380XHGS25	115.0	120.7	168.7			2
	30	●	0380XHGS30	135.0	140.7	188.7			2
3.9	3	●	MDW 0390PHT	17.2	23.0	72.5	0.5	4.0	1
	10	●	0390XHGS10	54.9	60.7	108.7	0.7		2
	12		0390XHGS12	62.9	68.7	116.7			2
	15	●	0390XHGS15	74.9	80.7	128.7			2
	20	●	0390XHGS20	94.9	100.7	148.7			2
	25	●	0390XHGS25	114.9	120.7	168.7			2
	30	●	0390XHGS30	134.9	140.7	188.7			2
4.0	3	●	MDW 0400PHT	17.0	23.0	72.5	0.5	4.0	1
	10	●	0400XHGS10	54.7	60.7	108.7	0.7		2
	12	●	0400XHGS12	62.7	68.7	116.7			2
	15	●	0400XHGS15	74.7	80.7	128.7			2
	20	●	0400XHGS20	94.7	100.7	148.7			2
	25	●	0400XHGS25	114.7	120.7	168.7			2
	30	●	0400XHGS30	134.7	140.7	188.7			2
4.1	3	●	MDW 0410PHT	19.4	25.5	80.5	0.5	5.0	1
	10	●	0410XHGS10	62.6	68.7	120.7	0.7		2
	12		0410XHGS12	69.6	75.7	127.7			2
	15	●	0410XHGS15	82.6	88.7	140.7			2
	20	●	0410XHGS20	105.6	111.7	163.7			2
	25	●	0410XHGS25	127.6	133.7	185.7			2
	30	●	0410XHGS30	150.6	156.7	208.7			2
4.2	3	●	MDW 0420PHT	19.3	25.6	80.6	0.6	5.0	1
	10	●	0420XHGS10	62.5	68.8	120.8	0.8		2
	12		0420XHGS12	69.5	75.8	127.8			2
	15	●	0420XHGS15	82.5	88.8	140.8			2
	20	●	0420XHGS20	105.5	111.8	163.8			2
	25	●	0420XHGS25	127.5	133.8	185.8			2
	30	●	0420XHGS30	150.5	156.8	208.8			2
4.3	3	●	MDW 0430PHT	19.2	25.6	80.6	0.6	5.0	1
	10	●	0430XHGS10	62.4	68.8	120.8	0.8		2
	12		0430XHGS12	69.4	75.8	127.8			2
	15	●	0430XHGS15	82.4	88.8	140.8			2
	20	●	0430XHGS20	105.4	111.8	163.8			2
	25	●	0430XHGS25	127.4	133.8	185.8			2
	30	●	0430XHGS30	150.4	156.8	208.8			2
4.4	3	●	MDW 0440PHT	19.0	25.6	80.6	0.6	5.0	1
	10	●	0440XHGS10	62.2	68.8	120.8	0.8		2
	12		0440XHGS12	69.2	75.8	127.8			2
	15	●	0440XHGS15	82.2	88.8	140.8			2
	20	●	0440XHGS20	105.2	111.8	163.8			2
	25	●	0440XHGS25	127.2	133.8	185.8			2
	30	●	0440XHGS30	150.2	156.8	208.8			2

Part Number Suffix PHT: For Guide Hole
Grade: ACX70 (XHGS Type) / ACX20 (PHT Type)

Diameter ø4.5 to 5.2mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
4.5	3	●	MDW 0450PHT	18.9	25.6	80.6	0.6	5.0	1
	10	●	0450XHGS10	62.1	68.8	120.8	0.8		2
	12	●	0450XHGS12	69.1	75.8	127.8			2
	15	●	0450XHGS15	82.1	88.8	140.8			2
	20	●	0450XHGS20	105.1	111.8	163.8			2
	25	●	0450XHGS25	127.1	133.8	185.8			2
	30	●	0450XHGS30	150.1	156.8	208.8			2
4.6	3	●	MDW 0460PHT	21.2	28.1	80.6	0.6	5.0	1
	10	●	0460XHGS10	68.9	75.8	125.8	0.8		2
	12		0460XHGS12	78.9	85.8	135.8			2
	15	●	0460XHGS15	93.9	100.8	150.8			2
	20	●	0460XHGS20	118.9	125.8	175.8			2
	25	●	0460XHGS25	143.9	150.8	200.8			2
	30	●	0460XHGS30	168.9	175.8	225.8			2
4.7	3	●	MDW 0470PHT	21.1	28.1	80.6	0.6	5.0	1
	10	●	0470XHGS10	68.9	75.9	125.9	0.9		2
	12		0470XHGS12	78.9	85.9	135.9			2
	15	●	0470XHGS15	93.9	100.9	150.9			2
	20	●	0470XHGS20	118.9	125.9	175.9			2
	25	●	0470XHGS25	143.9	150.9	200.9			2
	30	●	0470XHGS30	168.9	175.9	225.9			2
4.8	3	●	MDW 0480PHT	20.9	28.1	80.6	0.6	5.0	1
	10	●	0480XHGS10	68.7	75.9	125.9	0.9		2
	12		0480XHGS12	78.7	85.9	135.9			2
	15	●	0480XHGS15	93.7	100.9	150.9			2
	20	●	0480XHGS20	118.7	125.9	175.9			2
	25	●	0480XHGS25	143.7	150.9	200.9			2
	30	●	0480XHGS30	168.7	175.9	225.9			2
4.9	3	●	MDW 0490PHT	20.9	28.2	80.7	0.7	5.0	1
	10	●	0490XHGS10	68.6	75.9	125.9	0.9		2
	12		0490XHGS12	78.6	85.9	135.9			2
	15	●	0490XHGS15	93.6	100.9	150.9			2
	20	●	0490XHGS20	118.6	125.9	175.9			2
	25	●	0490XHGS25	143.6	150.9	200.9			2
	30	●	0490XHGS30	168.6	175.9	225.9			2
5.0	3	●	MDW 0500PHT	20.7	28.2	80.7	0.7	5.0	1
	10	●	0500XHGS10	68.4	75.9	125.9	0.9		2
	12	●	0500XHGS12	78.4	85.9	135.9			2
	15	●	0500XHGS15	93.4	100.9	150.9			2
	20	●	0500XHGS20	118.4	125.9	175.9			2
	25	●	0500XHGS25	143.4	150.9	200.9			2
	30	●	0500XHGS30	168.4	175.9	225.9			2
5.1	3	●	MDW 0510PHT	20.6	28.2	82.7	0.7	6.0	1
	10	●	0510XHGS10	76.3	83.9	137.9	0.9		2
	12		0510XHGS12	85.3	92.9	146.9			2
	15	●	0510XHGS15	101.3	108.9	162.9			2
	20	●	0510XHGS20	131.3	138.9	192.9			2
	25	●	0510XHGS25	156.3	163.9	217.9			2
	30	●	0510XHGS30	184.3	191.9	245.9			2
5.2	3	●	MDW 0520PHT	20.4	28.2	82.7	0.7	6.0	1
	10	●	0520XHGS10	76.1	83.9	137.9	0.9		2
	12		0520XHGS12	85.1	92.9	146.9			2
	15	●	0520XHGS15	101.1	108.9	162.9			2
	20	●	0520XHGS20	131.1	138.9	192.9			2
	25	●	0520XHGS25	156.1	163.9	217.9			2
	30	●	0520XHGS30	184.1	191.9	245.9			2

Part Number Suffix PHT: For Guide Hole
Grade: ACX70 (XHGS Type) / ACX20 (PHT Type)

XHGS Type/PHT Type (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron

DEX Coat | Coolant Hole | 10D | 12D | 15D | 20D | 25D | 30D | Pilot 3D

*Refer to N38 for the tolerance of h6, h8 and e8

Fig 1 (PHT Type)

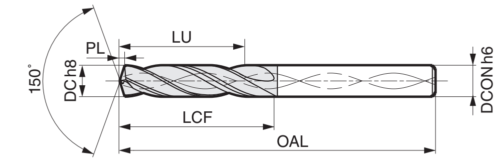
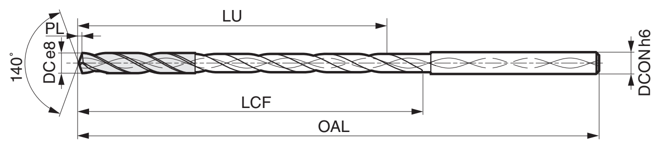


Fig 2 (XHGS Type)



Diameter ø5.3 to 5.9mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
	3	●	MDW 0530PHT	20.3	28.2	82.7	0.7		1
	10	●	0530XHGS10	76.1	84.0	138.0			2
	12		0530XHGS12	85.1	93.0	147.0			2
5.3	15	●	0530XHGS15	101.1	109.0	163.0	1.0	6.0	2
	20	●	0530XHGS20	131.1	139.0	193.0			2
	25	●	0530XHGS25	156.1	164.0	218.0			2
	30	●	0530XHGS30	184.1	192.0	246.0			2
	3	●	MDW 0540PHT	20.1	28.2	82.7	0.7		1
	10	●	0540XHGS10	75.9	84.0	138.0			2
	12		0540XHGS12	84.9	93.0	147.0			2
5.4	15	●	0540XHGS15	100.9	109.0	163.0	1.0	6.0	2
	20	●	0540XHGS20	130.9	139.0	193.0			2
	25	●	0540XHGS25	155.9	164.0	218.0			2
	30	●	0540XHGS30	183.9	192.0	246.0			2
	3	●	MDW 0550PHT	20.0	28.2	82.7	0.7		1
	10	●	0550XHGS10	75.8	84.0	138.0			2
	12	●	0550XHGS12	84.8	93.0	147.0			2
5.5	15	●	0550XHGS15	100.8	109.0	163.0	1.0	6.0	2
	20	●	0550XHGS20	130.8	139.0	193.0			2
	25	●	0550XHGS25	155.8	164.0	218.0			2
	30	●	0550XHGS30	183.8	192.0	246.0			2
	3	●	MDW 0560PHT	22.4	30.8	82.8	0.8		1
	10	●	0560XHGS10	82.6	91.0	143.0			2
	12		0560XHGS12	94.6	103.0	155.0			2
5.6	15	●	0560XHGS15	112.6	121.0	173.0	1.0	6.0	2
	20	●	0560XHGS20	142.6	151.0	203.0			2
	25	●	0560XHGS25	172.6	181.0	233.0			2
	30	●	0560XHGS30	202.6	211.0	263.0			2
	3	●	MDW 0570PHT	22.3	30.8	82.8	0.8		1
	10	●	0570XHGS10	82.5	91.0	143.0			2
	12		0570XHGS12	94.5	103.0	155.0			2
5.7	15	●	0570XHGS15	112.5	121.0	173.0	1.0	6.0	2
	20	●	0570XHGS20	142.5	151.0	203.0			2
	25	●	0570XHGS25	172.5	181.0	233.0			2
	30	●	0570XHGS30	202.5	211.0	263.0			2
	3	●	MDW 0580PHT	22.1	30.8	82.8	0.8		1
	10	●	0580XHGS10	82.4	91.1	143.1			2
	12		0580XHGS12	94.4	103.1	155.1			2
5.8	15	●	0580XHGS15	112.4	121.1	173.1	1.1	6.0	2
	20	●	0580XHGS20	142.4	151.1	203.1			2
	25	●	0580XHGS25	172.4	181.1	233.1			2
	30	●	0580XHGS30	202.4	211.1	263.1			2
	3	●	MDW 0590PHT	22.0	30.8	82.8	0.8		1
	10	●	0590XHGS10	82.3	91.1	143.1			2
	12		0590XHGS12	94.3	103.1	155.1			2
5.9	15	●	0590XHGS15	112.3	121.1	173.1	1.1	6.0	2
	20	●	0590XHGS20	142.3	151.1	203.1			2
	25	●	0590XHGS25	172.3	181.1	233.1			2
	30	●	0590XHGS30	202.3	211.1	263.1			2

Part Number Suffix PHT: For Guide Hole
Grade: ACX70 (XHGS Type) / ACX20 (PHT Type)

Diameter ø6.0 to 6.6mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
	3	●	MDW 0600PHT	21.8	30.8	82.8	0.8		1
	10	●	0600XHGS10	82.1	91.1	143.1			2
	12	●	0600XHGS12	94.1	103.1	155.1			2
6.0	15	●	0600XHGS15	112.1	121.1	173.1	1.1	6.0	2
	20	●	0600XHGS20	142.1	151.1	203.1			2
	25	●	0600XHGS25	172.1	181.1	233.1			2
	30	●	0600XHGS30	202.1	211.1	263.1			2
	3	●	MDW 0610PHT	24.2	33.3	88.8	0.8		1
	10	●	0610XHGS10	90.0	99.1	154.1			2
	12		0610XHGS12	101.0	110.1	165.1			2
6.1	15	●	0610XHGS15	120.0	129.1	184.1	1.1	7.0	2
	20	●	0610XHGS20	153.0	162.1	217.1			2
	25	●	0610XHGS25	185.0	194.1	249.1			2
	30	●	0610XHGS30	218.0	227.1	282.1			2
	3	●	MDW 0620PHT	24.0	33.3	88.8	0.8		1
	10	●	0620XHGS10	89.8	99.1	154.1			2
	12		0620XHGS12	100.8	110.1	165.1			2
6.2	15	●	0620XHGS15	119.8	129.1	184.1	1.1	7.0	2
	20	●	0620XHGS20	152.8	162.1	217.1			2
	25	●	0620XHGS25	184.8	194.1	249.1			2
	30	●	0620XHGS30	217.8	227.1	282.1			2
	3	●	MDW 0630PHT	23.9	33.3	88.8	0.8		1
	10	●	0630XHGS10	89.7	99.1	154.1			2
	12		0630XHGS12	100.7	110.1	165.1			2
6.3	15	●	0630XHGS15	119.7	129.1	184.1	1.1	7.0	2
	20	●	0630XHGS20	152.7	162.1	217.1			2
	25	●	0630XHGS25	184.7	194.1	249.1			2
	30	●	0630XHGS30	217.7	227.1	282.1			2
	3	●	MDW 0640PHT	23.8	33.4	88.9	0.9		1
	10	●	0640XHGS10	89.6	99.2	154.2			2
	12		0640XHGS12	100.6	110.2	165.2			2
6.4	15	●	0640XHGS15	119.6	129.2	184.2	1.2	7.0	2
	20	●	0640XHGS20	152.6	162.2	217.2			2
	25	●	0640XHGS25	184.6	194.2	249.2			2
	30	●	0640XHGS30	217.6	227.2	282.2			2
	3	●	MDW 0650PHT	23.7	33.4	88.9	0.9		1
	10	●	0650XHGS10	89.5	99.2	154.2			2
	12	●	0650XHGS12	100.5	110.2	165.2			2
6.5	15	●	0650XHGS15	119.5	129.2	184.2	1.2	7.0	2
	20	●	0650XHGS20	152.5	162.2	217.2			2
	25	●	0650XHGS25	184.5	194.2	249.2			2
	30	●	0650XHGS30	217.5	227.2	282.2			2
	3	●	MDW 0660PHT	26.0	35.9	88.9	0.9		1
	10	●	0660XHGS10	96.3	106.2	159.2			2
	12		0660XHGS12	110.3	120.2	173.2			2
6.6	15	●	0660XHGS15	131.3	141.2	194.2	1.2	7.0	2
	20	●	0660XHGS20	166.3	176.2	229.2			2
	25	●	0660XHGS25	201.3	211.2	264.2			2
	30	●	0660XHGS30	236.3	246.2	299.2			2

Part Number Suffix PHT: For Guide Hole
Grade: ACX70 (XHGS Type) / ACX20 (PHT Type)

XHGS Type/PHT Type (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron

DEX Coat | Coolant Hole | 10D | 12D | 15D | 20D | 25D | 30D | Pilot 3D

*Refer to N38 for the tolerance of h6, h8 and e8

Fig 1 (PHT Type)

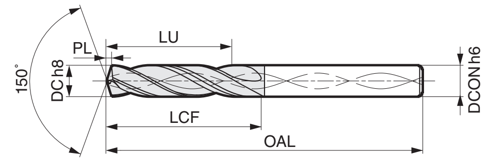
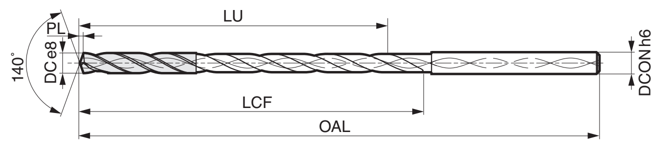


Fig 2 (XHGS Type)



Diameter ø6.7 to 7.3mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
6.7	3	●	MDW 0670PHT	25.9	35.9	88.9	0.9	7.0	1
	10	●	0670XHGS10	96.2	106.2	159.2	1.2		2
	12		0670XHGS12	110.2	120.2	173.2			2
	15	●	0670XHGS15	131.2	141.2	194.2			2
	20	●	0670XHGS20	166.2	176.2	229.2			2
	25	●	0670XHGS25	201.2	211.2	264.2			2
	30	●	0670XHGS30	236.2	246.2	299.2			2
6.8	3	●	MDW 0680PHT	25.7	35.9	88.9	0.9	7.0	1
	10	●	0680XHGS10	96.0	106.2	159.2	1.2		2
	12		0680XHGS12	110.0	120.2	173.2			2
	15	●	0680XHGS15	131.0	141.2	194.2			2
	20	●	0680XHGS20	166.0	176.2	229.2			2
	25	●	0680XHGS25	201.0	211.2	264.2			2
	30	●	0680XHGS30	236.0	246.2	299.2			2
6.9	3	●	MDW 0690PHT	25.6	35.9	88.9	0.9	7.0	1
	10	●	0690XHGS10	96.0	106.3	159.3	1.3		2
	12		0690XHGS12	110.0	120.3	173.3			2
	15	●	0690XHGS15	131.0	141.3	194.3			2
	20	●	0690XHGS20	166.0	176.3	229.3			2
	25	●	0690XHGS25	201.0	211.3	264.3			2
	30	●	0690XHGS30	236.0	246.3	299.3			2
7.0	3	●	MDW 0700PHT	25.4	35.9	88.9	0.9	7.0	1
	10	●	0700XHGS10	95.8	106.3	159.3	1.3		2
	12	●	0700XHGS12	109.8	120.3	173.3			2
	15	●	0700XHGS15	130.8	141.3	194.3			2
	20	●	0700XHGS20	165.8	176.3	229.3			2
	25	●	0700XHGS25	200.8	211.3	264.3			2
	30	●	0700XHGS30	235.8	246.3	299.3			2
7.1	3	●	MDW 0710PHT	27.9	38.5	95.0	1.0	8.0	1
	10	●	0710XHGS10	103.7	114.3	170.3	1.3		2
	12		0710XHGS12	116.7	127.3	183.3			2
	15	●	0710XHGS15	138.7	149.3	205.3			2
	20	●	0710XHGS20	176.7	187.3	243.3			2
	25	●	0710XHGS25	213.7	224.3	280.3			2
	30	●	0710XHGS30	251.7	262.3	318.3			2
7.2	3	●	MDW 0720PHT	27.7	38.5	95.0	1.0	8.0	1
	10	●	0720XHGS10	103.5	114.3	170.3	1.3		2
	12		0720XHGS12	116.5	127.3	183.3			2
	15	●	0720XHGS15	138.5	149.3	205.3			2
	20	●	0720XHGS20	176.5	187.3	243.3			2
	25	●	0720XHGS25	213.5	224.3	280.3			2
	30	●	0720XHGS30	251.5	262.3	318.3			2
7.3	3	●	MDW 0730PHT	27.6	38.5	95.0	1.0	8.0	1
	10	●	0730XHGS10	103.4	114.3	170.3	1.3		2
	12		0730XHGS12	116.4	127.3	183.3			2
	15	●	0730XHGS15	138.4	149.3	205.3			2
	20	●	0730XHGS20	176.4	187.3	243.3			2
	25	●	0730XHGS25	213.4	224.3	280.3			2
	30	●	0730XHGS30	251.4	262.3	318.3			2

Part Number Suffix PHT: For Guide Hole
Grade: ACX70 (XHGS Type) / ACX20 (PHT Type)

Diameter ø7.4 to 8.0mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
7.4	3	●	MDW 0740PHT	27.4	38.5	95.0	1.0	8.0	1
	10	●	0740XHGS10	103.2	114.3	170.3	1.3		2
	12		0740XHGS12	116.2	127.3	183.3			2
	15	●	0740XHGS15	138.2	149.3	205.3			2
	20	●	0740XHGS20	176.2	187.3	243.3			2
	25	●	0740XHGS25	213.2	224.3	280.3			2
	30	●	0740XHGS30	251.2	262.3	318.3			2
7.5	3	●	MDW 0750PHT	27.3	38.5	95.0	1.0	8.0	1
	10	●	0750XHGS10	103.2	114.4	170.4	1.4		2
	12	●	0750XHGS12	116.2	127.4	183.4			2
	15	●	0750XHGS15	138.2	149.4	205.4			2
	20	●	0750XHGS20	176.2	187.4	243.4			2
	25	●	0750XHGS25	213.2	224.4	280.4			2
	30	●	0750XHGS30	251.2	262.4	318.4			2
7.6	3	●	MDW 0760PHT	29.6	41.0	95.0	1.0	8.0	1
	10	●	0760XHGS10	110.0	121.4	175.4	1.4		2
	12		0760XHGS12	126.0	137.4	191.4			2
	15	●	0760XHGS15	150.0	161.4	215.4			2
	20	●	0760XHGS20	190.0	201.4	255.4			2
	25	●	0760XHGS25	230.0	241.4	295.4			2
	30	●	0760XHGS30	270.0	281.4	335.4			2
7.7	3	●	MDW 0770PHT	29.5	41.0	95.0	1.0	8.0	1
	10	●	0770XHGS10	109.9	121.4	175.4	1.4		2
	12		0770XHGS12	125.9	137.4	191.4			2
	15	●	0770XHGS15	149.9	161.4	215.4			2
	20	●	0770XHGS20	189.9	201.4	255.4			2
	25	●	0770XHGS25	229.9	241.4	295.4			2
	30	●	0770XHGS30	269.9	281.4	335.4			2
7.8	3	●	MDW 0780PHT	29.3	41.0	95.0	1.0	8.0	1
	10	●	0780XHGS10	109.7	121.4	175.4	1.4		2
	12		0780XHGS12	125.7	137.4	191.4			2
	15	●	0780XHGS15	149.7	161.4	215.4			2
	20	●	0780XHGS20	189.7	201.4	255.4			2
	25	●	0780XHGS25	229.7	241.4	295.4			2
	30	●	0780XHGS30	269.7	281.4	335.4			2
7.9	3	●	MDW 0790PHT	29.3	41.1	95.1	1.1	8.0	1
	10	●	0790XHGS10	109.6	121.4	175.4	1.4		2
	12		0790XHGS12	125.6	137.4	191.4			2
	15	●	0790XHGS15	149.6	161.4	215.4			2
	20	●	0790XHGS20	189.6	201.4	255.4			2
	25	●	0790XHGS25	229.6	241.4	295.4			2
	30	●	0790XHGS30	269.6	281.4	335.4			2
8.0	3	●	MDW 0800PHT	29.1	41.1	95.1	1.1	8.0	1
	10	●	0800XHGS10	109.5	121.5	175.5	1.5		2
	12	●	0800XHGS12	125.5	137.5	191.5			2
	15	●	0800XHGS15	149.5	161.5	215.5			2
	20	●	0800XHGS20	189.5	201.5	255.5			2
	25	●	0800XHGS25	229.5	241.5	295.5			2
	30	●	0800XHGS30	269.5	281.5	335.5			2

Part Number Suffix PHT: For Guide Hole
Grade: ACX70 (XHGS Type) / ACX20 (PHT Type)

XHGS Type/PHT Type (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron

DEX Coat | Coolant Hole | 10D | 12D | 15D | 20D | 25D | 30D | Pilot 3D

*Refer to N38 for the tolerance of h6, h8 and e8

Fig 1 (PHT Type)

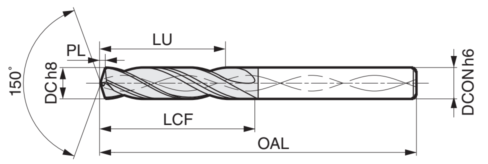
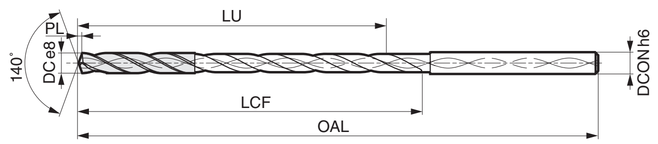


Fig 2 (XHGS Type)



Diameter ø8.5 to 11.5mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
8.5	3	●	MDW 0850PHT	30.9	43.6	101.1	1.1	9.0	1
8.5	10	●	0850XHGS10	116.8	129.5	186.5	1.5	9.0	2
8.5	12	●	0850XHGS12	131.8	144.5	201.5	1.5	9.0	2
8.5	15	●	0850XHGS15	156.8	169.5	226.5	1.5	9.0	2
8.5	20	●	0850XHGS20	199.8	212.5	269.5	1.5	9.0	2
8.5	25	●	0850XHGS25	241.8	254.5	311.5	1.5	9.0	2
8.5	30	●	0850XHGS30	284.8	297.5	354.5	1.5	9.0	2
9.0	3	●	MDW 0900PHT	32.7	46.2	101.2	1.2	9.0	1
9.0	10	●	0900XHGS10	123.1	136.6	191.6	1.6	9.0	2
9.0	12	●	0900XHGS12	141.1	154.6	209.6	1.6	9.0	2
9.0	15	●	0900XHGS15	168.1	181.6	236.6	1.6	9.0	2
9.0	20	●	0900XHGS20	213.1	226.6	281.6	1.6	9.0	2
9.0	25	●	0900XHGS25	258.1	271.6	326.6	1.6	9.0	2
9.0	30	●	0900XHGS30	303.1	316.6	371.6	1.6	9.0	2
9.5	3	●	MDW 0950PHT	34.6	48.8	107.3	1.3	10.0	1
9.5	10	●	0950XHGS10	130.5	144.7	202.7	1.7	10.0	2
9.5	12	●	0950XHGS12	147.5	161.7	219.7	1.7	10.0	2
9.5	15	●	0950XHGS15	175.5	189.7	247.7	1.7	10.0	2
9.5	20	●	0950XHGS20	223.5	237.7	295.7	1.7	10.0	2
9.5	25	●	0950XHGS25	270.5	284.7	342.7	1.7	10.0	2
9.5	30	●	0950XHGS30	318.5	332.7	390.7	1.7	10.0	2
10.0	3	●	MDW 1000PHT	36.3	51.3	107.3	1.3	10.0	1
10.0	10	●	1000XHGS10	136.8	151.8	207.8	1.8	10.0	2
10.0	12	●	1000XHGS12	156.8	171.8	227.8	1.8	10.0	2
10.0	15	●	1000XHGS15	186.8	201.8	257.8	1.8	10.0	2
10.0	20	●	1000XHGS20	236.8	251.8	307.8	1.8	10.0	2
10.0	25	●	1000XHGS25	286.8	301.8	357.8	1.8	10.0	2
10.0	30	●	1000XHGS30	336.8	351.8	407.8	1.8	10.0	2
10.5	3	●	MDW 1050PHT	38.2	53.9	117.4	1.4	11.0	1
10.5	10	●	1050XHGS10	144.2	159.9	222.9	1.9	11.0	2
10.5	12	●	1050XHGS12	163.2	178.9	241.9	1.9	11.0	2
10.5	15	●	1050XHGS15	194.2	209.9	272.9	1.9	11.0	2
10.5	20	●	1050XHGS20	247.2	262.9	325.9	1.9	11.0	2
10.5	25	●	1050XHGS25	299.2	314.9	377.9	1.9	11.0	2
11.0	3	●	MDW 1100PHT	40.0	56.5	117.5	1.5	11.0	1
11.0	10	●	1100XHGS10	150.5	167.0	228.0	2.0	11.0	2
11.0	12	●	1100XHGS12	172.5	189.0	250.0	2.0	11.0	2
11.0	15	●	1100XHGS15	205.5	222.0	283.0	2.0	11.0	2
11.0	20	●	1100XHGS20	260.5	277.0	338.0	2.0	11.0	2
11.0	25	●	1100XHGS25	315.5	332.0	393.0	2.0	11.0	2
11.5	3	●	MDW 1150PHT	41.8	59.0	123.5	1.5	12.0	1
11.5	10	●	1150XHGS10	157.9	175.1	239.1	2.1	12.0	2
11.5	12	●	1150XHGS12	178.9	196.1	260.1	2.1	12.0	2
11.5	15	●	1150XHGS15	212.9	230.1	294.1	2.1	12.0	2
11.5	20	●	1150XHGS20	270.9	288.1	352.1	2.1	12.0	2
11.5	25	●	1150XHGS25	327.9	345.1	409.1	2.1	12.0	2

Part Number Suffix PHT: For Guide Hole
Grade: ACX70 (XHGS Type) / ACX20 (PHT Type)

Diameter ø12.0 to 16.0mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
12.0	3	●	MDW 1200PHT	43.6	61.6	123.6	1.6	12.0	1
12.0	10	●	1200XHGS10	164.2	182.2	244.2	2.2	12.0	2
12.0	12	●	1200XHGS12	188.2	206.2	268.2	2.2	12.0	2
12.0	15	●	1200XHGS15	224.2	242.2	304.2	2.2	12.0	2
12.0	20	●	1200XHGS20	284.2	302.2	364.2	2.2	12.0	2
12.0	25	●	1200XHGS25	344.2	362.2	424.2	2.2	12.0	2
12.5	3	●	MDW 1250PHT	45.5	64.2	129.7	1.7	13.0	1
12.5	10	●	1250XHGS10	171.6	190.3	255.3	2.3	13.0	2
12.5	12	●	1250XHGS12	194.6	213.3	278.3	2.3	13.0	2
12.5	15	●	1250XHGS15	231.6	250.3	315.3	2.3	13.0	2
12.5	20	●	1250XHGS20	294.6	313.3	378.3	2.3	13.0	2
13.0	3	●	MDW 1300PHT	47.2	66.7	129.7	1.7	13.0	1
13.0	10	●	1300XHGS10	177.9	197.4	260.4	2.4	13.0	2
13.0	12	●	1300XHGS12	203.9	223.4	286.4	2.4	13.0	2
13.0	15	●	1300XHGS15	242.9	262.4	325.4	2.4	13.0	2
13.0	20	●	1300XHGS20	307.9	327.4	390.4	2.4	13.0	2
13.5	3	●	MDW 1350PHT	49.1	69.3	135.8	1.8	14.0	1
13.5	10	●	1350XHGS10	185.3	205.5	271.5	2.5	14.0	2
13.5	12	●	1350XHGS12	210.3	230.5	296.5	2.5	14.0	2
13.5	15	●	1350XHGS15	250.3	270.5	336.5	2.5	14.0	2
13.5	20	●	1350XHGS20	318.3	338.5	404.5	2.5	14.0	2
14.0	3	●	MDW 1400PHT	50.9	71.9	135.9	1.9	14.0	1
14.0	10	●	1400XHGS10	191.5	212.5	276.5	2.5	14.0	2
14.0	12	●	1400XHGS12	219.5	240.5	304.5	2.5	14.0	2
14.0	15	●	1400XHGS15	261.5	282.5	346.5	2.5	14.0	2
14.0	20	●	1400XHGS20	331.5	352.5	416.5	2.5	14.0	2
14.5	3	●	MDW 1450PHT	52.7	74.4	141.9	1.9	15.0	1
14.5	10	●	1450XHGS10	198.9	220.6	287.6	2.6	15.0	2
14.5	12	●	1450XHGS12	225.9	247.6	314.6	2.6	15.0	2
14.5	15	●	1450XHGS15	268.9	290.6	357.6	2.6	15.0	2
15.0	3	●	MDW 1500PHT	54.5	77.0	142.0	2.0	15.0	1
15.0	10	●	1500XHGS10	205.2	227.7	292.7	2.7	15.0	2
15.0	12	●	1500XHGS12	235.2	257.7	322.7	2.7	15.0	2
15.0	15	●	1500XHGS15	280.2	302.7	367.7	2.7	15.0	2
15.5	3	●	MDW 1550PHT	56.4	79.6	148.1	2.1	16.0	1
15.5	10	●	1550XHGS10	212.6	235.8	303.8	2.8	16.0	2
15.5	12	●	1550XHGS12	241.6	264.8	332.8	2.8	16.0	2
15.5	15	●	1550XHGS15	287.6	310.8	378.8	2.8	16.0	2
16.0	3	●	MDW 1600PHT	58.1	82.1	148.1	2.1	16.0	1
16.0	10	●	1600XHGS10	218.9	242.9	308.9	2.9	16.0	2
16.0	12	●	1600XHGS12	248.9	272.9	340.9	2.9	16.0	2
16.0	15	●	1600XHGS15	298.9	322.9	388.9	2.9	16.0	2

Part Number Suffix PHT: For Guide Hole
Grade: ACX70 (XHGS Type) / ACX20 (PHT Type)

XHGS Type/PHT Type (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron

DEX Coat | Coolant Hole | 10D | 12D | 15D | 20D | 25D | 30D | Pilot 3D

*Refer to N38 for the tolerance of h6, h8 and e8

Fig 1 (PHT Type)

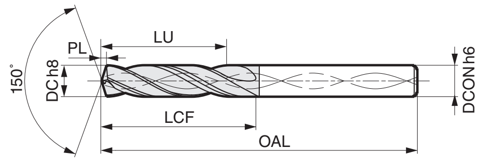
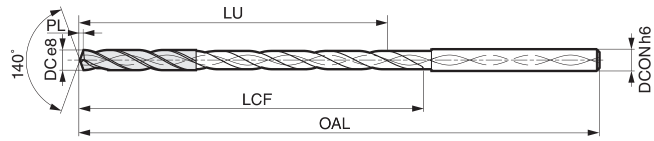


Fig 2 (XHGS Type)



Made-to-order items: Inquire about production of drills in tool diameters and lengths that are not listed in the dimensions at left or not in stock.

Recommended Cutting Conditions

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

Diameter DC (mm)	Cutting Conditions	Mild Steel (up to 200HB)	General Steel (up to 250HB)	Alloy Steel (up to 300HB)	Hardened Steel (up to 40HRC)	Gray Cast Iron Ductile Cast Iron
ø3.0	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
ø5.0	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
ø10.0	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
ø16.0	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 supply or dual-liquid mist.

Min. - **Optimum** - Max.

NHGS Type

Features

- **High-efficiency drilling**
  AURORA Coat (DLC Coat) and low resistance WL (Wide L) thinning drastically reduce cutting force.
- **Stable drilling performance**
  Special cutting edge design and WW (Wide W) margin improve hole quality.
- **Long tool life**
  With AURORA Coat coupled with the cutting edge shape, a long and stable tool life is achieved.
- **Deep hole drilling**
  Drills for deep hole drilling can be made to oder.
  (Production range: Drill diameters: ø3.0 to ø16.0mm
  Overall length: Available on inquiry)

Product Range (Stocked Sizes)

Coolant Supply	Cat. No.	Diameter Range (mm)	Hole Depth (L/D)
Internal	MDW□□□□NHGS3	ø3.0 to 16.0	up to 3
	MDW□□□□NHGS5		up to 5
	MDW□□□□NHGS10	ø3.0 to 13.0	up to 10

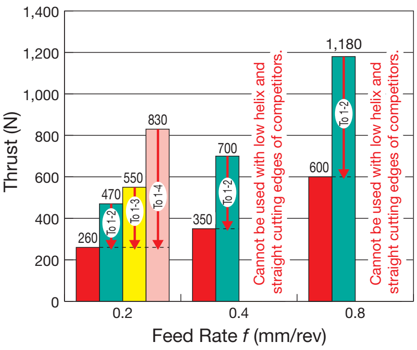
Performance

Cutting Force

- Low cutting force, achieving 2 to 4 times the feed rate

The cutting force of the NHGS Type is
1/2 that of competitors' 30° helix drills ⇨ double the feed rate!
1/3 that of competitors' light helix drills ⇨ 3x the feed rate!
1/4 that of straight-blade drills ⇨ 4x the feed rate!

Thrust



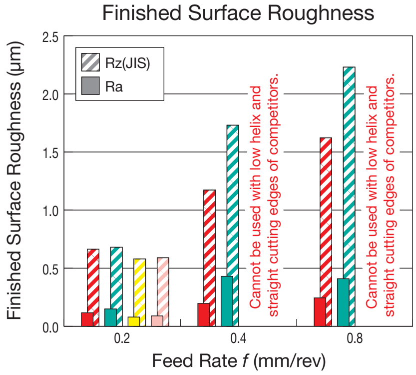
Tool	: MDW 0800NHGS5 (DL1300)	Work Material	: ADC12
Cutting Speed	: v_c=200m/min	Machine	: Vertical machining centre (BT30)
Coolant	: Internal supply (1.5MPa)	Coolant	: Emulsion (dilute to around 25x)

Machined surface quality

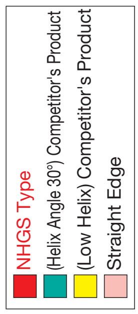
- Achieves good surface roughness over a wide range of feed rates

Good surface roughness from low to high feed rates:
Ra=0.11 to 0.25
Rz (JIS)=0.66 to 1.62

Finished Surface Roughness



Legend (common)



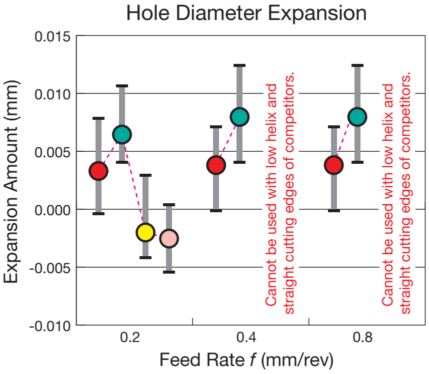
Tool	: MDW 0800NHGS5 (DL1300)	Work Material	: ADC12
Cutting Speed	: v_c=200m/min	Machine	: Vertical machining centre (BT30)
Coolant	: Internal supply (1.5MPa)	Coolant	: Emulsion (dilute to around 25x)

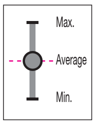
Machined hole accuracy (hole expansion)

- Stable hole accuracy with hole expansion within 0.01mm

Achieves minimal expansion and stable machining from low to high feed rates

Hole Diameter Expansion





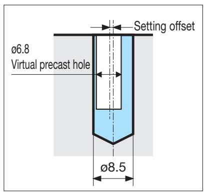
Tool	: MDW 0800NHGS5 (DL1300)	Work Material	: ADC12
Cutting Speed	: v_c=200m/min	Machine	: Vertical machining centre (BT30)
Coolant	: Internal supply (1.5MPa)	Coolant	: Emulsion (dilute to around 25x)

Machined hole accuracy (hole position accuracy)

- Pre-cast hole accuracy within ±1/10 to ±1/5 of axial offset

Pre-cast hole accuracy (hole position accuracy)

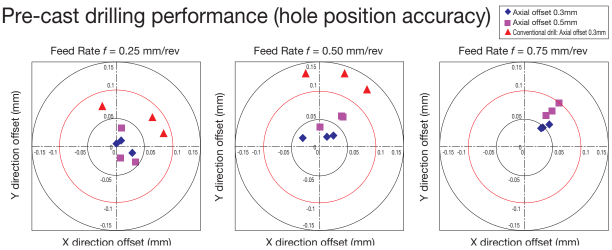
Offset \ Feed Rate	0.25mm/rev	0.50mm/rev	0.75mm/rev
0.3mm	±0.03mm	±0.04mm	±0.06mm
0.5mm	±0.05mm	±0.07mm	±0.10mm
Conventional drill: 0.3mm	±0.09mm	±0.19mm	



- Test method

An axial offset of 0.3mm to 0.5mm is set for a virtual pre-cast hole (ø6.8) and a hole is drilled with an ø8.5 drill before measuring the deviation from the target position.

Pre-cast drilling performance (hole position accuracy)



Tool	: MDW 0850NHGS5 (DL1300)	Work Material	: AC4C-T6
Cutting Speed	: v_c=200m/min (n=7, 489min^{-1})	Machine	: Vertical machining centre (BT30)
Coolant	: Internal supply		

NHGS Type (Internal Coolant Supply)

Aluminum Alloy | Copper Alloy

Aurora DLC Coat | Coolant Hole | 3D | 5D | 10D

*Refer to N38 for the tolerance of h6

Fig 1 (NHGS3/5 Type, ø3.0 to 16.0mm)

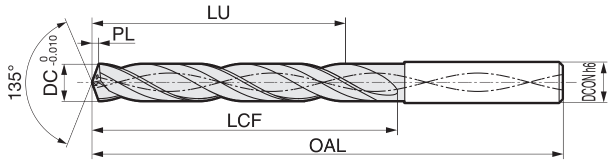
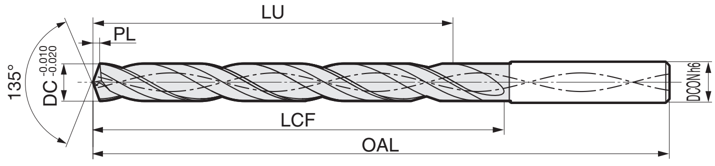


Fig 2 (NHGS10 Type, ø3.0 to 16.0mm)



Diameter ø3.0 to 4.5mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
3.0	3	●	MDW 0300NHGS3	13.6	18.1	68.6			1
	5	●	0300NHGS5	24.1	28.6	78.6	0.6	3.0	1
	10	●	0300NHGS10	38.1	42.6	92.6			2
3.1	3		MDW 0310NHGS3	16.0	20.6	72.6			1
	5	●	0310NHGS5	28.0	32.6	86.6	0.6	4.0	1
	10		0310NHGS10	45.0	49.6	106.6			2
3.2	3	●	MDW 0320NHGS3	15.9	20.7	72.7			1
	5	●	0320NHGS5	27.9	32.7	86.7	0.7	4.0	1
	10	●	0320NHGS10	44.9	49.7	106.7			2
3.3	3	●	MDW 0330NHGS3	15.8	20.7	72.7			1
	5	●	0330NHGS5	27.8	32.7	86.7	0.7	4.0	1
	10		0330NHGS10	44.8	49.7	106.7			2
3.4	3		MDW 0340NHGS3	15.6	20.7	72.7			1
	5	●	0340NHGS5	27.6	32.7	86.7	0.7	4.0	1
	10	●	0340NHGS10	44.6	49.7	106.7			2
3.5	3	●	MDW 0350NHGS3	15.5	20.7	72.7			1
	5	●	0350NHGS5	27.5	32.7	86.7	0.7	4.0	1
	10	●	0350NHGS10	44.5	49.7	106.7			2
3.6	3		MDW 0360NHGS3	17.8	23.2	72.7			1
	5	●	0360NHGS5	31.3	36.7	86.7	0.7	4.0	1
	10	●	0360NHGS10	51.3	56.7	106.7			2
3.65	3	●	MDW 0365NHGS3	17.8	23.3	72.8			1
	5	●	0365NHGS5	31.3	36.8	86.8	0.8	4.0	1
	10		0365NHGS10	51.3	56.8	106.8			2
3.66	3		MDW 0366NHGS3	17.8	23.3	72.8			1
	5	●	0366NHGS5	31.3	36.8	86.8	0.8	4.0	1
	10		0366NHGS10	51.3	56.8	106.8			2
3.7	3		MDW 0370NHGS3	17.8	23.3	72.8			1
	5	●	0370NHGS5	31.3	36.8	86.8	0.8	4.0	1
	10		0370NHGS10	51.3	56.8	106.8			2
3.8	3		MDW 0380NHGS3	17.6	23.3	72.8			1
	5	●	0380NHGS5	31.1	36.8	86.8	0.8	4.0	1
	10		0380NHGS10	51.1	56.8	106.8			2
3.9	3		MDW 0390NHGS3	17.5	23.3	72.8			1
	5	●	0390NHGS5	31.0	36.8	86.8	0.8	4.0	1
	10	●	0390NHGS10	51.0	56.8	106.8			2
4.0	3	●	MDW 0400NHGS3	17.3	23.3	72.8			1
	5	●	0400NHGS5	30.8	36.8	86.8	0.8	4.0	1
	10	●	0400NHGS10	50.8	56.8	106.8			2
4.1	3	●	MDW 0410NHGS3	19.7	25.8	80.8			1
	5	●	0410NHGS5	34.7	40.8	98.8	0.8	5.0	1
	10		0410NHGS10	57.7	63.8	121.8			2
4.2	3	●	MDW 0420NHGS3	19.6	25.9	80.9			1
	5	●	0420NHGS5	34.6	40.9	98.9	0.9	5.0	1
	10		0420NHGS10	57.6	63.9	121.9			2
4.3	3		MDW 0430NHGS3	19.5	25.9	80.9			1
	5	●	0430NHGS5	34.5	40.9	98.9	0.9	5.0	1
	10		0430NHGS10	57.5	63.9	121.9			2
4.4	3		MDW 0440NHGS3	19.3	25.9	80.9			1
	5	●	0440NHGS5	34.3	40.9	98.9	0.9	5.0	1
	10		0440NHGS10	57.3	63.9	121.9			2
4.5	3	●	MDW 0450NHGS3	19.2	25.9	80.9			1
	5	●	0450NHGS5	34.2	40.9	98.9	0.9	5.0	1
	10	●	0450NHGS10	57.2	63.9	121.9			2

Grade: DL1300

Diameter ø4.6 to 6.3mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
4.6	3	●	MDW 0460NHGS3	21.6	28.5	81.0			1
	5	●	0460NHGS5	38.1	45.0	99.0	1.0	5.0	1
	10		0460NHGS10	64.1	71.0	122.0			2
4.7	3		MDW 0470NHGS3	21.5	28.5	81.0			1
	5	●	0470NHGS5	38.0	45.0	99.0	1.0	5.0	1
	10		0470NHGS10	64.0	71.0	122.0			2
4.8	3		MDW 0480NHGS3	21.3	28.5	81.0			1
	5	●	0480NHGS5	37.8	45.0	99.0	1.0	5.0	1
	10		0480NHGS10	63.8	71.0	122.0			2
4.9	3		MDW 0490NHGS3	21.2	28.5	81.0			1
	5	●	0490NHGS5	37.7	45.0	99.0	1.0	5.0	1
	10	●	0490NHGS10	63.7	71.0	122.0			2
5.0	3	●	MDW 0500NHGS3	21.0	28.5	81.0			1
	5	●	0500NHGS5	37.5	45.0	99.0	1.0	5.0	1
	10	●	0500NHGS10	63.5	71.0	122.0			2
5.1	3		MDW 0510NHGS3	21.0	28.6	83.1			1
	5	●	0510NHGS5	37.5	45.1	101.1	1.1	6.0	1
	10	●	0510NHGS10	70.5	78.1	137.1			2
5.2	3	●	MDW 0520NHGS3	20.8	28.6	83.1			1
	5	●	0520NHGS5	37.3	45.1	101.1	1.1	6.0	1
	10		0520NHGS10	70.3	78.1	137.1			2
5.3	3	●	MDW 0530NHGS3	20.7	28.6	83.1			1
	5	●	0530NHGS5	37.2	45.1	101.1	1.1	6.0	1
	10		0530NHGS10	70.2	78.1	137.1			2
5.4	3		MDW 0540NHGS3	20.5	28.6	83.1			1
	5	●	0540NHGS5	37.0	45.1	101.1	1.1	6.0	1
	10		0540NHGS10	70.0	78.1	137.1			2
5.5	3	●	MDW 0550NHGS3	20.4	28.6	83.1			1
	5	●	0550NHGS5	36.9	45.1	101.1	1.1	6.0	1
	10	●	0550NHGS10	69.9	78.1	137.1			2
5.6	3		MDW 0560NHGS3	22.8	31.2	83.2			1
	5	●	0560NHGS5	40.8	49.2	101.2	1.2	6.0	1
	10		0560NHGS10	76.8	85.2	137.2			2
5.7	3		MDW 0570NHGS3	22.7	31.2	83.2			1
	5	●	0570NHGS5	40.7	49.2	101.2	1.2	6.0	1
	10		0570NHGS10	76.7	85.2	137.2			2
5.8	3		MDW 0580NHGS3	22.5	31.2	83.2			1
	5	●	0580NHGS5	40.5	49.2	101.2	1.2	6.0	1
	10		0580NHGS10	76.5	85.2	137.2			2
5.9	3	●	MDW 0590NHGS3	22.4	31.2	83.2			1
	5	●	0590NHGS5	40.4	49.2	101.2	1.2	6.0	1
	10		0590NHGS10	76.4	85.2	137.2			2
6.0	3	●	MDW 0600NHGS3	22.2	31.2	83.2			1
	5	●	0600NHGS5	40.2	49.2	101.2	1.2	6.0	1
	10	●	0600NHGS10	76.2	85.2	137.2			2
6.1	3		MDW 0610NHGS3	24.7	33.8	89.3			1
	5	●	0610NHGS5	44.2	53.3	110.3	1.3	7.0	1
	10	●	0610NHGS10	83.2	92.3	152.3			2
6.2	3		MDW 0620NHGS3	24.5	33.8	89.3			1
	5	●	0620NHGS5	44.0	53.3	110.3	1.3	7.0	1
	10		0620NHGS10	83.0	92.3	152.3			2
6.3	3		MDW 0630NHGS3	24.4	33.8	89.3			1
	5	●	0630NHGS5	43.9	53.3	110.3	1.3	7.0	1
	10		0630NHGS10	82.9	92.3	152.3			2

Grade: DL1300

NHGS Type (Internal Coolant Supply)

Aluminum Alloy | Copper Alloy

Aurora DLC Coat | Coolant Hole | 3D | 5D | 10D

*Refer to N38 for the tolerance of h6

Fig 1 (NHGS3/5 Type, ø3.0 to 16.0mm)

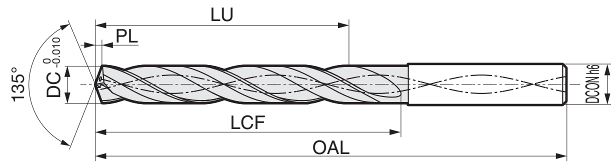
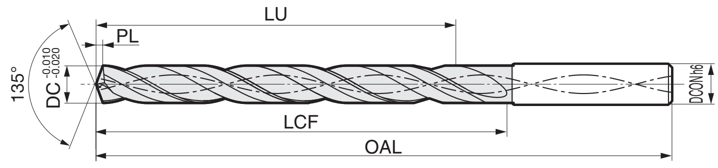


Fig 2 (NHGS10 Type, ø3.0 to 16.0mm)



Diameter ø6.4 to 8.0mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
	3		MDW 0640NHGS3	24.2	33.8	89.3			1
6.4	5	●	0640NHGS5	43.7	53.3	110.3	1.3	7.0	1
	10		0640NHGS10	82.7	92.3	152.3			2
	3	●	MDW 0650NHGS3	24.1	33.8	89.3			1
6.5	5	●	0650NHGS5	43.6	53.3	110.3	1.3	7.0	1
	10	●	0650NHGS10	82.6	92.3	152.3			2
	3		MDW 0660NHGS3	26.5	36.4	89.4			1
6.6	5	●	0660NHGS5	47.5	57.4	110.4	1.4	7.0	1
	10		0660NHGS10	89.5	99.4	152.4			2
	3	●	MDW 0670NHGS3	26.4	36.4	89.4			1
6.7	5	●	0670NHGS5	47.4	57.4	110.4	1.4	7.0	1
	10	●	0670NHGS10	89.4	99.4	152.4			2
	3	●	MDW 0680NHGS3	26.2	36.4	89.4			1
6.8	5	●	0680NHGS5	47.2	57.4	110.4	1.4	7.0	1
	10	●	0680NHGS10	89.2	99.4	152.4			2
	3		MDW 0690NHGS3	26.1	36.4	89.4			1
6.9	5	●	0690NHGS5	47.1	57.4	110.4	1.4	7.0	1
	10		0690NHGS10	89.1	99.4	152.4			2
	3	●	MDW 0700NHGS3	25.9	36.4	89.4			1
7.0	5	●	0700NHGS5	46.9	57.4	110.4	1.4	7.0	1
	10	●	0700NHGS10	88.9	99.4	152.4			2
	3		MDW 0710NHGS3	28.4	39.0	95.5			1
7.1	5	●	0710NHGS5	50.9	61.5	119.5	1.5	8.0	1
	10		0710NHGS10	95.9	106.5	167.5			2
	3		MDW 0720NHGS3	28.2	39.0	95.5			1
7.2	5	●	0720NHGS5	50.7	61.5	119.5	1.5	8.0	1
	10	●	0720NHGS10	95.7	106.5	167.5			2
	3		MDW 0730NHGS3	28.1	39.0	95.5			1
7.3	5	●	0730NHGS5	50.6	61.5	119.5	1.5	8.0	1
	10		0730NHGS10	95.6	106.5	167.5			2
	3	●	MDW 0735NHGS3	28.0	39.0	95.5			1
7.35	5	●	0735NHGS5	50.5	61.5	119.5	1.5	8.0	1
	10		0735NHGS10	95.5	106.5	167.5			2
	3	●	MDW 0740NHGS3	27.9	39.0	95.5			1
7.4	5	●	0740NHGS5	50.4	61.5	119.5	1.5	8.0	1
	10		0740NHGS10	95.4	106.5	167.5			2
	3	●	MDW 0750NHGS3	27.9	39.1	95.6			1
7.5	5	●	0750NHGS5	50.4	61.6	119.6	1.6	8.0	1
	10	●	0750NHGS10	95.4	106.6	167.6			2
	3		MDW 0760NHGS3	30.2	41.6	95.6			1
7.6	5	●	0760NHGS5	54.2	65.6	119.6	1.6	8.0	1
	10		0760NHGS10	102.2	113.6	167.6			2
	3		MDW 0770NHGS3	30.1	41.6	95.6			1
7.7	5	●	0770NHGS5	54.1	65.6	119.6	1.6	8.0	1
	10		0770NHGS10	102.1	113.6	167.6			2
	3	●	MDW 0780NHGS3	29.9	41.6	95.6			1
7.8	5	●	0780NHGS5	53.9	65.6	119.6	1.6	8.0	1
	10	●	0780NHGS10	101.9	113.6	167.6			2
	3		MDW 0790NHGS3	29.8	41.6	95.6			1
7.9	5	●	0790NHGS5	53.8	65.6	119.6	1.6	8.0	1
	10		0790NHGS10	101.8	113.6	167.6			2
	3	●	MDW 0800NHGS3	29.7	41.7	95.7			1
8.0	5	●	0800NHGS5	53.7	65.7	119.7	1.7	8.0	1
	10	●	0800NHGS10	101.7	113.7	167.7			2

Grade: DL1300

Diameter ø8.1 to 9.7mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
	3		MDW 0810NHGS3	32.1	44.2	101.7			1
8.1	5	●	0810NHGS5	57.6	69.7	128.7	1.7	9.0	1
	10		0810NHGS10	108.6	120.7	182.7			2
	3		MDW 0820NHGS3	31.9	44.2	101.7			1
8.2	5	●	0820NHGS5	57.4	69.7	128.7	1.7	9.0	1
	10		0820NHGS10	108.4	120.7	182.7			2
	3		MDW 0830NHGS3	31.8	44.2	101.7			1
8.3	5	●	0830NHGS5	57.3	69.7	128.7	1.7	9.0	1
	10		0830NHGS10	108.3	120.7	182.7			2
	3		MDW 0840NHGS3	31.6	44.2	101.7			1
8.4	5	●	0840NHGS5	57.1	69.7	128.7	1.7	9.0	1
	10		0840NHGS10	108.1	120.7	182.7			2
	3	●	MDW 0850NHGS3	31.6	44.3	101.8			1
8.5	5	●	0850NHGS5	57.1	69.8	128.8	1.8	9.0	1
	10	●	0850NHGS10	108.1	120.8	182.8			2
	3	●	MDW 0860NHGS3	33.9	46.8	101.8			1
8.6	5	●	0860NHGS5	60.9	73.8	128.8	1.8	9.0	1
	10		0860NHGS10	114.9	127.8	182.8			2
	3		MDW 0870NHGS3	33.8	46.8	101.8			1
8.7	5	●	0870NHGS5	60.8	73.8	128.8	1.8	9.0	1
	10		0870NHGS10	114.8	127.8	182.8			2
	3	●	MDW 0880NHGS3	33.6	46.8	101.8			1
8.8	5	●	0880NHGS5	60.6	73.8	128.8	1.8	9.0	1
	10		0880NHGS10	114.6	127.8	182.8			2
	3		MDW 0890NHGS3	33.5	46.8	101.8			1
8.9	5	●	0890NHGS5	60.5	73.8	128.8	1.8	9.0	1
	10		0890NHGS10	114.5	127.8	182.8			2
	3	●	MDW 0900NHGS3	33.4	46.9	101.9			1
9.0	5	●	0900NHGS5	60.4	73.9	128.9	1.9	9.0	1
	10	●	0900NHGS10	114.4	127.9	182.9			2
	3		MDW 0910NHGS3	35.8	49.4	107.9			1
9.1	5	●	0910NHGS5	64.3	77.9	137.9	1.9	10.0	1
	10		0910NHGS10	121.3	134.9	197.9			2
	3		MDW 0920NHGS3	35.6	49.4	107.9			1
9.2	5	●	0920NHGS5	64.1	77.9	137.9	1.9	10.0	1
	10		0920NHGS10	121.1	134.9	197.9			2
	3	●	MDW 0921NHGS3	35.6	49.4	107.9			1
9.21	5	●	0921NHGS5	64.1	77.9	137.9	1.9	10.0	1
	10		0921NHGS10	121.1	134.9	197.9			2
	3		MDW 0930NHGS3	35.5	49.4	107.9			1
9.3	5	●	0930NHGS5	64.0	77.9	137.9	1.9	10.0	1
	10		0930NHGS10	121.0	134.9	197.9			2
	3	●	MDW 0940NHGS3	35.3	49.4	107.9			1
9.4	5	●	0940NHGS5	63.8	77.9	137.9	1.9	10.0	1
	10		0940NHGS10	120.8	134.9	197.9			2
	3	●	MDW 0950NHGS3	35.3	49.5	108.0			1
9.5	5	●	0950NHGS5	63.8	78.0	138.0	2.0	10.0	1
	10	●	0950NHGS10	120.8	135.0	198.0			2
	3		MDW 0960NHGS3	37.6	52.0	108.0			1
9.6	5	●	0960NHGS5	67.6	82.0	138.0	2.0	10.0	1
	10		0960NHGS10	127.6	142.0	198.0			2
	3		MDW 0970NHGS3	37.5	52.0	108.0			1
9.7	5	●	0970NHGS5	67.5	82.0	138.0	2.0	10.0	1
	10		0970NHGS10	127.5	142.0	198.0			2

Grade: DL1300

NHGS Type (Internal Coolant Supply)

Aluminum Alloy | Copper Alloy

Aurora DLC Coat | Coolant Hole | 3D | 5D | 10D

*Refer to N38 for the tolerance of h6

Fig 1 (NHGS3/5 Type, ø3.0 to 16.0mm)

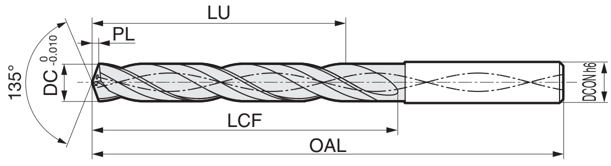
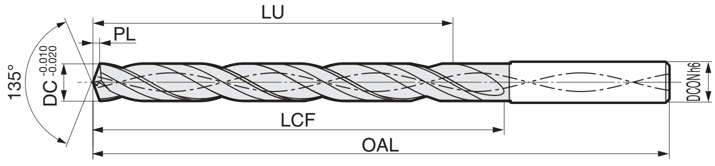


Fig 2 (NHGS10 Type, ø3.0 to 16.0mm)



Diameter ø9.8 to 11.4mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
9.8	3		MDW 0980NHGS3	37.3	52.0	108.0	2.0	10.0	1
	5	●	0980NHGS5	67.3	82.0	138.0			1
	10	●	0980NHGS10	127.3	142.0	198.0			2
9.9	3		MDW 0990NHGS3	37.2	52.0	108.0	2.0	10.0	1
	5	●	0990NHGS5	67.2	82.0	138.0			1
	10		0990NHGS10	127.2	142.0	198.0			2
10.0	3	●	MDW 1000NHGS3	37.1	52.1	108.1	2.1	10.0	1
	5	●	1000NHGS5	67.1	82.1	138.1			1
	10	●	1000NHGS10	127.1	142.1	198.1			2
10.1	3	●	MDW 1010NHGS3	39.5	54.6	118.1	2.1	11.0	1
	5		1010NHGS5	71.0	86.1	151.1			1
	10		1010NHGS10	134.0	149.1	217.1			2
10.2	3		MDW 1020NHGS3	39.3	54.6	118.1	2.1	11.0	1
	5		1020NHGS5	70.8	86.1	151.1			1
	10		1020NHGS10	133.8	149.1	217.1			2
10.3	3	●	MDW 1030NHGS3	39.2	54.6	118.1	2.1	11.0	1
	5	●	1030NHGS5	70.7	86.1	151.1			1
	10		1030NHGS10	133.7	149.1	217.1			2
10.4	3		MDW 1040NHGS3	39.1	54.7	118.2	2.2	11.0	1
	5	●	1040NHGS5	70.6	86.2	151.2			1
	10		1040NHGS10	133.6	149.2	217.2			2
10.5	3	●	MDW 1050NHGS3	39.0	54.7	118.2	2.2	11.0	1
	5	●	1050NHGS5	70.5	86.2	151.2			1
	10	●	1050NHGS10	133.5	149.2	217.2			2
10.6	3	●	MDW 1060NHGS3	41.3	57.2	118.2	2.2	11.0	1
	5	●	1060NHGS5	74.3	90.2	151.2			1
	10		1060NHGS10	140.3	156.2	217.2			2
10.7	3		MDW 1070NHGS3	41.2	57.2	118.2	2.2	11.0	1
	5		1070NHGS5	74.2	90.2	151.2			1
	10		1070NHGS10	140.2	156.2	217.2			2
10.8	3		MDW 1080NHGS3	41.0	57.2	118.2	2.2	11.0	1
	5		1080NHGS5	74.0	90.2	151.2			1
	10		1080NHGS10	140.0	156.2	217.2			2
10.9	3		MDW 1090NHGS3	41.0	57.3	118.3	2.3	11.0	1
	5		1090NHGS5	74.0	90.3	151.3			1
	10		1090NHGS10	140.0	156.3	217.3			2
11.0	3	●	MDW 1100NHGS3	40.8	57.3	118.3	2.3	11.0	1
	5	●	1100NHGS5	73.8	90.3	151.3			1
	10	●	1100NHGS10	139.8	156.3	217.3			2
11.08	3	●	MDW 1108NHGS3	43.2	59.8	124.3	2.3	12.0	1
	5	●	1108NHGS5	77.7	94.3	160.3			1
	10		1108NHGS10	146.7	163.3	232.3			2
11.1	3	●	MDW 1110NHGS3	43.2	59.8	124.3	2.3	12.0	1
	5	●	1110NHGS5	77.7	94.3	160.3			1
	10		1110NHGS10	146.7	163.3	232.3			2
11.2	3	●	MDW 1120NHGS3	43.0	59.8	124.3	2.3	12.0	1
	5	●	1120NHGS5	77.5	94.3	160.3			1
	10		1120NHGS10	146.5	163.3	232.3			2
11.3	3		MDW 1130NHGS3	42.9	59.8	124.3	2.3	12.0	1
	5		1130NHGS5	77.4	94.3	160.3			1
	10		1130NHGS10	146.4	163.3	232.3			2
11.4	3	●	MDW 1140NHGS3	42.8	59.9	124.4	2.4	12.0	1
	5	●	1140NHGS5	77.3	94.4	160.4			1
	10		1140NHGS10	146.3	163.4	232.4			2

Grade: DL1300

Diameter ø11.5 to 13.1mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
11.5	3	●	MDW 1150NHGS3	42.7	59.9	124.4	2.4	12.0	1
	5	●	1150NHGS5	77.2	94.4	160.4			1
	10	●	1150NHGS10	146.2	163.4	232.4			2
11.6	3		MDW 1160NHGS3	45.0	62.4	124.4	2.4	12.0	1
	5		1160NHGS5	81.0	98.4	160.4			1
	10		1160NHGS10	153.0	170.4	232.4			2
11.7	3		MDW 1170NHGS3	44.9	62.4	124.4	2.4	12.0	1
	5		1170NHGS5	80.9	98.4	160.4			1
	10		1170NHGS10	152.9	170.4	232.4			2
11.8	3		MDW 1180NHGS3	44.7	62.4	124.4	2.4	12.0	1
	5		1180NHGS5	80.7	98.4	160.4			1
	10		1180NHGS10	152.7	170.4	232.4			2
11.9	3		MDW 1190NHGS3	44.7	62.5	124.5	2.5	12.0	1
	5		1190NHGS5	80.7	98.5	160.5			1
	10		1190NHGS10	152.7	170.5	232.5			2
12.0	3	●	MDW 1200NHGS3	44.5	62.5	124.5	2.5	12.0	1
	5	●	1200NHGS5	80.5	98.5	160.5			1
	10	●	1200NHGS10	152.5	170.5	232.5			2
12.1	3	●	MDW 1210NHGS3	46.9	65.0	130.5	2.5	13.0	1
	5	●	1210NHGS5	84.4	102.5	169.5			1
	10		1210NHGS10	159.4	177.5	247.5			2
12.2	3		MDW 1220NHGS3	46.7	65.0	130.5	2.5	13.0	1
	5		1220NHGS5	84.2	102.5	169.5			1
	10		1220NHGS10	159.2	177.5	247.5			2
12.3	3	●	MDW 1230NHGS3	46.6	65.0	130.5	2.5	13.0	1
	5	●	1230NHGS5	84.1	102.5	169.5			1
	10		1230NHGS10	159.1	177.5	247.5			2
12.4	3		MDW 1240NHGS3	46.5	65.1	130.6	2.6	13.0	1
	5		1240NHGS5	84.0	102.6	169.6			1
	10		1240NHGS10	159.0	177.6	247.6			2
12.5	3	●	MDW 1250NHGS3	46.4	65.1	130.6	2.6	13.0	1
	5	●	1250NHGS5	83.9	102.6	169.6			1
	10	●	1250NHGS10	158.9	177.6	247.6			2
12.6	3		MDW 1260NHGS3	48.7	67.6	130.6	2.6	13.0	1
	5		1260NHGS5	87.7	106.6	169.6			1
	10		1260NHGS10	165.7	184.6	247.6			2
12.7	3		MDW 1270NHGS3	48.6	67.6	130.6	2.6	13.0	1
	5		1270NHGS5	87.6	106.6	169.6			1
	10		1270NHGS10	165.6	184.6	247.6			2
12.8	3		MDW 1280NHGS3	48.4	67.6	130.6	2.6	13.0	1
	5		1280NHGS5	87.4	106.6	169.6			1
	10		1280NHGS10	165.4	184.6	247.6			2
12.9	3		MDW 1290NHGS3	48.4	67.7	130.7	2.7	13.0	1
	5		1290NHGS5	87.4	106.7	169.7			1
	10		1290NHGS10	165.4	184.7	247.7			2
12.96	3	●	MDW 1296NHGS3	48.3	67.7	130.7	2.7	13.0	1
	5	●	1296NHGS5	87.3	106.7	169.7			1
	10		1296NHGS10	165.3	184.7	247.7			2
13.0	3	●	MDW 1300NHGS3	48.2	67.7	130.7	2.7	13.0	1
	5	●	1300NHGS5	87.2	106.7	169.7			1
	10	●	1300NHGS10	165.2	184.7	247.7			2
13.1	3		MDW 1310NHGS3	50.6	70.2	136.7	2.7	14.0	1
	5		1310NHGS5	91.1	110.7	178.7			1
	10		1310NHGS10	172.1	191.7	262.7			2

Grade: DL1300

NHGS Type (Internal Coolant Supply)

Aluminum Alloy | Copper Alloy

Aurora DLC Coat | Coolant Hole | 3D | 5D | 10D

*Refer to N38 for the tolerance of h6

Fig 1 (NHGS3/5 Type, ø3.0 to 16.0mm)

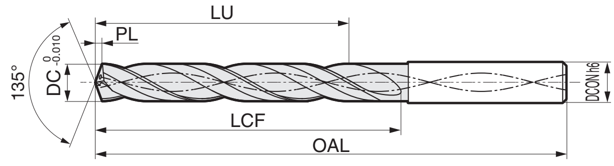
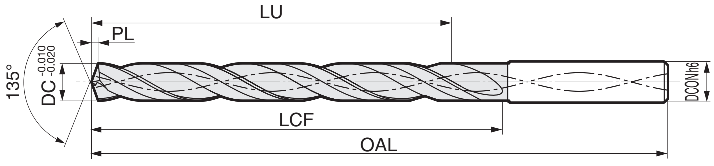


Fig 2 (NHGS10 Type, ø3.0 to 16.0mm)



Diameter ø13.2 to 14.9mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
	3		MDW 1320NHGS3	50.4	70.2	136.7			1
13.2	5		1320NHGS5	90.9	110.7	178.7	2.7	14.0	1
	10		1320NHGS10	171.9	191.7	262.7			2
	3		MDW 1330NHGS3	50.4	70.3	136.8			1
13.3	5		1330NHGS5	90.9	110.8	178.8	2.8	14.0	1
	10		1330NHGS10	171.9	191.8	262.8			2
	3		MDW 1340NHGS3	50.2	70.3	136.8			1
13.4	5		1340NHGS5	90.7	110.8	178.8	2.8	14.0	1
	10		1340NHGS10	171.7	191.8	262.8			2
	3	●	MDW 1350NHGS3	50.1	70.3	136.8			1
13.5	5	●	1350NHGS5	90.6	110.8	178.8	2.8	14.0	1
	10		1350NHGS10	171.6	191.8	262.8			2
	3		MDW 1360NHGS3	52.4	72.8	136.8			1
13.6	5		1360NHGS5	94.4	114.8	178.8	2.8	14.0	1
	10		1360NHGS10	178.4	198.8	262.8			2
	3		MDW 1370NHGS3	52.3	72.8	136.8			1
13.7	5		1370NHGS5	94.3	114.8	178.8	2.8	14.0	1
	10		1370NHGS10	178.3	198.8	262.8			2
	3		MDW 1380NHGS3	52.2	72.9	136.9			1
13.8	5		1380NHGS5	94.2	114.9	178.9	2.9	14.0	1
	10		1380NHGS10	178.2	198.9	262.9			2
	3		MDW 1390NHGS3	52.1	72.9	136.9			1
13.9	5		1390NHGS5	94.1	114.9	178.9	2.9	14.0	1
	10		1390NHGS10	178.1	198.9	262.9			2
	3	●	MDW 1400NHGS3	51.9	72.9	136.9			1
14.0	5	●	1400NHGS5	93.9	114.9	178.9	2.9	14.0	1
	10		1400NHGS10	177.9	198.9	262.9			2
	3	●	MDW 1410NHGS3	54.3	75.4	142.9			1
14.1	5	●	1410NHGS5	97.8	118.9	187.9	2.9	15.0	1
	10		1410NHGS10	184.8	205.9	277.9			2
	3		MDW 1420NHGS3	54.1	75.4	142.9			1
14.2	5		1420NHGS5	97.6	118.9	187.9	2.9	15.0	1
	10		1420NHGS10	184.6	205.9	277.9			2
	3		MDW 1430NHGS3	54.1	75.5	143.0			1
14.3	5		1430NHGS5	97.6	119.0	188.0	3.0	15.0	1
	10		1430NHGS10	184.6	206.0	278.0			2
	3		MDW 1440NHGS3	53.9	75.5	143.0			1
14.4	5		1440NHGS5	97.4	119.0	188.0	3.0	15.0	1
	10		1440NHGS10	184.4	206.0	278.0			2
	3	●	MDW 1450NHGS3	53.8	75.5	143.0			1
14.5	5	●	1450NHGS5	97.3	119.0	188.0	3.0	15.0	1
	10		1450NHGS10	184.3	206.0	278.0			2
	3		MDW 1460NHGS3	56.1	78.0	143.0			1
14.6	5		1460NHGS5	101.1	123.0	188.0	3.0	15.0	1
	10		1460NHGS10	191.1	213.0	278.0			2
	3		MDW 1470NHGS3	56.0	78.0	143.0			1
14.7	5		1470NHGS5	101.0	123.0	188.0	3.0	15.0	1
	10		1470NHGS10	191.0	213.0	278.0			2
	3		MDW 1480NHGS3	55.9	78.1	143.1			1
14.8	5		1480NHGS5	100.9	123.1	188.1	3.1	15.0	1
	10		1480NHGS10	190.9	213.1	278.1			2
	3	●	MDW 1490NHGS3	55.8	78.1	143.1			1
14.9	5	●	1490NHGS5	100.8	123.1	188.1	3.1	15.0	1
	10		1490NHGS10	190.8	213.1	278.1			2

Grade: DL1300

Diameter ø14.96 to 16.0mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
	3	●	MDW 1496NHGS3	55.7	78.1	143.1			1
14.96	5	●	1496NHGS5	100.7	123.1	188.1	3.1	15.0	1
	10		1496NHGS10	190.7	213.1	278.1			2
	3	●	MDW 1500NHGS3	55.6	78.1	143.1			1
15.0	5	●	1500NHGS5	100.6	123.1	188.1	3.1	15.0	1
	10		1500NHGS10	190.6	213.1	278.1			2
	3		MDW 1510NHGS3	58.0	80.6	149.1			1
15.1	5		1510NHGS5	104.5	127.1	197.1	3.1	16.0	1
	10		1510NHGS10	197.5	220.1	293.1			2
	3		MDW 1520NHGS3	57.8	80.6	149.1			1
15.2	5		1520NHGS5	104.3	127.1	197.1	3.1	16.0	1
	10		1520NHGS10	197.3	220.1	293.1			2
	3		MDW 1530NHGS3	57.8	80.7	149.2			1
15.3	5		1530NHGS5	104.3	127.2	197.2	3.2	16.0	1
	10		1530NHGS10	197.3	220.2	293.2			2
	3		MDW 1540NHGS3	57.6	80.7	149.2			1
15.4	5		1540NHGS5	104.1	127.2	197.2	3.2	16.0	1
	10		1540NHGS10	197.1	220.2	293.2			2
	3	●	MDW 1550NHGS3	57.5	80.7	149.2			1
15.5	5	●	1550NHGS5	104.0	127.2	197.2	3.2	16.0	1
	10		1550NHGS10	197.0	220.2	293.2			2
	3		MDW 1560NHGS3	59.8	83.2	149.2			1
15.6	5		1560NHGS5	107.8	131.2	197.2	3.2	16.0	1
	10		1560NHGS10	203.8	227.2	293.2			2
	3		MDW 1570NHGS3	59.7	83.2	149.2			1
15.7	5		1570NHGS5	107.7	131.2	197.2	3.2	16.0	1
	10		1570NHGS10	203.7	227.2	293.2			2
	3		MDW 1580NHGS3	59.6	83.3	149.3			1
15.8	5		1580NHGS5	107.6	131.3	197.3	3.3	16.0	1
	10		1580NHGS10	203.6	227.3	293.3			2
	3		MDW 1590NHGS3	59.5	83.3	149.3			1
15.9	5		1590NHGS5	107.5	131.3	197.3	3.3	16.0	1
	10		1590NHGS10	203.5	227.3	293.3			2
	3	●	MDW 1600NHGS3	59.3	83.3	149.3			1
16.0	5	●	1600NHGS5	107.3	131.3	197.3	3.3	16.0	1
	10		1600NHGS10	203.3	227.3	293.3			2

Grade: DL1300

Recommended Cutting Conditions

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

Diameter DC (mm)	Cutting Conditions	Aluminum alloy castings/ aluminum alloy die castings	Wrought Aluminum Alloy
ø6.0	v_c	80 - **140** - 200	80 - **120** - 200
	f	0.2 - **0.4** - 0.6	0.2 - **0.3** - 0.4
ø10.0	v_c	100 - **180** - 250	100 - **150** - 250
	f	0.4 - **0.6** - 0.8	0.2 - **0.35** - 0.5
ø16.0	v_c	120 - **200** - 250	120 - **180** - 250
	f	0.4 - **0.7** - 1.0	0.3 - **0.45** - 0.6

Min. - **Optimum** - Max.

SDC Type (External Coolant Supply)

Aluminium Alloy | Composite CFRP

■ General Features

SUMIDIA Coat SDC type drills for carbon fibre reinforced plastic (CFRP) employ our proprietary multi-step point angle.
Combined with a diamond coating, this technology improves machined surface quality and extends tool life.

■ Product Range

Cat. No.	Diameter Range (mm)	Point Angle	Hole Depth (L/D)
MDS□□□□□SDC3	ø2.0 to ø4.0	90°	up to 3
	ø4.851 to ø10.0	130°	

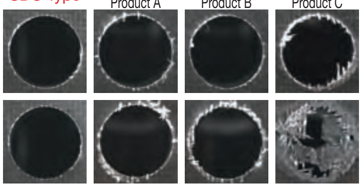
■ Features and Applications

- Excellent Drilled-Hole Quality
  - · Sharp cutting edge shape reduces delamination of fibre layers and minimizes burrs.
  - · Continuously changing point angle, disperses the load placed on the cutting edge and preventing breakage.
- Long Tool Life
  - · Utilises high-strength diamond coating with excellent adhesion, delivering high quality and long tool life.

■ Performance

Comparison of Machined Surface Quality

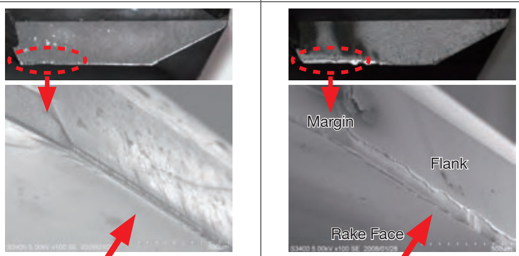
Excellent machined surface quality
Prevents Delamination and Burrs



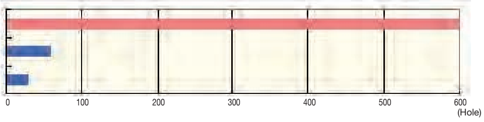
Tool: SUMIDIA Coat Drill SDC Type ø6.35
Work Material: CFRP
Cutting Conditions: n =6,000min^{-1}, f =0.1mm/rev, H =28mm (through)
Dry

Tool Life Comparison

Effects of Diamond Coating



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



Tool: SUMIDIA Coat Drill ø6.35
Work Material: CFRP
Cutting Conditions: n =6,000min^{-1}, f =0.075mm/rev, H =15mm (through)
Dry

SUMIDIA Coat 3D

*Refer to N38 for the tolerance of h6 and h8

Fig. 1 (Diameter ø2.0 to 4.0mm)

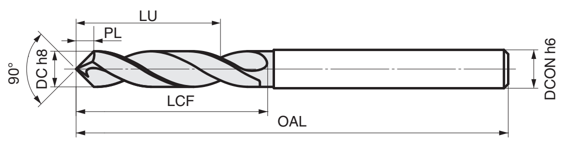
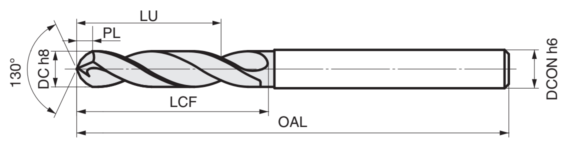


Fig. 2 (Diameter ø4.851 to 10.0mm)



Diameter ø2.0 to 10.0mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
2.0	3	●	MDS 02000SDC3	10.50	13.5	50.0	1.0	2.0	1
2.489	3	●	02489SDC3	12.47	16.2	50.2	1.2	2.489	1
3.0	3	●	03000SDC3	14.5	19.0	50.5	1.5	3.0	1
3.300	3	●	03300SDC3	16.8	21.7	61.7	1.7	3.300	1
4.0	3	●	04000SDC3	18.5	24.5	62.0	2.0	4.0	1
4.851	3	●	04851SDC3	21.3	28.6	77.1	1.1	4.851	2
5.0	3	●	05000SDC3	21.2	28.7	77.2	1.2	5.0	2
5.6	3	●	05600SDC3	22.9	31.3	82.3	1.3	5.6	2
6.0	3	●	06000SDC3	22.4	31.4	82.4	1.4	6.0	2
6.375	3	●	06375SDC3	24.4	34.0	84.5	1.5	6.375	2
7.0	3	●	07000SDC3	26.1	36.6	84.6	1.6	7.0	2
7.938	3	●	07938SDC3	30.0	41.9	91.9	1.9	7.938	2
8.0	3	●	08000SDC3	29.9	41.9	91.9	1.9	8.0	2
9.0	3	●	09000SDC3	33.6	47.1	100.1	2.1	9.0	2
9.550	3	●	09550SDC3	37.9	52.2	107.2	2.2	9.550	2
10.0	3	●	10000SDC3	37.3	52.3	107.3	2.3	10.0	2

Grade: DCX20

Recommended Cutting Conditions

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

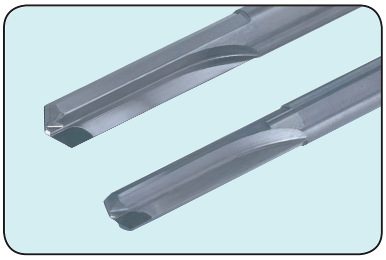
Diameter DC (mm)	Cutting Conditions	CFRP Only (Dry Machining)	Stacked Sheets of CFRP and Aluminum Alloys (Dry Machining)
ø6.0	v_c	80 - **120** - 150	40 - **60** - 80
	f	0.05 - **0.08** - 0.10	0.03 - **0.05** - 0.10
ø12.0	v_c	80 - **100** - 120	40 - **60** - 80
	f	0.05 - **0.08** - 0.10	0.03 - **0.05** - 0.10

Min. - **Optimum** - Max.

DAL/DDL Type

Aluminum Alloy | Composite CFRP

PCD 3D



From General to High Precision Drilling of Aluminum Alloys

- High precision DAL type is able to produce holes of IT Class of 7 to 8.
- General DDL type is able to produce holes of IT class 11 to 12, mainly for pre-tap hole drilling.

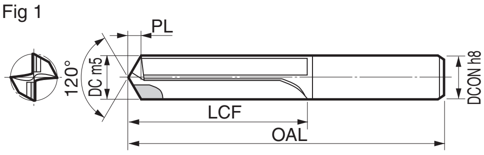
DAL Type

*Refer to N38 for the tolerance of m5, h8 Dimensions (mm)

Grade Classification		SUMIDIA
Process	High-speed/Light	N
	General-purpose	
	Roughing	

Cat. No.	DA2200	Dia. (Shank Dia.) DC(DCON)	Flute Length LCF	Overall Length OAL	Tip PL	Fig
DAL 0500H to 0600H		ø5 ≤ DC ≤ ø6	31.6	81.6	1.6	1
0601H to 0700H		ø6 < DC ≤ ø7	36.9	91.9	1.9	1
0701H to 0800H		ø7 < DC ≤ ø8	37.2	92.2	2.2	1
0801H to 0900H		ø8 < DC ≤ ø9	42.5	102.5	2.5	1
0901H to 1000H		ø9 < DC ≤ ø10	42.8	102.8	2.8	1
1001H to 1100H		ø10 < DC ≤ ø11	53.1	113.1	3.1	1
1101H to 1200H		ø11 < DC ≤ ø12	53.4	113.4	3.4	1

Fig 1



Ordering numbers should be handled according to this example: ø6.05mm drill → DAL0605H.

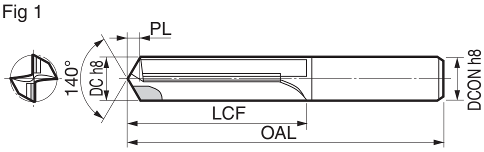
DDL Type

*Refer to N38 for the tolerance of h8 Dimensions (mm)

Grade Classification		SUMIDIA
Process	High-speed/Light	N
	General-purpose	
	Roughing	

Cat. No.	DA2200	Dia. (Shank Dia.) DC(DCON)	Flute Length LCF	Overall Length OAL	Tip PL	Fig
DDL 050V to 060V		ø5 ≤ DC ≤ ø6	31.5	81.0	1.0	1
061V to 070V		ø6 < DC ≤ ø7	36.2	91.2	1.2	1
071V to 080V		ø7 < DC ≤ ø8	36.4	91.4	1.4	1
081V to 090V		ø8 < DC ≤ ø9	41.6	101.6	1.6	1
091V to 100V		ø9 < DC ≤ ø10	41.7	101.7	1.7	1
101V to 110V		ø10 < DC ≤ ø11	51.9	111.9	1.9	1
111V to 120V		ø11 < DC ≤ ø12	52.1	112.1	2.1	1

Fig 1



Ordering numbers should be handled according to this example: ø10.5mm drill → DDL105V.

Recommended Cutting Conditions

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

Diameter DC (mm)	Cutting Conditions	DAL Type	DDL Type	Depth of Cut	Oil
ø8.0	v_c	80 - **100** - 150	150 - **200** - 250	L/D=Below 3	Emulsion Type
	f	0.05 - **0.1** - 0.15	0.1 - **0.15** - 0.25		
ø12.0	v_c	80 - **100** - 150	150 - **200** - 250		
	f	0.08 - **0.13** - 0.2	0.15 - **0.2** - 0.3		

Min. - **Optimum** - Max.

Important Notes

- When using DAL type for high-precision machining, select a high rigidity machine and high precision holder.
- Supply coolant generously at the entrance of the hole.

MLDH-L/MLDH-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 drills for small diameter deep holes feature improved strength - often a problem area with small drills.

■ Features and Applications

- **Deep hole drilling**
  Flute shape ensures good drill rigidity and chip evacuation.
  High-efficiency drilling to depths of over 20 times the drill diameter at over v_f=500mm/min (drill diameter ø1.3, equivalent to SUS416).
  Optimal thinning and edge balance for stable chip control.
- **Long tool life**
  Special coating provides long tool life on a wide variety of work materials.
  Improved chip evacuation makes it possible to reduce spindle load fluctuation, ensuring long, stable tool life.

■ Product Range

Applications	Cat. No.	Diameter Range (mm)	Hole Depth (L/D)	Number of items
Deep Hole Drilling	MLDH□□□□L5	ø0.8 to 2.0	up to 5	41 items in stock
	MLDH□□□□L12	ø0.8 to 2.0	up to 12	41 items in stock
	MLDH□□□□L20	ø0.8 to 2.0	up to 20	41 items in stock
	MLDH□□□□L30	ø0.8 to 2.0	up to 30	41 items in stock
For Guide Holes	MLDH□□□□P	ø0.8 to 2.0	up to 2	41 items in stock

■ Recommended Cutting Conditions

MLDH-P Type/MLDH-L5 Type

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

Diameter DC (mm)	Cutting Conditions	Mild Steel up to 200HB	General Steel up to 250HB	Alloy Steel up to 300HB	Stainless Steel up to 200HB	Cast Iron FC/FCD	Aluminum Alloy	Heat-resistant Steel
ø1.0	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
ø1.5	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
ø2.0	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

Min. - **Optimum** - Max.

MLDH-L12 Type/MLDH-L20 Type/MLDH-L30 Type

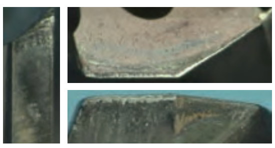
Diameter DC (mm)	Cutting Conditions	Mild Steel up to 200HB	General Steel up to 250HB	Alloy Steel up to 300HB	Stainless Steel up to 200HB	Cast Iron FC/FCD	Aluminum Alloy	Heat-resistant Steel
ø1.0	v_c	40 - **50** - 60	40 - **50** - 60	40 - **50** - 60	20 - **30** - 40	40 - **50** - 60	50 - **60** - 70	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
ø1.5	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
ø2.0	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

Min. - **Optimum** - Max.

■ Application Examples

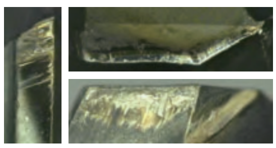
● Automotive component molds (equivalent to SUS416)

Tool : MLDH 1400L20 (guide: MLDH1400P)
Machine : Vertical machining centre (HSKA63)
Coolant : Internal coolant supply (emulsion type, pump source pressure: 4MPa)
Cutting Conditions : v_c=60m/min, f =0.03mm/rev, H =21mm
Tool Life : 600 holes (11.4m)



● Tooling components (equivalent to SKD11)

Tool : MLDH 1900L20 (guide: MLDH1900P)
Machine : Vertical machining centre (HSKA63)
Coolant : Internal coolant supply (emulsion type, pump source pressure: 4MPa)
Cutting Conditions : v_c=60m/min, f =0.10mm/rev, H =27mm
Tool life : 600 units (18m)



Drilling
J
Solid
Indexable Head Type
Indexable Insert Type
Reamers
Brazed
Others

MLDH-L/MLDH-P Type (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat-resistant Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

PVD Coat | Coolant Hole | 5D | 12D | 20D | 30D | Pilot 2D

Fig 1 (MLDH-P Type)

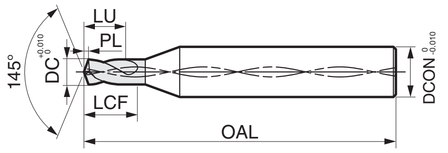
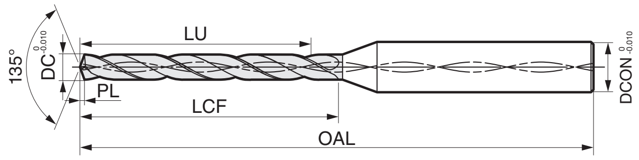


Fig 2 (MLDH-L Type)



Diameter ø0.80 to 0.90mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
	2	●	MLDH 0800P	2.0	3.2	45	0.1		1
	5	●	0800L5	6.8	8	50.0			2
0.80	12	●	0800L12	12.8	14	55	0.2	3.0	2
	20	●	0800L20	17.8	19	60			2
	30	●	0800L30	26.8	28	70			2
	2	●	MLDH 0810P	2.0	3.2	45	0.1		1
	5	●	0810L5	7.8	9	50.0			2
0.81	12	●	0810L12	12.8	14	55	0.2	3.0	2
	20	●	0810L20	17.8	19	60			2
	30	●	0810L30	26.8	28	70			2
	2	●	MLDH 0820P	2.1	3.3	45	0.1		1
	5	●	0820L5	7.8	9	50.0			2
0.82	12	●	0820L12	12.8	14	55	0.2	3.0	2
	20	●	0820L20	18.8	20	60			2
	30	●	0820L30	26.8	28	70			2
	2	●	MLDH 0830P	2.1	3.3	45	0.1		1
	5	●	0830L5	7.8	9	50.0			2
0.83	12	●	0830L12	12.8	14	55	0.2	3.0	2
	20	●	0830L20	18.8	20	60			2
	30	●	0830L30	26.8	28	70			2
	2	●	MLDH 0840P	2.1	3.4	45	0.1		1
	5	●	0840L5	7.7	9	50.0			2
0.84	12	●	0840L12	12.7	14	55	0.2	3.0	2
	20	●	0840L20	18.7	20	60			2
	30	●	0840L30	27.7	29	70			2
	2	●	MLDH 0850P	2.1	3.4	45	0.1		1
	5	●	0850L5	7.7	9	50.0			2
0.85	12	●	0850L12	12.7	14	55	0.2	3.0	2
	20	●	0850L20	18.7	20	60			2
	30	●	0850L30	27.7	29	70			2
	2	●	MLDH 0860P	2.1	3.4	45	0.1		1
	5	●	0860L5	7.7	9	50.0			2
0.86	12	●	0860L12	13.7	15	55	0.2	3.0	2
	20	●	0860L20	19.7	21	65			2
	30	●	0860L30	27.7	29	70			2
	2	●	MLDH 0870P	2.2	3.5	45	0.1		1
	5	●	0870L5	7.7	9	50.0			2
0.87	12	●	0870L12	13.7	15	55	0.2	3.0	2
	20	●	0870L20	19.7	21	65			2
	30	●	0870L30	28.7	30	70			2
	2	●	MLDH 0880P	2.2	3.5	45	0.1		1
	5	●	0880L5	7.7	9	50.0			2
0.88	12	●	0880L12	13.7	15	55	0.2	3.0	2
	20	●	0880L20	19.7	21	65			2
	30	●	0880L30	28.7	30	70			2
	2	●	MLDH 0890P	2.3	3.6	45	0.1		1
	5	●	0890L5	7.7	9	50.0			2
0.89	12	●	0890L12	13.7	15	55	0.2	3.0	2
	20	●	0890L20	19.7	21	65			2
	30	●	0890L30	28.7	30	70			2
	2	●	MLDH 0900P	2.3	3.6	45	0.1		1
	5	●	0900L5	7.7	10	50.0			2
0.90	12	●	0900L12	13.7	15	55	0.2	3.0	2
	20	●	0900L20	20.7	22	65			2
	30	●	0900L30	29.7	31	75			2

Part Number Suffix P: For Guide Hole
Grade: ACV70

Diameter ø0.91 to 1.05mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
	2	●	MLDH 0910P	2.2	3.6	45	0.1		1
	5	●	0910L5	8.6	10	50.0			2
0.91	12	●	0910L12	13.6	15	55	0.2	3.0	2
	20	●	0910L20	20.6	22	65			2
	30	●	0910L30	29.6	31	75			2
	2	●	MLDH 0920P	2.3	3.7	45	0.1		1
	5	●	0920L5	8.6	10	50.0			2
0.92	12	●	0920L12	14.6	16	60	0.2	3.0	2
	20	●	0920L20	20.6	22	65			2
	30	●	0920L30	29.6	31	75			2
	2	●	MLDH 0930P	2.3	3.7	45	0.1		1
	5	●	0930L5	8.6	10	50.0			2
0.93	12	●	0930L12	14.6	16	60	0.2	3.0	2
	20	●	0930L20	20.6	22	65			2
	30	●	0930L30	30.6	32	75			2
	2	●	MLDH 0940P	2.4	3.8	45	0.1		1
	5	●	0940L5	8.6	10	50.0			2
0.94	12	●	0940L12	14.6	16	60	0.2	3.0	2
	20	●	0940L20	21.6	23	65			2
	30	●	0940L30	30.6	32	75			2
	2	●	MLDH 0950P	2.4	3.8	45			1
	5	●	0950L5	8.6	10	50.0			2
0.95	12	●	0950L12	14.6	16	60	0.2	3.0	2
	20	●	0950L20	21.6	23	65			2
	30	●	0950L30	30.6	32	75			2
	2	●	MLDH 0960P	2.4	3.8	45			1
	5	●	0960L5	8.6	10	50.0			2
0.96	12	●	0960L12	14.6	16	60	0.2	3.0	2
	20	●	0960L20	21.6	23	65			2
	30	●	0960L30	31.6	33	75			2
	2	●	MLDH 0970P	2.4	3.9	45			1
	5	●	0970L5	8.5	10	50.0			2
0.97	12	●	0970L12	14.5	16	60	0.2	3.0	2
	20	●	0970L20	21.5	23	65			2
	30	●	0970L30	31.5	33	75			2
	2	●	MLDH 0980P	2.4	3.9	45			1
	5	●	0980L5	8.5	10	50.0			2
0.98	12	●	0980L12	15.5	17	60	0.2	3.0	2
	20	●	0980L20	22.5	24	65			2
	30	●	0980L30	31.5	33	75			2
	2	●	MLDH 0990P	2.5	4	45			1
	5	●	0990L5	8.5	10	50.0			2
0.99	12	●	0990L12	15.5	17	60	0.2	3.0	2
	20	●	0990L20	22.5	24	65			2
	30	●	0990L30	32.5	34	75			2
	2	●	MLDH 1000P	2.5	4	45			1
	5	●	1000L5	8.5	10	50.0			2
1.00	12	●	1000L12	15.5	17	60	0.2	3.0	2
	20	●	1000L20	22.5	24	65			2
	30	●	1000L30	32.5	34	75			2
	2	●	MLDH 1050P	2.6	4.2	45			1
	5	●	1050L5	10.4	12	55.0			2
1.05	12	●	1050L12	16.4	18	60	0.2	3.0	2
	20	●	1050L20	23.4	25	65			2
	30	●	1050L30	34.4	36	80			2

Part Number Suffix P: For Guide Hole
Grade: ACV70

Made-to-order items: Inquire about production of drills in tool diameters and lengths that are not listed in the dimensions above or not in stock.

MLDH-L/MLDH-P Type (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat-resistant Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

PVD Coat | Coolant Hole | 5D | 12D | 20D | 30D | Pilot 2D

Fig 1 (MLDH-P Type)

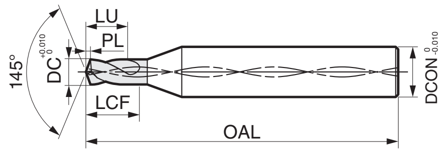
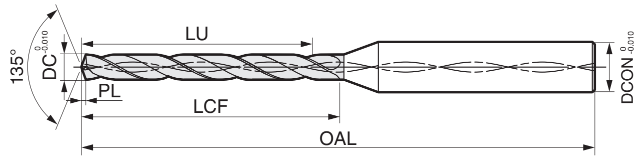


Fig 2 (MLDH-L Type)



Diameter ø1.10 to 1.60mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
1.10	2	●	MLDH 1100P	2.8	4.4	45	0.2	3.0	1
	5	●	1100L5	10.4	12	55.0			2
	12	●	1100L12	17.4	19	60			2
	20	●	1100L20	24.4	26	70			2
	30	●	1100L30	35.4	37	80			2
1.15	2	●	MLDH 1150P	2.9	4.5	45	0.2	3.0	1
	5	●	1150L5	10.3	12	55.0			2
	12	●	1150L12	18.3	20	60			2
	20	●	1150L20	26.3	28	70			2
	30	●	1150L30	37.3	39	80			2
1.20	2	●	MLDH 1200P	3.0	4.8	45	0.2	3.0	1
	5	●	1200L5	10.2	12	55.0			2
	12	●	1200L12	18.2	20	60			2
	20	●	1200L20	27.2	29	70			2
	30	●	1200L30	39.2	41	85			2
1.25	2	●	MLDH 1250P	3.1	8	45	0.2	3.0	1
	5	●	1250L5	12.1	14	55.0	0.3		2
	12	●	1250L12	19.1	21	65			2
	20	●	1250L20	28.1	30	70			2
	30	●	1250L30	41.1	43	85			2
1.30	2	●	MLDH 1300P	3.3	5.2	45	0.2	3.0	1
	5	●	1300L5	12.1	14	55.0	0.3		2
	12	●	1300L12	20.1	22	65			2
	20	●	1300L20	29.1	31	75			2
	30	●	1300L30	42.1	44	85			2
1.35	2	●	MLDH 1350P	3.4	5.4	45	0.2	3.0	1
	5	●	1350L5	12.0	14	55.0	0.3		2
	12	●	1350L12	21.0	23	65			2
	20	●	1350L20	30.0	32	75			2
	30	●	1350L30	44.0	46	90			2
1.40	2	●	MLDH 1400P	3.5	5.6	45	0.2	3.0	1
	5	●	1400L5	11.9	14	55.0	0.3		2
	12	●	1400L12	21.9	24	65			2
	20	●	1400L20	31.9	34	75			2
	30	●	1400L30	45.9	48	90			2
1.45	2	●	MLDH 1450P	3.6	5.8	45	0.2	3.0	1
	5	●	1450L5	13.8	16	55.0	0.3		2
	12	●	1450L12	22.8	25	65			2
	20	●	1450L20	32.8	35	75			2
	30	●	1450L30	46.8	49	90			2
1.50	2	●	MLDH 1500P	3.8	6	45	0.2	3.0	1
	5	●	1500L5	13.8	16	55.0	0.3		2
	12	●	1500L12	23.8	26	65			2
	20	●	1500L20	33.8	36	75			2
	30	●	1500L30	48.8	51	90			2
1.55	2	●	MLDH 1550P	3.9	6.2	45	0.2	3.0	1
	5	●	1550L5	13.7	16	55.0	0.3		2
	12	●	1550L12	23.7	26	65			2
	20	●	1550L20	34.7	37	80			2
	30	●	1550L30	50.7	53	95			2
1.60	2	●	MLDH 1600P	4.0	6.4	45	0.3	3.0	1
	5	●	1600L5	13.6	16	55.0			2
	12	●	1600L12	24.6	27	70			2
	20	●	1600L20	35.6	38	80			2
	30	●	1600L30	51.6	54	95			2

Part Number Suffix P: For Guide Hole
Grade: ACV70

Diameter ø1.65 to 2.00mm

Dimensions (mm)

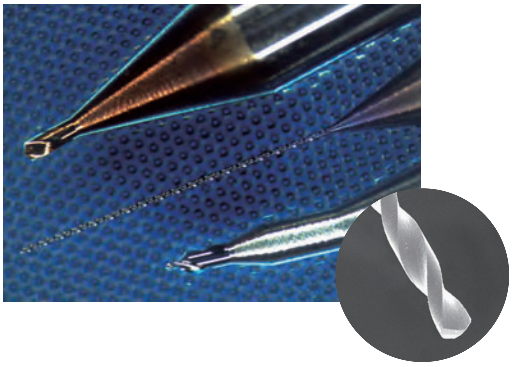
Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
1.65	2	●	MLDH 1650P	4.1	6.6	50	0.3	3.0	1
	5	●	1650L5	15.5	18	60.0			2
	12	●	1650L12	25.5	28	70			2
	20	●	1650L20	37.5	40	80			2
	30	●	1650L30	53.5	56	95			2
1.70	2	●	MLDH 1700P	4.3	6.8	50	0.3	3.0	1
	5	●	1700L5	15.5	18	60.0	0.4		2
	12	●	1700L12	26.5	29	70			2
	20	●	1700L20	38.5	41	80			2
	30	●	1700L30	55.5	58	100			2
1.75	2	●	MLDH 1750P	4.4	7	50	0.3	3.0	1
	5	●	1750L5	15.4	18	60.0	0.4		2
	12	●	1750L12	27.4	30	70			2
	20	●	1750L20	39.4	42	85			2
	30	●	1750L30	57.4	60	100			2
1.80	2	●	MLDH 1800P	4.5	7.2	50	0.3	3.0	1
	5	●	1800L5	15.3	18	60.0	0.4		2
	12	●	1800L12	28.3	31	70			2
	20	●	1800L20	40.3	43	85			2
	30	●	1800L30	58.3	61	100			2
1.85	2	●	MLDH 1850P	4.6	7.4	50	0.3	3.0	1
	5	●	1850L5	17.2	20	60.0	0.4		2
	12	●	1850L12	28.2	31	70			2
	20	●	1850L20	41.2	44	85			2
	30	●	1850L30	59.2	62	103			2
1.90	2	●	MLDH 1900P	4.8	7.6	50	0.3	3.0	1
	5	●	1900L5	17.2	20	60.0	0.4		2
	12	●	1900L12	29.2	32	75			2
	20	●	1900L20	43.2	46	85			2
	30	●	1900L30	60.2	63	103			2
1.95	2	●	MLDH 1950P	4.9	7.8	50	0.3	3.0	1
	5	●	1950L5	17.1	20	60.0	0.4		2
	12	●	1950L12	30.1	33	75			2
	20	●	1950L20	44.1	47	85			2
	30	●	1950L30	61.1	64	103			2
2.00	2	●	MLDH 2000P	5.0	8	50	0.3	3.0	1
	5	●	2000L5	17.0	20	60.0	0.4		2
	12	●	2000L12	31.0	34	75			2
	20	●	2000L20	45.0	48	90			2
	30	●	2000L30	63.0	66	103			2

Part Number Suffix P: For Guide Hole
Grade: ACV70

MDUS Type / MDUP Type / MDSS Type

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Stainless Steel | Aluminum Alloy | Copper Alloy

For Steel, Stainless Steel and Other Metals



■ Micro MULTIDRILL MDUS Type ø0.03 to ø0.19mm

- High-precision shank (Shank tolerance h3, circularity 0.3µm or less, cylindricity 0.5µm or less)
- Ultra-thin TiAIN coating gives improved wear resistance
- Perfect for drilling steel, stainless steel, or copper
- Available from ø0.03 mm to ø0.19 mm in 0.005 mm increments

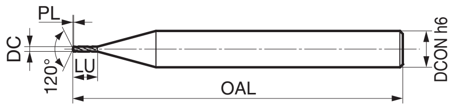
■ Micro Multi Pointing Drill MDUP Type ø0.03 to ø0.18mm

- For drilling guide holes for MDUS type drills

PVD Coat | Pilot 1D

*Refer to N38 for the tolerance of h6

Fig. 1 (Helix Angle: 30°)



DC	Tolerance
Less than 0.1	From -0.005 to -0.010
0.1 or more	From -0.010 to -0.015

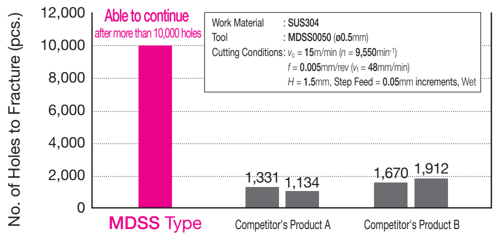
Micro Multi Pointing Drill MDUP Type Diameter ø0.03 to 0.18mm — Dimensions (mm)

Dia. DC	Stock	Cat. No.	Effective Length LU	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
0.03	●	MDUP 0030-30C	0.02	38.2	0.01	3.0	1
0.04	●	0040-30C	0.04	38.2	0.01	3.0	1
0.05	●	0050-30C	0.05	38.2	0.01	3.0	1
0.08	●	0080-30C	0.06	38.2	0.02	3.0	1
0.10	●	0100-30C	0.10	38.2	0.03	3.0	1
0.12	●	0120-30C	0.08	38.2	0.03	3.0	1
0.15	●	0150-30C	0.08	38.2	0.04	3.0	1
0.18	●	0180-30C	0.17	38.2	0.05	3.0	1

Grade: KP011

■ Solid Carbide MINI-MULTIDRILLs MDSS Type ø0.20 to ø1.00mm

- The combination of a hard, tough carbide substrate and a high-rigidity design (web thickness, flute width ratio, helix angle) greatly improves fracture resistance.
- PVD coating dedicated for small drills significantly extends tool life
- Applicable to a wide range of work materials including carbon steel, alloy steel, die steel, and stainless steel
- Shanks standardised to ø3mm diameter and overall length of 38mm for greater ease of use.



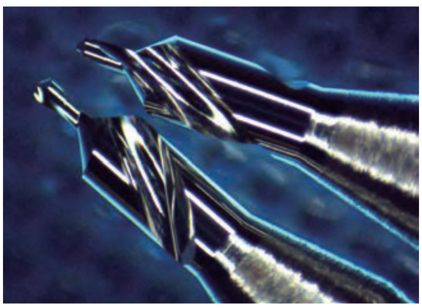
MDSS Recommended Cutting Conditions (Wet) <Inquire about cutting conditions for the MDUS type>

Work Material / Cutting Conditions	Alloy Steel, Pre-hardened Steel SCM,NAK			Die Steel, Tempered Steel (30 to 40HRC)			Stainless Steel SUS		
Diameter DC (mm)	Spindle Speed min^{-1}	Feed Rate mm/min	Step Feed (mm)	Spindle Speed min^{-1}	Feed Rate mm/min	Step Feed (mm)	Spindle Speed min^{-1}	Feed Rate mm/min	Step Feed (mm)
ø0.2	26,500	50	0.1D	21,200	40	0.1D	10,600	20	0.1D
ø0.3	26,500	80		21,200	60		10,600	30	
ø0.4	25,900	100		19,900	80		9,500	40	
ø0.5	25,500	150		19,100	110		9,500	50	
ø1.0	15,900	240	0.2D to 0.5D*	12,700	190	0.2D to 0.5D*	5,600	80	

1. The conditions at left are recommended under wet conditions, using water-soluble coolant.
2. If cutting noise and vibration are present, please adjust the cutting conditions accordingly.
3. If the machine cannot achieve the standard spindle speed, please use the maximum spindle speed available. In this case, lower the feed rate by the same ratio.

* Step feed is recommended for drilling of holes deeper than 3xD (D=drill diameter).

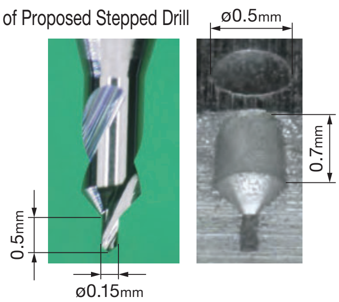
For Ceramics and Non-metals



■ Made-to-order Fine Drills ø0.02mm up

- Dedicated cutting edge designs are available for various work materials including non-metals, ceramics, and resins.
- Customised designs are also available for improved efficiency, such as integration of processes by using a stepped drill.
- Various drill diameters (from ø0.02) and LxDs are available to order. (Contact us for possible profiles.)

Example of Proposed Stepped Drill



MDUS Type/MDSS Type (External Coolant Supply/Small Diameter Type)

MDUS: Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Stainless Steel | Aluminum Alloy | Copper Alloy

MDSS: Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Hardened Steel from 46HRC | Stainless Steel | Heat-resistant Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

PVD Coat | FB Coat | 10D

*Refer to N38 for the tolerance of h6

Fig 1 (ø0.030 to 0.190mm)

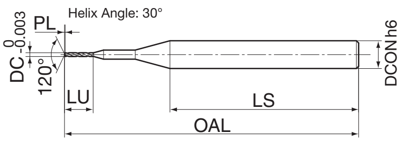


Fig 2 (ø0.20 to 0.34mm)

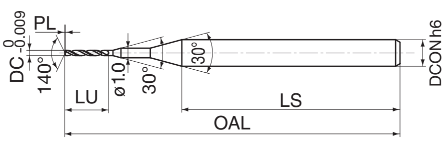
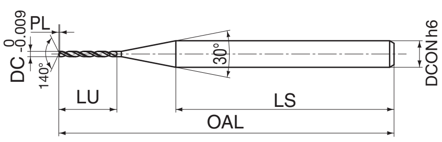


Fig 3 (ø0.35 to 1.00mm)



Diameter ø0.030 to 0.49mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Overall Length OAL	Tip PL	Shank LS	Shank Dia. DCON	Fig
0.030	10	●	MDUS 0030-30C	0.26	38.0	0.01	28	3.0	1
0.035			0035-30C	0.35					1
0.040		●	0040-30C	0.34					1
0.045			0045-30C	0.46					1
0.050		●	0050-30C	0.45					1
0.055	10		MDUS 0055-30C	0.55	38.0	0.02	28	3.0	1
0.060			0060-30C	0.54					1
0.065			0065-30C	0.64					1
0.070			0070-30C	0.63					1
0.075			0075-30C	0.73					1
0.080		●	0080-30C	0.72					1
0.085			0085-30C	0.92					1
0.090	10		MDUS 0090-30C	0.91	38.0	0.03	28	3.0	1
0.095			0095-30C	0.91					1
0.100		●	0100-30C	0.90					1
0.110			0110-30C	1.09					1
0.120		●	0120-30C	1.08					1
0.130	10		MDUS 0130-30C	1.37	38.0	0.04	28	3.0	1
0.140			0140-30C	1.36					1
0.150		●	0150-30C	1.35					1
0.160	10		MDUS 0160-30C	1.64	38.0	0.05	28	3.0	1
0.170			0170-30C	1.63					1
0.180		●	0180-30C	1.62					1
0.190			0190-30C	1.71					1
0.20	10	●	MDSS 0020	2.25	38	0.04	28	3.0	2
0.21		●	0021	2.24					2
0.22		●	0022	2.23					2
0.23		●	0023	2.21					2
0.24		●	0024	2.20					2
0.25	10	●	MDSS 0025	2.19	38	0.05	28	3.0	2
0.26		●	0026	2.18					2
0.27		●	0027	2.16					2
0.28		●	0028	2.15					2
0.29		●	0029	2.14					2
0.30		●	0030	2.6					2
0.31	10	●	MDSS 0031	2.6	38	0.06	28	3.0	2
0.32		●	0032	2.6					2
0.33		●	0033	2.6					2
0.34		●	0034	2.6					2
0.35		●	0035	3.6					3
0.36	10	●	MDSS 0036	3.6	38	0.07	28	3.0	3
0.37		●	0037	3.5					3
0.38		●	0038	3.5					3
0.39		●	0039	3.5					3
0.40		●	0040	4.5					3
0.41		●	0041	4.5					3
0.42	10	●	MDSS 0042	4.5	38	0.08	28	3.0	3
0.43		●	0043	4.5					3
0.44		●	0044	4.5					3
0.45		●	0045	4.4					3
0.46		●	0046	4.4					3
0.47	10	●	MDSS 0047	4.4	38	0.09	28	3.0	3
0.48		●	0048	4.4					3
0.49		●	0049	4.4					3

Grade: MDUS type KP011 / MDSS type ACF40B

Diameter ø0.50 to 1.00mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Overall Length OAL	Tip PL	Shank LS	Shank Dia. DCON	Fig
0.50	10	●	MDSS 0050	5.4	38	0.09	27	3.0	3
0.51		●	0051	5.4					3
0.52		●	0052	5.4					3
0.53	10	●	MDSS 0053	5.3	38	0.10	27	3.0	3
0.54		●	0054	5.3					3
0.55		●	0055	5.3					3
0.56		●	0056	5.3					3
0.57		●	0057	5.3					3
0.58	10	●	MDSS 0058	5.3	38	0.11	27	3.0	3
0.59		●	0059	5.3					3
0.60		●	0060	6.3			26		3
0.61		●	0061	6.2					3
0.62		●	0062	6.2					3
0.63		●	0063	6.2					3
0.64	10	●	MDSS 0064	6.2	38	0.12	26	3.0	3
0.65		●	0065	6.2					3
0.66		●	0066	6.2					3
0.67		●	0067	6.2					3
0.68		●	0068	6.2					3
0.69	10	●	MDSS 0069	6.1	38	0.13	26	3.0	3
0.70		●	0070	8.1			24		3
0.71		●	0071	8.1					3
0.72		●	0072	8.1					3
0.73		●	0073	8.1					3
0.74		●	0074	8.1					3
0.75	10	●	MDSS 0075	8.1	38	0.14	24	3.0	3
0.76		●	0076	8.1					3
0.77		●	0077	8.0					3
0.78		●	0078	8.0					3
0.79		●	0079	8.0					3
0.80	10	●	MDSS 0080	9.0	38	0.15	23	3.0	3
0.81		●	0081	9.0					3
0.82		●	0082	9.0					3
0.83		●	0083	9.0					3
0.84		●	0084	9.0					3
0.85		●	0085	8.9					3
0.86	10	●	MDSS 0086	8.9	38	0.16	23	3.0	3
0.87		●	0087	8.9					3
0.88		●	0088	8.9					3
0.89		●	0089	8.9					3
0.90		●	0090	9.9			22		3
0.91	10	●	MDSS 0091	9.9	38	0.17	22	3.0	3
0.92		●	0092	9.9					3
0.93		●	0093	9.8					3
0.94		●	0094	9.8					3
0.95		●	0095	9.8					3
0.96		●	0096	9.8					3
0.97	10	●	MDSS 0097	9.8	38	0.18	22	3.0	3
0.98		●	0098	9.8					3
0.99		●	0099	9.8					3
1.00		●	0100	10.8			21		3

Grade: MDUS type KP011 / MDSS type ACF40B

SMD Type

Expansion

Front screw clamp design

MULTIDRILL Type +
dedicated coated carbide grades

Radial serration provides steady and precise clamping

Specially surface-treated body for high wear and rust resistance

Oil holes are directed at cutting lip and chips

Features

Indexable type drill with exchangeable drill head, which has a radial serration design, for high precision and strength.
An exchangeable drill head provides a new cutting edge, higher productivity and cost efficiency with easy tool management.
Regrinding allowance of 1.5mm to 3mm makes further tool cost reductions possible.

* Regrinding is available only for MTL/MSL/MEL/MB

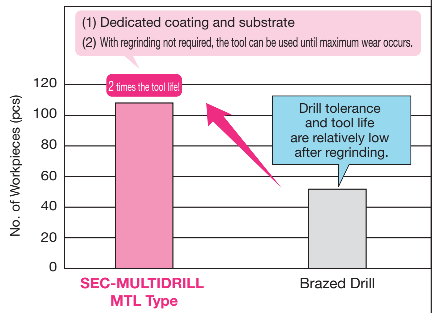
Product Range

Head	Applications	Holder (L/D)	DC Range
MTL Type	General Steel	S Type / 1.5D Type / 1.5DF Type (1.5D) M Type / 3D Type / 3DF Type (3D) L Type / 5D Type / 5DF Type (5D) D Type / 8D Type / 8DF Type (8D) 12D Type (12D)	ø12.0 to ø30.8 M Type / L Type ø12.0 to ø42.5 D Type ø13.5 to ø30.8
New MSL Type	SUS SS FC	S Type / 1.5D Type / 1.5DF Type (1.5D) M Type / 3D Type / 3DF Type (3D) L Type / 5D Type / 5DF Type (5D) D Type / 8D Type / 8DF Type (8D) 12D Type (12D)	ø12.0 to ø30.8 D Type ø13.5 to ø30.8
MFS Type	Spot Facing	1.5D Type / 1.5DF Type / S Type (1.5D)	ø12.0 to ø30.0
MB Type	For Bridge	B3 Type (3D)	ø24.5 to ø26.7

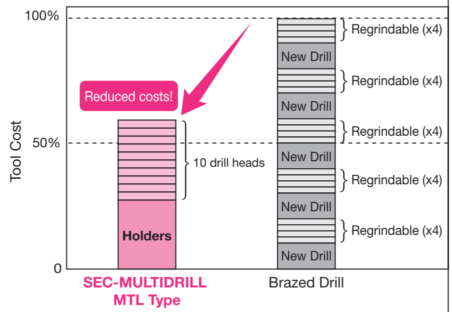
*MFS Type can also be used with 3D, 5D, 8D, and 12D holders.

Tool Life and Cost

● Comparison of tool life



● Tool Comparison for Machining of 1,000 Workpieces

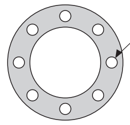


● Results

For regrinding purposes, brazed drills are only used for 50-70% of their actual tool life potential.
SEC-MULTIDRILL MTL Type reaches 100%!

MTL Type SEC-MULTIDRILLs offer:
Double the tool life of brazed drills!
Shorter tool change time!

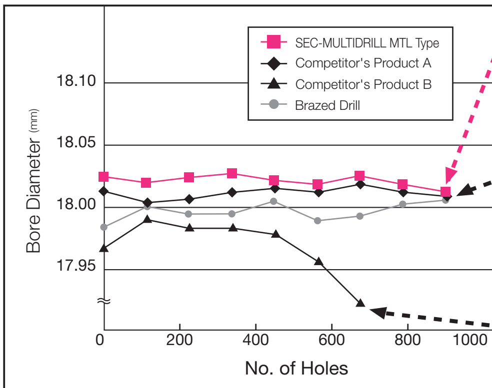
● Workpiece Example



Hole dia.: ø18.0mm, depth: 50mm

SEC-MULTIDRILL MTL Type
Insert: SMDT1800MTL
Holder: SMDH180M
Work Material: Machine component (S50C)
Wet

Drilling Precision



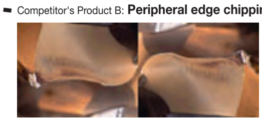
SEC-MULTIDRILL MTL Type: **Normal wear**

After 900 holes (equivalent to 34m)

Competitor's Product A: **Large wear**

After 900 holes (equivalent to 34m)

Competitor's Product B: **Peripheral edge chipping**

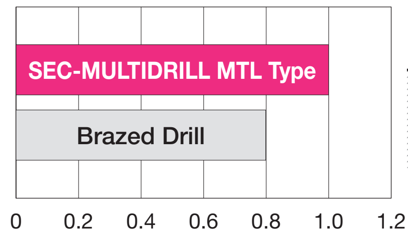


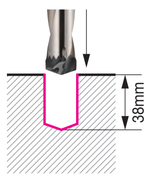
After 670 holes (equivalent to 25m)

Work Material : S50C, O.D.: ø18.0mm
Cutting Conditions : v_c=70m/min, f =0.25mm/rev
Hole Depth 38mm (through) Wet

Tool Strength

● Durability Comparison



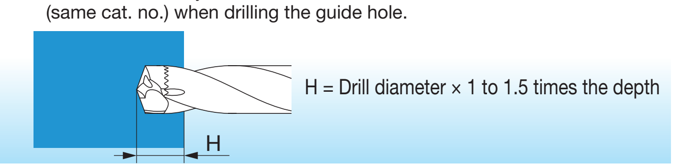


Feed Rate at which Drill Was Damaged f (mm/rev)

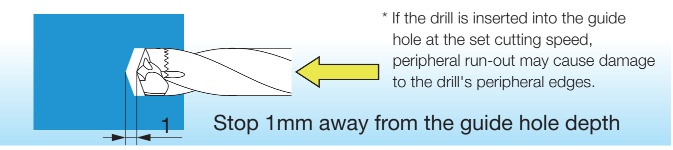
Work Material : S50C, O.D.: ø16.0mm
Cutting Conditions : v_c=80m/min
Hole Depth: 38mm

Recommended drilling method for 12D Type: Use a hydro chuck, milling chuck or collet chuck to hold the 12D drill body

(1) Feed the SMDH○○○M (3D holder) + MTL Type (head) through the guide hole
● Use a 3D drill body and a drill head with the same diameter as the 12D (same cat. no.) when drilling the guide hole.



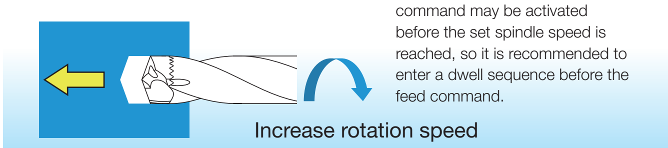
(2) Feed the SMDH○○○-12D (12D holder) + MTL Type (head) through the guide hole at a low spindle speed
● Spindle speed: 500min^{-1} ●Feed rate: 1,000 to 2,000mm/min



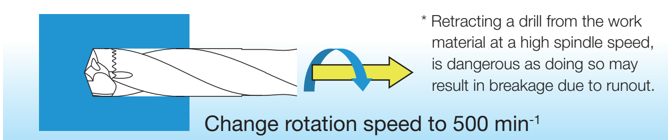
* If the drill is inserted into the guide hole at the set cutting speed, peripheral run-out may cause damage to the drill's peripheral edges.

(3) Increase spindle speed until the set spindle speed is reached, then start drilling

* On some NC machines, the feed command may be activated before the set spindle speed is reached, so it is recommended to enter a dwell sequence before the feed command.

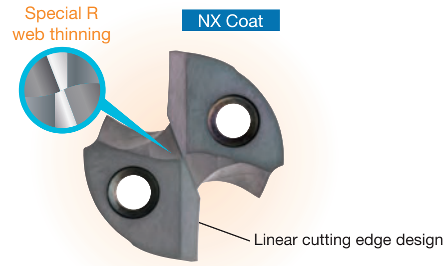


(4) After drilling, rotation speed is reduced and the drill is retracted from the work material
● Spindle speed: 500min^{-1} ●Feed rate: 1,000 to 2,000mm/min



* Retracting a drill from the work material at a high spindle speed, is dangerous as doing so may result in breakage due to runout.

MSL Type Stable machining of mild steel, stainless steel, etc.



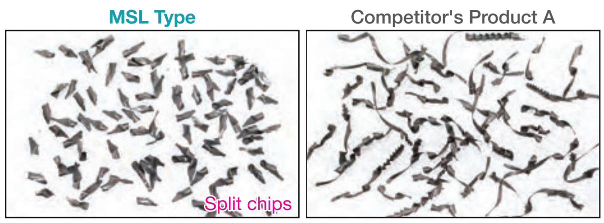
● Overwhelming cutting edge sharpness in mild steel and SUS machining

Newly designed linear cutting edge and special R web thinning enables improved chip evacuation and stable machining

● Stable long tool life

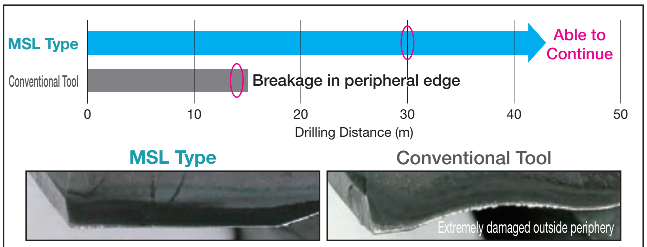
New grade improves fracture and adhesion resistance

Chip Control



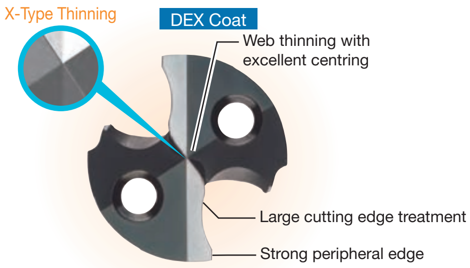
Equipment: Vertical Machining Centre BT50 Internal Coolant Supply 2MPa
Work material: SS400 Tool: ø14 x 5D
Cutting Conditions: v_c = 80m/min, f = 0.2mm/rev, H=50mm

Longer Tool Life



Equipment: Vertical Machining Centre BT50 Internal Coolant Supply 2MPa
Work material: SUS304 Tool: ø14 x 5D
Cutting Conditions: v_c = 65m/min, f = 0.15mm/rev, H=40mm

MTL Type Suitable for high-efficiency drilling of general steel



● Excellent cutting edge strength

Large edge treatment is used to reduce breakage of the cutting edge.

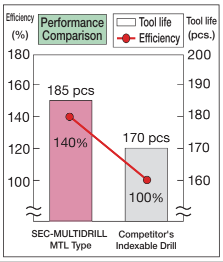
● Stable machined hole accuracy

X Type thinning achieves excellent centring on entry and stable drilling.

Longer Tool Life

Improved tool life and efficiency

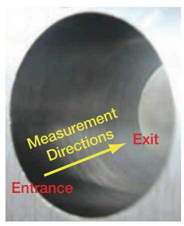
Work material: Housing (S20C)
Tool: ø15 × 5D
Cutting Conditions: v_c = 107m/min
f = 0.3mm/rev
Hole depth: 32mm×12 holes

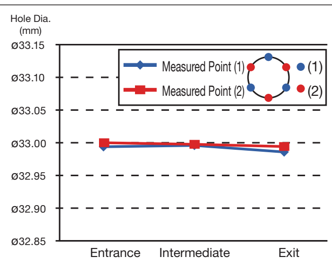


Drilling Precision

High drilling accuracy even with large diameters

Work Material: SM490
(base substrate for construction machinery)
Tool: ø33 × 5D
Cutting Conditions: v_c = 120m/min
f = 0.25mm/rev
Coolant: Emulsion type





Recommended Cutting Conditions (MSL Type/MTL Type)

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

Work Material		Mild Steel (up to 250HB)	General Steel (250 to 320HB)		Hardened Steel (45HRC)	Stainless Steel (up to 200HB)	Gray Cast Iron	Ductile Cast Iron	Aluminum Alloy*
Recommended Head		MSL Type	MSL Type	MTL Type	MTL Type	MSL Type	MSL Type / MTL Type	MSL Type / MTL Type	(MEL Type)
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.	Min. - **Optimum** - Max.
up to ø16.0	v_c	80-**100**-120 (50-**70**-80)	70-**100**-120 (50-**70**-80)	70-**100**-120 (50-**70**-80)	40-**60**-90 (30-**50**-70)	50-**60**-80 (40-**50**-60)	50-**70**-90 (40-**60**-80)	50-**60**-80 (40-**50**-70)	200-**240**-260 (180-**200**-240)
	f	0.15-**0.20**-0.25	0.15-**0.20**-0.25	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
up to ø20.0	v_c	80-**100**-120 (50-**70**-80)	70-**100**-120 (50-**70**-80)	70-**100**-120 (50-**70**-80)	40-**60**-90 (30-**50**-70)	60-**70**-90 (40-**60**-70)	60-**80**-100 (50-**70**-90)	50-**70**-90 (40-**60**-80)	200-**240**-260 (180-**200**-240)
	f	0.15-**0.25**-0.30	0.15-**0.20**-0.25	0.20-**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
up to ø30.8	v_c	80-**100**-120 (50-**70**-80)	70-**100**-120 (50-**70**-80)	70-**100**-120 (50-**70**-80)	40-**60**-90 (30-**50**-70)	60-**70**-90 (40-**60**-70)	60-**80**-100 (50-**70**-90)	50-**70**-90 (40-**60**-80)	200-**240**-260 (180-**200**-240)
	f	0.20-**0.25**-0.30	0.20-**0.25**-0.30	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
Recommended Head		Large Diameter MTL Type (ø31.0 up)							
ø31.0 to ø42.5	v_c	40-**60**-120 (30-**50**-80)	60-**80**-120 (40-**50**-80)		40-**50**-80 (30-**40**-60)	40-**60**-80 (30-**40**-60)	50-**70**-100 (40-**60**-90)	50-**60**-90 (40-**50**-70)	200-**240**-260
	f	0.25-**0.35**-0.45	0.25-**0.30**-0.40		0.15-**0.25**-0.30	0.20-**0.25**-0.30	0.25-**0.35**-0.45	0.25-**0.30**-0.35	0.35-**0.50**-0.60

Note: Where machine and work clamp rigidity are good, conditions may be increased up to the maximum.
For 8D and 12D drills, use the cutting speeds in parentheses as a guideline.
Before drilling 8D and 12D holes, a guide hole of a similar diameter is recommended.

(*) Inquire if you require drill heads dedicated for aluminum alloy.

SMD Type (Internal Coolant Supply)

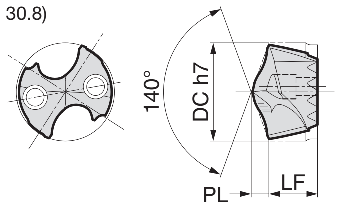
MTL | Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Cast Iron | Ductile Cast Iron

DEX Coat | Indexable head MTL | Coolant Hole | Indexable | 1.5D | 3D | 5D | 8D | 12D

*Refer to N38 for the tolerance of h7

Indexable Head

Fig 1 (DC ≤ 30.8)



Indexable Head MTL Type Diameter ø12.0 to 17.3 mm

Dimensions (mm)

Diameter DC	Stock	Cat. No.	Shoulder Length LF	Tip PL	Applicable Holders	Fig
12.0	●	SMDT 1200 MTL	6.9	2.2	SMDH120□	1
12.1	●	1210 MTL				1
12.2	●	1220 MTL				1
12.3	●	1230 MTL				1
12.4	●	1240 MTL		2.3		1
12.5	●	SMDT 1250 MTL	7.1	2.3	SMDH125□	1
12.6	●	1260 MTL				1
12.7	●	1270 MTL				1
12.8	●	1280 MTL				1
12.9	●	1290 MTL				1
13.0	●	SMDT 1300 MTL	7.3	2.4	SMDH130□	1
13.1	●	1310 MTL				1
13.2	●	1320 MTL				1
13.3	●	1330 MTL				1
13.4	●	1340 MTL				1
13.5	●	SMDT 1350 MTL	7.8	2.5	SMDH140□	1
13.6	●	1360 MTL				1
13.7	●	1370 MTL				1
13.8	●	1380 MTL				1
13.9	●	1390 MTL				1
14.0	●	1400 MTL				1
14.1	●	1410 MTL		2.6		1
14.2	●	1420 MTL				1
14.3	●	1430 MTL				1
14.4	●	1440 MTL				1
14.5	●	1450 MTL				1
14.6	●	SMDT 1460 MTL	8.3	2.7	SMDH150□	1
14.7	●	1470 MTL				1
14.8	●	1480 MTL				1
14.9	●	1490 MTL				1
15.0	●	1500 MTL				1
15.1	●	1510 MTL				1
15.2	●	1520 MTL		2.8		1
15.3	●	1530 MTL				1
15.4	●	1540 MTL				1
15.5	●	1550 MTL				1
15.6	●	SMDT 1560 MTL	8.7	2.8	SMDH160□	1
15.7	●	1570 MTL		2.9		1
15.8	●	1580 MTL				1
15.9	●	1590 MTL				1
16.0	●	1600 MTL				1
16.1	●	1610 MTL				1
16.2	●	1620 MTL		3.0		1
16.3	●	1630 MTL				1
16.4	●	1640 MTL				1
16.5	●	1650 MTL				1
16.6	●	SMDT 1660 MTL	9.2	3.0	SMDH170□	1
16.7	●	1670 MTL				1
16.8	●	1680 MTL		3.1		1
16.9	●	1690 MTL				1
17.0	●	1700 MTL				1
17.1	●	1710 MTL				1
17.2	●	1720 MTL				1
17.3	●	1730 MTL				1

Grade: ACX70

Recommended Cutting Conditions ☞ J97 | Applicable Holders ☞ J104

Indexable Head MTL Type Diameter ø17.4 to 22.7 mm

Dimensions (mm)

Diameter DC	Stock	Cat. No.	Shoulder Length LF	Tip PL	Applicable Holders	Fig
17.4	●	SMDT 1740 MTL	9.2	3.2	SMDH170□	1
17.5	●	1750 MTL				1
17.6	●	SMDT 1760 MTL	9.6	3.2	SMDH180□	1
17.7	●	1770 MTL				1
17.8	●	1780 MTL				1
17.9	●	1790 MTL		3.3		1
18.0	●	1800 MTL				1
18.1	●	1810 MTL				1
18.2	●	1820 MTL				1
18.3	●	1830 MTL				1
18.4	●	1840 MTL				1
18.5	●	1850 MTL		3.4		1
18.6	●	SMDT 1860 MTL	10.1	3.4	SMDH190□	1
18.7	●	1870 MTL				1
18.8	●	1880 MTL				1
18.9	●	1890 MTL				1
19.0	●	1900 MTL		3.5		1
19.1	●	1910 MTL				1
19.2	●	1920 MTL				1
19.3	●	1930 MTL				1
19.4	●	1940 MTL				1
19.5	●	1950 MTL				1
19.6	●	SMDT 1960 MTL	10.5	3.6	SMDH200□	1
19.7	●	1970 MTL				1
19.8	●	1980 MTL				1
19.9	●	1990 MTL				1
20.0	●	2000 MTL				1
20.1	●	2010 MTL		3.7		1
20.2	●	2020 MTL				1
20.3	●	2030 MTL				1
20.4	●	2040 MTL				1
20.5	●	2050 MTL				1
20.6	●	SMDT 2060 MTL	11.0	3.7	SMDH210□	1
20.7	●	2070 MTL		3.8		1
20.8	●	2080 MTL				1
20.9	●	2090 MTL				1
21.0	●	2100 MTL				1
21.1	●	2110 MTL				1
21.2	●	2120 MTL		3.9		1
21.3	●	2130 MTL				1
21.4	●	2140 MTL				1
21.5	●	2150 MTL				1
21.6	●	SMDT 2160 MTL	11.0	3.9	SMDH220□	1
21.7	●	2170 MTL				1
21.8	●	2180 MTL		4.0		1
21.9	●	2190 MTL				1
22.0	●	2200 MTL				1
22.1	●	2210 MTL				1
22.2	●	2220 MTL				1
22.3	●	2230 MTL		4.1		1
22.4	●	2240 MTL				1
22.5	●	2250 MTL				1
22.6	●	2260 MTL				1
22.7	●	2270 MTL				1

Grade: ACX70

Recommended Cutting Conditions ☞ J97 | Applicable Holders ☞ J104

SMD Type (Internal Coolant Supply)

MTL | Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Cast Iron | Ductile Cast Iron

DEX Coat | Indexable head MTL | Coolant Hole | Indexable | 1.5D | 3D | 5D | 8D | 12D

*Refer to N38 for the tolerance of h7

Indexable Head

Fig 1 (DC ≤ 30.8)

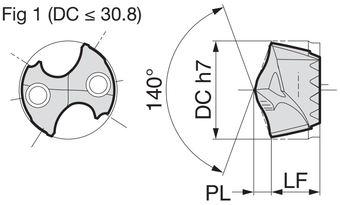
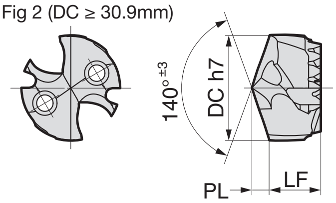


Fig 2 (DC ≥ 30.9mm)



Indexable Head MTL Type Diameter ø22.8 to 28.1 mm

Dimensions (mm)

Diameter DC	Stock	Cat. No.	Shoulder Length LF	Tip PL	Applicable Holders	Fig
22.8	●	SMDT 2280 MTL	11.0	4.1	SMDH220□	1
22.9	●	SMDT 2290 MTL	11.0	4.2	SMDH230□	1
23.0	●	2300 MTL				1
23.1	●	2310 MTL				1
23.2	●	2320 MTL				1
23.3	●	2330 MTL				1
23.4	●	2340 MTL		4.3		1
23.5	●	2350 MTL				1
23.6	●	2360 MTL				1
23.7	●	2370 MTL				1
23.8	●	2380 MTL				1
23.9	●	SMDT 2390 MTL	11.0	4.3	SMDH240□	1
24.0	●	2400 MTL		4.4		1
24.1	●	2410 MTL				1
24.2	●	2420 MTL				1
24.3	●	2430 MTL				1
24.4	●	2440 MTL				1
24.5	●	2450 MTL		4.5		1
24.6	●	2460 MTL				1
24.7	●	2470 MTL				1
24.8	●	2480 MTL				1
24.9	●	SMDT 2490 MTL	11.3	4.5	SMDH250□	1
25.0	●	2500 MTL				1
25.1	●	2510 MTL	11.3	4.6		1
25.2	●	2520 MTL				1
25.3	●	2530 MTL				1
25.4	●	2540 MTL				1
25.5	●	2550 MTL				1
25.6	●	2560 MTL	11.3	4.7		1
25.7	●	2570 MTL				1
25.8	●	2580 MTL				1
25.9	●	SMDT 2590 MTL	11.7	4.7	SMDH260□	1
26.0	●	2600 MTL				1
26.1	●	2610 MTL				1
26.2	●	2620 MTL		4.8		1
26.3	●	2630 MTL				1
26.4	●	2640 MTL				1
26.5	●	2650 MTL				1
26.6	●	2660 MTL				1
26.7	●	2670 MTL		4.9		1
26.8	●	2680 MTL				1
26.9	●	SMDT 2690 MTL	12.2	4.9	SMDH270□	1
27.0	●	2700 MTL				1
27.1	●	2710 MTL				1
27.2	●	2720 MTL				1
27.3	●	2730 MTL		5.0		1
27.4	●	2740 MTL				1
27.5	●	2750 MTL				1
27.6	●	2760 MTL				1
27.7	●	2770 MTL				1
27.8	●	2780 MTL		5.1		1
27.9	●	SMDT 2790 MTL	12.6	5.1	SMDH280□	1
28.0	●	2800 MTL				1
28.1	●	2810 MTL				1

Grade: ACX70

Recommended Cutting Conditions ☞ J97 | Applicable Holders ☞ J104

Indexable Head MTL Type Diameter ø28.2 to 42.5 mm

Dimensions (mm)

Diameter DC	Stock	Cat. No.	Shoulder Length LF	Tip PL	Applicable Holders	Fig
28.2	●	SMDT 2820 MTL	12.6	5.1	SMDH280□	1
28.3	●	2830 MTL		5.2		1
28.4	●	2840 MTL				1
28.5	●	2850 MTL				1
28.6	●	2860 MTL				1
28.7	●	2870 MTL				1
28.8	●	2880 MTL				1
28.9	●	SMDT 2890 MTL	13.1	5.3	SMDH290□	1
29.0	●	2900 MTL				1
29.1	●	2910 MTL				1
29.2	●	2920 MTL				1
29.3	●	2930 MTL				1
29.4	●	2940 MTL		5.4		1
29.5	●	2950 MTL				1
29.6	●	2960 MTL				1
29.7	●	2970 MTL				1
29.8	●	2980 MTL				1
29.9	●	SMDT 2990 MTL	13.5	5.4	SMDH300□	1
30.0	●	3000 MTL		5.5		1
30.1	●	3010 MTL				1
30.2	●	3020 MTL				1
30.3	●	3030 MTL				1
30.4	●	3040 MTL				1
30.5	●	3050 MTL		5.6		1
30.6	●	3060 MTL				1
30.7	●	3070 MTL				1
30.8	●	3080 MTL				1
31.0	●	SMDT 3100 MTL	15.4	5.6	SMDH320□	2
31.5		3150 MTL	15.3	5.7		2
32.0	●	3200 MTL	15.2	5.8		2
32.5		SMDT 3250 MTL	15.1	5.9	SMDH335□	2
33.0	●	3300 MTL	15.0	6.0		2
33.5		3350 MTL	14.9	6.1		2
34.0	●	SMDT 3400 MTL	16.8	6.2	SMDH350□	2
34.5		3450 MTL	16.7	6.3		2
35.0	●	3500 MTL	16.6	6.4		2
35.5		SMDT 3550 MTL	16.5	6.5	SMDH365□	2
36.0	●	3600 MTL	16.4	6.6		2
36.5		3650 MTL				2
37.0	●	SMDT 3700 MTL	18.3	6.7	SMDH380□	2
37.5	●	3750 MTL	18.2	6.8		2
38.0	●	3800 MTL	18.1	6.9		2
38.5		SMDT 3850 MTL	18.0	7.0	SMDH395□	2
39.0	●	3900 MTL	17.9	7.1		2
39.5		3950 MTL	17.8	7.2		2
40.0	●	SMDT 4000 MTL	19.7	7.3	SMDH410□	2
40.5	●	4050 MTL	19.6	7.4		2
41.0	●	4100 MTL	19.5	7.5		2
41.5		SMDT 4150 MTL	19.4	7.6	SMDH425□	2
42.0	●	4200 MTL				2
42.5		4250 MTL	19.3	7.7		2

Grade: ACX70 (Diameter DC 12.0 to 30.8)
ACX80 (Diameter DC 30.9 to 42.5)

Recommended Cutting Conditions ☞ J97
Applicable Holders ☞ J104, J105

SMD Type (Internal Coolant Supply)

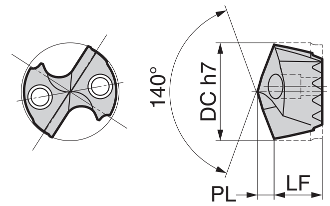
MSL | Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Stainless Steel | Ti Alloy | Heat-resistant Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

New | NX Coat | Indexable head MSL | Coolant Hole | Indexable | 1.5D | 3D | 5D | 8D | 12D

*Refer to N38 for the tolerance of h7

Indexable Head

Fig 1



Indexable Head MSL Type Diameter ø12.0 to 17.3 mm

Dimensions (mm)

Diameter DC	Stock	Cat. No.	Shoulder Length LF	Tip PL	Applicable Holders	Fig
12.0	●	SMDT 1200 MSL	6.9	2.2	SMDH120□	1
12.1	●	1210 MSL				1
12.2	●	1220 MSL				1
12.3	●	1230 MSL				1
12.4	●	1240 MSL		2.3		1
12.5	●	SMDT 1250 MSL	7.1	2.3	SMDH125□	1
12.6	●	1260 MSL				1
12.7	●	1270 MSL				1
12.8	●	1280 MSL				1
12.9	●	1290 MSL				1
13.0	●	SMDT 1300 MSL	7.3	2.4	SMDH130□	1
13.1	●	1310 MSL				1
13.2	●	1320 MSL				1
13.3	●	1330 MSL				1
13.4	●	1340 MSL				1
13.5	●	SMDT 1350 MSL	7.8	2.5	SMDH140□	1
13.6	●	1360 MSL				1
13.7	●	1370 MSL				1
13.8	●	1380 MSL				1
13.9	●	1390 MSL				1
14.0	●	1400 MSL				1
14.1	●	1410 MSL		2.6		1
14.2	●	1420 MSL				1
14.3	●	1430 MSL				1
14.4	●	1440 MSL				1
14.5	●	1450 MSL				1
14.6	●	SMDT 1460 MSL	8.3	2.7	SMDH150□	1
14.7	●	1470 MSL				1
14.8	●	1480 MSL				1
14.9	●	1490 MSL				1
15.0	●	1500 MSL				1
15.1	●	1510 MSL				1
15.2	●	1520 MSL		2.8		1
15.3	●	1530 MSL				1
15.4	●	1540 MSL				1
15.5	●	1550 MSL				1
15.6	●	SMDT 1560 MSL	8.7	2.8	SMDH160□	1
15.7	●	1570 MSL		2.9		1
15.8	●	1580 MSL				1
15.9	●	1590 MSL				1
16.0	●	1600 MSL				1
16.1	●	1610 MSL				1
16.2	●	1620 MSL				1
16.3	●	1630 MSL		3.0		1
16.4	●	1640 MSL				1
16.5	●	1650 MSL				1
16.6	●	SMDT 1660 MSL	9.2	3.0	SMDH170□	1
16.7	●	1670 MSL				1
16.8	●	1680 MSL		3.1		1
16.9	●	1690 MSL				1
17.0	●	1700 MSL				1
17.1	●	1710 MSL				1
17.2	●	1720 MSL				1
17.3	●	1730 MSL				1

Grade: ACT100

Recommended Cutting Conditions ☞ J97 | Applicable Holders ☞ J104

Indexable Head MSL Type Diameter ø17.4 to 22.7 mm

Dimensions (mm)

Diameter DC	Stock	Cat. No.	Shoulder Length LF	Tip PL	Applicable Holders	Fig
17.4	●	SMDT 1740 MSL	9.2	3.2	SMDH170□	1
17.5	●	1750 MSL				1
17.6	●	SMDT 1760 MSL	9.6	3.2	SMDH180□	1
17.7	●	1770 MSL				1
17.8	●	1780 MSL				1
17.9	●	1790 MSL		3.3		1
18.0	●	1800 MSL				1
18.1	●	1810 MSL				1
18.2	●	1820 MSL				1
18.3	●	1830 MSL				1
18.4	●	1840 MSL				1
18.5	●	1850 MSL		3.4		1
18.6	●	SMDT 1860 MSL	10.1	3.4	SMDH190□	1
18.7	●	1870 MSL				1
18.8	●	1880 MSL				1
18.9	●	1890 MSL				1
19.0	●	1900 MSL		3.5		1
19.1	●	1910 MSL				1
19.2	●	1920 MSL				1
19.3	●	1930 MSL				1
19.4	●	1940 MSL				1
19.5	●	1950 MSL				1
19.6	●	SMDT 1960 MSL	10.5	3.6	SMDH200□	1
19.7	●	1970 MSL				1
19.8	●	1980 MSL				1
19.9	●	1990 MSL				1
20.0	●	2000 MSL				1
20.1	●	2010 MSL		3.7		1
20.2	●	2020 MSL				1
20.3	●	2030 MSL				1
20.4	●	2040 MSL				1
20.5	●	2050 MSL				1
20.6	●	SMDT 2060 MSL	11.0	3.7	SMDH210□	1
20.7	●	2070 MSL		3.8		1
20.8	●	2080 MSL				1
20.9	●	2090 MSL				1
21.0	●	2100 MSL				1
21.1	●	2110 MSL				1
21.2	●	2120 MSL		3.9		1
21.3	●	2130 MSL				1
21.4	●	2140 MSL				1
21.5	●	2150 MSL				1
21.6	●	SMDT 2160 MSL	11.0	3.9	SMDH220□	1
21.7	●	2170 MSL				1
21.8	●	2180 MSL		4.0		1
21.9	●	2190 MSL				1
22.0	●	2200 MSL				1
22.1	●	2210 MSL				1
22.2	●	2220 MSL				1
22.3	●	2230 MSL		4.1		1
22.4	●	2240 MSL				1
22.5	●	2250 MSL				1
22.6	●	2260 MSL				1
22.7	●	2270 MSL				1

Grade: ACT100

Recommended Cutting Conditions ☞ J97 | Applicable Holders ☞ J104

● mark: Standard stocked item (new product/expanded item)

SMD Type (Internal Coolant Supply)

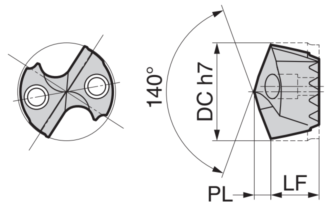
MSL | Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Stainless Steel | Ti Alloy | Heat-resistant Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

New | NX Coat | Indexable head MSL | Coolant Hole | Indexable | 1.5D | 3D | 5D | 8D | 12D

*Refer to N38 for the tolerance of h7

Indexable Head

Fig 1



Indexable Head MSL Type Diameter ø22.8 to 28.1 mm

Dimensions (mm)

Diameter DC	Stock	Cat. No.	Shoulder Length LF	Tip PL	Applicable Holders	Fig
22.8	●	SMDT 2280 MSL	11.0	4.1	SMDH220□	1
22.9	●	SMDT 2290 MSL	11.0	4.2	SMDH230□	1
23.0	●	2300 MSL				1
23.1	●	2310 MSL				1
23.2	●	2320 MSL				1
23.3	●	2330 MSL				1
23.4	●	2340 MSL		4.3		1
23.5	●	2350 MSL				1
23.6	●	2360 MSL				1
23.7	●	2370 MSL				1
23.8	●	2380 MSL				1
23.9	●	SMDT 2390 MSL	11.0	4.3	SMDH240□	1
24.0	●	2400 MSL		4.4		1
24.1	●	2410 MSL				1
24.2	●	2420 MSL				1
24.3	●	2430 MSL				1
24.4	●	2440 MSL				1
24.5	●	2450 MSL		4.5		1
24.6	●	2460 MSL				1
24.7	●	2470 MSL				1
24.8	●	2480 MSL				1
24.9	●	SMDT 2490 MSL	11.3	4.5	SMDH250□	1
25.0	●	2500 MSL				1
25.1	●	2510 MSL		4.6		1
25.2	●	2520 MSL				1
25.3	●	2530 MSL				1
25.4	●	2540 MSL				1
25.5	●	2550 MSL				1
25.6	●	2560 MSL		4.7		1
25.7	●	2570 MSL				1
25.8	●	2580 MSL				1
25.9	●	SMDT 2590 MSL	11.7	4.7	SMDH260□	1
26.0	●	2600 MSL				1
26.1	●	2610 MSL				1
26.2	●	2620 MSL		4.8		1
26.3	●	2630 MSL				1
26.4	●	2640 MSL				1
26.5	●	2650 MSL				1
26.6	●	2660 MSL				1
26.7	●	2670 MSL		4.9		1
26.8	●	2680 MSL				1
26.9	●	SMDT 2690 MSL	12.2	4.9	SMDH270□	1
27.0	●	2700 MSL				1
27.1	●	2710 MSL				1
27.2	●	2720 MSL				1
27.3	●	2730 MSL		5.0		1
27.4	●	2740 MSL				1
27.5	●	2750 MSL				1
27.6	●	2760 MSL				1
27.7	●	2770 MSL				1
27.8	●	2780 MSL		5.1		1
27.9	●	SMDT 2790 MSL	12.6	5.1	SMDH280□	1
28.0	●	2800 MSL				1
28.1	●	2810 MSL				1

Grade: ACT100

Recommended Cutting Conditions ☞ J97 | Applicable Holders ☞ J104

Indexable Head MSL Type Diameter ø28.2 to 30.8 mm

Dimensions (mm)

Diameter DC	Stock	Cat. No.	Shoulder Length LF	Tip PL	Applicable Holders	Fig
28.2	●	SMDT 2820 MSL	12.6	5.1	SMDH280□	1
28.3	●	2830 MSL		5.2		1
28.4	●	2840 MSL				1
28.5	●	2850 MSL				1
28.6	●	2860 MSL				1
28.7	●	2870 MSL				1
28.8	●	2880 MSL				1
28.9	●	SMDT 2890 MSL	13.1	5.3	SMDH290□	1
29.0	●	2900 MSL				1
29.1	●	2910 MSL				1
29.2	●	2920 MSL				1
29.3	●	2930 MSL				1
29.4	●	2940 MSL		5.4		1
29.5	●	2950 MSL				1
29.6	●	2960 MSL				1
29.7	●	2970 MSL				1
29.8	●	2980 MSL				1
29.9	●	SMDT 2990 MSL	13.5	5.4	SMDH300□	1
30.0	●	3000 MSL		5.5		1
30.1	●	3010 MSL				1
30.2	●	3020 MSL				1
30.3	●	3030 MSL				1
30.4	●	3040 MSL				1
30.5	●	3050 MSL		5.6		1
30.6	●	3060 MSL				1
30.7	●	3070 MSL				1
30.8	●	3080 MSL				1

Grade: ACT100

Recommended Cutting Conditions ☞ J97 | Applicable Holders ☞ J104, J105

● mark: Standard stocked item (new product/expanded item)

SMD Type (Internal Coolant Supply) MEL

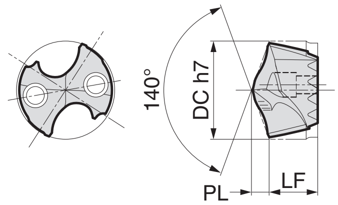
Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat-resistant Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

DEX Coat | Indexable head MEL | Coolant Hole | Indexable | 1.5D | 3D | 5D | 8D | 12D

*Refer to N38 for the tolerance of h7

Indexable Head

Fig 1



Indexable Head MEL Type Diameter ø12.0 to 17.3 mm

Dimensions (mm)

Diameter DC	Stock	Cat. No.	Shoulder Length LF	Tip PL	Applicable Holders	Fig
12.0	▲	SMDT 1200 MEL	6.9	2.2	SMDH120□	1
12.1	▲	1210 MEL				1
12.2	▲	1220 MEL				1
12.3	▲	1230 MEL				1
12.4	▲	1240 MEL		2.3		1
12.5	▲	SMDT 1250 MEL	7.1	2.3	SMDH125□	1
12.6	▲	1260 MEL				1
12.7	▲	1270 MEL				1
12.8	▲	1280 MEL				1
12.9	▲	1290 MEL				1
13.0	▲	SMDT 1300 MEL	7.3	2.4	SMDH130□	1
13.1	▲	1310 MEL				1
13.2	▲	1320 MEL				1
13.3	▲	1330 MEL				1
13.4	▲	1340 MEL				1
13.5	▲	SMDT 1350 MEL	7.8	2.5	SMDH140□	1
13.6	▲	1360 MEL				1
13.7	▲	1370 MEL				1
13.8	▲	1380 MEL				1
13.9	▲	1390 MEL				1
14.0	▲	1400 MEL				1
14.1	▲	1410 MEL		2.6		1
14.2	▲	1420 MEL				1
14.3	▲	1430 MEL				1
14.4	▲	1440 MEL				1
14.5	▲	1450 MEL				1
14.6	▲	SMDT 1460 MEL	8.3	2.7	SMDH150□	1
14.7	▲	1470 MEL				1
14.8	▲	1480 MEL				1
14.9	▲	1490 MEL				1
15.0	▲	1500 MEL				1
15.1	▲	1510 MEL				1
15.2	▲	1520 MEL		2.8		1
15.3	▲	1530 MEL				1
15.4	▲	1540 MEL				1
15.5	▲	1550 MEL				1
15.6	▲	SMDT 1560 MEL	8.7	2.8	SMDH160□	1
15.7	▲	1570 MEL		2.9		1
15.8	▲	1580 MEL				1
15.9	▲	1590 MEL				1
16.0	▲	1600 MEL				1
16.1	▲	1610 MEL				1
16.2	▲	1620 MEL				1
16.3	▲	1630 MEL		3.0		1
16.4	▲	1640 MEL				1
16.5	▲	1650 MEL				1
16.6	▲	SMDT 1660 MEL	9.2	3.0	SMDH170□	1
16.7	▲	1670 MEL				1
16.8	▲	1680 MEL		3.1		1
16.9	▲	1690 MEL				1
17.0	▲	1700 MEL				1
17.1	▲	1710 MEL				1
17.2	▲	1720 MEL				1
17.3	▲	1730 MEL				1

Grade: ACX80

Recommended Cutting Conditions J97 | Applicable Holders J104

Indexable Head MEL Type Diameter ø17.4 to 22.7 mm

Dimensions (mm)

Diameter DC	Stock	Cat. No.	Shoulder Length LF	Tip PL	Applicable Holders	Fig
17.4	▲	SMDT 1740 MEL	9.2	3.2	SMDH170□	1
17.5	▲	1750 MEL				1
17.6	▲	SMDT 1760 MEL	9.6	3.2	SMDH180□	1
17.7	▲	1770 MEL				1
17.8	▲	1780 MEL				1
17.9	▲	1790 MEL		3.3		1
18.0	▲	1800 MEL				1
18.1	▲	1810 MEL				1
18.2	▲	1820 MEL				1
18.3	▲	1830 MEL				1
18.4	▲	1840 MEL				1
18.5	▲	1850 MEL		3.4		1
18.6	▲	SMDT 1860 MEL	10.1	3.4	SMDH190□	1
18.7	▲	1870 MEL				1
18.8	▲	1880 MEL				1
18.9	▲	1890 MEL				1
19.0	▲	1900 MEL		3.5		1
19.1	▲	1910 MEL				1
19.2	▲	1920 MEL				1
19.3	▲	1930 MEL				1
19.4	▲	1940 MEL				1
19.5	▲	1950 MEL				1
19.6	▲	SMDT 1960 MEL	10.5	3.6	SMDH200□	1
19.7	▲	1970 MEL				1
19.8	▲	1980 MEL				1
19.9	▲	1990 MEL				1
20.0	▲	2000 MEL				1
20.1	▲	2010 MEL		3.7		1
20.2	▲	2020 MEL				1
20.3	▲	2030 MEL				1
20.4	▲	2040 MEL				1
20.5	▲	2050 MEL				1
20.6	▲	SMDT 2060 MEL	11.0	3.7	SMDH210□	1
20.7	▲	2070 MEL		3.8		1
20.8	▲	2080 MEL				1
20.9	▲	2090 MEL				1
21.0	▲	2100 MEL				1
21.1	▲	2110 MEL				1
21.2	▲	2120 MEL		3.9		1
21.3	▲	2130 MEL				1
21.4	▲	2140 MEL				1
21.5	▲	2150 MEL				1
21.6	▲	SMDT 2160 MEL	11.0	3.9	SMDH220□	1
21.7	▲	2170 MEL				1
21.8	▲	2180 MEL		4.0		1
21.9	▲	2190 MEL				1
22.0	▲	2200 MEL				1
22.1	▲	2210 MEL				1
22.2	▲	2220 MEL				1
22.3	▲	2230 MEL		4.1		1
22.4	▲	2240 MEL				1
22.5	▲	2250 MEL				1
22.6	▲	2260 MEL				1
22.7	▲	2270 MEL				1

Grade: ACX80

Recommended Cutting Conditions J97 | Applicable Holders J104

Drilling | J | Solid | Indexable Head Type | Indexable Insert Type | Reamers | Brazed | Others

▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability).

SMD Type (Internal Coolant Supply)

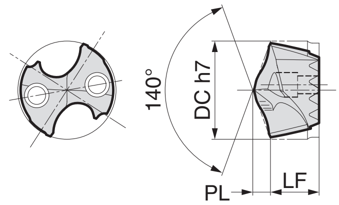
MEL | Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat-resistant Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

DEX Coat | Indexable head MEL | Coolant Hole | Indexable | 1.5D | 3D | 5D | 8D | 12D

*Refer to N38 for the tolerance of h7

Indexable Head

Fig 1



Indexable Head MEL Type Diameter ø22.8 to 28.1 mm

Dimensions (mm)

Diameter DC	Stock	Cat. No.	Shoulder Length LF	Tip PL	Applicable Holders	Fig
22.8	▲	SMDT 2280 MEL	11.0	4.1	SMDH220□	1
22.9	▲	SMDT 2290 MEL	11.0	4.2	SMDH230□	1
23.0	▲	2300 MEL				1
23.1	▲	2310 MEL				1
23.2	▲	2320 MEL				1
23.3	▲	2330 MEL				1
23.4	▲	2340 MEL		4.3		1
23.5	▲	2350 MEL				1
23.6	▲	2360 MEL				1
23.7	▲	2370 MEL				1
23.8	▲	2380 MEL				1
23.9	▲	SMDT 2390 MEL	11.0	4.3	SMDH240□	1
24.0	▲	2400 MEL		4.4		1
24.1	▲	2410 MEL				1
24.2	▲	2420 MEL				1
24.3	▲	2430 MEL				1
24.4	▲	2440 MEL				1
24.5	▲	2450 MEL		4.5		1
24.6	▲	2460 MEL				1
24.7	▲	2470 MEL				1
24.8	▲	2480 MEL				1
24.9	▲	SMDT 2490 MEL	11.3	4.5	SMDH250□	1
25.0	▲	2500 MEL				1
25.1	▲	2510 MEL		4.6		1
25.2	▲	2520 MEL				1
25.3	▲	2530 MEL				1
25.4	▲	2540 MEL				1
25.5	▲	2550 MEL				1
25.6	▲	2560 MEL		4.7		1
25.7	▲	2570 MEL				1
25.8	▲	2580 MEL				1
25.9	▲	SMDT 2590 MEL	11.7	4.7	SMDH260□	1
26.0	▲	2600 MEL				1
26.1	▲	2610 MEL				1
26.2	▲	2620 MEL		4.8		1
26.3	▲	2630 MEL				1
26.4	▲	2640 MEL				1
26.5	▲	2650 MEL				1
26.6	▲	2660 MEL				1
26.7	▲	2670 MEL		4.9		1
26.8	▲	2680 MEL				1
26.9	▲	SMDT 2690 MEL	12.2	4.9	SMDH270□	1
27.0	▲	2700 MEL				1
27.1	▲	2710 MEL				1
27.2	▲	2720 MEL				1
27.3	▲	2730 MEL		5.0		1
27.4	▲	2740 MEL				1
27.5	▲	2750 MEL				1
27.6	▲	2760 MEL				1
27.7	▲	2770 MEL				1
27.8	▲	2780 MEL		5.1		1
27.9	▲	SMDT 2790 MEL	12.6	5.1	SMDH280□	1
28.0	▲	2800 MEL				1
28.1	▲	2810 MEL				1

Grade: ACX80

Recommended Cutting Conditions ☞ J97 | Applicable Holders ☞ J104

Indexable Head MEL Type Diameter ø28.2 to 30.8 mm

Dimensions (mm)

Diameter DC	Stock	Cat. No.	Shoulder Length LF	Tip PL	Applicable Holders	Fig
28.2	▲	SMDT 2820 MEL	12.6	5.1	SMDH280□	1
28.3	▲	2830 MEL		5.2		1
28.4	▲	2840 MEL				1
28.5	▲	2850 MEL				1
28.6	▲	2860 MEL				1
28.7	▲	2870 MEL				1
28.8	▲	2880 MEL				1
28.9	▲	SMDT 2890 MEL	13.1	5.3	SMDH290□	1
29.0	▲	2900 MEL				1
29.1	▲	2910 MEL				1
29.2	▲	2920 MEL				1
29.3	▲	2930 MEL				1
29.4	▲	2940 MEL		5.4		1
29.5	▲	2950 MEL				1
29.6	▲	2960 MEL				1
29.7	▲	2970 MEL				1
29.8	▲	2980 MEL				1
29.9	▲	SMDT 2990 MEL	13.5	5.4	SMDH300□	1
30.0	▲	3000 MEL		5.5		1
30.1	▲	3010 MEL				1
30.2	▲	3020 MEL				1
30.3	▲	3030 MEL				1
30.4	▲	3040 MEL				1
30.5	▲	3050 MEL		5.6		1
30.6	▲	3060 MEL				1
30.7	▲	3070 MEL				1
30.8	▲	3080 MEL				1

Grade: ACX80

Recommended Cutting Conditions ☞ J97 | Applicable Holders ☞ J104, J105

▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability).

SMD Type (Internal Coolant Supply) Side Lock Flat / No Flange

MTL	Carbon Steel/ Alloy Steel up to 0.28%	Carbon Steel/ Alloy Steel from 0.29%	Tempered Steel	Hardened Steel up to 45HRC	Cast Iron	Ductile Cast Iron					
MSL	Carbon Steel/ Alloy Steel up to 0.28%	Carbon Steel/ Alloy Steel from 0.29%	Stainless Steel	Ti Alloy	Heat-resistant Steel	Cast Iron	Ductile Cast Iron	Aluminum Alloy			
MEL	Carbon Steel/ Alloy Steel up to 0.28%	Carbon Steel/ Alloy Steel from 0.29%	Hardened Steel up to 45HRC	Stainless Steel	Ti Alloy	Heat-resistant Steel	Cast Iron	Ductile Cast Iron	Aluminum Alloy		

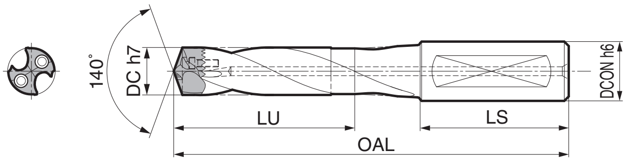
DEX Coat | Indexable head MTL | Indexable head MSL | Indexable head MEL | Coolant Hole | Indexable | 3D | 5D | 8D

*Refer to N38 for the tolerance of h6 and h7

● Set Figure

Indexable head MTL | Indexable head MSL | Indexable head MEL

Fig 1



Holder ø12.0 to 29.8mm With MTL Type / MSL Type / MEL Type set

Parts

Dimensions (mm)

Diameter DC	Hole Depth (L/D)	Cat. No.	Stock	Effective Length LU	Overall Length OAL	Shank LS	Shank Dia. DCON	Indexable Head	Fig	Cap Screw	N·m	Wrench
12.0 ≤ D < 12.5	3	SMDH 120M	●	42	107	48	16	MTL/MSL	1	BXD02208IP	0.75 to 1.00	TRDR08IP
	5	120L	●	67	132			MEL	1			
12.5 ≤ D < 13.0	3	SMDH 125M	●	44	107	48	16	MTL/MSL	1	BXD02208IP	0.75 to 1.00	TRDR08IP
	5	125L	●	69	132			MEL	1			
13.0 ≤ D < 13.5	3	SMDH 130M	●	45	112	48	16	MTL/MSL	1	BXD02208IP	0.75 to 1.00	TRDR08IP
	5	130L	●	72	142			MEL	1			
13.5 ≤ D ≤ 14.5	3	SMDH 140M	●	51	119	48	16	MTL/MSL MEL	1	BXD02208IP	0.75 to 1.00	TRDR08IP
	5	140L	●	80	149				1			
	8	140D	●	123	194				1			
14.5 < D ≤ 15.5	3	SMDH 150M	●	54	129	50	20	MTL/MSL MEL	1	BXD02208IP	0.75 to 1.00	TRDR08IP
	5	150L	●	85	159				1			
	8	150D	●	131	204				1			
15.5 < D ≤ 16.5	3	SMDH 160M	●	57	134	50	20	MTL/MSL MEL	1	BXD02509IP	0.93 to 1.24	TRDR10IP
	5	160L	●	90	169				1			
	8	160D	●	140	214				1			
16.5 < D ≤ 17.5	3	SMDH 170M	●	60	140	50	20	MTL/MSL MEL	1	BXD02509IP	0.93 to 1.24	TRDR10IP
	5	170L	●	95	175				1			
	8	170D	●	148	225				1			
17.5 < D ≤ 18.5	3	SMDH 180M	●	63	145	50	20	MTL/MSL MEL	1	BXD02509IP	0.93 to 1.24	TRDR10IP
	5	180L	●	100	180				1			
	8	180D	●	156	230				1			
18.5 < D ≤ 19.5	3	SMDH 190M	●	67	160	56	25	MTL/MSL MEL	1	BXD03011IP	1.83 to 2.44	TRDR15IP
	5	190L	●	106	195				1			
	8	190D	●	164	255				1			
19.5 < D ≤ 20.5	3	SMDH 200M	●	70	160	56	25	MTL/MSL MEL	1	BXD03011IP	1.83 to 2.44	TRDR15IP
	5	200L	●	111	200				1			
	8	200D	●	172	265				1			
20.5 < D ≤ 21.5	3	SMDH 210M	●	73	160	56	25	MTL/MSL MEL	1	BXD03011IP	1.83 to 2.44	TRDR15IP
	5	210L	●	116	200				1			
	8	210D	●	180	270				1			
21.5 < D ≤ 22.8	3	SMDH 220M	●	77	165	56	25	MTL/MSL MEL	1	BXD03512IP	2.79 to 3.72	TRDR15IP
	5	220L	●	123	205				1			
	8	220D	●	191	275				1			
22.8 < D ≤ 23.8	3	SMDH 230M	●	80	165	56	25	MTL/MSL MEL	1	BXD03512IP	2.79 to 3.72	TRDR15IP
	5	230L	●	128	215				1			
	8	230D	●	199	285				1			
23.8 < D ≤ 24.8	3	SMDH 240M	●	83	175	60	32	MTL/MSL MEL	1	BXD03512IP	2.79 to 3.72	TRDR15IP
	5	240L	●	133	225				1			
	8	240D	●	207	300				1			
24.8 < D ≤ 25.8	3	SMDH 250M	●	87	175	60	32	MTL/MSL MEL	1	BXD04014IP	4.14 to 5.52	TRDR20IP
	5	250L	●	138	230				1			
	8	250D	●	216	305				1			
25.8 < D ≤ 26.8	3	SMDH 260M	●	90	180	60	32	MTL/MSL MEL	1	BXD04014IP	4.14 to 5.52	TRDR20IP
	5	260L	●	143	235				1			
	8	260D	●	224	315				1			
26.8 < D ≤ 27.8	3	SMDH 270M	●	93	180	60	32	MTL/MSL MEL	1	BXD04014IP	4.14 to 5.52	TRDR20IP
	5	270L	●	149	240				1			
	8	270D	●	232	325				1			
27.8 < D ≤ 28.8	3	SMDH 280M	●	96	185	60	32	MTL/MSL MEL	1	BXD04515IP	4.98 to 6.64	TRDR25IP
	5	280L	●	154	245				1			
	8	280D	●	240	330				1			
28.8 < D ≤ 29.8	3	SMDH 290M	●	99	190	60	32	MTL/MSL MEL	1	BXD04515IP	4.98 to 6.64	TRDR25IP
	5	290L	●	159	250				1			
	8	290D	●	248	340				1			

Recommended Cutting Conditions ☞ J97 | MTL Type Head ☞ J98, J99 | MSL Type Head ☞ J100, J101 | MEL Type Head ☞ J102, J103

* Because the calculation method has been changed, the dimensions above are different from those listed in the 19-20 General Catalogue, but the specifications have not changed.

N·m Recommended Tightening Torque (N·m)

SMD Type (Internal Coolant Supply) Side Lock Flat / No Flange

MTL	Carbon Steel/ Alloy Steel up to 0.28%	Carbon Steel/ Alloy Steel from 0.29%	Tempered Steel	Hardened Steel up to 45HRC	Cast Iron	Ductile Cast Iron			
MSL	Carbon Steel/ Alloy Steel up to 0.28%	Carbon Steel/ Alloy Steel from 0.29%	Stainless Steel	Ti Alloy	Heat-resistant Steel	Cast Iron	Ductile Cast Iron	Aluminum Alloy	
MEL	Carbon Steel/ Alloy Steel up to 0.28%	Carbon Steel/ Alloy Steel from 0.29%	Hardened Steel up to 45HRC	Stainless Steel	Ti Alloy	Heat-resistant Steel	Cast Iron	Ductile Cast Iron	Aluminum Alloy

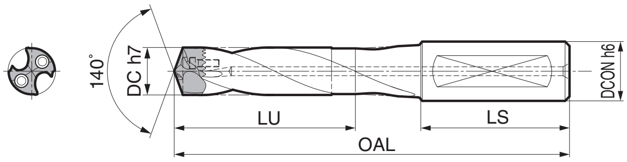
DEX Coat | Indexable head MTL | Indexable head MSL | Indexable head MEL | Coolant Hole | Indexable | 3D | 5D | 8D

*Refer to N38 for the tolerance of h6 and h7

● Set Figure

MTL MSL MEL

Fig 1



Holder ø29.8 to 42.5mm With MTL Type / MSL Type / MEL Type set

Parts

Dimensions (mm)

Diameter DC	Hole Depth (L/D)	Cat. No.	Stock	Effective Length LU	Overall Length OAL	Shank LS	Shank Dia. DCON	Indexable Head	Fig	Cap Screw	Cap Screw N·m	Wrench
29.8 < D ≤ 30.8	3	**SMDH 300M**	●	**103**	**190**	60	32	MTL/MSL MEL	1	BXD04515IP	4.98 to 6.64	TRDR25IP
	5	**300L**	●	**164**	**260**				1			
	8	**300D**	●	**257**	**350**				1			
30.8 < D ≤ 32.0	3	**SMDH 320M**	●	**106**	**201**	60	32	MTL	1	BXD04515IP	4.98 to 6.64	TRDR25IP
	5	**320L**	●	**170**	**266**				1			
	8	**320D**	●	**266**	**361**				1			
32.0 < D ≤ 33.5	3	**SMDH 335M**	●	**111**	**206**	60	32	MTL	1	BXD04515IP	4.98 to 6.64	TRDR25IP
	5	**335L**	●	**178**	**276**				1			
	8	**335D**	●	**279**	**376**				1			
33.5 < D ≤ 35.0	3	**SMDH 350M**	●	**116**	**221**	70	40	MTL	1	BX0515	7.2	HD040
	5	**350L**	●	**186**	**296**				1			
	8	**350D**	●	**291**	**401**				1			
35.0 < D ≤ 36.5	3	**SMDH 365M**	●	**121**	**227**	70	40	MTL	1	BX0515	7.2	HD040
	5	**365L**	●	**194**	**302**				1			
	8	**365D**	●	**303**	**412**				1			
36.5 < D ≤ 38.0	3	**SMDH 380M**	●	**125**	**232**	70	40	MTL	1	BX0515	7.2	HD040
	5	**380L**	●	**201**	**312**				1			
	8	**380D**	●	**315**	**427**				1			
38.0 < D ≤ 39.5	3	**SMDH 395M**	●	**130**	**237**	70	40	MTL	1	BX0515	7.2	HD040
	5	**395L**	●	**209**	**322**				1			
	8	**395D**	●	**328**	**437**				1			
39.5 < D ≤ 41.0	3	**SMDH 410M**	●	**135**	**252**	70	40	MTL	1	BX0515	7.2	HD040
	5	**410L**	●	**217**	**332**				1			
	8	**410D**	●	**340**	**457**				1			
41.0 < D ≤ 42.5	3	**SMDH 425M**	●	**140**	**258**	70	40	MTL	1	BX0515	7.2	HD040
	5	**425L**	●	**225**	**343**				1			
	8	**425D**	●	**352**	**468**				1			

Recommended Cutting Conditions ☞ J97 | MTL Type Head ☞ J99 | MSL Type Head ☞ J101 | MEL Type Head ☞ J103

* Because the calculation method has been changed, the dimensions above are different from those listed in the 19-20 General Catalogue, but the specifications have not changed.

SMD Type (Internal Coolant Supply) Side Lock Flat / Flange

MTL	Carbon Steel/ Alloy Steel up to 0.28%	Carbon Steel/ Alloy Steel from 0.29%	Tempered Steel	Hardened Steel up to 45HRC	Cast Iron	Ductile Cast Iron		
MSL	Carbon Steel/ Alloy Steel up to 0.28%	Carbon Steel/ Alloy Steel from 0.29%	Stainless Steel	Ti Alloy	Heat-resistant Steel	Cast Iron	Ductile Cast Iron	Aluminum Alloy
MEL	Carbon Steel/ Alloy Steel up to 0.28%	Carbon Steel/ Alloy Steel from 0.29%	Hardened Steel up to 45HRC	Stainless Steel	Ti Alloy	Heat-resistant Steel	Cast Iron	Ductile Cast Iron	Aluminum Alloy

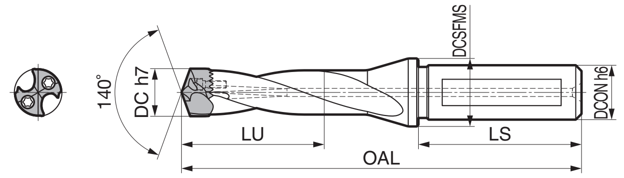
Expansion DEX Coat Indexable head MTL Indexable head MSL Indexable head MEL Coolant Hole Indexable 1.5D 3D 5D 8D

*Refer to N38 for the tolerance of h6 and h7

● Set Figure

Indexable head MTL Indexable head MSL Indexable head MEL

Fig 1



Drilling

J

Solid

Indexable Head Type

Indexable Insert Type

Reamers

Brazed

Others

Holder ø12.0 to 24.8mm With MTL Type / MSL Type / MEL Type set

Parts

Dimensions (mm)

Diameter DC	Hole Depth (L/D)	Cat. No.	Stock	Effective Length LU	Overall Length OAL	Shank LS	Flange Diameter DCSFMS	Shank Dia. DCON	Indexable Head	Fig	Cap Screw	Cap Screw (N·m)	Wrench
12.0 ≤ D < 12.5	1.5	SMDH 120-1.5DF	●	23	91	48	20	16	MTL/ MSL MEL	1	BXD02208IPC	0.75 to 1.00	TRDR08IP
	3	120-3DF	●	42	107					1			
	5	120-5DF	●	67	132					1			
	8	120-8DF	●	98	164					1			
12.5 ≤ D < 13.0	1.5	SMDH 125-1.5DF	●	24	91	48	20	16	MTL/ MSL MEL	1	BXD02208IPC	0.75 to 1.00	TRDR08IP
	3	125-3DF	●	44	107					1			
	5	125-5DF	●	69	132					1			
	8	125-8DF	●	102	170					1			
13.0 ≤ D < 13.5	1.5	SMDH 130-1.5DF	●	25	92	48	20	16	MTL/ MSL MEL	1	BXD02208IPC	0.75 to 1.00	TRDR08IP
	3	130-3DF	●	45	112					1			
	5	130-5DF	●	72	142					1			
	8	130-8DF	●	106	178					1			
13.5 ≤ D ≤ 14.5	1.5	SMDH 140-1.5DF	●	29	96	48	20	16	MTL/ MSL MEL	1	BXD02208IPC	0.75 to 1.00	TRDR08IP
	3	140-3DF	●	51	119					1			
	5	140-5DF	●	80	149					1			
	8	140-8DF	●	123	194					1			
14.5 < D ≤ 15.5	1.5	SMDH 150-1.5DF	●	31	100	50	25	20	MTL/ MSL MEL	1	BXD02208IPC	0.75 to 1.00	TRDR08IP
	3	150-3DF	●	54	129					1			
	5	150-5DF	●	85	159					1			
	8	150-8DF	●	131	204					1			
15.5 < D ≤ 16.5	1.5	SMDH 160-1.5DF	●	32	103	50	25	20	MTL/ MSL MEL	1	BXD02509IPC	0.93 to 1.24	TRDR10IP
	3	160-3DF	●	57	134					1			
	5	160-5DF	●	90	169					1			
	8	160-8DF	●	140	214					1			
16.5 < D ≤ 17.5	1.5	SMDH 170-1.5DF	●	34	104	50	25	20	MTL/ MSL MEL	1	BXD02509IPC	0.93 to 1.24	TRDR10IP
	3	170-3DF	●	60	140					1			
	5	170-5DF	●	95	175					1			
	8	170-8DF	●	148	225					1			
17.5 < D ≤ 18.5	1.5	SMDH 180-1.5DF	●	36	107	50	25	20	MTL/ MSL MEL	1	BXD02509IPC	0.93 to 1.24	TRDR10IP
	3	180-3DF	●	63	145					1			
	5	180-5DF	●	100	180					1			
	8	180-8DF	●	156	230					1			
18.5 < D ≤ 19.5	1.5	SMDH 190-1.5DF	●	37	115	56	30	25	MTL/ MSL MEL	1	BXD03011IPC	1.83 to 2.44	TRDR15IP
	3	190-3DF	●	67	160					1			
	5	190-5DF	●	106	195					1			
	8	190-8DF	●	164	255					1			
19.5 < D ≤ 20.5	1.5	SMDH 200-1.5DF	●	39	118	56	30	25	MTL/ MSL MEL	1	BXD03011IPC	1.83 to 2.44	TRDR15IP
	3	200-3DF	●	70	160					1			
	5	200-5DF	●	111	200					1			
	8	200-8DF	●	172	265					1			
20.5 < D ≤ 21.5	1.5	SMDH 210-1.5DF	●	41	119	56	30	25	MTL/ MSL MEL	1	BXD03011IPC	1.83 to 2.44	TRDR15IP
	3	210-3DF	●	73	160					1			
	5	210-5DF	●	116	200					1			
	8	210-8DF	●	180	270					1			
21.5 < D ≤ 22.8	1.5	SMDH 220-1.5DF	●	43	121	56	30	25	MTL/ MSL MEL	1	BXD03512IPC	2.79 to 3.72	TRDR15IP
	3	220-3DF	●	77	165					1			
	5	220-5DF	●	123	205					1			
	8	220-8DF	●	191	275					1			
22.8 < D ≤ 23.8	1.5	SMDH 230-1.5DF	●	45	122	56	30	25	MTL/ MSL MEL	1	BXD03512IPC	2.79 to 3.72	TRDR15IP
	3	230-3DF	●	80	165					1			
	5	230-5DF	●	128	215					1			
	8	230-8DF	●	199	285					1			
23.8 < D ≤ 24.8	1.5	SMDH 240-1.5DF	●	46	129	60	37	32	MTL/ MSL MEL	1	BXD03512IPC	2.79 to 3.72	TRDR15IP
	3	240-3DF	●	83	175					1			
	5	240-5DF	●	133	225					1			
	8	240-8DF	●	207	300					1			

Recommended Cutting Conditions ☞ J97 MTL Type Head ☞ J98, J99 MSL Type Head ☞ J100, J101 MEL Type Head ☞ J102, J103

* The SMDH○○○S Holder Cat. No. has been changed to SMDH○○○-1.5DF. The specifications have not changed.
* Because the calculation method has been changed, the dimensions above are different from those listed in the 19-20 General Catalogue, but the specifications have not changed.

(N·m) Recommended Tightening Torque (N·m) ● mark: Standard Stock (new product/expanded item)

SMD Type (Internal Coolant Supply) Side Lock Flat / Flange

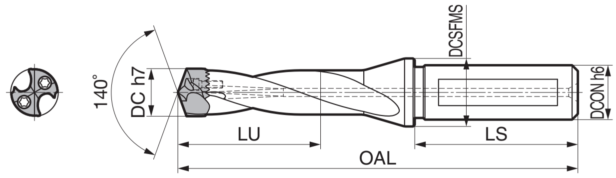
Expansion | DEX Coat | Indexable head MTL | Indexable head MSL | Indexable head MEL | Coolant Hole | Indexable | 1.5D | 3D | 5D | 8D

*Refer to N38 for the tolerance of h6 and h7

● Set Figure

MTL MSL MEL

Fig 1



Holder ø24.8 to 30.8mm With MTL Type / MSL Type / MEL Type set

Parts

Dimensions (mm)

Diameter DC	Hole Depth (L/D)	Cat. No.	Stock	Effective Length LU	Overall Length OAL	Shank LS	Flange Diameter DCSFMS	Shank Dia. DCON	Indexable Head	Fig	Cap Screw	N·m	Wrench
24.8 < D ≤ 25.8	1.5	**SMDH 250-1.5DF**	●	**48**	**129**	60	37	32	MTL/ MSL MEL	1	BXD04014IPC	4.14 to 5.52	TRDR20IP
	3	**250-3DF**	●	**87**	**175**					1			
	5	**250-5DF**	●	**138**	**230**					1			
	8	**250-8DF**	●	**216**	**305**					1			
25.8 < D ≤ 26.8	1.5	**SMDH 260-1.5DF**	●	**50**	**132**	60	37	32	MTL/ MSL MEL	1	BXD04014IPC	4.14 to 5.52	TRDR20IP
	3	**260-3DF**	●	**90**	**180**					1			
	5	**260-5DF**	●	**143**	**235**					1			
	8	**260-8DF**	●	**224**	**315**					1			
26.8 < D ≤ 27.8	1.5	**SMDH 270-1.5DF**	●	**51**	**133**	60	37	32	MTL/ MSL MEL	1	BXD04014IPC	4.14 to 5.52	TRDR20IP
	3	**270-3DF**	●	**93**	**180**					1			
	5	**270-5DF**	●	**149**	**240**					1			
	8	**270-8DF**	●	**232**	**325**					1			
27.8 < D ≤ 28.8	1.5	**SMDH 280-1.5DF**	●	**53**	**134**	60	37	32	MTL/ MSL MEL	1	BXD04515IPC	4.98 to 6.64	TRDR25IP
	3	**280-3DF**	●	**96**	**185**					1			
	5	**280-5DF**	●	**154**	**245**					1			
	8	**280-8DF**	●	**240**	**330**					1			
28.8 < D ≤ 29.8	1.5	**SMDH 290-1.5DF**	●	**55**	**136**	60	37	32	MTL/ MSL MEL	1	BXD04515IPC	4.98 to 6.64	TRDR25IP
	3	**290-3DF**	●	**99**	**190**					1			
	5	**290-5DF**	●	**159**	**250**					1			
	8	**290-8DF**	●	**248**	**340**					1			
29.8 < D ≤ 30.8	1.5	**SMDH 300-1.5DF**	●	**56**	**139**	60	37	32	MTL/ MSL MEL	1	BXD04515IPC	4.98 to 6.64	TRDR25IP
	3	**300-3DF**	●	**103**	**190**					1			
	5	**300-5DF**	●	**164**	**260**					1			
	8	**300-8DF**	●	**257**	**350**					1			

Recommended Cutting Conditions ☞ J97 | MTL Type Head ☞ J99 | MSL Type Head ☞ J101 | MEL Type Head ☞ J103

* The SMDH○○○S Holder Cat. No. has been changed to SMDH○○○-1.5DF. The specifications have not changed.
* Because the calculation method has been changed, the dimensions above are different from those listed in the 19-20 General Catalogue, but the specifications have not changed.

N·m Recommended Tightening Torque (N·m) ● mark: Standard Stock (new product/expanded item)

SMD Type (Internal Coolant Supply) No Side Lock Flat / With Flange

MTL: Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Cast Iron | Ductile Cast Iron

MSL: Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Stainless Steel | Ti Alloy | Heat-resistant Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

MEL: Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat-resistant Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

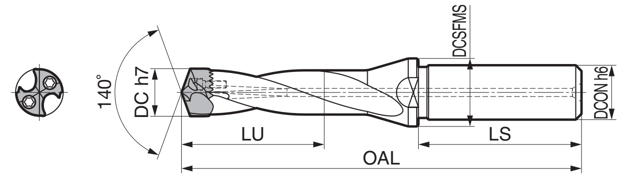
Expansion | DEX Coat | Indexable head MTL | Indexable head MSL | Indexable head MEL | Coolant Hole | Indexable | 1.5D | 3D | 5D | 8D | 12D

*Refer to N38 for the tolerance of h6 and h7

● Set Figure

Indexable head MTL | Indexable head MSL | Indexable head MEL

Fig 1



Drilling
J
Solid
Indexable Head Type
Indexable Insert Type
Reamers
Brazed
Others

Holder ø12.0 to 21.5mm With MTL Type / MSL Type / MEL Type set

Parts — Dimensions (mm)

Diameter DC	Hole Depth (L/D)	Cat. No.	Stock	Effective Length LU	Overall Length OAL	Shank LS	Flange Diameter DCSFMS	Shank Dia. DCON	Indexable Head	Fig	Cap Screw	Cap Screw (N·m)	Wrench
12.0 ≤ D < 12.5	1.5	SMDH 120-1.5D	●	23	91	48	20	16	MTL/MSL MEL	1	BXD02208IPC	0.75 to 1.00	TRDR08IP
	3	120-3D	●	42	107					1			
	5	120-5D	●	67	132					1			
	8	120-8D	●	98	164					1			
	12	120-12D	●	146	213					1			
12.5 ≤ D < 13.0	1.5	SMDH 125-1.5D	●	24	91	48	20	16	MTL/MSL MEL	1	BXD02208IPC	0.75 to 1.00	TRDR08IP
	3	125-3D	●	44	107					1			
	5	125-5D	●	69	132					1			
	8	125-8D	●	102	170					1			
	12	125-12D	●	152	219					1			
13.0 ≤ D < 13.5	1.5	SMDH 130-1.5D	●	25	92	48	20	16	MTL/MSL MEL	1	BXD02208IPC	0.75 to 1.00	TRDR08IP
	3	130-3D	●	45	112					1			
	5	130-5D	●	72	142					1			
	8	130-8D	●	106	178					1			
	12	130-12D	●	158	226					1			
13.5 ≤ D ≤ 14.5	1.5	SMDH 140-1.5D	●	29	96	48	20	16	MTL/MSL MEL	1	BXD02208IPC	0.75 to 1.00	TRDR08IP
	3	140-3D	●	51	119					1			
	5	140-5D	●	80	149					1			
	8	140-8D	●	123	194					1			
	12	140-12D	●	170	239					1			
14.5 < D ≤ 15.5	1.5	SMDH 150-1.5D	●	31	100	50	25	20	MTL/MSL MEL	1	BXD02208IPC	0.75 to 1.00	TRDR08IP
	3	150-3D	●	54	129					1			
	5	150-5D	●	85	159					1			
	8	150-8D	●	131	204					1			
	12	150-12D	●	182	253					1			
15.5 < D ≤ 16.5	1.5	SMDH 160-1.5D	●	32	103	50	25	20	MTL/MSL MEL	1	BXD02509IPC	0.93 to 1.24	TRDR10IP
	3	160-3D	●	57	134					1			
	5	160-5D	●	90	169					1			
	8	160-8D	●	140	214					1			
	12	160-12D	●	195	266					1			
16.5 < D ≤ 17.5	1.5	SMDH 170-1.5D	●	34	104	50	25	20	MTL/MSL MEL	1	BXD02509IPC	0.93 to 1.24	TRDR10IP
	3	170-3D	●	60	140					1			
	5	170-5D	●	95	175					1			
	8	170-8D	●	148	225					1			
	12	170-12D	●	207	278					1			
17.5 < D ≤ 18.5	1.5	SMDH 180-1.5D	●	36	107	50	25	20	MTL/MSL MEL	1	BXD02509IPC	0.93 to 1.24	TRDR10IP
	3	180-3D	●	63	145					1			
	5	180-5D	●	100	180					1			
	8	180-8D	●	156	230					1			
	12	180-12D	●	219	290					1			
18.5 < D ≤ 19.5	1.5	SMDH 190-1.5D	●	37	115	56	30	25	MTL/MSL MEL	1	BXD03011IPC	1.83 to 2.44	TRDR15IP
	3	190-3D	●	67	160					1			
	5	190-5D	●	106	195					1			
	8	190-8D	●	164	255					1			
	12	190-12D	●	231	309					1			
19.5 < D ≤ 20.5	1.5	SMDH 200-1.5D	●	39	118	56	30	25	MTL/MSL MEL	1	BXD03011IPC	1.83 to 2.44	TRDR15IP
	3	200-3D	●	70	160					1			
	5	200-5D	●	111	200					1			
	8	200-8D	●	172	265					1			
	12	200-12D	●	243	321					1			
20.5 < D ≤ 21.5	1.5	SMDH 210-1.5D	●	41	119	56	30	25	MTL/MSL MEL	1	BXD03011IPC	1.83 to 2.44	TRDR15IP
	3	210-3D	●	73	160					1			
	5	210-5D	●	116	200					1			
	8	210-8D	●	180	270					1			
	12	210-12D	●	255	334					1			

Recommended Cutting Conditions ☞ J97 | MTL Type Head ☞ J98 | MSL Type Head ☞ J100 | MEL Type Head ☞ J102

* Because the calculation method has been changed, the dimensions above are different from those listed in the 19-20 General Catalogue, but the specifications have not changed.

N·m Recommended Tightening Torque (N·m) ● mark: Standard Stock (new product/expanded item)

SMD Type (Internal Coolant Supply) No Side Lock Flat / With Flange

MTL: Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Cast Iron | Ductile Cast Iron

MSL: Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Stainless Steel | Ti Alloy | Heat-resistant Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

MEL: Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat-resistant Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

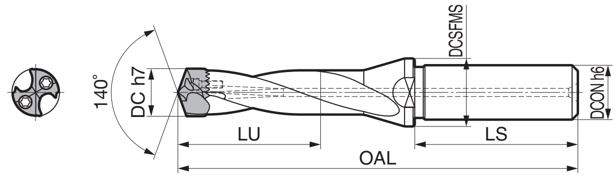
Expansion | DEX Coat | Indexable head MTL | Indexable head MSL | Indexable head MEL | Coolant Hole | Indexable | 1.5D | 3D | 5D | 8D | 12D

*Refer to N38 for the tolerance of h6 and h7

● Set Figure

MTL MSL MEL

Fig 1



Holder ø21.5 to 30.8mm With MTL Type / MSL Type / MEL Type set

Parts — Dimensions (mm)

Diameter DC	Hole Depth (L/D)	Cat. No.	Stock	Effective Length LU	Overall Length OAL	Shank LS	Flange Diameter DCSFMS	Shank Dia. DCON	Indexable Head	Fig	Cap Screw	N·m	Wrench
21.5 < D ≤ 22.8	1.5	SMDH 220-1.5D	●	43	121	56	30	25	MTL/MSL MEL	1	BXD03512IPC	2.79 to 3.72	TRDR15IP
	3	220-3D	●	77	165					1			
	5	220-5D	●	123	205					1			
	8	220-8D	●	191	275					1			
	12	220-12D	●	268	347					1			
22.8 < D ≤ 23.8	1.5	SMDH 230-1.5D	●	45	122	56	30	25	MTL/MSL MEL	1	BXD03512IPC	2.79 to 3.72	TRDR15IP
	3	230-3D	●	80	165					1			
	5	230-5D	●	128	215					1			
	8	230-8D	●	199	285					1			
	12	230-12D	●	280	359					1			
23.8 < D ≤ 24.8	1.5	SMDH 240-1.5D	●	46	129	60	37	32	MTL/MSL MEL	1	BXD03512IPC	2.79 to 3.72	TRDR15IP
	3	240-3D	●	83	175					1			
	5	240-5D	●	133	225					1			
	8	240-8D	●	207	300					1			
	12	240-12D	●	292	376					1			
24.8 < D ≤ 25.8	1.5	SMDH 250-1.5D	●	48	129	60	37	32	MTL/MSL MEL	1	BXD04014IPC	4.14 to 5.52	TRDR20IP
	3	250-3D	●	87	175					1			
	5	250-5D	●	138	230					1			
	8	250-8D	●	216	305					1			
	12	250-12D	●	304	388					1			
25.8 < D ≤ 26.8	1.5	SMDH 260-1.5D	●	50	132	60	37	32	MTL/MSL MEL	1	BXD04014IPC	4.14 to 5.52	TRDR20IP
	3	260-3D	●	90	180					1			
	5	260-5D	●	143	235					1			
	8	260-8D	●	224	315					1			
	12	260-12D	●	316	401					1			
26.8 < D ≤ 27.8	1.5	SMDH 270-1.5D	●	51	133	60	37	32	MTL/MSL MEL	1	BXD04014IPC	4.14 to 5.52	TRDR20IP
	3	270-3D	●	93	180					1			
	5	270-5D	●	149	240					1			
	8	270-8D	●	232	325					1			
	12	270-12D	●	329	413					1			
27.8 < D ≤ 28.8	1.5	SMDH 280-1.5D	●	53	134	60	37	32	MTL/MSL MEL	1	BXD04515IPC	4.98 to 6.64	TRDR25IP
	3	280-3D	●	96	185					1			
	5	280-5D	●	154	245					1			
	8	280-8D	●	240	330					1			
	12	280-12D	●	341	426					1			
28.8 < D ≤ 29.8	1.5	SMDH 290-1.5D	●	55	136	60	37	32	MTL/MSL MEL	1	BXD04515IPC	4.98 to 6.64	TRDR25IP
	3	290-3D	●	99	190					1			
	5	290-5D	●	159	250					1			
	8	290-8D	●	248	340					1			
	12	290-12D	●	353	438					1			
29.8 < D ≤ 30.8	1.5	SMDH 300-1.5D	●	56	139	60	37	32	MTL/MSL MEL	1	BXD04515IPC	4.98 to 6.64	TRDR25IP
	3	300-3D	●	103	190					1			
	5	300-5D	●	164	260					1			
	8	300-8D	●	257	350					1			
	12	300-12D	●	365	451					1			

Recommended Cutting Conditions J97 | MTL Type Head J98, J99 | MSL Type Head J100, J101 | MEL Type Head J102, 1J03

* Because the calculation method has been changed, the dimensions above are different from those listed in the 19-20 General Catalogue, but the specifications have not changed.

MFS Type Ideal for drilling and burr control on non-flat surfaces

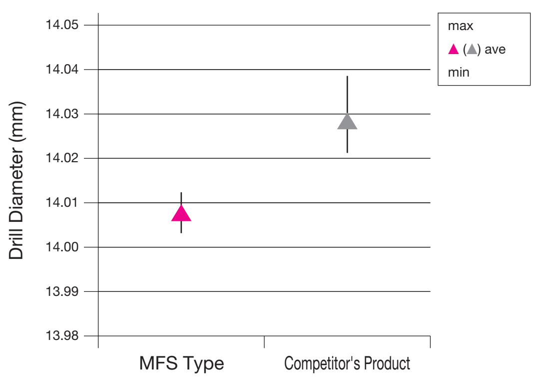
● Suited to various types of drilling thanks to a point angle of 180°

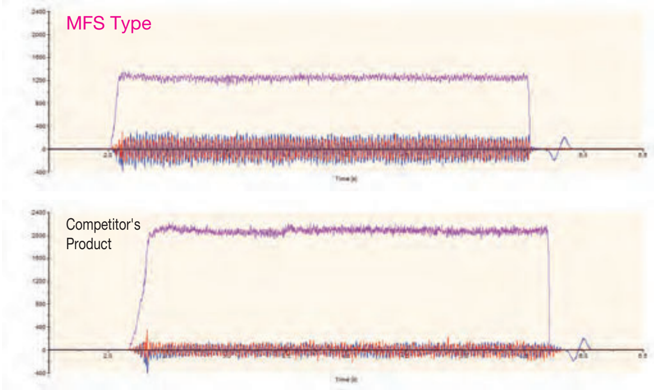
Can be used for high-efficiency spot facing, drilling on non-horizontal surfaces such as inclined and cylindrical surfaces, and interrupted drilling. Also reduces burrs at the hole exit.

● Improves machining stability

Achieves high rigidity by employing RS THINNING, which ensures thick web.

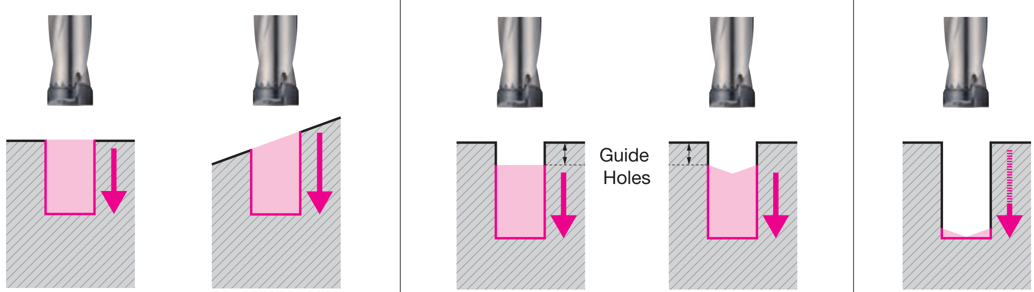
■ Performance





Tool : SMDH 140-1.5DF + SMDT 1400MFS
Work Material : S50C
Cutting Conditions : v_c=100mm/min, f =0.15mm/rev, Hole depth 21mm Wet

■ Precautions when Using MFS Type Heads



	No guide hole (direct drilling)		With guide hole	Flat Finishing of Hole Bottom
Application	Flat surface	Non-flat surface		
1.5D holder	○		○ (guide hole not needed)	○
3D to 12D holders	×		×	○

■ Recommended Cutting Conditions (MFS Type)

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

Work Material		Mild Steel (up to 250HB)	General Steel (250 to 320HB)	Hardened Steel (45HRC)	Stainless Steel (up to 200HB)	Gray Cast Iron	Ductile Cast Iron	Aluminum Alloy*
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.
ø16.0	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
ø20.0	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
ø30.8	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 in 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% or lower when the 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 cutting or helical milling.

(*) Inquire if you require drill heads dedicated for aluminum alloy.

SMD Type (Internal Coolant Supply)

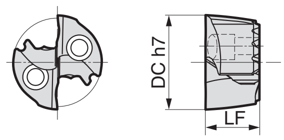
MFS | Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

DEX Coat | Indexable head MFS | Coolant Hole | Indexable | 1.5D | 3D | 5D | 8D | 12D

*Refer to N38 for the tolerance of h7

Indexable Head

Fig 1



Indexable Head MFS Type Diameter ø12.0 to 21.5 mm

Dimensions (mm)

Diameter DC	Stock	Cat. No.	Shoulder Length LF	Applicable Holders	Fig
12.0	●	SMDT 1200 MFS	7.1	SMDH120□	1
12.5	●	1250 MFS	7.2	SMDH125□	1
13.0	●	1300 MFS	7.5	SMDH130□	1
13.5	●	SMDT 1350 MFS	7.9	SMDH140□	1
14.0	●	1400 MFS			1
14.5	●	1450 MFS			1
15.0	●	SMDT 1500 MFS	8.3	SMDH150□	1
15.5	●	1550 MFS			1
16.0	●	SMDT 1600 MFS	8.8	SMDH160□	1
16.5	●	1650 MFS			1
17.0	●	SMDT 1700 MFS	9.3	SMDH170□	1
17.5	●	1750 MFS			1
18.0	●	SMDT 1800 MFS	9.8	SMDH180□	1
18.5	●	1850 MFS			1
19.0	●	SMDT 1900 MFS	10.2	SMDH190□	1
19.5	●	1950 MFS			1
20.0	●	SMDT 2000 MFS	10.7	SMDH200□	1
20.5	●	2050 MFS			1
21.0	●	SMDT 2100 MFS	11.2	SMDH210□	1
21.5	●	2150 MFS			1

Grade: ACX70

Recommended Cutting Conditions ☞J110 | Applicable Holders ☞J112, J114, J116

Indexable Head MFS Type Diameter ø22.0 to 30.0 mm

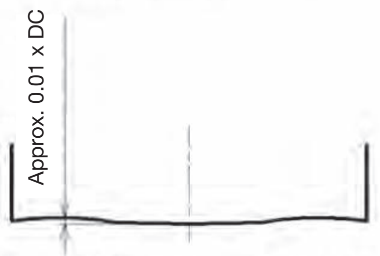
Dimensions (mm)

Diameter DC	Stock	Cat. No.	Shoulder Length LF	Applicable Holders	Fig
22.0	●	SMDT 2200 MFS	11.2	SMDH220□	1
22.5	●	2250 MFS			1
23.0	●	SMDT 2300 MFS	11.2	SMDH230□	1
23.5	●	2350 MFS			1
24.0	●	SMDT 2400 MFS	11.3	SMDH240□	1
24.5	●	2450 MFS			1
25.0	●	SMDT 2500 MFS	11.7	SMDH250□	1
25.5	●	2550 MFS			1
26.0	●	SMDT 2600 MFS	12.2	SMDH260□	1
26.5	●	2650 MFS			1
27.0	●	SMDT 2700 MFS	12.7	SMDH270□	1
27.5	●	2750 MFS			1
28.0	●	SMDT 2800 MFS	13.2	SMDH280□	1
28.5	●	2850 MFS			1
29.0	●	SMDT 2900 MFS	13.6	SMDH290□	1
29.5	●	2950 MFS			1
30.0	●	SMDT 3000 MFS	14.1	SMDH300□	1

Grade: ACX70

Recommended Cutting Conditions ☞J110 | Applicable Holders ☞J112 to J115, J117

Shape of Hole Base with MFS Type



The machined hole bottom is not completely flat.
Contact us for more details.

SMD Type (Internal Coolant Supply) Side Lock Flat / No Flange

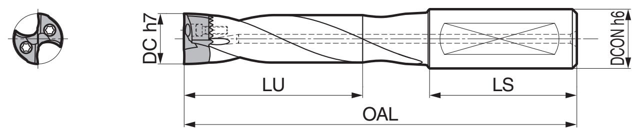
MFS | Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

DEX Coat | Indexable head MFS | Coolant Hole | Indexable | 3D | 5D | 8D

*Refer to N38 for the tolerance of h6 and h7

● Set Figure

Fig 1



Holder ø12.0 to 29.8mm With MFS Type set

Dimensions (mm)

Diameter DC	Hole Depth (L/D)	Cat. No.	Stock	Effective Length LU	Overall Length OAL	Shank LS	Shank Dia. DCON	Indexable Head	Fig	Parts: Cap Screw	Parts: Cap Screw (N·m)	Parts: Wrench
12.0 ≤ D < 12.5	3	SMDH 120M	●	40	105	48	16	MFS	1	BXD02208IP	0.75 to 1.00	TRDR08IP
	5	120L	●	65	130				1			
12.5 ≤ D < 13.0	3	SMDH 125M	●	41	105	48	16	MFS	1	BXD02208IP	0.75 to 1.00	TRDR08IP
	5	125L	●	67	130				1			
13.0 ≤ D < 13.5	3	SMDH 130M	●	43	110	48	16	MFS	1	BXD02208IP	0.75 to 1.00	TRDR08IP
	5	130L	●	70	140				1			
13.5 ≤ D ≤ 14.5	3	SMDH 140M	●	48	117	48	16	MFS	1	BXD02208IP	0.75 to 1.00	TRDR08IP
	5	140L	●	77	147				1			
	8	140D	●	121	192				1			
14.5 < D ≤ 15.5	3	SMDH 150M	●	51	127	50	20	MFS	1	BXD02208IP	0.75 to 1.00	TRDR08IP
	5	150L	●	82	157				1			
	8	150D	●	129	202				1			
15.5 < D ≤ 16.5	3	SMDH 160M	●	54	132	50	20	MFS	1	BXD02509IP	0.93 to 1.24	TRDR10IP
	5	160L	●	87	167				1			
	8	160D	●	137	212				1			
16.5 < D ≤ 17.5	3	SMDH 170M	●	57	137	50	20	MFS	1	BXD02509IP	0.93 to 1.24	TRDR10IP
	5	170L	●	92	172				1			
	8	170D	●	145	222				1			
17.5 < D ≤ 18.5	3	SMDH 180M	●	60	142	50	20	MFS	1	BXD02509IP	0.93 to 1.24	TRDR10IP
	5	180L	●	97	177				1			
	8	180D	●	153	227				1			
18.5 < D ≤ 19.5	3	SMDH 190M	●	63	157	56	25	MFS	1	BXD03011IP	1.83 to 2.44	TRDR15IP
	5	190L	●	102	192				1			
	8	190D	●	161	252				1			
19.5 < D ≤ 20.5	3	SMDH 200M	●	66	157	56	25	MFS	1	BXD03011IP	1.83 to 2.44	TRDR15IP
	5	200L	●	107	197				1			
	8	200D	●	169	262				1			
20.5 < D ≤ 21.5	3	SMDH 210M	●	69	157	56	25	MFS	1	BXD03011IP	1.83 to 2.44	TRDR15IP
	5	210L	●	112	197				1			
	8	210D	●	177	267				1			
21.5 < D ≤ 22.8	3	SMDH 220M	●	73	161	56	25	MFS	1	BXD03512IP	2.79 to 3.72	TRDR15IP
	5	220L	●	119	201				1			
	8	220D	●	187	271				1			
22.8 < D ≤ 23.8	3	SMDH 230M	●	76	161	56	25	MFS	1	BXD03512IP	2.79 to 3.72	TRDR15IP
	5	230L	●	124	211				1			
	8	230D	●	195	281				1			
23.8 < D ≤ 24.8	3	SMDH 240M	●	79	170	60	32	MFS	1	BXD03512IP	2.79 to 3.72	TRDR15IP
	5	240L	●	129	220				1			
	8	240D	●	203	295				1			
24.8 < D ≤ 25.8	3	SMDH 250M	●	82	170	60	32	MFS	1	BXD04014IP	4.14 to 5.52	TRDR20IP
	5	250L	●	134	225				1			
	8	250D	●	211	300				1			
25.8 < D ≤ 26.8	3	SMDH 260M	●	85	175	60	32	MFS	1	BXD04014IP	4.14 to 5.52	TRDR20IP
	5	260L	●	139	230				1			
	8	260D	●	219	310				1			
26.8 < D ≤ 27.8	3	SMDH 270M	●	88	175	60	32	MFS	1	BXD04014IP	4.14 to 5.52	TRDR20IP
	5	270L	●	144	235				1			
	8	270D	●	227	320				1			
27.8 < D ≤ 28.8	3	SMDH 280M	●	91	180	60	32	MFS	1	BXD04515IP	4.98 to 6.64	TRDR25IP
	5	280L	●	149	240				1			
	8	280D	●	235	325				1			
28.8 < D ≤ 29.8	3	SMDH 290M	●	94	185	60	32	MFS	1	BXD04515IP	4.98 to 6.64	TRDR25IP
	5	290L	●	154	245				1			
	8	290D	●	243	335				1			

Recommended Cutting Conditions ☞J110 MFS Type Head ☞J111

* Because the calculation method has been changed, the dimensions above are different from those listed in the 19-20 General Catalogue, but the specifications have not changed.

(N·m) Recommended Tightening Torque (N·m)

SMD Type (Internal Coolant Supply) Side Lock Flat / No Flange

MFS | Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

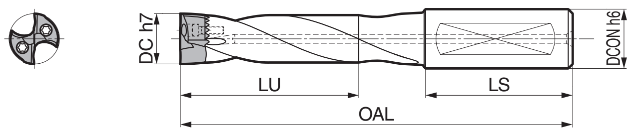
DEX Coat | Indexable head MFS | Coolant Hole | Indexable | 3D | 5D | 8D

*Refer to N38 for the tolerance of h6 and h7

● Set Figure

MFS

Fig 1



Holder ø29.8 to 30.8mm With MFS Type set

Parts

Dimensions (mm)

Diameter DC	Hole Depth (L/D)	Cat. No.	Stock	Effective Length LU	Overall Length OAL	Shank LS	Shank Dia. DCON	Indexable Head	Fig	Cap Screw	N·m	Wrench
29.8 < D ≤ 30.8	3	**SMDH 300M**	●	**97**	**185**	60	32	MFS	1	BXD04515IP	4.98 to 6.64	TRDR25IP
	5	**300L**	●	**159**	**255**				1			
	8	**300D**	●	**251**	**345**				1			

Recommended Cutting Conditions J110 | MFS Type Head J111

* Because the calculation method has been changed, the dimensions above are different from those listed in the 19-20 General Catalogue, but the specifications have not changed.

SMD Type (Internal Coolant Supply) Side Lock Flat / Flange MFS

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

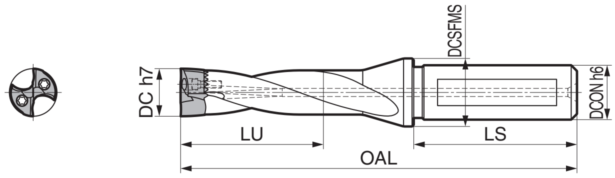
Expansion | DEX Coat | Indexable head MFS | Coolant Hole | Indexable | 1.5D | 3D | 5D | 8D

*Refer to N38 for the tolerance of h6 and h7

● Set Figure

MFS

Fig 1



Holder ø12.0 to 24.8mm With MFS Type set

Parts

Dimensions (mm)

Diameter DC	Hole Depth (L/D)	Cat. No.	Stock	Effective Length LU	Overall Length OAL	Shank LS	Flange Diameter DCSFMS	Shank Dia. DCON	Indexable Head	Fig	Cap Screw	Cap Screw (N·m)	Wrench
12.0 ≤ D < 12.5	1.5	SMDH 120-1.5DF	●	21	89	48	20	16	MFS	1	BXD02208IPC	0.75 to 1.00	TRDR08IP
	3	120-3DF	🔴	40	105					1			
	5	120-5DF	🔴	65	130					1			
	8	120-8DF	🔴	96	162					1			
12.5 ≤ D < 13.0	1.5	SMDH 125-1.5DF	●	22	89	48	20	16	MFS	1	BXD02208IPC	0.75 to 1.00	TRDR08IP
	3	125-3DF	🔴	41	105					1			
	5	125-5DF	🔴	67	130					1			
	8	125-8DF	🔴	100	168					1			
13.0 ≤ D < 13.5	1.5	SMDH 130-1.5DF	●	23	90	48	20	16	MFS	1	BXD02208IPC	0.75 to 1.00	TRDR08IP
	3	130-3DF	🔴	43	110					1			
	5	130-5DF	🔴	70	140					1			
	8	130-8DF	🔴	104	176					1			
13.5 ≤ D ≤ 14.5	1.5	SMDH 140-1.5DF	●	26	94	48	20	16	MFS	1	BXD02208IPC	0.75 to 1.00	TRDR08IP
	3	140-3DF	🔴	48	117					1			
	5	140-5DF	🔴	77	147					1			
	8	140-8DF	🔴	121	192					1			
14.5 < D ≤ 15.5	1.5	SMDH 150-1.5DF	●	28	97	50	25	20	MFS	1	BXD02208IPC	0.75 to 1.00	TRDR08IP
	3	150-3DF	🔴	51	127					1			
	5	150-5DF	🔴	82	157					1			
	8	150-8DF	🔴	129	202					1			
15.5 < D ≤ 16.5	1.5	SMDH 160-1.5DF	●	29	100	50	25	20	MFS	1	BXD02509IPC	0.93 to 1.24	TRDR10IP
	3	160-3DF	🔴	54	132					1			
	5	160-5DF	🔴	87	167					1			
	8	160-8DF	🔴	137	212					1			
16.5 < D ≤ 17.5	1.5	SMDH 170-1.5DF	●	31	101	50	25	20	MFS	1	BXD02509IPC	0.93 to 1.24	TRDR10IP
	3	170-3DF	🔴	57	137					1			
	5	170-5DF	🔴	92	172					1			
	8	170-8DF	🔴	145	222					1			
17.5 < D ≤ 18.5	1.5	SMDH 180-1.5DF	●	32	104	50	25	20	MFS	1	BXD02509IPC	0.93 to 1.24	TRDR10IP
	3	180-3DF	🔴	60	142					1			
	5	180-5DF	🔴	97	177					1			
	8	180-8DF	🔴	153	227					1			
18.5 < D ≤ 19.5	1.5	SMDH 190-1.5DF	●	34	111	56	30	25	MFS	1	BXD03011IPC	1.83 to 2.44	TRDR15IP
	3	190-3DF	🔴	63	157					1			
	5	190-5DF	🔴	102	192					1			
	8	190-8DF	🔴	161	252					1			
19.5 < D ≤ 20.5	1.5	SMDH 200-1.5DF	●	35	114	56	30	25	MFS	1	BXD03011IPC	1.83 to 2.44	TRDR15IP
	3	200-3DF	🔴	66	157					1			
	5	200-5DF	🔴	107	197					1			
	8	200-8DF	🔴	169	262					1			
20.5 < D ≤ 21.5	1.5	SMDH 210-1.5DF	●	37	116	56	30	25	MFS	1	BXD03011IPC	1.83 to 2.44	TRDR15IP
	3	210-3DF	🔴	69	157					1			
	5	210-5DF	🔴	112	197					1			
	8	210-8DF	🔴	177	267					1			
21.5 < D ≤ 22.8	1.5	SMDH 220-1.5DF	●	39	117	56	30	25	MFS	1	BXD03512IPC	2.79 to 3.72	TRDR15IP
	3	220-3DF	🔴	73	161					1			
	5	220-5DF	🔴	119	201					1			
	8	220-8DF	🔴	187	271					1			
22.8 < D ≤ 23.8	1.5	SMDH 230-1.5DF	●	40	118	56	30	25	MFS	1	BXD03512IPC	2.79 to 3.72	TRDR15IP
	3	230-3DF	🔴	76	161					1			
	5	230-5DF	🔴	124	211					1			
	8	230-8DF	🔴	195	281					1			
23.8 < D ≤ 24.8	1.5	SMDH 240-1.5DF	●	42	124	60	37	32	MFS	1	BXD03512IPC	2.79 to 3.72	TRDR15IP
	3	240-3DF	🔴	79	170					1			
	5	240-5DF	🔴	129	220					1			
	8	240-8DF	🔴	203	295					1			

Recommended Cutting Conditions ☞ J110 | MFS Type Head ☞ J111

* The SMDH○○○S Holder Cat. No. has been changed to SMDH○○○-1.5DF. The specifications have not changed.
* Because the calculation method has been changed, the dimensions above are different from those listed in the 19-20 General Catalogue, but the specifications have not changed.

(N·m) Recommended Tightening Torque (N·m) 🔴 mark: Standard Stock (new product/expanded item)

SMD Type (Internal Coolant Supply) Side Lock Flat / Flange

MFS | Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

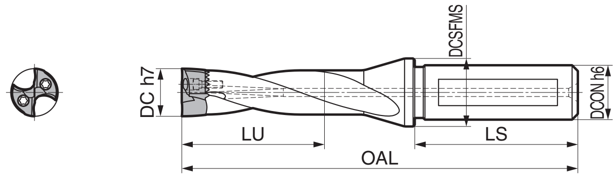
Expansion | DEX Coat | Indexable head MFS | Coolant Hole | Indexable | 1.5D | 3D | 5D | 8D

*Refer to N38 for the tolerance of h6 and h7

● Set Figure

Indexable head MFS

Fig 1



Holder ø24.8 to 30.8mm With MFS Type set

Parts

Dimensions (mm)

Diameter DC	Hole Depth (L/D)	Cat. No.	Stock	Effective Length LU	Overall Length OAL	Shank LS	Flange Diameter DCSFMS	Shank Dia. DCON	Indexable Head	Fig	Cap Screw	Cap Screw N·m	Wrench
24.8 < D ≤ 25.8	1.5	SMDH 250-1.5DF	●	43	125	60	37	32	MFS	1	BXD04014IPC	4.14 to 5.52	TRDR20IP
	3	250-3DF	●	82	170					1			
	5	250-5DF	●	134	225					1			
	8	250-8DF	●	211	300					1			
25.8 < D ≤ 26.8	1.5	SMDH 260-1.5DF	●	45	127	60	37	32	MFS	1	BXD04014IPC	4.14 to 5.52	TRDR20IP
	3	260-3DF	●	85	175					1			
	5	260-5DF	●	139	230					1			
	8	260-8DF	●	219	310					1			
26.8 < D ≤ 27.8	1.5	SMDH 270-1.5DF	●	46	128	60	37	32	MFS	1	BXD04014IPC	4.14 to 5.52	TRDR20IP
	3	270-3DF	●	88	175					1			
	5	270-5DF	●	144	235					1			
	8	270-8DF	●	227	320					1			
27.8 < D ≤ 28.8	1.5	SMDH 280-1.5DF	●	48	129	60	37	32	MFS	1	BXD04515IPC	4.98 to 6.64	TRDR25IP
	3	280-3DF	●	91	180					1			
	5	280-5DF	●	149	240					1			
	8	280-8DF	●	235	325					1			
28.8 < D ≤ 29.8	1.5	SMDH 290-1.5DF	●	49	131	60	37	32	MFS	1	BXD04515IPC	4.98 to 6.64	TRDR25IP
	3	290-3DF	●	94	185					1			
	5	290-5DF	●	154	245					1			
	8	290-8DF	●	243	335					1			
29.8 < D ≤ 30.8	1.5	SMDH 300-1.5DF	●	51	133	60	37	32	MFS	1	BXD04515IPC	4.98 to 6.64	TRDR25IP
	3	300-3DF	●	97	185					1			
	5	300-5DF	●	159	255					1			
	8	300-8DF	●	251	345					1			

Recommended Cutting Conditions ☞J110 | MFS Type Head ☞J111

* The SMDH○○○S Holder Cat. No. has been changed to SMDH○○○-1.5DF. The specifications have not changed.
* Because the calculation method has been changed, the dimensions above are different from those listed in the 19-20 General Catalogue, but the specifications have not changed.

SMD Type (Internal Coolant Supply) No Side Lock Flat / With Flange

MFS | Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

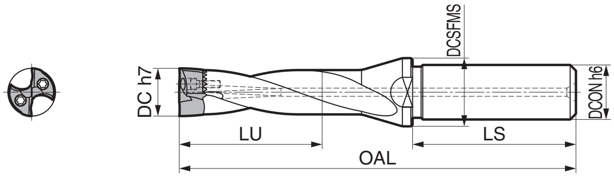
Expansion | DEX Coat | Indexable head MFS | Coolant Hole | Indexable | 1.5D | 3D | 5D | 8D | 12D

*Refer to N38 for the tolerance of h6 and h7

● Set Figure

Indexable head MFS

Fig 1



Holder ø12.0 to 21.5mm With MFS Type set

Parts

Dimensions (mm)

Diameter DC	Hole Depth (L/D)	Cat. No.	Stock	Effective Length LU	Overall Length OAL	Shank LS	Flange Diameter DCSFMS	Shank Dia. DCON	Indexable Head	Fig	Cap Screw	N·m	Wrench
12.0 ≤ D < 12.5	1.5	SMDH 120-1.5D	●	21	89	48	20	16	MFS	1	BXD02208IPC	0.75 to 1.00	TRDR08IP
	3	120-3D	●	40	105					1			
	5	120-5D	●	65	130					1			
	8	120-8D	●	96	162					1			
	12	120-12D	●	144	211					1			
12.5 ≤ D < 13.0	1.5	SMDH 125-1.5D	●	22	89	48	20	16	MFS	1	BXD02208IPC	0.75 to 1.00	TRDR08IP
	3	125-3D	●	41	105					1			
	5	125-5D	●	67	130					1			
	8	125-8D	●	100	168					1			
	12	125-12D	●	150	217					1			
13.0 ≤ D < 13.5	1.5	SMDH 130-1.5D	●	23	90	48	20	16	MFS	1	BXD02208IPC	0.75 to 1.00	TRDR08IP
	3	130-3D	●	43	110					1			
	5	130-5D	●	70	140					1			
	8	130-8D	●	104	176					1			
	12	130-12D	●	156	223					1			
13.5 ≤ D ≤ 14.5	1.5	SMDH 140-1.5D	●	26	94	48	20	16	MFS	1	BXD02208IPC	0.75 to 1.00	TRDR08IP
	3	140-3D	●	48	117					1			
	5	140-5D	●	77	147					1			
	8	140-8D	●	121	192					1			
	12	140-12D	●	168	236					1			
14.5 < D ≤ 15.5	1.5	SMDH 150-1.5D	●	28	97	50	25	20	MFS	1	BXD02208IPC	0.75 to 1.00	TRDR08IP
	3	150-3D	●	51	127					1			
	5	150-5D	●	82	157					1			
	8	150-8D	●	129	202					1			
	12	150-12D	●	180	250					1			
15.5 < D ≤ 16.5	1.5	SMDH 160-1.5D	●	29	100	50	25	20	MFS	1	BXD02509IPC	0.93 to 1.24	TRDR10IP
	3	160-3D	●	54	132					1			
	5	160-5D	●	87	167					1			
	8	160-8D	●	137	212					1			
	12	160-12D	●	192	263					1			
16.5 < D ≤ 17.5	1.5	SMDH 170-1.5D	●	31	101	50	25	20	MFS	1	BXD02509IPC	0.93 to 1.24	TRDR10IP
	3	170-3D	●	57	137					1			
	5	170-5D	●	92	172					1			
	8	170-8D	●	145	222					1			
	12	170-12D	●	204	275					1			
17.5 < D ≤ 18.5	1.5	SMDH 180-1.5D	●	32	104	50	25	20	MFS	1	BXD02509IPC	0.93 to 1.24	TRDR10IP
	3	180-3D	●	60	142					1			
	5	180-5D	●	97	177					1			
	8	180-8D	●	153	227					1			
	12	180-12D	●	216	287					1			
18.5 < D ≤ 19.5	1.5	SMDH 190-1.5D	●	34	111	56	30	25	MFS	1	BXD03011IPC	1.83 to 2.44	TRDR15IP
	3	190-3D	●	63	157					1			
	5	190-5D	●	102	192					1			
	8	190-8D	●	161	252					1			
	12	190-12D	●	228	306					1			
19.5 < D ≤ 20.5	1.5	SMDH 200-1.5D	●	35	114	56	30	25	MFS	1	BXD03011IPC	1.83 to 2.44	TRDR15IP
	3	200-3D	●	66	157					1			
	5	200-5D	●	107	197					1			
	8	200-8D	●	169	262					1			
	12	200-12D	●	240	318					1			
20.5 < D ≤ 21.5	1.5	SMDH 210-1.5D	●	37	116	56	30	25	MFS	1	BXD03011IPC	1.83 to 2.44	TRDR15IP
	3	210-3D	●	69	157					1			
	5	210-5D	●	112	197					1			
	8	210-8D	●	177	267					1			
	12	210-12D	●	252	330					1			

Recommended Cutting Conditions ☞ J110 | MFS Type Head ☞ J111

* Because the calculation method has been changed, the dimensions above are different from those listed in the 19-20 General Catalogue, but the specifications have not changed.

N·m Recommended Tightening Torque (N·m) ● mark: Standard Stock (new product/expanded item)

SMD Type (Internal Coolant Supply) No Side Lock Flat / With Flange

MFS | Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

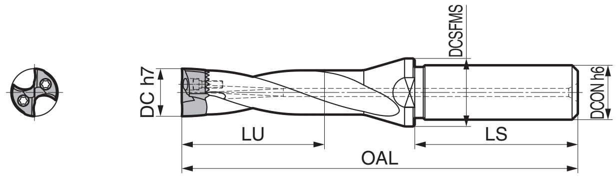
Expansion | DEX Coat | Indexable head MFS | Coolant Hole | Indexable | 1.5D | 3D | 5D | 8D | 12D

*Refer to N38 for the tolerance of h6 and h7

● Set Figure

MFS

Fig 1



Holder ø21.5 to 30.8mm With MFS Type set

Parts

Dimensions (mm)

Diameter DC	Hole Depth (L/D)	Cat. No.	Stock	Effective Length LU	Overall Length OAL	Shank LS	Flange Diameter DCSFMS	Shank Dia. DCON	Indexable Head	Fig	Cap Screw	N·m	Wrench
21.5 < D ≤ 22.8	1.5	SMDH 220-1.5D	🔴	39	117	56	30	25	MFS	1	BXD03512IPC	2.79 to 3.72	TRDR15IP
	3	220-3D	🔴	73	161					1			
	5	220-5D	🔴	119	201					1			
	8	220-8D	🔴	187	271					1			
	12	220-12D	●	264	343					1			
22.8 < D ≤ 23.8	1.5	SMDH 230-1.5D	🔴	40	118	56	30	25	MFS	1	BXD03512IPC	2.79 to 3.72	TRDR15IP
	3	230-3D	🔴	76	161					1			
	5	230-5D	🔴	124	211					1			
	8	230-8D	🔴	195	281					1			
	12	230-12D	●	276	355					1			
23.8 < D ≤ 24.8	1.5	SMDH 240-1.5D	🔴	42	124	60	37	32	MFS	1	BXD03512IPC	2.79 to 3.72	TRDR15IP
	3	240-3D	🔴	79	170					1			
	5	240-5D	🔴	129	220					1			
	8	240-8D	🔴	203	295					1			
	12	240-12D	●	288	372					1			
24.8 < D ≤ 25.8	1.5	SMDH 250-1.5D	🔴	43	125	60	37	32	MFS	1	BXD04014IPC	4.14 to 5.52	TRDR20IP
	3	250-3D	🔴	82	170					1			
	5	250-5D	🔴	134	225					1			
	8	250-8D	🔴	211	300					1			
	12	250-12D	●	300	384					1			
25.8 < D ≤ 26.8	1.5	SMDH 260-1.5D	🔴	45	127	60	37	32	MFS	1	BXD04014IPC	4.14 to 5.52	TRDR20IP
	3	260-3D	🔴	85	175					1			
	5	260-5D	🔴	139	230					1			
	8	260-8D	🔴	219	310					1			
	12	260-12D	🔴	312	396					1			
26.8 < D ≤ 27.8	1.5	SMDH 270-1.5D	🔴	46	128	60	37	32	MFS	1	BXD04014IPC	4.14 to 5.52	TRDR20IP
	3	270-3D	🔴	88	175					1			
	5	270-5D	🔴	144	235					1			
	8	270-8D	🔴	227	320					1			
	12	270-12D	🔴	324	408					1			
27.8 < D ≤ 28.8	1.5	SMDH 280-1.5D	🔴	48	129	60	37	32	MFS	1	BXD04515IPC	4.98 to 6.64	TRDR25IP
	3	280-3D	🔴	91	180					1			
	5	280-5D	🔴	149	240					1			
	8	280-8D	🔴	235	325					1			
	12	280-12D	🔴	336	421					1			
28.8 < D ≤ 29.8	1.5	SMDH 290-1.5D	🔴	49	131	60	37	32	MFS	1	BXD04515IPC	4.98 to 6.64	TRDR25IP
	3	290-3D	🔴	94	185					1			
	5	290-5D	🔴	154	245					1			
	8	290-8D	🔴	243	335					1			
	12	290-12D	🔴	348	433					1			
29.8 < D ≤ 30.8	1.5	SMDH 300-1.5D	🔴	51	133	60	37	32	MFS	1	BXD04515IPC	4.98 to 6.64	TRDR25IP
	3	300-3D	🔴	97	185					1			
	5	300-5D	🔴	159	255					1			
	8	300-8D	🔴	251	345					1			
	12	300-12D	🔴	360	445					1			

Recommended Cutting Conditions ☞J110 | MFS Type Head ☞J111

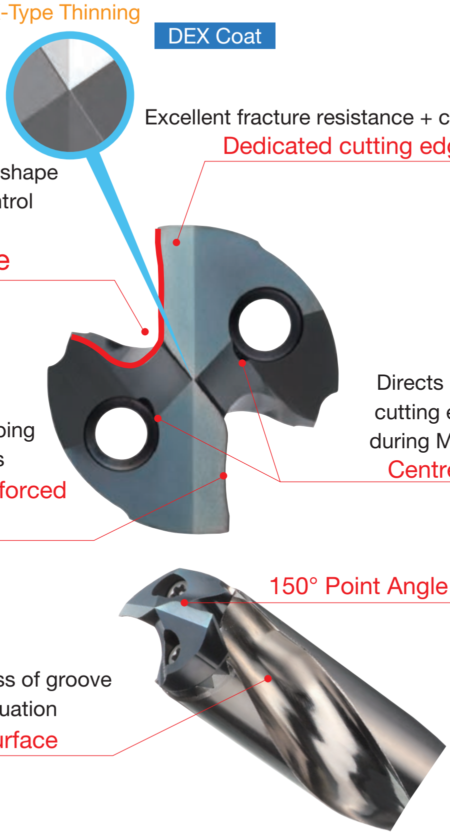
* Because the calculation method has been changed, the dimensions above are different from those listed in the 19-20 General Catalogue, but the specifications have not changed.

Drilling | J | Solid | Indexable Head Type | Indexable Insert Type | Reamers | Brazed | Others

N·m Recommended Tightening Torque (N·m) 🔴 mark: Standard Stock (new product/expanded item)

SMD-MB Type for Bridge

MB Type Ideal for drilling rolled steels for welded structures for bridge (single layer and stacked)



■ Application Examples

MB Type for Bridge **Good chip control**

SM490YB
v_c=87m/min, f=0.29mm/rev

Competitor's Product **Elongated chips**

SM490YB
v_c=87m/min, f=0.29mm/rev

■ Cutting Length Comparison for MB Type

Case	Current Tool	Tool Life Comparison (Cutting Length)		Cutting Conditions
1	Competitor A's Indexable Head Model	Competitor's Product A MB Type	17m 42m 2.5 times the tool life	v_c = 46m/min f=0.35mm/rev Coolant: MQL
2	Competitor B's Indexable Head Model	Competitor's Product B MB Type	50m 87m 1.7 times the tool life	v_c = 56m/min f=0.30mm/rev Coolant: MQL
3	Competitor C's Brazed Model	Competitor's Product C MB Type	32m 95m 3.0 times the tool life	v_c = 54m/min f=0.30mm/rev Coolant: MQL
4	Competitor D's Indexable Head Model	Competitor's Product D MB Type	70m 120m 1.7 times the tool life	v_c = 60m/min f=0.30mm/rev Coolant: MQL

1.7 to 3 times
the current tool life

Tool Cost
Major Potential Savings

■ Recommended Cutting Conditions (MB Type)

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

Work Material		Rolled Steel for Welded Structures SS400	Rolled Steel for Welded Structures SM490	Rolled Steel for Welded Structures SM520	Rolled Steel for Welded Structures SM570
Diameter DC (mm)	Cutting Conditions	Min. - **Optimum** - Max.	Min. - **Optimum** - Max.	Min. - **Optimum** - Max.	Min. - **Optimum** - Max.
ø24.5 to ø26.7	v_c	60-**70**-80	55-**65**-75	55-**65**-75	55-**65**-75
	f	0.20-**0.30**-0.40	0.20-**0.30**-0.40	0.20-**0.25**-0.35	0.20-**0.25**-0.35

SMD-MB Type for Bridge (Internal Coolant Supply)

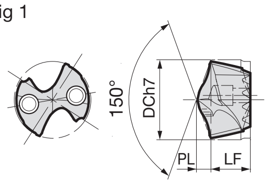
MB | Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29%

DEX Coat | Indexable head MB | Coolant Hole | Indexable | 3D

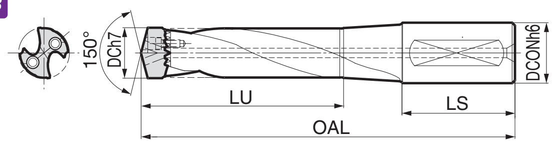
Only use the special MB type head with a B3 type holder.

*Refer to N38 for the tolerance of h6 and h7

Indexable Head Fig 1



● Set Figure Fig 2



Indexable Head MB Type Diameter ø24.5/24.7 mm

Dimensions (mm)

Diameter DC	Stock	Cat. No.	Shoulder Length LF	Tip PL	Applicable Holders	Fig
24.5	●	**SMDT 2450 MB**	10.8	3.3	**SMDH 240B3**	1
24.7	●	**SMDT 2470 MB**	10.8	3.3	**SMDH 240B3**	1

Grade: ACX80

Indexable Head MB Type Diameter ø26.5/26.7 mm

Dimensions (mm)

Diameter DC	Stock	Cat. No.	Shoulder Length LF	Tip PL	Applicable Holders	Fig
26.5	●	**SMDT 2650 MB**	11.7	3.6	**SMDH 260B3**	1
26.7	●	**SMDT 2670 MB**	11.7	3.6	**SMDH 260B3**	1

Grade: ACX80

* Because the calculation method has been changed, the dimensions above are different from those listed in the 19-20 General Catalogue, but the specifications have not changed.

Holder ø23.8 to 26.8mm With MB Type set

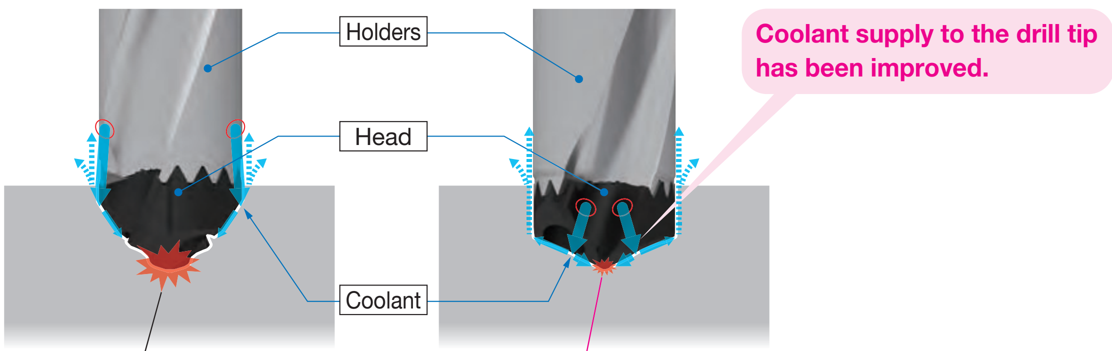
Parts

Dimensions (mm)

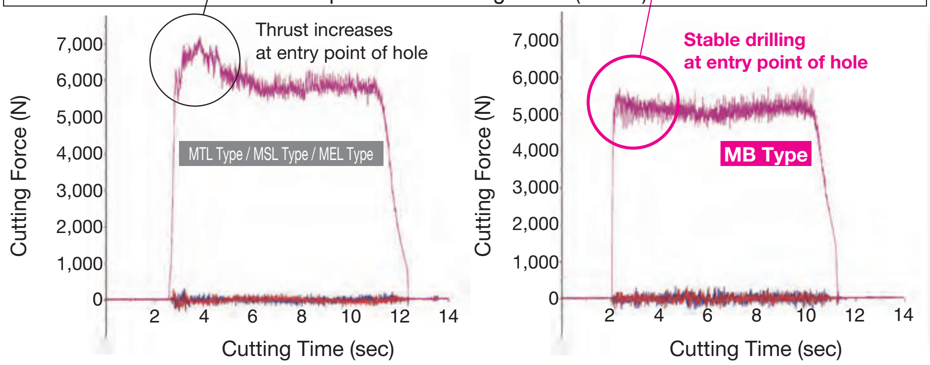
Diameter DC	Hole Depth (L/D)	Cat. No.	Stock	Effective Length LU	Overall Length OAL	Shank LS	Shank Dia. DCON	Indexable Head	Fig	Cap Screw	N·m	Wrench
23.8 < D ≤ 24.8	3	**SMDH 240B3**	●	84	173	60	32	MB	2	BXD03512IP	2.79 to 3.72	TRDR15IP
25.8 < D ≤ 26.8	3	**SMDH 260B3**	●	90	179	60	32	MB	2	BXD04014IP	4.14 to 5.52	TRDR20IP

Inquire about production of holders not listed in stock.

Coolant for Greater Lubricity



Comparison of Cutting Force (Thrust)



Work Material: SS400, Drill Diameter: ø24.7, Cutting Conditions: v_c = 70m/min, f = 0.35mm/rev, Coolant: MQL

*Due to the difference in oil hole positions and flute shapes, MTL/MSL/MEL Type drill heads are not compatible to use with B3 Type drill holders and similarly, MB Type drill heads are not compatible for use with M/L/D Type drill holders.

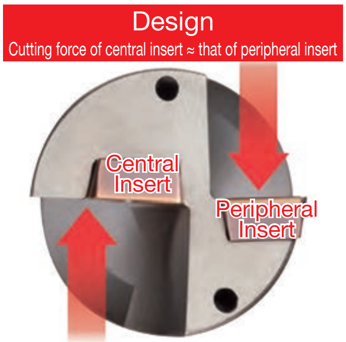
N·m Recommended Tightening Torque (N·m)

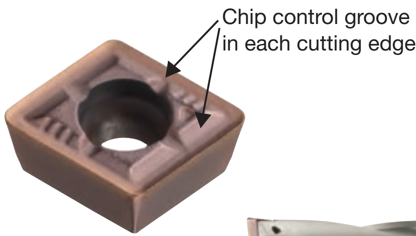
SumiDrill WDX Type

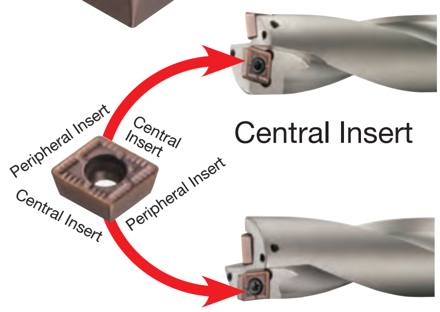
Expansion

■ General Features

The SumiDrill WDX type has excellent cutting balance that provides stable hole drilling on a wide range of work materials from general steel to stainless steel and aluminum alloy. Available in four original chipbreaker styles, the inserts feature improved chip control and reduced cutting force for use in low-rigidity contexts.

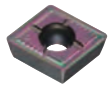
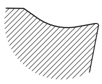
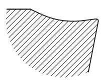
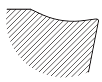
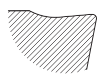
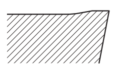






■ Features and Applications

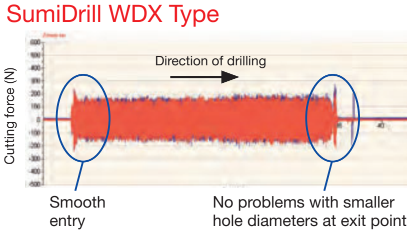
- **Balanced Design**
  Cutting force during drilling is balanced between central insert and peripheral insert. The relative position of each insert is optimised to provide stable drilling.
- **Excellent Chip Control**
  The chip evacuation direction can be controlled with the chip control groove at the centre of the breaker, enabling good chip control.
- **Versatile Tool for a Variety of Machining Applications**
  Select among four types of chipbreakers for different applications, allowing optimal drilling for a variety of work materials and conditions. Suitable for a wide range of applications including hole expansion, spot facing, external turning and internal boring.
- **Economical Four-Cornered Insert**
  This product has an extremely economical design where a single insert type can be used for the central insert or peripheral insert, with two corners for each position - a total of four corners.

Type	L Type	G Type		H Type	New M Type
Features	For low feed with chip control	General-purpose	For Non-ferrous Metal	Strong Edge Type	Dedicated for Stainless Steel
Appearance					
Figure					

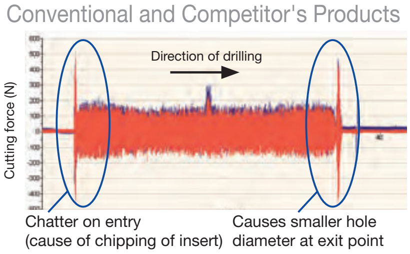
■ Performance

● Balanced Design (Comparison of Horizontal Component Values)
Balance is maintained at the through hole entry and exit points, and drilling is stable.

SumiDrill WDX Type



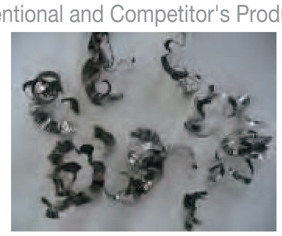
Conventional and Competitor's Products



● Improved chip control
Drill: WDX 200D3S25 (ø20.0)
Work material: SUS304
Cutting Conditions: v_c=130m/min, f=0.06mm/rev
H=50mm Wet

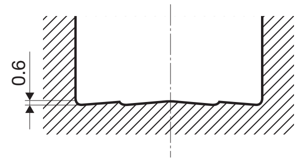
SumiDrill WDX Type

Conventional and Competitor's Products

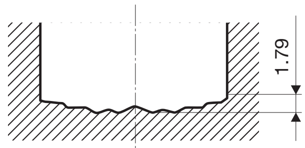


● Finishing is easy because the hole bottom is almost flat.

Bottom of hole after drilling with WDX200D3S25



Bottom of hole after drilling with conventional tool (ø20)



Chipbreakers / Grades for Stainless Steel Drilling New
M Type / ACM300

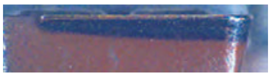
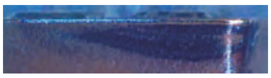
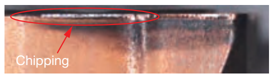
■ Features
Newly developed stainless steel-dedicated M Type chipbreaker achieves stable hole quality through chip control.

Tool	WDX M Type	WDX G Type	Competitor's Product Dedicated for SUS
Hole Quality			
Chip			

Holder: WDX200D3S25
Insert: WDXT063006-M (ACM300)
Work Material: SUS316L
Cutting Conditions: v_C = 150m/min, f = 0.08mm/rev
H = 60mm Wet

For High-speed Drilling of Steel and Cast Iron ACP100

■ Features
Provides excellent wear resistance and high reliability thanks to our coating stress control technology and the ultra-fine crystal grain coating layer of the Super FF Coat achieved through our proprietary technology.

		ACP100	Competitor's Product
Peripheral Insert	Rake Face		
	Flank		
Central Insert	Rake Face		
	Flank		

Holder: WDX 250D3S25
Insert: WDXT 063006-G (ACP100)
Work Material: S50C
Cutting Conditions: v_C=200m/min, f=0.12mm/rev,
H=50mm (through hole) Wet

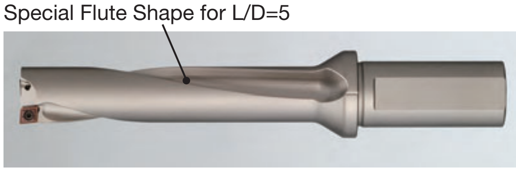
Drills for Deep Hole Drilling L/D = 5 (In stock from ø13.0 to ø55.0 mm)

■ Features
The SumiDrill WDX type for 5D drilling features a specially designed flute shape and enlarged coolant hole for excellent chip evacuation even during deep hole drilling.

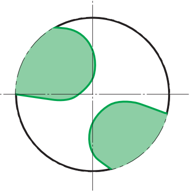
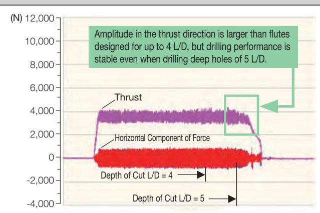
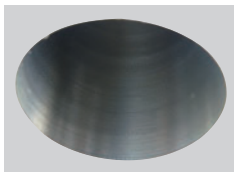
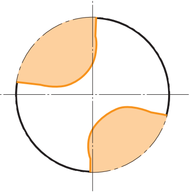
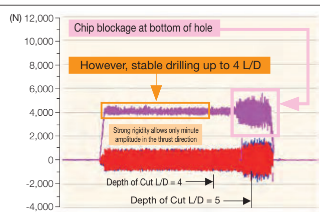
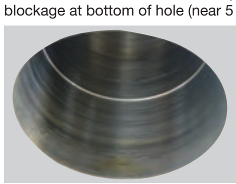
Large coolant hole

Coolant supply guide

Special Flute Shape for L/D=5



■ Performance

Tool Holder Features	Figure	Cutting Force	Machined Surface (Exit)
WDX 260D5S32 **Special Flute Shape for L/D=5** * Designed with emphasis on chip evacuation Expanded flute design improves chip evacuation for stable drilling performance even with holes up to 5 L/D.			Good machined surface down to end of hole 
Tool Shape for Comparison **L/D = 4 Flute Shape** * Designed with emphasis on drill rigidity Flute design enables greater rigidity of the drill, achieving stable drilling of shallow holes up to 4 L/D.			Poor machined surface due to chip blockage at bottom of hole (near 5 L/D) 

Work Material: SUS304, Insert: WDXT 073506-G
Cutting Conditions: v_c=150m/min, f=0.05mm/rev, H =130mm (through hole) Wet

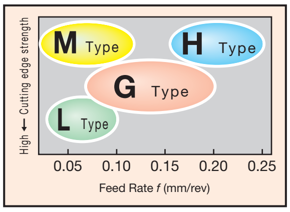
Insert Selection Guide——The WDX insert series has a variety of options

5 Grades

Work Materials \ Grade	ACP100	ACP300	ACM300	ACK300	DL1500
P Steel (High-speed Drilling)	○				
P Steel (General Drilling)		○			
M Stainless Steel		○	○		
K Cast Iron (High-speed Drilling)	○				
K Cast Iron (General Drilling)				○	
N Non-ferrous Metal					○

+

4 Types of chipbreaker



11 Combinations are possible!

ACP100	ACP300	ACM300	ACK300	DL1500
P K L Type	P L Type		P K L Type	
P K G Type	P M G Type		P K G Type	N G Type
P K H Type	P H Type		K H Type	
		M M Type		

P 2nd Recommendation

P Steel — For low feed with chip control

L Type ACP300

· For drilling of SS400, SCM415, SCM420, etc.

· High speed and low feed is recommended if there are issues with chip control

· Decrease the feed if vibration occurs due to burnt chips

P Steel — General-purpose

G Type ACP100

· For drilling of general steel and alloy steel, when prone to significantly large flank wear

P Steel — For low feed with chip control

L Type ACP100

· For low-feed conditions

P Steel — Strong Edge Type

H Type ACP300

· For drilling with interruptions (entry/through) due to slanted entry, reduce the feed rate in the interrupted area (around f 0.05)

· For insufficient cutting edge strength due to drilling of hardened steel (heat treated)

P Steel — Improved chip control (Low carbon steel, etc.)

P Steel — Insufficient Wear Resistance

P Steel — Initial chipping measures (interruption, high hardness, etc.)

P M K N 1st Recommendation

General-purpose

G Type

P Steel — For general steel and alloy steel drilling **ACP300**

K Cast Iron — For cast iron drilling **ACK300**

N Non-Ferrous Metal — For non-ferrous metal drilling **DL1500**

M Stainless Steel — For stainless steel drilling **ACM300**

Dedicated for Stainless Steel

M Type

K Cast Iron — Insufficient wear resistance (high-speed drilling)

K Cast Iron — Initial chipping measures (interruption, high feed, etc.)

M Stainless Steel — Lack of chip evacuation (extension)

M K 2nd Recommendation

K Cast Iron — General-purpose

G Type ACP100

· When heavy flank wear occurs in cast iron drilling

· To limit wear in high-speed, low to medium feed conditions

K Cast Iron — Strong Edge Type

H Type ACK300

· When interrupted drilling is performed due to slanted entry, etc. as with steel milling

· For insufficient cutting edge strength due to high-feed drilling

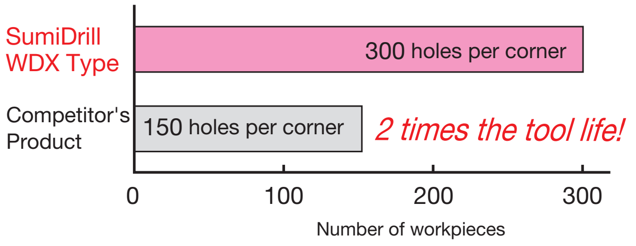
M Stainless Steel — General-purpose

G Type ACP300

· When chips extend and clog

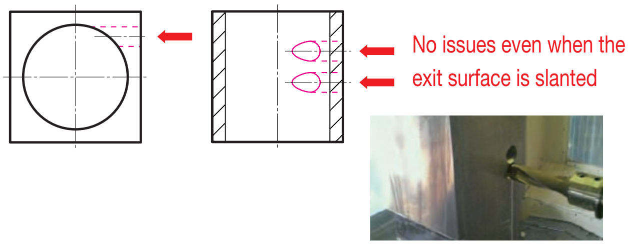
*ACP100 is the first recommendation for steel with a hardness of 200HB or greater, or for high-speed drilling of steel.

Application Examples



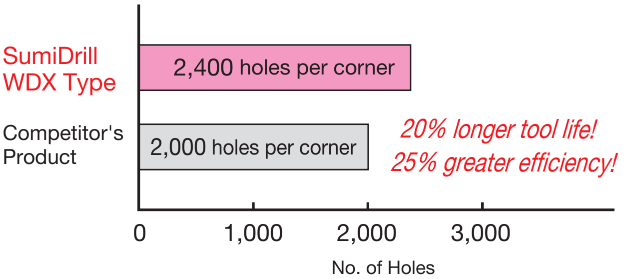
Work Material : Machine component (FCD450)
Tool : WDX 205D3S25
Insert : WDXT 063006-G (ACK300)
Cutting Conditions : v_c=122m/min, f =0.15mm/rev, H =33mm, through Wet

· Significant increase in tool life: twice that of conventional tools.
· Stable drilling with minimal cutting force.



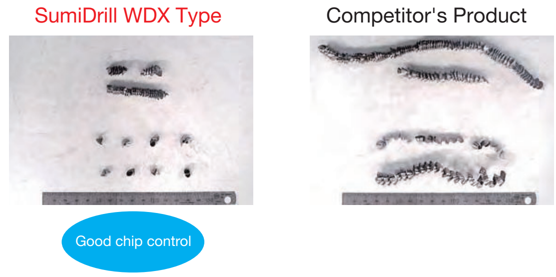
Work Material : Plate (S15C)
Tool : WDX 430D3S40, Insert: WDXT 125012-H (ACP300)
Cutting Conditions : v_c=136m/min, f =0.15mm/rev, H =60+50mm (semicircle area), through Wet

· Enables stable drilling even in unstable cutting conditions (interrupted drilling at deepest point).
· Quieter drilling than conventional tools.



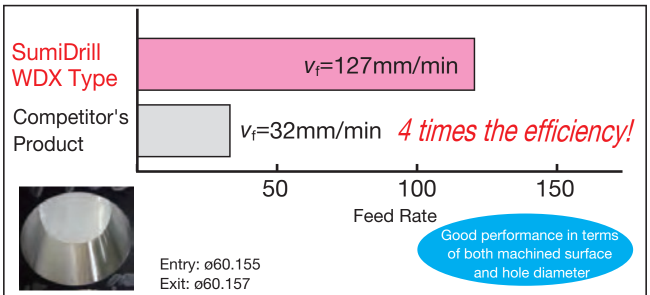
Work Material: Machine component (SCM440)
Tool: WDX 200D3S25, Insert: WDXT 063006-G (ACP300)
Cutting Conditions: v_c=157m/min, f =0.19mm/rev, H =19mm, through Wet
(competitor's product: v_c=157m/min, f =0.15mm/rev, H =19mm, through Wet)

Good chip control even in high-efficiency conditions. Good stability with low vibration during drilling. 25% greater efficiency and 20% longer tool life.



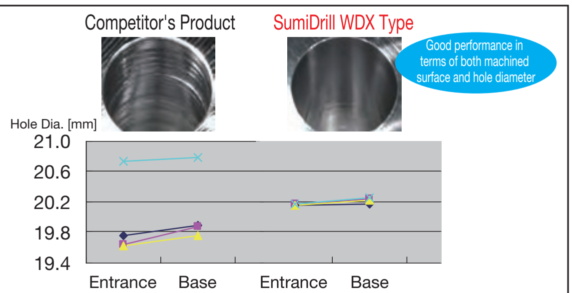
Work Material : Piping Parts (SUS304)
Tool : WDX210D3S25 Insert: WDXT063006-M (ACM300)
Cutting Conditions: v_c=105mm/min, f =0.08mm/rev, H =34mm Wet

· Enables improved chip evacuation and stable drilling.



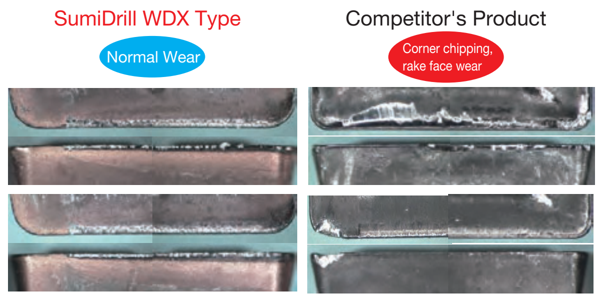
Work Material : Plate (S48C)
Tool : WDX 600D3S40
Insert : WDXT 186012-G (ACP300)
Cutting Conditions : v_c=150m/min, f =0.16mm/rev, H =60mm, through Wet
(conventional tool : v_c=30m/min, f =0.20mm/rev, H =60mm, through Wet)

· Achieves steady drilling even at large diameters!
· Achieves 4 times the efficiency of conventional tools!



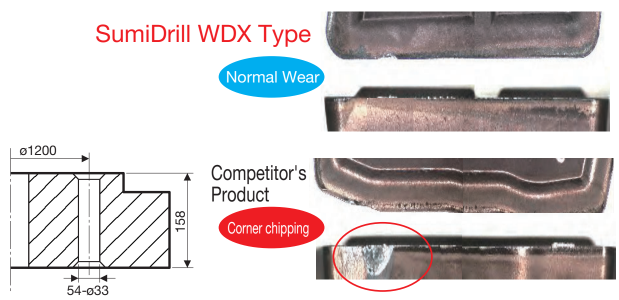
Work Material : Machine component (SCM415)
Tool : WDX 200D5S25
Insert : WDXT 063006-G (ACP300)
Cutting Conditions : v_c=185m/min, f =0.12mm/rev, H =87mm, through Wet

· Good machined surface!
· Consistent drilled diameter



Work Material : Tractor links (35MnBM)
Tool : WDX 205D5S25
Insert : WDXT 063006-G (ACP300)
Cutting Conditions : v_c=100m/min, f =0.11mm/rev, H =60mm, through Wet

· Achieves steady drilling even at L/D=5
· Reduces insert chipping and wear for stable tool life



Work Material : Bearing for wind power generator (equivalent to SCM440)
Tool : WDX330D5S40
Insert : WDXT094008-L (ACP300)
Cutting Conditions: v_c=146m/min, f =0.10mm/rev, H =158mm, through Wet

· Eliminates defects in workpieces caused by insert chipping!

WDX Type for 2D (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

CVD Coat | PVD Coat | Aurora DLC Coat | Coolant Hole | 2D | Indexable

Drilling tolerance: -0.05 to +0.15

*Refer to N38 for the tolerance of h7

Fig 1

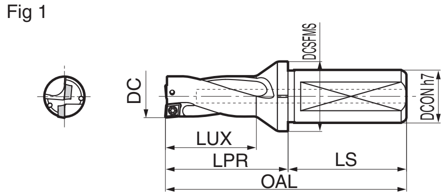


Fig 2

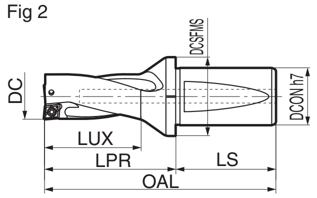
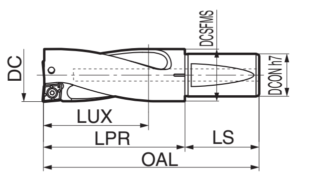


Fig 3



Holder Diameter ø13.0 to 45.0mm

Dimensions (mm)

Dia. DC	Stock	Cat. No.	Neck Length LUX	Overhang Length LPR	Overall Length OAL	Shank LS	Boss DCSFMS	Shank Dia. DCON	Radial Offset Amount (Max)	Applicable Insert	Fig
13.0	●	WDX 130D2S20	29	44	88				0.35		1
13.5	●	135D2S20	30	45	89				0.30		1
14.0	●	140D2S20	31	46	90	44	28.0	20	0.25	WDXT 042004	1
14.5	●	145D2S20	32	47	91				0.20		1
15.0	●	150D2S20	33	48	92				0.15		1
15.5	●	WDX 155D2S20	34	49	93				0.40		1
16.0	●	160D2S20	35	50	94	44	30.0	20			1
16.5	●	165D2S20	36	51	95				0.35	WDXT 052504	1
17.0	●	170D2S20	37	52	96				0.30		1
17.5	●	WDX 175D2S25	38	53	109	56	32.0	25	0.25		1
18.0	●	180D2S25	39	54	110				0.20		1
18.5	●	WDX 185D2S25	40	55	111				0.50		1
19.0	●	190D2S25	41	56	112				0.45		1
19.5	●	195D2S25	42	57	113				0.40		1
20.0	●	200D2S25	43	58	114				0.30	WDXT 063006	1
20.5	●	205D2S25	44	59	115	56	33.0	25			1
21.0	●	210D2S25	45	60	116				0.20		1
21.5	●	215D2S25	46	61	117				0.15		1
22.0	●	220D2S25	47	62	118				0.10		1
22.5	●	225D2S25	48	63	119				0.05		1
23.0	●	WDX 230D2S25	49	67	123				0.70		1
23.5	●	235D2S25	50	68	124						1
24.0	●	240D2S25	51	69	125	56	37.0	25	0.60		1
24.5	●	245D2S25	52	70	126				0.50		1
25.0	●	250D2S25	53	71	127						1
25.5	●	WDX 255D2S32	54	74	134				0.45	WDXT 073506	2
26.0	●	260D2S32	55	75	135				0.40		2
26.5	●	265D2S32	56	76	136				0.35		2
27.0	●	270D2S32	57	77	137	60	41.0	32	0.25		2
27.5	●	275D2S32	58	78	138				0.20		2
28.0	●	280D2S32	59	79	139				0.15		2
28.5	●	285D2S32	60	80	140				0.10		2
29.0	●	WDX 290D2S32	62	83	143		50.0		1.00		2
29.5	●	295D2S32	63	84	144				0.95		2
30.0*	●	300D2S32	64	88	148	60		32	0.90		2
31.0*	●	310D2S32	66	90	150		54.0		0.80		2
32.0*	●	320D2S32	68	92	152				0.70		2
30.0*	●	WDX 300D2S40	64	88	158				0.90	WDXT 094008	2
31.0*	●	310D2S40	66	90	160				0.80		2
32.0*	●	320D2S40	68	92	162				0.70		2
33.0	●	330D2S40	70	94	164	70	54.0	40	0.55		2
34.0	●	340D2S40	72	96	166				0.45		2
35.0	●	350D2S40	74	98	168				0.35		2
36.0	●	360D2S40	76	100	170				0.20		2
37.0	●	WDX 370D2S40	79	109	179				1.00		2
38.0	●	380D2S40	81	111	181						2
39.0	●	390D2S40	83	113	183				0.90		2
40.0	●	400D2S40	85	115	185				0.80	WDXT 125012	2
41.0	●	410D2S40	87	117	187	70	49.5	40	0.70		2
42.0	●	420D2S40	89	119	189				0.60		2
43.0	●	430D2S40	91	121	191				0.50		2
44.0	●	440D2S40	93	123	193						2
45.0	●	450D2S40	95	125	195				0.40		2

*Diameters ø30, ø31, ø32 are in stock with shank diameters of ø32 and ø40.

Radial Offset Amount ☞ J132

Holder Diameter ø46.0 to 68.0mm

Dimensions (mm)

Dia. DC	Stock	Cat. No.	Neck Length LUX	Overhang Length LPR	Overall Length OAL	Shank LS	Boss DCSFMS	Shank Dia. DCON	Radial Offset Amount (Max)	Applicable Insert	Fig
46.0	●	WDX 460D2S40	97	127	197				1.50		2
47.0	●	470D2S40	99	129	199				1.40		2
48.0	●	480D2S40	101	131	201		49.5		1.30		2
49.0	●	490D2S40	103	133	203				1.20		2
50.0	●	500D2S40	105	135	205				1.10	WDXT 156012	2
51.0	●	510D2S40	107	137	207	70		40	1.00		3
52.0	●	520D2S40	109	139	209		50.5		0.90		3
53.0	●	530D2S40	111	141	211		51.5		0.80		3
54.0	●	540D2S40	113	143	213		52.5		0.60		3
55.0	●	550D2S40	115	145	215		53.5		0.50		3
56.0	●	WDX 560D2S40	120	152	222		54.0		2.00		3
57.0	●	570D2S40	122	154	224		55.0		1.80		3
58.0	●	580D2S40	124	156	226		56.0		1.70		3
59.0	●	590D2S40	126	158	228		57.0		1.60		3
60.0	●	600D2S40	128	160	230		58.0		1.50		3
61.0	●	610D2S40	130	162	232		59.0		1.40		3
62.0	●	620D2S40	132	164	234	70	60.0	40	1.30	WDXT 186012	3
63.0	●	630D2S40	134	166	236		61.0		1.20		3
64.0	●	640D2S40	136	168	238		62.0		1.00		3
65.0	●	650D2S40	138	170	240		63.0		0.90		3
66.0	●	660D2S40	140	172	242		64.0		0.70		3
67.0	●	670D2S40	142	174	244		65.0		0.60		3
68.0	●	680D2S40	144	176	246		66.0		0.50		3

*Diameters ø30, ø31, ø32 are in stock with shank diameters of ø32 and ø40.

Parts

Applicable Holders	Flat Insert Screw	N·m	Wrench	Wrench
WDX130D2S20 to WDX150D2S20	BFTX01604N	0.3	TRX06	—
WDX155D2S20 to WDX180D2S25	BFTX0204N	0.5	TRX06	—
WDX185D2S25 to WDX225D2S25	BFTY02206	1.0	—	TRD07
WDX230D2S25 to WDX285D2S32	BFTX02506N	1.5	—	TRD08
WDX290D2S32 to WDX360D2S40	BFTX03584	3.5	—	TRD15
WDX370D2S40 to WDX450D2S40	BFTX0511N	5.0	—	TRD20
WDX460D2S40 to WDX680D2S40	BFTX0615N	5.0	—	TRD25

Identification Code

WDX 200 D2 S25

Dia. DC (ø20.0)

Flute Length L/D (2D)

Shank Dia. DCON (ø25.0)

N·m Recommended Tightening Torque (N·m)

WDX Type for 2D (Internal Coolant Supply)

Expansion

Insert

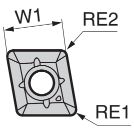
Dimensions (mm)

Grade Classification		Coated Carbide				
Process	High-speed/Light	P K				N
	General-purpose		P	M		
	Roughing		P		K	

Cat. No.	ACP100	ACP300	ACM300	ACK300	DL1500	Fig	Width W1	Thickness S	Corner Radius RE1	Corner Radius RE2	Applicable Holders
WDXT 042004-L	●	●		●		1	4.2	2.0	0.4	0.4	WDX130D2S20 to WDX150D2S20
042004-G	●	●		●	●	2					
042004-H	●	●		●		3					
042004-M			●			4				0.8	
WDXT 052504-L	●	●		●		1	5.0	2.5	0.4	0.4	WDX155D2S20 to WDX180D2S25
052504-G	●	●		●	●	2					
052504-H	●	●		●		3					
052504-M			●			4				1.0	
WDXT 063006-L	●	●		●		1	6.0	3.0	0.6	0.6	WDX185D2S25 to WDX225D2S25
063006-G	●	●		●	●	2					
063006-H	●	●		●		3					
063006-M			●			4				1.4	
WDXT 073506-L	●	●		●		1	7.5	3.5	0.6	0.6	WDX230D2S25 to WDX285D2S32
073506-G	●	●		●	●	2					
073506-H	●	●		●		3					
073506-M			●			4				1.6	
WDXT 094008-L	●	●		●		1	9.6	4.0	0.8	0.8	WDX290D2S32 to WDX360D2S40
094008-G	●	●		●	●	2					
094008-H	●	●		●		3					
094008-M			●			4				2.4	
WDXT 125012-L	●	●		●		1	12.4	5.0	1.2	1.2	WDX370D2S40 to WDX450D2S40
125012-G	●	●		●	●	2					
125012-H	●	●		●		3					
125012-M			●			4				3.2	
WDXT 156012-L	●	●		●		1	15.2	6.0	1.2	1.2	WDX460D2S40 to WDX550D2S40
156012-G	●	●		●	●	2					
156012-H	●	●		●		3					
WDXT 186012-L	●	●		●		1	18.0	6.0	1.2	1.2	WDX560D2S40 to WDX680D2S40
186012-G	●	●		●		2					
186012-H	●	●		●		3					

Fig 1

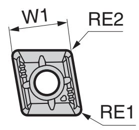
L Type



L Type: For low feed with chip control

Fig 2

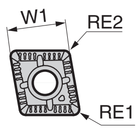
G Type



G Type: General-purpose

Fig 3

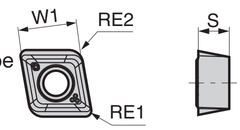
H Type



H Type: Strong edge

Fig 4

M Type



M Type: Dedicated for Stainless Steel

Identification Code

WDXT 06 30 06 -G

Width across Flats (6.0) — Thickness x 10 (3.0) — Corner Radius x 10 (0.6) — Breaker Type

Recommended Cutting Conditions (for 2D)

			Work Material	Workpiece Hardness HB	Recommended Chipbreaker	Recommended Insert Grade	V_c (cutting speed) (m/min)	*f* (feed rate) (mm/rev) (Min. - **Optimum** - Max.) ø13.0 to ø18.0	ø18.5 to ø29.0	ø29.5 to ø36.0	ø37.0 to ø55.0	ø56.0 to ø68.0
2D	P	Steel, Carbon Steel	SS400	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	0.06-**0.09**-0.13
			S15C	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	0.06-**0.11**-0.17
			S45C	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	0.10-**0.17**-0.32
			S45C Hardened	250	G	ACP100	100-**170**-240	0.05-**0.09**-0.14	0.05-**0.09**-0.14	0.05-**0.09**-0.14	0.05-**0.10**-0.17	0.06-**0.11**-0.18
			S75C	270	G	ACP100	120-**180**-240	0.06-**0.10**-0.17	0.06-**0.10**-0.17	0.06-**0.10**-0.17	0.07-**0.12**-0.19	0.08-**0.13**-0.21
			S75C Hardened	300	G	ACP100	85-**150**-210	0.05-**0.09**-0.14	0.05-**0.09**-0.14	0.05-**0.09**-0.14	0.05-**0.10**-0.15	0.06-**0.11**-0.17
		Low-alloy Steel	SCM,SNCM	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	0.07-**0.10**-0.19
			SCM, SNCM Hardened	275	G	ACP100	100-**170**-240	0.06-**0.10**-0.14	0.06-**0.10**-0.14	0.06-**0.10**-0.14	0.07-**0.11**-0.16	0.08-**0.11**-0.17
			SCM, SNCM Hardened	300	G	ACP100	90-**150**-210	0.06-**0.10**-0.14	0.06-**0.10**-0.14	0.06-**0.10**-0.14	0.07-**0.11**-0.16	0.08-**0.11**-0.17
			SCM, SNCM Hardened	350	G	ACP100	75-**120**-165	0.06-**0.10**-0.14	0.06-**0.10**-0.14	0.06-**0.10**-0.14	0.07-**0.11**-0.16	0.08-**0.11**-0.17
		High-alloy Steel	SKD,SKT,SKH	200	G	ACP100	120-**180**-240	0.08-**0.12**-0.17	0.08-**0.12**-0.17	0.08-**0.12**-0.18	0.09-**0.12**-0.21	0.10-**0.13**-0.22
			SKD, SKT, SKH (Sintered)	325	G	ACP100	100-**140**-180	0.06-**0.10**-0.15	0.06-**0.10**-0.15	0.06-**0.11**-0.15	0.07-**0.11**-0.16	0.08-**0.11**-0.17
	M	Stainless Steel	SUS403/Others (Martensitic/Ferritic)	200	M	ACM300	120-**150**-180	0.06-**0.08**-0.15	0.06-**0.08**-0.15	0.06-**0.08**-0.15	0.07-**0.10**-0.16	0.08-**0.12**-0.16
			SUS403/Others (Martensitic (hardened))	240	M	ACM300	90-**120**-150	0.06-**0.08**-0.15	0.06-**0.08**-0.15	0.06-**0.08**-0.15	0.07-**0.10**-0.16	0.08-**0.12**-0.16
			SUS304, SUS316 (Austenitic)	180	M	ACM300	120-**150**-180	0.06-**0.08**-0.15	0.06-**0.08**-0.15	0.06-**0.08**-0.15	0.07-**0.10**-0.16	0.08-**0.12**-0.16
	K	Cast Iron			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
		Ductile Cast Iron			H	ACK300	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
	S	Exotic Alloy (Heat-Resistant Alloy, Super Alloy, Titanium Alloy, etc.)		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	0.08-**0.14**-0.24
	N	Aluminum 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
		Copper Alloy			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

For the P and K grades for which ACP300 and ACK300 inserts are the first recommendation, ACP100 inserts are the second recommendation. In that case, it is recommended to set the cutting speed (V_C) to 130% and the feed rate (f) to 75% of the figures in the table above.

● mark: Standard stocked item (new product/expanded item)

WDX Type for 3D (Internal Coolant Supply)

Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

CVD Coat | PVD Coat | Aurora DLC Coat | Coolant Hole | 3D | Indexable

Drilling tolerance: 0 to +0.20

*Refer to N38 for the tolerance of h7

Fig 1

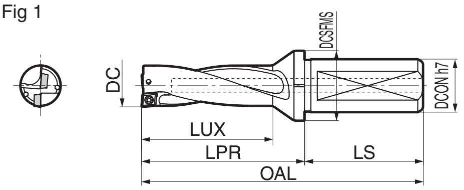


Fig 2

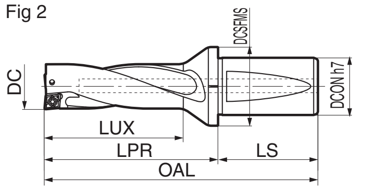
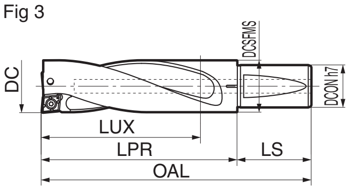


Fig 3



Holder Diameter ø13.0 to 45.0mm

Dimensions (mm)

Dia. DC	Stock	Cat. No.	Neck Length LUX	Overhang Length LPR	Overall Length OAL	Shank LS	Boss DCSFMS	Shank Dia. DCON	Radial Offset Amount (Max)	Applicable Insert	Fig
13.0	●	WDX 130D3S20	42.0	57.0	101.0	44	28.0	20	0.35	WDXT042004	1
13.5	●	135D3S20	43.5	58.5	102.5				0.30		1
14.0	●	140D3S20	45.0	60.0	104.0				0.25		1
14.5	●	145D3S20	46.5	61.5	105.5				0.20		1
15.0	●	150D3S20	48.0	63.0	107.0				0.15		1
15.5	●	WDX 155D3S20	49.5	64.5	108.5	44	30.0	20	0.40	WDXT052504	1
16.0	●	160D3S20	51.0	66.0	110.0						1
16.5	●	165D3S20	52.5	67.5	111.5				0.35		1
17.0	●	170D3S20	54.0	69.0	113.0				0.30		1
17.5	●	WDX 175D3S25	55.5	70.5	126.5	56	32.0	25	0.25		1
18.0	●	180D3S25	57.0	72.0	128.0				0.20		1
18.5	●	WDX 185D3S25	58.5	73.5	129.5	56	33.0	25	0.50	WDXT063006	1
19.0	●	190D3S25	60.0	75.0	131.0				0.45		1
19.5	●	195D3S25	61.5	76.5	132.5				0.40		1
20.0	●	200D3S25	63.0	78.0	134.0				0.30		1
20.5	●	205D3S25	64.5	79.5	135.5						1
21.0	●	210D3S25	66.0	81.0	137.0				0.20		1
21.5	●	215D3S25	67.5	82.5	138.5				0.15		1
22.0	●	220D3S25	69.0	84.0	140.0				0.10		1
22.5	●	225D3S25	70.5	85.5	141.5				0.05		1
23.0	●	WDX 230D3S25	72.0	90.0	146.0	56	37.0	25	0.70		1
23.5	●	235D3S25	73.5	91.5	147.5						1
24.0	●	240D3S25	75.0	93.0	149.0				0.60		1
24.5	●	245D3S25	76.5	94.5	150.5				0.50		1
25.0	●	250D3S25	78.0	96.0	152.0						1
25.5	●	WDX 255D3S32	79.5	99.5	159.5	60	41.0	32	0.45	WDXT073506	2
26.0	●	260D3S32	81.0	101.0	161.0				0.40		2
26.5	●	265D3S32	82.5	102.5	162.5				0.35		2
27.0	●	270D3S32	84.0	104.0	164.0				0.25		2
27.5	●	275D3S32	85.5	105.5	165.5				0.20		2
28.0	●	280D3S32	87.0	107.0	167.0				0.15		2
28.5	●	285D3S32	88.5	108.5	168.5				0.10		2
29.0	●	WDX 290D3S32	91.0	112.0	172.0	60	50.0	32	1.00		2
29.5	●	295D3S32	92.5	113.5	173.5				0.95		2
30.0*	●	300D3S32	94.0	118.0	178.0		54.0		0.90		2
31.0*	●	310D3S32	97.0	121.0	181.0				0.80		2
32.0*	●	320D3S32	100.0	124.0	184.0				0.70		2
30.0*	●	WDX 300D3S40	94.0	118.0	188.0	70	54.0	40	0.90	WDXT094008	2
31.0*	●	310D3S40	97.0	121.0	191.0				0.80		2
32.0*	●	320D3S40	100.0	124.0	194.0				0.70		2
33.0	●	330D3S40	103.0	127.0	197.0				0.55		2
34.0	●	340D3S40	106.0	130.0	200.0				0.45		2
35.0	●	350D3S40	109.0	133.0	203.0				0.35		2
36.0	●	360D3S40	112.0	136.0	206.0				0.20		2
37.0	●	WDX 370D3S40	116.0	146.0	216.0	70	49.5	40	1.00	WDXT125012	2
38.0	●	380D3S40	119.0	149.0	219.0						2
39.0	●	390D3S40	122.0	152.0	222.0				0.90		2
40.0	●	400D3S40	125.0	155.0	225.0				0.80		2
41.0	●	410D3S40	128.0	158.0	228.0				0.70		2
42.0	●	420D3S40	131.0	161.0	231.0				0.60		2
43.0	●	430D3S40	134.0	164.0	234.0				0.50		2
44.0	●	440D3S40	137.0	167.0	237.0						2
45.0	●	450D3S40	140.0	170.0	240.0				0.40		2

*Diameters ø30, ø31, ø32 are in stock with shank diameters of ø32 and ø40.

Radial Offset Amount ☞ J132

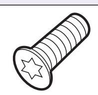
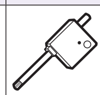
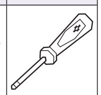
Holder Diameter ø46.0 to 68.0mm

Dimensions (mm)

Dia. DC	Stock	Cat. No.	Neck Length LUX	Overhang Length LPR	Overall Length OAL	Shank LS	Boss DCSFMS	Shank Dia. DCON	Radial Offset Amount (Max)	Applicable Insert	Fig
46.0	●	WDX 460D3S40	143.0	173.0	243.0	70	49.5	40	1.50	WDXT156012	2
47.0	●	470D3S40	146.0	176.0	246.0				1.40		2
48.0	●	480D3S40	149.0	179.0	249.0				1.30		2
49.0	●	490D3S40	152.0	182.0	252.0				1.20		2
50.0	●	500D3S40	155.0	185.0	255.0				1.10		2
51.0	●	510D3S40	158.0	188.0	258.0				1.00		3
52.0	●	520D3S40	161.0	191.0	261.0		50.5		0.90		3
53.0	●	530D3S40	164.0	194.0	264.0		51.5		0.80		3
54.0	●	540D3S40	167.0	197.0	267.0		52.5		0.60		3
55.0	●	550D3S40	170.0	200.0	270.0		53.5		0.50		3
56.0	●	WDX 560D3S40	176.0	208.0	278.0	70	54.0	40	2.00	WDXT186012	3
57.0	●	570D3S40	179.0	211.0	281.0		55.0		1.80		3
58.0	●	580D3S40	182.0	214.0	284.0		56.0		1.70		3
59.0	●	590D3S40	185.0	217.0	287.0		57.0		1.60		3
60.0	●	600D3S40	188.0	220.0	290.0		58.0		1.50		3
61.0	●	610D3S40	191.0	223.0	293.0		59.0		1.40		3
62.0	●	620D3S40	194.0	226.0	296.0		60.0		1.30		3
63.0	●	630D3S40	197.0	229.0	299.0		61.0		1.20		3
64.0	●	640D3S40	200.0	232.0	302.0		62.0		1.00		3
65.0	●	650D3S40	203.0	235.0	305.0		63.0		0.90		3
66.0	●	660D3S40	206.0	238.0	308.0		64.0		0.70		3
67.0	●	670D3S40	209.0	241.0	311.0		65.0		0.60		3
68.0	●	680D3S40	212.0	244.0	314.0		66.0		0.50		3

*Diameters ø30, ø31, ø32 are in stock with shank diameters of ø32 and ø40.

Parts

Applicable Holders	Flat Insert Screw	N·m	Wrench	Wrench
WDX130D3S20 to WDX150D3S20	BFTX01604N	0.3	TRX06	—
WDX155D3S20 to WDX180D3S25	BFTX0204N	0.5	TRX06	—
WDX185D3S25 to WDX225D3S25	BFTY02206	1.0	—	TRD07
WDX230D3S25 to WDX285D3S32	BFTX02506N	1.5	—	TRD08
WDX290D3S32 to WDX360D3S40	BFTX03584	3.5	—	TRD15
WDX370D3S40 to WDX450D3S40	BFTX0511N	5.0	—	TRD20
WDX460D3S40 to WDX680D3S40	BFTX0615N	5.0	—	TRD25

Identification Code

WDX 200 D3 S25

Dia. DC (ø20.0) — Flute Length L/D (3D) — Shank Dia. DCON (ø25.0)

Drilling | J | Solid | Indexable Head Type | Indexable Insert Type | Reamers | Brazed | Others

N·m Recommended Tightening Torque (N·m)

WDX Type for 3D (Internal Coolant Supply)

Expansion

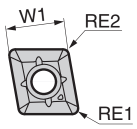
Insert

Dimensions (mm)

Grade Classification		Coated Carbide										
Process	High-speed/Light	P K				N						
	General-purpose		P	M								
	Roughing		P		K							
Cat. No.		ACP100	ACP300	ACM300	ACK300	DL1500	Fig	Width W1	Thickness S	Corner Radius RE1	Corner Radius RE2	Applicable Holders
WDXT 042004-L		●	●		●		1	4.2	2.0	0.4	0.4	WDX130D3S20 to WDX150D3S20
042004-G		●	●		●	●	2					
042004-H		●	●		●		3					
042004-M				●			4				0.8	
WDXT 052504-L		●	●		●		1	5.0	2.5	0.4	0.4	WDX155D3S20 to WDX180D3S25
052504-G		●	●		●	●	2					
052504-H		●	●		●		3					
052504-M				●			4				1.0	
WDXT 063006-L		●	●		●		1	6.0	3.0	0.6	0.6	WDX185D3S25 to WDX225D3S25
063006-G		●	●		●	●	2					
063006-H		●	●		●		3					
063006-M				●			4				1.4	
WDXT 073506-L		●	●		●		1	7.5	3.5	0.6	0.6	WDX230D3S25 to WDX285D3S32
073506-G		●	●		●	●	2					
073506-H		●	●		●		3					
073506-M				●			4				1.6	
WDXT 094008-L		●	●		●		1	9.6	4.0	0.8	0.8	WDX290D3S32 to WDX360D3S40
094008-G		●	●		●	●	2					
094008-H		●	●		●		3					
094008-M				●			4				2.4	
WDXT 125012-L		●	●		●		1	12.4	5.0	1.2	1.2	WDX370D3S40 to WDX450D3S40
125012-G		●	●		●	●	2					
125012-H		●	●		●		3					
125012-M				●			4				3.2	
WDXT 156012-L		●	●		●		1	15.2	6.0	1.2	1.2	WDX460D3S40 to WDX550D3S40
156012-G		●	●		●	●	2					
156012-H		●	●		●		3					
WDXT 186012-L		●	●		●		1	18.0	6.0	1.2	1.2	WDX560D3S40 to WDX680D3S40
186012-G		●	●		●		2					
186012-H		●	●		●		3					

Fig 1

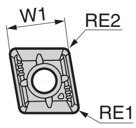
L Type



L Type: For low feed with chip control

Fig 2

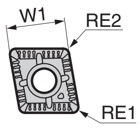
G Type



G Type: General-purpose

Fig 3

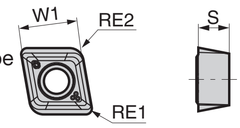
H Type



H Type: Strong edge

Fig 4

M Type



M Type: Dedicated for Stainless Steel

Identification Code

WDXT 06 30 06 -G

Width across Flats (6.0) · Thickness x 10 (3.0) · Corner Radius x 10 (0.6) · Breaker Type

Recommended Cutting Conditions (for 3D)

		Work Material		Workpiece Hardness HB	Recommended Chipbreaker	Recommended Insert Grade	v_c (cutting speed) (m/min)	f (feed rate) (mm/rev) (Min. - **Optimum** - Max.) ø13.0 to ø18.0	ø18.5 to ø29.0	ø29.5 to ø36.0	ø37.0 to ø55.0	ø56.0 to ø68.0
3D	P	Steel, Carbon Steel	SS400	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	0.06-**0.09**-0.13
			S15C	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	0.06-**0.10**-0.13
			S45C	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	0.10-**0.16**-0.27
			S45C Hardened	250	G	ACP100	100-**170**-240	0.05-**0.08**-0.11	0.05-**0.08**-0.11	0.05-**0.08**-0.12	0.05-**0.09**-0.14	0.06-**0.10**-0.15
			S75C	270	G	ACP100	120-**180**-240	0.06-**0.09**-0.14	0.06-**0.09**-0.14	0.06-**0.10**-0.14	0.07-**0.11**-0.17	0.08-**0.12**-0.18
			S75C Hardened	300	G	ACP100	85-**150**-210	0.05-**0.08**-0.11	0.05-**0.08**-0.11	0.05-**0.08**-0.11	0.05-**0.09**-0.14	0.06-**0.10**-0.14
		Low-alloy Steel	SCM,SNCM	180	L	ACP300	100-**140**-180	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
			SCM, SNCM Hardened	275	G	ACP100	100-**170**-240	0.06-**0.08**-0.11	0.06-**0.08**-0.11	0.06-**0.08**-0.11	0.07-**0.10**-0.12	0.08-**0.10**-0.13
			SCM, SNCM Hardened	300	G	ACP100	90-**150**-210	0.06-**0.08**-0.11	0.06-**0.08**-0.11	0.06-**0.08**-0.11	0.07-**0.10**-0.12	0.08-**0.10**-0.13
			SCM, SNCM Hardened	350	G	ACP100	75-**120**-165	0.06-**0.08**-0.11	0.06-**0.08**-0.11	0.06-**0.08**-0.11	0.07-**0.10**-0.12	0.08-**0.10**-0.13
		High-alloy Steel	SKD,SKT,SKH	200	G	ACP100	120-**180**-240	0.08-**0.11**-0.14	0.08-**0.12**-0.15	0.08-**0.12**-0.16	0.09-**0.14**-0.18	0.10-**0.14**-0.19
			SKD, SKT, SKH (Sintered)	325	G	ACP100	100-**140**-180	0.06-**0.09**-0.11	0.06-**0.09**-0.11	0.06-**0.09**-0.11	0.07-**0.10**-0.12	0.08-**0.10**-0.13
	M	Stainless Steel	SUS403/Others (Martensitic/Ferritic)	200	M	ACM300	120-**150**-180	0.06-**0.08**-0.15	0.06-**0.08**-0.15	0.06-**0.08**-0.15	0.07-**0.10**-0.16	0.08-**0.12**-0.16
			SUS403/Others (Martensitic (hardened))	240	M	ACM300	90-**120**-150	0.06-**0.08**-0.15	0.06-**0.08**-0.15	0.06-**0.08**-0.15	0.07-**0.10**-0.16	0.08-**0.12**-0.16
			SUS304, SUS316 (Austenitic)	180	M	ACM300	120-**150**-180	0.06-**0.08**-0.15	0.06-**0.08**-0.15	0.06-**0.08**-0.15	0.07-**0.10**-0.16	0.08-**0.12**-0.16
	K	Cast Iron			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
		Ductile Cast Iron			H	ACK300	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
	S	Exotic Alloy (Heat-Resistant Alloy, Super Alloy, Titanium Alloy, etc.)		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	0.08-**0.13**-0.20
	N	Aluminum 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
		Copper Alloy			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

For the P and K grades for which ACP300 and ACK300 inserts are the first recommendation, ACP100 inserts are the second recommendation.
In that case, it is recommended to set the cutting speed (V_C) to 130% and the feed rate (f) to 75% of the figures in the table above.

● mark: Standard stocked item (new product/expanded item)

SumiDrill

WDX Type for 4D (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

CVD Coat | PVD Coat | Aurora DLC Coat | Coolant Hole | 4D | Indexable

Drilling tolerance: 0 to +0.25

*Refer to N38 for the tolerance of h7

Fig 1

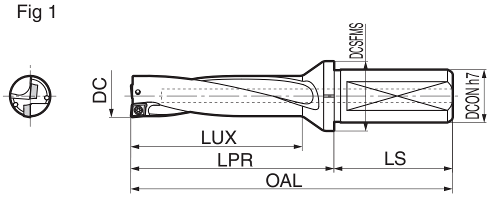


Fig 2

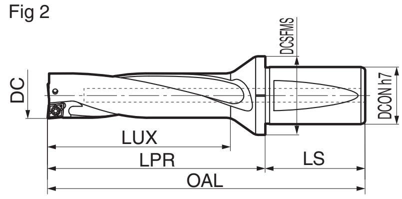
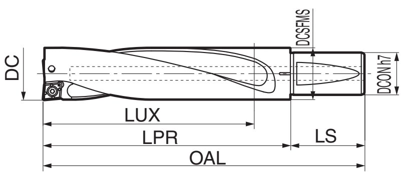


Fig 3



Holder Diameter ø13.0 to 45.0mm

Dimensions (mm)

Dia. DC	Stock	Cat. No.	Neck Length LUX	Overhang Length LPR	Overall Length OAL	Shank LS	Boss DCSFMS	Shank Dia. DCON	Radial Offset Amount (Max)	Applicable Insert	Fig
13.0	●	WDX 130D4S20	55	70	114				0.35		1
13.5	●	135D4S20	57	72	116				0.30	WDXT 042004	1
14.0	●	140D4S20	59	74	118	44	28.0	20	0.25		1
14.5	●	145D4S20	61	76	120				0.20		1
15.0	●	150D4S20	63	78	122				0.15		1
15.5	●	WDX 155D4S20	65	80	124				0.40		1
16.0	●	160D4S20	67	82	126	44	30.0	20			1
16.5	●	165D4S20	69	84	128				0.35	WDXT 052504	1
17.0	●	170D4S20	71	86	130				0.30		1
17.5	●	WDX 175D4S25	73	88	144	56	32.0	25	0.25		1
18.0	●	180D4S25	75	90	146				0.20		1
18.5	●	WDX 185D4S25	77	92	148				0.50		1
19.0	●	190D4S25	79	94	150				0.45		1
19.5	●	195D4S25	81	96	152				0.40		1
20.0	●	200D4S25	83	98	154				0.30	WDXT 063006	1
20.5	●	205D4S25	85	100	156	56	33.0	25			1
21.0	●	210D4S25	87	102	158				0.20		1
21.5	●	215D4S25	89	104	160				0.15		1
22.0	●	220D4S25	91	106	162				0.10		1
22.5	●	225D4S25	93	108	164				0.05		1
23.0	●	WDX 230D4S25	95	113	169				0.70		1
23.5	●	235D4S25	97	115	171						1
24.0	●	240D4S25	99	117	173	56	37.0	25	0.60		1
24.5	●	245D4S25	101	119	175				0.50		1
25.0	●	250D4S25	103	121	177						1
25.5	●	WDX 255D4S32	105	125	185				0.45	WDXT 073506	2
26.0	●	260D4S32	107	127	187				0.40		2
26.5	●	265D4S32	109	129	189				0.35		2
27.0	●	270D4S32	111	131	191	60	41.0	32	0.25		2
27.5	●	275D4S32	113	133	193				0.20		2
28.0	●	280D4S32	115	135	195				0.15		2
28.5	●	285D4S32	117	137	197				0.10		2
29.0	●	WDX 290D4S32	120	141	201		50.0		1.00		2
29.5	●	295D4S32	122	143	203				0.95		2
30.0*	●	300D4S32	124	148	208	60		32	0.90		2
31.0*	●	310D4S32	128	152	212		54.0		0.80		2
32.0*	●	320D4S32	132	156	216				0.70		2
30.0*	●	WDX 300D4S40	124	148	218				0.90	WDXT 094008	2
31.0*	●	310D4S40	128	152	222				0.80		2
32.0*	●	320D4S40	132	156	226				0.70		2
33.0	●	330D4S40	136	160	230	70	54.0	40	0.55		2
34.0	●	340D4S40	140	164	234				0.45		2
35.0	●	350D4S40	144	168	238				0.35		2
36.0	●	360D4S40	148	172	242				0.20		2
37.0	●	WDX 370D4S40	153	183	253				1.00		2
38.0	●	380D4S40	157	187	257						2
39.0	●	390D4S40	161	191	261				0.90		2
40.0	●	400D4S40	165	195	265				0.80		2
41.0	●	410D4S40	169	199	269	70	49.5	40	0.70	WDXT 125012	2
42.0	●	420D4S40	173	203	273				0.60		2
43.0	●	430D4S40	177	207	277				0.50		2
44.0	●	440D4S40	181	211	281						2
45.0	●	450D4S40	185	215	285				0.40		2

*Diameters ø30, ø31, ø32 are in stock with shank diameters of ø32 and ø40.

Radial Offset Amount ☞ J132

Holder Diameter ø46.0 to 63.0mm

Dimensions (mm)

Dia. DC	Stock	Cat. No.	Neck Length LUX	Overhang Length LPR	Overall Length OAL	Shank LS	Boss DCSFMS	Shank Dia. DCON	Radial Offset Amount (Max)	Applicable Insert	Fig
46.0	●	WDX 460D4S40	189	219	289				1.50		2
47.0	●	470D4S40	193	223	293				1.40		2
48.0	●	480D4S40	197	227	297		49.5		1.30		2
49.0	●	490D4S40	201	231	301				1.20		2
50.0	●	500D4S40	205	235	305	70		40	1.10	WDXT 156012	2
51.0	●	510D4S40	209	239	309				1.00		3
52.0	●	520D4S40	213	243	313		50.5		0.90		3
53.0	●	530D4S40	217	247	317		51.5		0.80		3
54.0	●	540D4S40	221	251	321		52.5		0.60		3
55.0	●	550D4S40	225	255	325		53.5		0.50		3
56.0	●	WDX 560D4S40	232	264	334		54.0		2.00		3
57.0	●	570D4S40	236	268	338		55.0		1.80		3
58.0	●	580D4S40	240	272	342		56.0		1.70		3
59.0	●	590D4S40	244	276	346	70	57.0	40	1.60	WDXT 186012	3
60.0	●	600D4S40	248	280	350		58.0		1.50		3
61.0	●	610D4S40	252	284	354		59.0		1.40		3
62.0	●	620D4S40	256	288	358		60.0		1.30		3
63.0	●	630D4S40	260	292	362		61.0		1.20		3

*Diameters ø30, ø31, ø32 are in stock with shank diameters of ø32 and ø40.

Parts

Applicable Holders	Flat Insert Screw	N·m	Wrench	Wrench
WDX130D4S20 to WDX150D4S20	BFTX01604N	0.3	TRX06	—
WDX155D4S20 to WDX180D4S25	BFTX0204N	0.5	TRX06	—
WDX185D4S25 to WDX225D4S25	BFTY02206	1.0	—	TRD07
WDX230D4S25 to WDX285D4S32	BFTX02506N	1.5	—	TRD08
WDX290D4S32 to WDX360D4S40	BFTX03584	3.5	—	TRD15
WDX370D4S40 to WDX450D4S40	BFTX0511N	5.0	—	TRD20
WDX460D4S40 to WDX630D4S40	BFTX0615N	5.0	—	TRD25

Identification Code

WDX 200 D4 S25

Dia. DC (ø20.0)
Flute Length L/D (4D)
Shank Dia. DCON (ø25.0)

N·m Recommended Tightening Torque (N·m)

WDX Type for 4D (Internal Coolant Supply)

Expansion

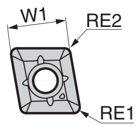
Insert

Dimensions (mm)

Grade Classification		Coated Carbide										
Process	High-speed/Light	P K				N						
	General-purpose		P	M								
	Roughing		P		K							
Cat. No.		ACP100	ACP300	ACM300	ACK300	DL1500	Fig	Width W1	Thickness S	Corner Radius RE1	Corner Radius RE2	Applicable Holders
WDXT 042004-L		●	●		●		1	4.2	2.0	0.4	0.4	WDX130D4S20 to WDX150D4S20
042004-G		●	●		●	●	2					
042004-H		●	●		●		3					
042004-M				●			4				0.8	
WDXT 052504-L		●	●		●		1	5.0	2.5	0.4	0.4	WDX155D4S20 to WDX180D4S25
052504-G		●	●		●	●	2					
052504-H		●	●		●		3					
052504-M				●			4				1.0	
WDXT 063006-L		●	●		●		1	6.0	3.0	0.6	0.6	WDX185D4S25 to WDX225D4S25
063006-G		●	●		●	●	2					
063006-H		●	●		●		3					
063006-M				●			4				1.4	
WDXT 073506-L		●	●		●		1	7.5	3.5	0.6	0.6	WDX230D4S25 to WDX285D4S32
073506-G		●	●		●	●	2					
073506-H		●	●		●		3					
073506-M				●			4				1.6	
WDXT 094008-L		●	●		●		1	9.6	4.0	0.8	0.8	WDX290D4S32 to WDX360D4S40
094008-G		●	●		●	●	2					
094008-H		●	●		●		3					
094008-M				●			4				2.4	
WDXT 125012-L		●	●		●		1	12.4	5.0	1.2	1.2	WDX370D4S40 to WDX450D4S40
125012-G		●	●		●	●	2					
125012-H		●	●		●		3					
125012-M				●			4				3.2	
WDXT 156012-L		●	●		●		1	15.2	6.0	1.2	1.2	WDX460D4S40 to WDX550D4S40
156012-G		●	●		●	●	2					
156012-H		●	●		●		3					
WDXT 186012-L		●	●		●		1	18.0	6.0	1.2	1.2	WDX560D4S40 to WDX630D4S40
186012-G		●	●		●		2					
186012-H		●	●		●		3					

Fig 1

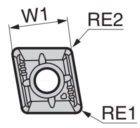
L Type



L Type: For low feed with chip control

Fig 2

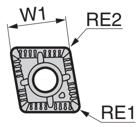
G Type



G Type: General-purpose

Fig 3

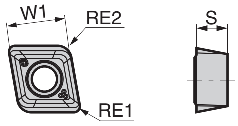
H Type



H Type: Strong edge

Fig 4

M Type



M Type: Dedicated for Stainless Steel

Identification Code

WDXT 06 30 06 -G

- 06: Width across Flats (6.0)
- 30: Thickness x 10 (3.0)
- 06: Corner Radius x 10 (0.6)
- -G: Breaker Type

Recommended Cutting Conditions (for 4D)

4D		Work Material	Workpiece Hardness HB	Recommended Chipbreaker	Recommended Insert Grade	V_c (cutting speed) (m/min)	*f* (feed rate) (mm/rev) (Min. - **Optimum** - Max.) ø13.0 to ø18.0	ø18.5 to ø29.0	ø29.5 to ø36.0	ø37.0 to ø55.0	ø56.0 to ø63.0
P	Steel, Carbon Steel	SS400	125	G	ACP300	120-**180**-240	0.05-**0.07**-0.10	0.05-**0.07**-0.10	0.05-**0.07**-0.10	0.05-**0.08**-0.10	0.06-**0.09**-0.11
		S15C	125	L	ACP300	130-**170**-220	0.04-**0.07**-0.09	0.04-**0.07**-0.09	0.04-**0.07**-0.09	0.05-**0.08**-0.10	0.06-**0.09**-0.11
		S45C	190	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	0.10-**0.15**-0.23
		S45C Hardened	250	G	ACP100	100-**170**-240	0.05-**0.08**-0.10	0.05-**0.08**-0.10	0.05-**0.08**-0.11	0.05-**0.08**-0.11	0.06-**0.09**-0.13
		S75C	270	G	ACP100	120-**180**-240	0.06-**0.08**-0.11	0.06-**0.08**-0.11	0.06-**0.09**-0.13	0.07-**0.11**-0.14	0.08-**0.11**-0.15
		S75C Hardened	300	G	ACP100	85-**150**-210	0.05-**0.07**-0.09	0.05-**0.07**-0.09	0.05-**0.08**-0.10	0.05-**0.08**-0.11	0.06-**0.09**-0.12
	Low-alloy Steel	SCM,SNCM	180	L	ACP300	100-**140**-180	0.05-**0.07**-0.10	0.05-**0.07**-0.10	0.05-**0.07**-0.11	0.06-**0.08**-0.12	0.07-**0.09**-0.14
		SCM, SNCM Hardened	275	G	ACP100	100-**170**-240	0.05-**0.08**-0.10	0.05-**0.08**-0.10	0.05-**0.08**-0.10	0.05-**0.08**-0.11	0.06-**0.08**-0.11
		SCM, SNCM Hardened	300	G	ACP100	90-**150**-210	0.05-**0.08**-0.10	0.05-**0.08**-0.10	0.05-**0.08**-0.10	0.05-**0.08**-0.11	0.06-**0.08**-0.11
		SCM, SNCM Hardened	350	G	ACP100	75-**120**-165	0.05-**0.08**-0.10	0.05-**0.08**-0.10	0.05-**0.08**-0.10	0.05-**0.08**-0.11	0.06-**0.08**-0.11
	High-alloy Steel	SKD,SKT,SKH	200	G	ACP100	120-**180**-240	0.06-**0.10**-0.13	0.07-**0.11**-0.14	0.07-**0.11**-0.15	0.08-**0.12**-0.16	0.09-**0.13**-0.17
		SKD, SKT, SKH (Sintered)	325	G	ACP100	100-**140**-180	0.05-**0.08**-0.10	0.05-**0.08**-0.10	0.05-**0.08**-0.10	0.05-**0.08**-0.11	0.06-**0.08**-0.11
M	Stainless Steel	SUS403/Others (Martensitic/Ferritic)	200	M	ACM300	120-**150**-180	0.06-**0.08**-0.13	0.06-**0.08**-0.13	0.06-**0.08**-0.14	0.07-**0.09**-0.14	0.08-**0.11**-0.14
		SUS403/Others (Martensitic (hardened))	240	M	ACM300	90-**120**-150	0.06-**0.08**-0.13	0.06-**0.08**-0.13	0.06-**0.08**-0.14	0.07-**0.09**-0.14	0.08-**0.11**-0.14
		SUS304, SUS316 (Austenitic)	180	M	ACM300	120-**150**-180	0.06-**0.08**-0.13	0.06-**0.08**-0.13	0.06-**0.08**-0.14	0.07-**0.09**-0.14	0.08-**0.11**-0.14
K	Cast Iron			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	0.13-**0.25**-0.34
	Ductile Cast Iron			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	0.13-**0.25**-0.34
S	Exotic Alloy (Heat-Resistant Alloy, Super Alloy, Titanium Alloy, etc.)		200	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	0.08-**0.12**-0.17
N	Aluminum 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

For the P and K grades for which ACP300 and ACK300 inserts are the first recommendation, ACP100 inserts are the second recommendation.
In that case, it is recommended to set the cutting speed (V_C) to 130% and the feed rate (f) to 75% of the figures in the table above.

● mark: Standard stocked item (new product/expanded item)

WDX Type for 5D (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

CVD Coat | PVD Coat | Aurora DLC Coat | Coolant Hole | 5D | Indexable

Drilling tolerance: 0 to +0.25

*Refer to N38 for the tolerance of h7

Fig 1

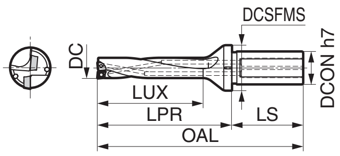


Fig 2

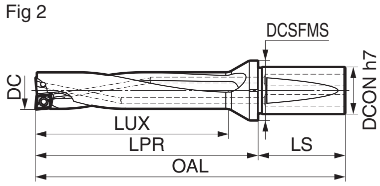
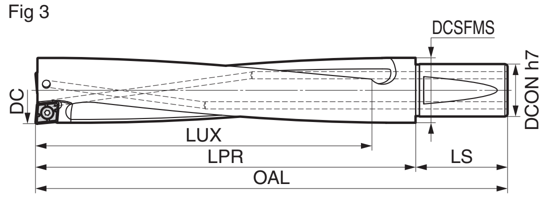


Fig 3



Holder Diameter ø13.0 to 45.0mm

Dimensions (mm)

Dia. DC	Stock	Cat. No.	Neck Length LUX	Overhang Length LPR	Overall Length OAL	Shank LS	Boss DCSFMS	Shank Dia. DCON	Radial Offset Amount (Max)	Applicable Insert	Fig
13.0	●	WDX 130D5S20	68.0	83.0	127.0	44	28.0	20.0	0.35	WDXT 042004	1
13.5	●	135D5S20	70.5	85.5	129.5				0.30		1
14.0	●	140D5S20	73.0	88.0	132.0				0.25		1
14.5	●	145D5S20	75.5	90.5	134.5				0.20		1
15.0	●	150D5S20	78.0	93.0	137.0				0.15		1
15.5	●	WDX 155D5S20	80.5	95.5	139.5	44	30.0	20.0	0.40	WDXT 052504	1
16.0	●	160D5S20	83.0	98.0	142.0						1
16.5	●	165D5S20	85.5	100.5	144.5				0.35		1
17.0	●	170D5S20	88.0	103.0	147.0				0.30		1
17.5	●	WDX 175D5S25	90.5	105.5	161.5	56	32.0	25.0	0.25		1
18.0	●	180D5S25	93.0	108.0	164.0				0.20		1
18.5	●	WDX 185D5S25	95.5	110.5	166.5	56	33.0	25.0	0.50	WDXT 063006	1
19.0	●	190D5S25	98.0	113.0	169.0				0.45		1
19.5	●	195D5S25	100.5	115.5	171.5				0.40		1
20.0	●	200D5S25	103.0	118.0	174.0				0.30		1
20.5	●	205D5S25	105.5	120.5	176.5						1
21.0	●	210D5S25	108.0	123.0	179.0				0.20		1
21.5	●	215D5S25	110.5	125.5	181.5				0.15		1
22.0	●	220D5S25	113.0	128.0	184.0				0.10		1
22.5	●	225D5S25	115.5	130.5	186.5				0.05		1
23.0	●	WDX 230D5S25	118.0	136.0	192.0	56	37.0	25.0	0.70	WDXT 073506	1
23.5	●	235D5S25	120.5	138.5	194.5						1
24.0	●	240D5S25	123.0	141.0	197.0				0.60		1
24.5	●	245D5S25	125.5	143.5	199.5				0.50		1
25.0	●	250D5S25	128.0	146.0	202.0						1
26.0	●	WDX 260D5S32	133.0	153.0	213.0	60	41.0	32.0	0.40		2
27.0	●	270D5S32	138.0	158.0	218.0				0.25		2
28.0	●	280D5S32	143.0	163.0	223.0				0.15		2
29.0	●	WDX 290D5S32	149.0	170.0	230.0	60	50.0	32.0	1.00	WDXT 094008	2
30.0*	●	300D5S32	154.0	178.0	238.0		54.0		0.90		2
31.0*	●	310D5S32	159.0	183.0	243.0				0.80		2
32.0*	●	320D5S32	164.0	188.0	248.0				0.70		2
30.0*	●	WDX 300D5S40	154.0	178.0	248.0	70	54.0	40.0	0.90		2
31.0*	●	310D5S40	159.0	183.0	253.0				0.80		2
32.0*	●	320D5S40	164.0	188.0	258.0				0.70		2
33.0	●	330D5S40	169.0	193.0	263.0				0.55		2
34.0	●	340D5S40	174.0	198.0	268.0				0.45		2
35.0	●	350D5S40	179.0	203.0	273.0				0.35		2
36.0	●	360D5S40	184.0	208.0	278.0				0.20		2
37.0	●	WDX 370D5S40	190.0	220.0	290.0	70	49.5	40.0	1.00	WDXT 125012	2
38.0	●	380D5S40	195.0	225.0	295.0						2
39.0	●	390D5S40	200.0	230.0	300.0				0.90		2
40.0	●	400D5S40	205.0	235.0	305.0				0.80		2
41.0	●	410D5S40	210.0	240.0	310.0				0.70		2
42.0	●	420D5S40	215.0	245.0	315.0				0.60		2
43.0	●	430D5S40	220.0	250.0	320.0				0.50		2
44.0	●	440D5S40	225.0	255.0	325.0						2
45.0	●	450D5S40	230.0	260.0	330.0				0.40		2

*Diameters ø30, ø31, ø32 are in stock with shank diameters of ø32 and ø40.

Radial Offset Amount ☞ J132

Holder Diameter ø46.0 to 55.0mm

Dimensions (mm)

Dia. DC	Stock	Cat. No.	Neck Length LUX	Overhang Length LPR	Overall Length OAL	Shank LS	Boss DCSFMS	Shank Dia. DCON	Radial Offset Amount (Max)	Applicable Insert	Fig
46.0	●	WDX 460D5S40	235.0	265.0	335.0	70	49.5	40.0	1.50	WDXT 156012	2
47.0	●	470D5S40	240.0	270.0	340.0				1.40		2
48.0	●	480D5S40	245.0	275.0	345.0				1.30		2
49.0	●	490D5S40	250.0	280.0	350.0				1.20		2
50.0	●	500D5S40	255.0	285.0	355.0				1.10		2
51.0	●	510D5S40	260.0	290.0	360.0				1.00		3
52.0	●	520D5S40	265.0	295.0	365.0		50.5		0.90		3
53.0	●	530D5S40	270.0	300.0	370.0		51.5		0.80		3
54.0	●	540D5S40	275.0	305.0	375.0		52.5		0.60		3
55.0	●	550D5S40	280.0	310.0	380.0		53.5		0.50		3

*Diameters ø30, ø31, ø32 are in stock with shank diameters of ø32 and ø40.

Parts

Applicable Holders	Flat Insert Screw	N·m	Wrench	Wrench
WDX130D5S20 to WDX150D5S20	BFTX01604N	0.3	TRX06	—
WDX155D5S20 to WDX180D5S25	BFTX0204N	0.5	TRX06	—
WDX185D5S25 to WDX225D5S25	BFTY02206	1.0	—	TRD07
WDX230D5S25 to WDX280D5S32	BFTX02506N	1.5	—	TRD08
WDX290D5S32 to WDX360D5S40	BFTX03584	3.5	—	TRD15
WDX370D5S40 to WDX450D5S40	BFTX0511N	5.0	—	TRD20
WDX460D5S40 to WDX550D5S40	BFTX0615N	5.0	—	TRD25

Identification Code

WDX 200 D5 S25

Dia. DC (ø20.0)

Flute Length L/D (5D)

Shank Dia. DCON (ø25.0)

N·m Recommended Tightening Torque (N·m)

WDX Type for 5D (Internal Coolant Supply)

Expansion

Insert

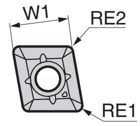
Dimensions (mm)

Grade Classification		Coated Carbide				
Process	High-speed/Light	P/K				N
	General-purpose		P	M		
	Roughing		P		K	

Cat. No.	ACP100	ACP300	ACM300	ACK300	DL1500	Fig	Width W1	Thickness S	Corner Radius RE1	Corner Radius RE2	Applicable Holders
WDXT 042004-L	●	●		●		1	4.2	2.0	0.4	0.4	WDX130D5S20 to WDX150D5S20
042004-G	●	●		●	●	2					
042004-H	●	●		●		3					
042004-M			●			4				0.8	
WDXT 052504-L	●	●		●		1	5.0	2.5	0.4	0.4	WDX155D5S20 to WDX180D5S25
052504-G	●	●		●	●	2					
052504-H	●	●		●		3					
052504-M			●			4				1.0	
WDXT 063006-L	●	●		●		1	6.0	3.0	0.6	0.6	WDX185D5S25 to WDX225D5S25
063006-G	●	●		●	●	2					
063006-H	●	●		●		3					
063006-M			●			4				1.4	
WDXT 073506-L	●	●		●		1	7.5	3.5	0.6	0.6	WDX230D5S25 to WDX280D5S32
073506-G	●	●		●	●	2					
073506-H	●	●		●		3					
073506-M			●			4				1.6	
WDXT 094008-L	●	●		●		1	9.6	4.0	0.8	0.8	WDX290D5S32 to WDX360D5S40
094008-G	●	●		●	●	2					
094008-H	●	●		●		3					
094008-M			●			4				2.4	
WDXT 125012-L	●	●		●		1	12.4	5.0	1.2	1.2	WDX370D5S40 to WDX450D5S40
125012-G	●	●		●	●	2					
125012-H	●	●		●		3					
125012-M			●			4				3.2	
WDXT 156012-L	●	●		●		1	15.2	6.0	1.2	1.2	WDX460D5S40 to WDX550D5S40
156012-G	●	●		●	●	2					
156012-H	●	●		●		3					

Fig 1

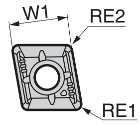
L Type



L Type: For low feed with chip control

Fig 2

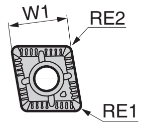
G Type



G Type: General-purpose

Fig 3

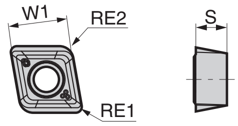
H Type



H Type: Strong edge

Fig 4

M Type



M Type: Dedicated for Stainless Steel

Identification Code

WDXT 06 30 06 -G

- 06: Width across Flats (6.0)
- 30: Thickness x 10 (3.0)
- 06: Corner Radius x 10 (0.6)
- -G: Breaker Type

Recommended Cutting Conditions (for 5D)

		Work Material		Workpiece Hardness HB	Recommended Chipbreaker	Recommended Insert Grade	v_c (cutting speed) (m/min)	*f* (feed rate) (mm/rev) (Min. - **Optimum** - Max.) ø13.0 to ø18.0	ø18.5 to ø29.0	ø29.5 to ø36.0	ø37.0 to ø55.0
5D	P	Steel, Carbon Steel	SS400	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
			S15C	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
			S45C	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
			S45C Hardened	250	G	ACP100	100-**170**-240	0.04-**0.07**-0.08	0.04-**0.07**-0.08	0.05-**0.07**-0.09	0.05-**0.08**-0.11
			S75C	270	G	ACP100	120-**180**-240	0.05-**0.08**-0.11	0.05-**0.08**-0.11	0.06-**0.08**-0.11	0.07-**0.09**-0.13
			S75C Hardened	300	G	ACP100	85-**150**-210	0.04-**0.07**-0.08	0.04-**0.07**-0.08	0.05-**0.07**-0.09	0.05-**0.08**-0.10
		Low-alloy Steel	SCM,SNCM	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
			SCM, SNCM Hardened	275	G	ACP100	100-**170**-240	0.04-**0.06**-0.09	0.04-**0.06**-0.09	0.04-**0.06**-0.09	0.05-**0.07**-0.10
			SCM, SNCM Hardened	300	G	ACP100	90-**150**-210	0.04-**0.06**-0.09	0.04-**0.06**-0.09	0.04-**0.06**-0.09	0.05-**0.07**-0.10
			SCM, SNCM Hardened	350	G	ACP100	75-**120**-165	0.04-**0.06**-0.09	0.04-**0.06**-0.09	0.04-**0.06**-0.09	0.05-**0.07**-0.10
		High-alloy Steel	SKD,SKT,SKH	200	G	ACP100	120-**180**-240	0.05-**0.08**-0.12	0.06-**0.09**-0.12	0.06-**0.09**-0.13	0.07-**0.10**-0.14
			SKD, SKT, SKH (Sintered)	325	G	ACP100	100-**140**-180	0.04-**0.06**-0.09	0.04-**0.06**-0.09	0.04-**0.06**-0.09	0.04-**0.06**-0.09
	M	Stainless Steel	SUS403/Others (Martensitic/Ferritic)	200	M	ACM300	120-**150**-180	0.05-**0.08**-0.11	0.05-**0.08**-0.12	0.05-**0.08**-0.12	0.06-**0.09**-0.12
			SUS403/Others (Martensitic (hardened))	240	M	ACM300	90-**120**-150	0.05-**0.08**-0.11	0.05-**0.08**-0.12	0.05-**0.08**-0.12	0.06-**0.09**-0.12
			SUS304, SUS316 (Austenitic)	180	M	ACM300	120-**150**-180	0.05-**0.08**-0.11	0.05-**0.08**-0.12	0.05-**0.08**-0.12	0.06-**0.09**-0.12
	K	Cast Iron			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
		Ductile Cast Iron			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	Exotic Alloy (Heat-Resistant Alloy, Super Alloy, Titanium Alloy, etc.)		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	Aluminum 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

For the P and K grades for which ACP300 and ACK300 inserts are the first recommendation, ACP100 inserts are the second recommendation.
In that case, it is recommended to set the cutting speed (V_C) to 130% and the feed rate (f) to 75% of the figures in the table above.
For ø46 and above, the first recommendation for M-class chipbreaker is G type and grade is APC300.

● mark: Standard stocked item (new product/expanded item)

■ Lathe Drilling Guidelines

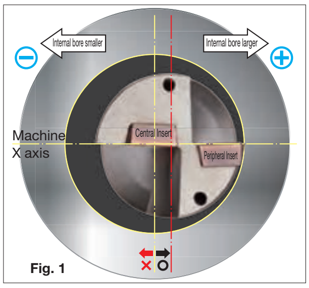


Fig. 1


Fig. 2

■ Drill Mounting

- Set the drill so that the peripheral insert is parallel to the X axis of the machine. (Fig.1)
- Press the end of the flange of the drill tightly against the face of the holder before tightening the bolt.

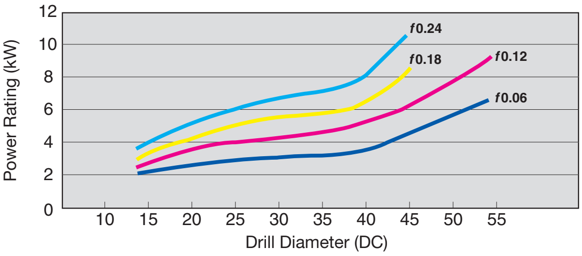
■ Adjusting work diameter (offset)

- The work diameter is adjustable by moving the machine X axis.
- Make the adjustment by moving in the positive direction of the X axis (enlarging the bore diameter). Moving the X axis in the negative direction (to reduce the bore diameter) is not recommended as the holder may interfere with the hole. (See Fig. 1)
- The maximum allowable adjustment (offset) differs depending on the drill diameter. Refer to Radial Offset (Max) in the Holder dimension tables on pages J124 to J130.

■ Other notes

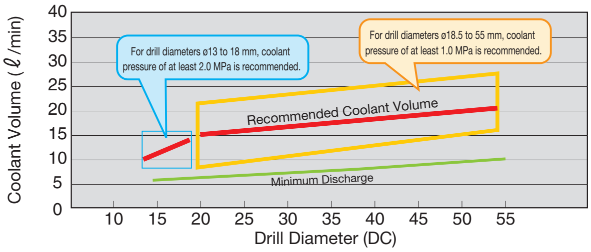
- When the drill is mounted on a lathe, the centre of the central insert is designed to be 0.15 to 0.2 mm below the centre of the spindle.
- If the spindle deviates so far off centre that the centre of the central insert lies above the spindle centre, the central insert will break.
- Set the depth of cut for turning or internal boring work to 1/5 or less of the drill diameter (max. 5 mm or less). (Example: Set depth of cut to 4 mm or less for a drill diameter of ø20 mm)
- Install a cover to prevent injury from possible chip fly-out (see disc-shaped chip in Figure 2) when through boring on a lathe.
  If your equipment has no cover, attach a cover or similar part for your safety.

■ Typical Power Ratings



<CAUTIONS>
- Power ratings are subject to change based on conditions such as work material and cutting speed, and should only be used for reference.
- Cutting Conditions (Reference)
  Work Material: S50C (230HB)
  Cutting Speed: v_c=150m/min

■ Typical Coolant Volume



<CAUTIONS>
- Coolant volume is a factor that affects drilling performance, particularly with respect to chip evacuation and lubricity. This is particularly important for chip evacuation and lubricity.
- Coolant pressure should be set higher for small drills. (ø18.0 mm or smaller)
- Coolant volume is usually adjusted by changing the coolant pressure provided on most CNC machines.
- This table provides guideline values only. More coolant may be required depending on the machine, coolant and work material.

■ Precautions for Attaching and Removing Inserts

- Before mounting the insert, remove all traces of foreign matter on the insert seat using air or other means.
- When using the wrench, align it to the axis of the screw and press while turning. (See Fig. 3)
  If the wrench is not aligned with the screw, the insert will be insufficiently clamped and the tip of the wrench and/or the Torx hole of the screw may become deformed.
- Do not allow clearance between the insert seat and drill when mounting the insert (Fig. 4, Part A).
  Figure 4 shows a properly mounted insert.

* It is normal for the outer sides of the central insert to have clearance because it is clamped at its centre and pushed to the rear.

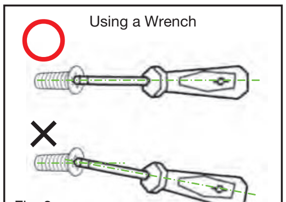


Fig. 3

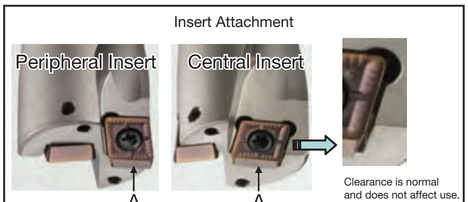


Fig. 4

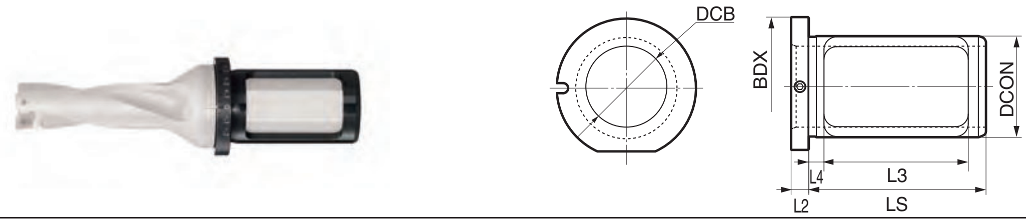
■ Troubleshooting

Problem	Symptom	Cause	Countermeasures
Too much variation in hole diameter	Drilled hole diameter is larger than desired	· Deflection of the holder due to high thrust force	· Decrease the feed rate to decrease the thrust force. · Make an adjustment on the X axis.
	Drilled hole diameter is smaller than desired	· The cutting edge backs off and does not enter the workpiece	· Increase the feed rate. · Make an adjustment on the X axis.
	Significant difference in hole diameter at entrance and bottom	· Packing of Chips	· Increase the feed rate to improve chip evacuation. · Use an L type breaker for chip control.
Poor quality machined hole surface	Poor machined surface from entrance to bottom of hole	· High cutting force · Low rigidity of workpiece	· Decrease the feed rate. · Review tooling to improve rigidity.
	Poor machined surface at bottom of hole	· Machined surfaces damaged by chips	· Increase the feed rate to improve chip evacuation. · Use an L type breaker for chip control.
Insert is broken	Breakage on central insert (centre)	· Improper adjustment of centre height · Insert is not strong enough	· Check the centre height again. · If the drill is being used on a lathe, try flipping the drill 180°. · Use a strong edge chipbreaker (H type).
	Breakage on peripheral insert	· High cutting load in cutting edge	· Decrease the feed rate to decrease cutting load. · Use a strong edge chipbreaker (H type).

Eccentric Sleeve for WDX Type

Indexable

Fig 1



Body (WAS Type)

Parts — Dimensions (mm)

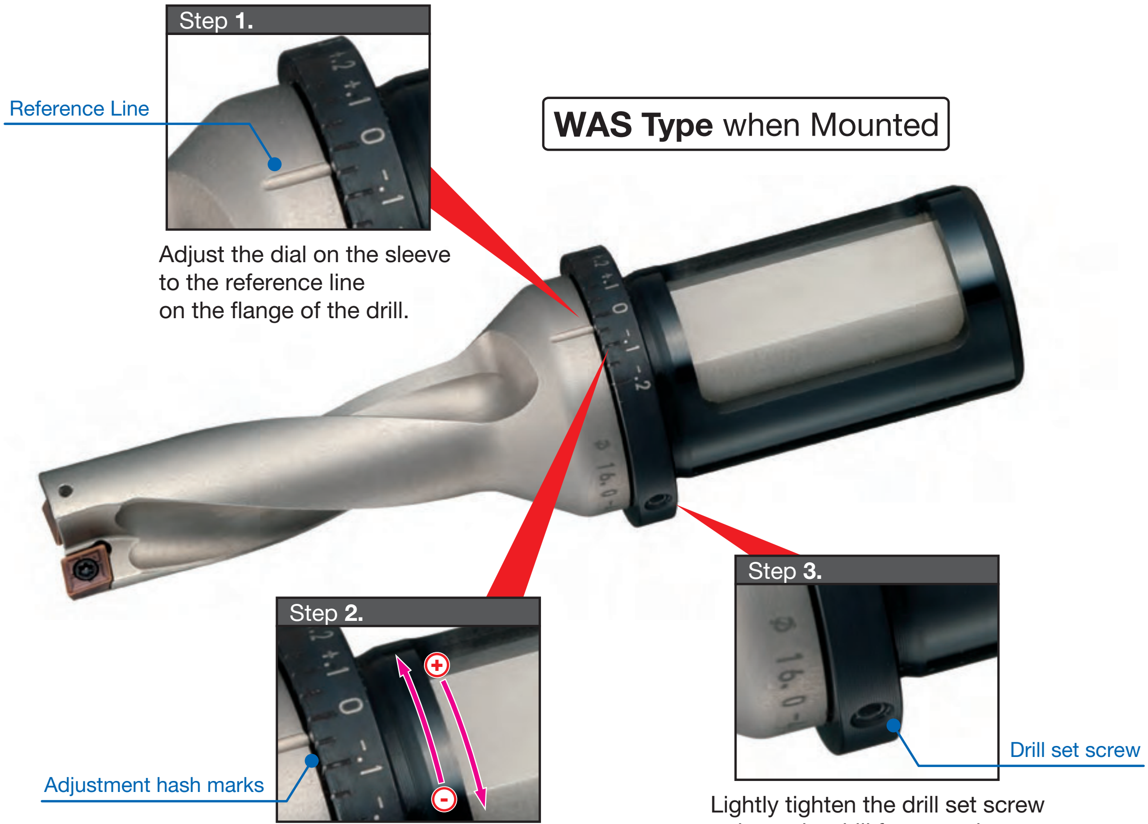
Cat. No.	Stock	Hole Dia. DCB	Shank Dia. DCON	Diameter BDX	Shank LS	Length L2	Length L3	Length L4	Diameter Adjustable Range	Fig	Screw	Wrench
WAS 2025-48	●	20	25	33	43	5	32	5	+0.3 to -0.2	1	BT0306	LH015
2532-60	●	25	32	42	60	7	46	6	+0.3 to -0.3	1	BT0406	LH020
3240-70	●	32	40	55	70	7	57	6	+0.3 to -0.3	1	BT0408	LH020
4050-85	●	40	50	60	70	7	54	6	+0.5 to -0.5	1	BT0408	LH020

Diameter Adjustment Range indicates the range in which the diameter can be adjusted.
The dedicated Eccentric Sleeve WAS Type for the SumiDrill WDX Type provides ±0.3 mm of adjustment when drilling holes.

Cautions for Use

1. The dial is for reference purposes. Always measure the actual work diameter and adjust accordingly.
2. Not usable with collet chuck type holders.
   Use a side-locking type holder.
3. Use this product under high-rigidity conditions.
   This product is not recommended for deep hole drilling such as 5D and low-rigidity conditions.

Directions (Adjusting the Work Diameter)



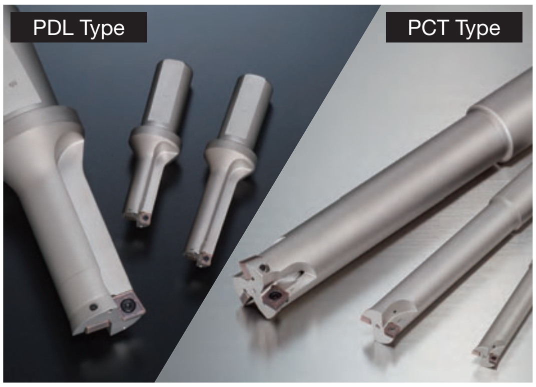
Step 1. Adjust the dial on the sleeve to the reference line on the flange of the drill.

Step 2. Turn the sleeve to a positive number to expand the work diameter, and to a negative number to decrease it.

Step 3. Lightly tighten the drill set screw to keep the drill from moving.

SEC-Plunge Drill, SEC-Plunge Mill

PDL Type / PCT Type

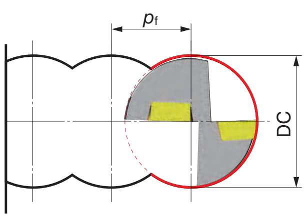


■ General Features

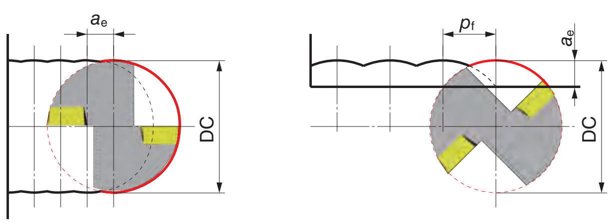
The tools cut in the Z axis direction, where tool rigidity is highest, allow high-efficiency roughing for aerospace components and dies with long tool overhang. These must be used to machine deep holes and pockets.

■ Features

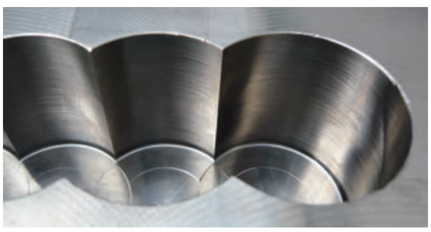
- The flat cutting edge design produces near-flat bottom profiles to reduce depth of cut variation during finishing.
- All sizes come with oil holes for supplying coolant internally to improve chip evacuation performance.
- Durable body with special surface treatment offers improved tool life and reliability.
- Utilising 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, enabling radial depth of cut beyond the tool's radius, pick feed cutting and drilling. (Pocketing, etc.)
- Although the PCT type has limited radial depth of cut, the tool has a high effective number of teeth enabling it to perform high feed cutting. (Medium finishing of corners, hole expansion, deep groove milling, etc.)

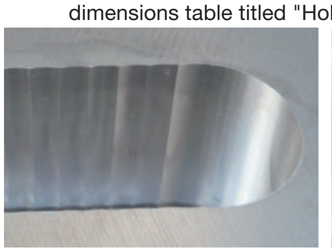


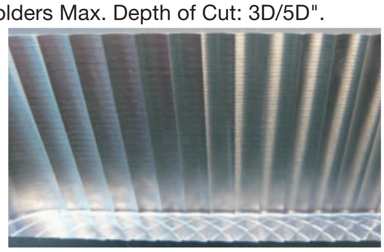
Keep the value of p_f for PDL type tools to less than 70% of the tool diameter (**DC**).



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 table titled "Holders Max. Depth of Cut: 3D/5D".



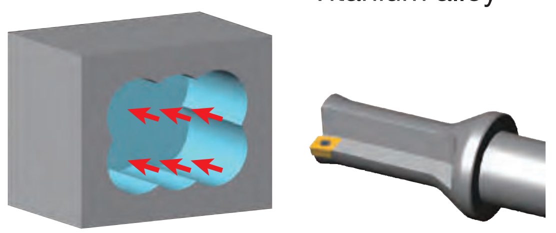




PDL Type / PCT Type

■ Application Examples

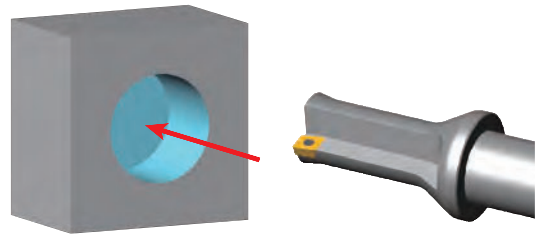
Pocketing PDL Type Work Material: Titanium alloy



Tool : PDL 400D2S40 (ø40)
Insert : WDXT 125012-G
Grade: ACK300

Cutting Speed : v_c=40m/min
Feed Rate : f=0.07mm/rev (v_f=22.3mm/min)
Depth of Cut : a_e (p_f)=25mm

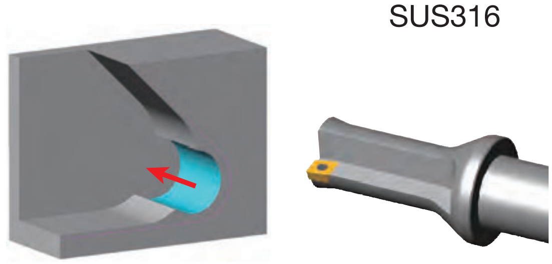
Drilling PDL Type Work Material: SUS316



Tool : PDL 200D3S25 (ø20)
Insert : WDXT 063006-G
Grade : ACP300

Cutting Speed: v_c=180m/min
Feed Rate : f=0.10mm/rev (v_f=286mm/min)
Depth of Cut : a_e (p_f)=20mm

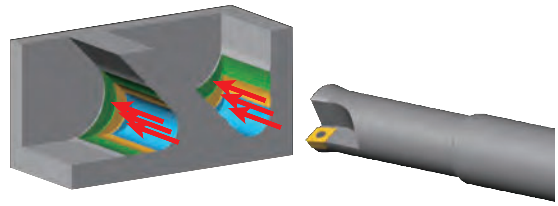
Corner Fillet Removal PDL Type Work Material: SUS316



Tool : PDL 250D2S25 (ø25)
Insert : WDX T073506-G
Grade : ACP300

Cutting Speed : v_c=140m/min
Feed Rate : f=0.10mm/rev (v_f=178mm/min)
Depth of Cut : a_e(p_f)=15mm

Corner Finishing PCT Type Work Material: Titanium alloy

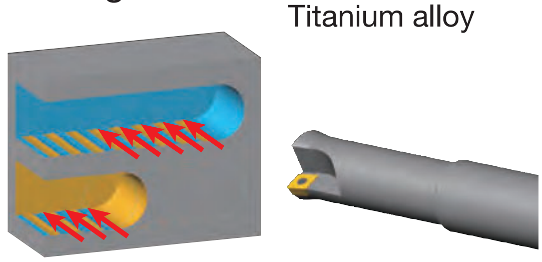


Tool:	Insert:
PCT 320D3S32 (ø32)	WDXT 094008-G
PCT 250D3S25 (ø25)	WDXT 073506-G
PCT 200D3S20 (ø20)	WDXT 063006-G

Grade: ACK300

Cutting Speed : v_c=50m/min
Feed Rate : f_z=0.04mm/t (v_f=80 to 127mm/min)
Depth of Cut : a_e (p_f)=3.2 to 6.5mm

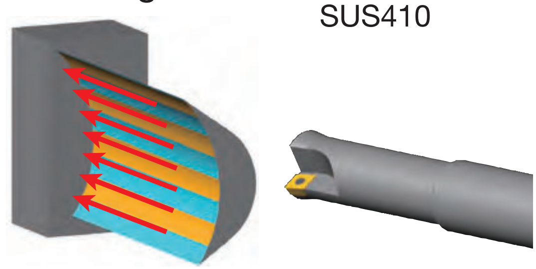
Grooving PCT Type Work Material: Titanium alloy



Tool : PCT 320D5S32 (ø32)
Insert : WDXT 094008-G
Grade: ACK300

Cutting Speed : v_c=40m/min
Feed Rate : f_z=0.035mm/t (v_f=56mm/min)
Depth of Cut : a_e (p_f)=5.0mm

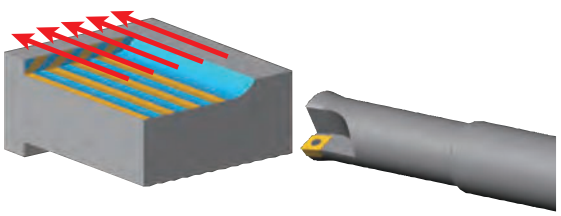
Contouring PCT Type Work Material: SUS410



Tool : PCT 250D5S25 (ø25)
Insert : WDXT 073506-G
Grade: ACP300

Cutting Speed: v_c=150m/min
Feed Rate : f_z=0.05mm/t (v_f=382mm/min)
Depth of Cut : a_e=3.0mm

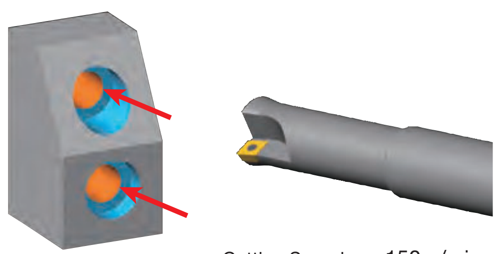
Shoulder Plunging PCT Type Work Material: SUS304



Tool : PCT 320D3S32 (ø32)
Insert : WDXT 094008-G
Grade: ACP300

Cutting Speed : v_c=180m/min
Feed Rate : f_z=0.075mm/t (v_f=537mm/min)
Depth of Cut : a_e=7.0mm p_f=5.0mm

Counterboring PCT Type Work Material: SCM435



Tool : PCT 200D5S20 (ø20)
Insert : WDXT 063006-G
Grade: ACP300

Cutting Speed: v_c=150m/min
Feed Rate : f_z=0.075mm/t (v_f=716mm/min)
Depth of Cut : a_e=3.5mm

PDL Type for 2D/3D (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Cast Iron | Ductile Cast Iron | Aluminum Alloy | Copper Alloy

Expansion | CVD Coat | PVD Coat | Aurora DLC Coat | Coolant Hole | 2D | 3D | Indexable

Fig 1

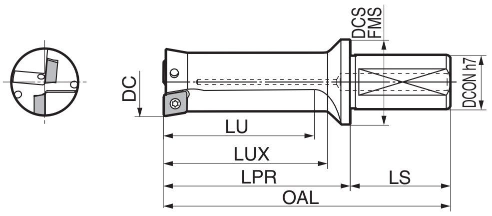
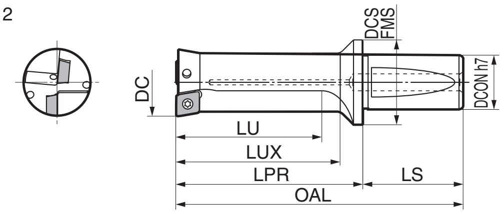


Fig 2



Holder for L/D=2D Diameter ø16.0 to 40.0mm

Dimensions (mm)

Dia. DC	Stock	Cat. No.	Effective Length LU	Neck Length LUX	Overhang Length LPR	Overall Length OAL	Shank LS	Flange Diameter DCSFMS	Shank Dia. DCON	Applicable Insert	Fig
16.0	●	**PDL 160D2S20**	**32**	35	50	94	44	28	20	WDXT052504	1
20.0	●	**200D2S25**	**40**	43	58	114	56	33	25	WDXT063006	1
25.0	●	**250D2S25**	**50**	53	71	127	56	37	25	WDXT073506	1
32.0	●	**320D2S40**	**64**	68	92	162	70	54	40	WDXT094008	2
40.0	●	**400D2S40**	**80**	85	115	185	70	54	40	WDXT125012	2

Holder for L/D=3D Diameter ø16.0 to 40.0mm

Dimensions (mm)

Dia. DC	Stock	Cat. No.	Effective Length LU	Neck Length LUX	Overhang Length LPR	Overall Length OAL	Shank LS	Flange Diameter DCSFMS	Shank Dia. DCON	Applicable Insert	Fig
16.0	●	**PDL 160D3S20**	**48**	51	66	110	44	28	20	WDXT052504	1
20.0	●	**200D3S25**	**60**	63	78	134	56	33	25	WDXT063006	1
25.0	●	**250D3S25**	**75**	78	96	152	56	37	25	WDXT073506	1
32.0	●	**320D3S40**	**96**	100	124	194	70	54	40	WDXT094008	2
40.0	●	**400D3S40**	**120**	125	155	225	70	54	40	WDXT125012	2

Insert

Dimensions (mm)

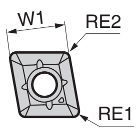
Grade Classification		Coated Carbide				
Process	High-speed/Light	P K				N
	General-purpose		P	M		
	Roughing		P		K	

Cat. No.	ACP100	ACP300	ACM300	ACK300	DL1500	Width W1	Thickness S	Corner Radius RE1	Corner Radius RE2	Applicable Holders	Fig
WDXT 052504-L	●	●		●		5.0	2.5	0.4	0.4	PDL160D2S20 / PDL160D3S20	1
052504-G	●	●		●	●						2
052504-H	●	●		●							3
052504-M			●						1.0		4
WDXT 063006-L	●	●		●		6.0	3.0	0.6	0.6	PDL200D2S25 / PDL200D3S25	1
063006-G	●	●		●	●						2
063006-H	●	●		●							3
063006-M			●						1.4		4
WDXT 073506-L	●	●		●		7.5	3.5	0.6	0.6	PDL250D2S25 / PDL250D3S25	1
073506-G	●	●		●	●						2
073506-H	●	●		●							3
073506-M			●						1.6		4
WDXT 094008-L	●	●		●		9.6	4.0	0.8	0.8	PDL320D2S40 / PDL320D3S40	1
094008-G	●	●		●	●						2
094008-H	●	●		●							3
094008-M			●						2.4		4
WDXT 125012-L	●	●		●		12.4	5.0	1.2	1.2	PDL400D2S40 / PDL400D3S40	1
125012-G	●	●		●	●						2
125012-H	●	●		●							3
125012-M			●						3.2		4

(Insert is the same as the WDX Type)

Fig 1

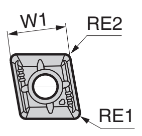
L Type



L Type: For low feed with chip control

Fig 2

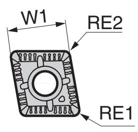
G Type



G Type: General-purpose

Fig 3

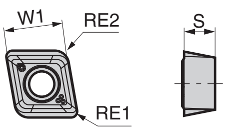
H Type



H Type: Strong edge

Fig 4

M Type



M Type: Dedicated for Stainless Steel

Parts

Applicable Holders	Flat Insert Screw	N·m	Wrench	Wrench
PDL160D2S20 / PDL160D3S20	BFTX0204N	0.5	TRX06	—
PDL200D2S25 / PDL200D3S25	BFTY02206	1.0	—	TRD07
PDL250D2S25 / PDL250D3S25	BFTX02506N	1.5	—	TRD08
PDL320D2S40 / PDL320D3S40	BFTX03584	3.5	—	TRD15
PDL400D2S40 / PDL400D3S40	BFTX0511N	5.0	—	TRD20

Identification Code

PDL 250 D2 S25

- 250: Dia. DC (ø25.0)
- D2: Flute Length (L/D) (2D)
- S25: Shank Dia. DCON (ø25.0)

WDXT 07 35 06 -G

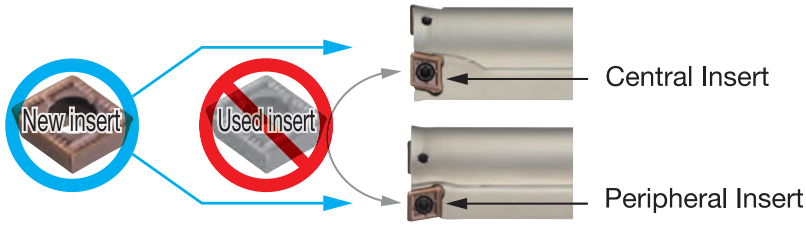
- 07: Width across Flats (7.5)
- 35: Thickness x 10 (3.5)
- 06: Corner Radius x 10 (0.6)
- -G: Breaker Type

N·m Recommended Tightening Torque (N·m) ● mark: Standard Stock (new product/expanded item)

PDL Type for 2D/3D (Internal Coolant Supply)

Drilling
J
Solid
Indexable Head Type
Indexable Insert Type
Reamers
Brazed
Others

● Precautions for Mounting Inserts



PDL Type: Inserts can be used on either the central or peripheral position and both corners are used.
Used peripheral inserts cannot be used as central inserts.
Similarly, central inserts cannot be used as peripheral inserts.

Recommended Cutting Conditions (for 2D) (PDL Type)

		Work Material		Workpiece Hardness HB	Recommended Chipbreaker	Recommended Insert Grade	v_c (cutting speed) (m/min)	*f* (feed rate) (mm/rev) (Min. - **Optimum** - Max.) ø16.0	ø20.0, ø25.0	ø32.0	ø40.0
2D	P	Steel, Carbon Steel	SS400	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
			S15C	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
			S45C	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
			S45C Hardened	250	G	ACP100	100-**170**-240	0.05-**0.09**-0.14	0.05-**0.09**-0.14	0.05-**0.09**-0.14	0.05-**0.10**-0.17
			S75C	270	G	ACP100	120-**180**-240	0.06-**0.10**-0.17	0.06-**0.10**-0.17	0.06-**0.10**-0.17	0.07-**0.12**-0.19
			S75C Hardened	300	G	ACP100	85-**150**-210	0.05-**0.09**-0.14	0.05-**0.09**-0.14	0.05-**0.09**-0.14	0.05-**0.10**-0.15
		Low-alloy Steel	SCM,SNCM	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
			SCM, SNCM Hardened	275	G	ACP100	100-**170**-240	0.06-**0.10**-0.14	0.06-**0.10**-0.14	0.06-**0.10**-0.14	0.07-**0.11**-0.16
			SCM, SNCM Hardened	300	G	ACP100	90-**150**-210	0.06-**0.10**-0.14	0.06-**0.10**-0.14	0.06-**0.10**-0.14	0.07-**0.11**-0.16
			SCM, SNCM Hardened	350	G	ACP100	75-**120**-165	0.06-**0.10**-0.14	0.06-**0.10**-0.14	0.06-**0.10**-0.14	0.07-**0.11**-0.16
		High-alloy Steel	SKD,SKT,SKH	200	G	ACP100	120-**180**-240	0.08-**0.12**-0.17	0.08-**0.12**-0.17	0.08-**0.12**-0.18	0.09-**0.12**-0.21
			SKD, SKT, SKH (Sintered)	325	G	ACP100	100-**140**-180	0.06-**0.10**-0.15	0.06-**0.10**-0.15	0.06-**0.11**-0.15	0.07-**0.11**-0.16
	M	Stainless Steel	SUS403/Others (Martensitic/Ferritic)	200	M	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
			SUS403/Others (Martensitic (hardened))	240	M	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
			SUS304, SUS316 (Austenitic)	180	M	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
	K	Cast Iron			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
		Ductile Cast Iron			H	ACK300	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	Exotic Alloy (Heat-Resistant Alloy, Super Alloy, Titanium Alloy, etc.)		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	Aluminum 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
		Copper Alloy			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

For the P and K grades for which ACP300 and ACK300 inserts are the first recommendation, ACP100 inserts are the second recommendation.
In that case, it is recommended to set the cutting speed (V_C) to 130% and the feed rate (f) to 75% of the figures in the table above.

Recommended Cutting Conditions (for 3D) (PDL Type)

		Work Material		Workpiece Hardness HB	Recommended Chipbreaker	Recommended Insert Grade	v_c (cutting speed) (m/min)	*f* (feed rate) (mm/rev) (Min. - **Optimum** - Max.) ø16.0	ø20.0, ø25.0	ø32.0	ø40.0
3D	P	Steel, Carbon Steel	SS400	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
			S15C	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
			S45C	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
			S45C Hardened	250	G	ACP100	100-**170**-240	0.05-**0.08**-0.11	0.05-**0.08**-0.11	0.05-**0.08**-0.12	0.05-**0.09**-0.14
			S75C	270	G	ACP100	120-**180**-240	0.06-**0.09**-0.14	0.06-**0.09**-0.14	0.06-**0.10**-0.14	0.07-**0.11**-0.17
			S75C Hardened	300	G	ACP100	85-**150**-210	0.05-**0.08**-0.11	0.05-**0.08**-0.11	0.05-**0.08**-0.11	0.05-**0.09**-0.14
		Low-alloy Steel	SCM,SNCM	180	L	ACP300	100-**140**-180	0.05-**0.07**-0.12	0.05-**0.07**-0.12	0.05-**0.08**-0.13	0.06-**0.08**-0.15
			SCM, SNCM Hardened	275	G	ACP100	100-**170**-240	0.06-**0.08**-0.11	0.06-**0.08**-0.11	0.06-**0.08**-0.11	0.07-**0.10**-0.12
			SCM, SNCM Hardened	300	G	ACP100	90-**150**-210	0.06-**0.08**-0.11	0.06-**0.08**-0.11	0.06-**0.08**-0.11	0.07-**0.10**-0.12
			SCM, SNCM Hardened	350	G	ACP100	75-**120**-165	0.06-**0.08**-0.11	0.06-**0.08**-0.11	0.06-**0.08**-0.11	0.07-**0.10**-0.12
		High-alloy Steel	SKD,SKT,SKH	200	G	ACP100	120-**180**-240	0.08-**0.11**-0.14	0.08-**0.12**-0.15	0.08-**0.12**-0.16	0.09-**0.14**-0.18
			SKD, SKT, SKH (Sintered)	325	G	ACP100	100-**140**-180	0.06-**0.09**-0.11	0.06-**0.09**-0.11	0.06-**0.09**-0.11	0.07-**0.10**-0.12
	M	Stainless Steel	SUS403/Others (Martensitic/Ferritic)	200	M	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
			SUS403/Others (Martensitic (hardened))	240	M	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
			SUS304, SUS316 (Austenitic)	180	M	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
	K	Cast Iron			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
		Ductile Cast Iron			H	ACK300	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	Exotic Alloy (Heat-Resistant Alloy, Super Alloy, Titanium Alloy, etc.)		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	Aluminum 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
		Copper Alloy			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

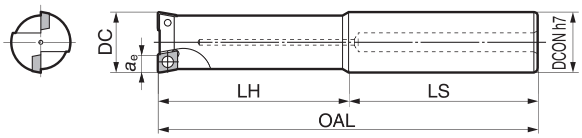
For the P and K grades for which ACP300 and ACK300 inserts are the first recommendation, ACP100 inserts are the second recommendation.
In that case, it is recommended to set the cutting speed (V_C) to 130% and the feed rate (f) to 75% of the figures in the table above.

PCT Type for 3D/5D (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Cast Iron | Ductile Cast Iron | Aluminum Alloy | Copper Alloy

Expansion | CVD Coat | PVD Coat | Aurora DLC Coat | Coolant Hole | 3D | 5D | Indexable

Fig 1



Holder for L/D=3D Diameter ø16.0 to 40.0mm

Dimensions (mm)

Dia. DC	Stock	Cat. No.	a_e max	Neck Length LH	Overall Length OAL	Shank LS	Shank Dia. DCON	Number of Teeth	Applicable Insert	Fig
16.0	●	**PCT 160D3S16**	4.0	53	123	70	16	**2**	WDXT052504	1
20.0	●	**200D3S20**	5.0	65	145	80	20	**2**	WDXT063006	1
25.0	●	**250D3S25**	6.5	80	160	80	25	**2**	WDXT073506	1
32.0	●	**320D3S32**	8.5	101	191	90	32	**2**	WDXT094008	1
40.0	●	**400D3S42**	11.0	125	225	100	42	**3**	WDXT125012	1

Holder for L/D=5D Diameter ø16.0 to 40.0mm

Dimensions (mm)

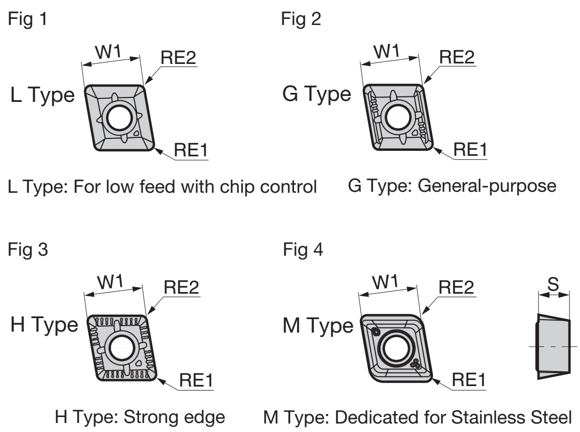
Dia. DC	Stock	Cat. No.	a_e max	Neck Length LH	Overall Length OAL	Shank LS	Shank Dia. DCON	Number of Teeth	Applicable Insert	Fig
16.0	●	**PCT 160D5S16**	4.0	85	155	70	16	**2**	WDXT052504	1
20.0	●	**200D5S20**	5.0	105	185	80	20	**2**	WDXT063006	1
25.0	●	**250D5S25**	6.5	130	210	80	25	**2**	WDXT073506	1
32.0	●	**320D5S32**	8.5	165	255	90	32	**2**	WDXT094008	1
40.0	●	**400D5S42**	11.0	205	305	100	42	**3**	WDXT125012	1

Insert

Dimensions (mm)

Grade Classification		Coated Carbide				
Process	High-speed/Light	P K				N
	General-purpose		P	M		
	Roughing		P		K	

Cat. No.	ACP100	ACP300	ACM300	ACK300	DL1500	Width W1	Thickness S	Corner Radius RE1	Corner Radius RE2	Applicable Holders	Fig
WDXT 052504-L	●	●		●		5.0	2.5	0.4	0.4	PCT160D3S16 / PCT160D5S16	1
052504-G	●	●		●	●						2
052504-H	●	●		●							3
052504-M			🔴						1.0		4
WDXT 063006-L	●	●		●		6.0	3.0	0.6	0.6	PCT200D3S20 / PCT200D5S20	1
063006-G	●	●		●	●						2
063006-H	●	●		●							3
063006-M			🔴						1.4		4
WDXT 073506-L	●	●		●		7.5	3.5	0.6	0.6	PCT250D3S25 / PCT250D5S25	1
073506-G	●	●		●	●						2
073506-H	●	●		●							3
073506-M			🔴						1.6		4
WDXT 094008-L	●	●		●		9.6	4.0	0.8	0.8	PCT320D3S32 / PCT320D5S32	1
094008-G	●	●		●	●						2
094008-H	●	●		●							3
094008-M			🔴						2.4		4
WDXT 125012-L	●	●		●		12.4	5.0	1.2	1.2	PCT400D3S42 / PCT400D5S42	1
125012-G	●	●		●	●						2
125012-H	●	●		●							3
125012-M			🔴						3.2		4



PCT Type: 2 corners can be used for the peripheral edge only. When using the M Type chipbreaker, the a_e max is 20% shorter.
(Insert is the same as the WDX Type)

Identification Code

PCT 250 D3 S25

- 250: Dia. DC (ø25.0)
- D3: Flute Length (L/D) (3D)
- S25: Shank Dia. DCON (ø25.0)

WDXT 07 35 06 -G

- 07: Width across Flats (7.5)
- 35: Thickness x 10 (3.5)
- 06: Corner Radius x 10 (0.6)
- -G: Breaker Type

Parts

Applicable Holders	Flat Insert Screw	N·m	Wrench	Wrench
PCT160D3S16 / PCT160D5S16	BFTX0204N	0.5	TRX06	—
PCT200D3S20 / PCT200D5S20	BFTY02206	1.0	—	TRD07
PCT250D3S25 / PCT250D5S25	BFTX02506N	1.5	—	TRD08
PCT320D3S32 / PCT320D5S32	BFTX03584	3.5	—	TRD15
PCT400D3S42 / PCT400D5S42	BFTX0511N	5.0	—	TRD20

N·m Recommended Tightening Torque (N·m) 🔴 mark: Standard Stock (new product/expanded item)

PCT Type for 3D/5D (Internal Coolant Supply)

Recommended Cutting Conditions (for 3D) (PCT Type)

		Work Material		Workpiece Hardness HB	Recommended Chipbreaker	Recommended Insert Grade	v_c (cutting speed) (m/min)	f_z (feed rate) (mm/rev)		(Min. - **Optimum** - Max.)	
								ø16.0	ø20.0, ø25.0	ø32.0	ø40.0
3D	P	Steel, Carbon Steel	SS400	125	G	ACP300	120-**180**-240	0.05-**0.07**-0.10	0.05-**0.07**-0.10	0.05-**0.07**-0.10	0.05-**0.08**-0.10
			S15C	125	L	ACP300	130-**170**-220	0.04-**0.07**-0.09	0.04-**0.07**-0.09	0.04-**0.07**-0.09	0.05-**0.08**-0.10
			S45C	190	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
			S45C Hardened	250	G	ACP100	100-**170**-240	0.05-**0.08**-0.10	0.05-**0.08**-0.10	0.05-**0.08**-0.11	0.05-**0.08**-0.11
			S75C	270	G	ACP100	120-**180**-240	0.06-**0.08**-0.11	0.06-**0.08**-0.11	0.06-**0.09**-0.13	0.07-**0.11**-0.14
			S75C Hardened	300	G	ACP100	85-**150**-210	0.05-**0.07**-0.09	0.05-**0.07**-0.09	0.05-**0.08**-0.10	0.05-**0.08**-0.11
		Low-alloy Steel	SCM,SNCM	180	L	ACP300	100-**140**-180	0.05-**0.07**-0.10	0.05-**0.07**-0.10	0.05-**0.07**-0.11	0.06-**0.08**-0.12
			SCM, SNCM Hardened	275	G	ACP100	100-**170**-240	0.05-**0.08**-0.10	0.05-**0.08**-0.10	0.05-**0.08**-0.10	0.05-**0.08**-0.11
			SCM, SNCM Hardened	300	G	ACP100	90-**150**-210	0.05-**0.08**-0.10	0.05-**0.08**-0.10	0.05-**0.08**-0.10	0.05-**0.08**-0.11
			SCM, SNCM Hardened	350	G	ACP100	75-**120**-165	0.05-**0.08**-0.10	0.05-**0.08**-0.10	0.05-**0.08**-0.10	0.05-**0.08**-0.11
		High-alloy Steel	SKD,SKT,SKH	200	G	ACP100	120-**180**-240	0.06-**0.10**-0.13	0.07-**0.11**-0.14	0.07-**0.11**-0.15	0.08-**0.12**-0.16
			SKD, SKT, SKH (Sintered)	325	G	ACP100	100-**140**-180	0.05-**0.08**-0.10	0.05-**0.08**-0.10	0.05-**0.08**-0.10	0.05-**0.08**-0.11
	M	Stainless Steel	SUS403/Others (Martensitic/Ferritic)	200	M	ACP300	100-**140**-180	0.06-**0.10**-0.13	0.06-**0.10**-0.13	0.06-**0.10**-0.14	0.07-**0.11**-0.15
			SUS403/Others (Martensitic (hardened))	240	M	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
			SUS304, SUS316 (Austenitic)	180	M	ACP300	100-**140**-180	0.06-**0.10**-0.13	0.06-**0.10**-0.13	0.06-**0.10**-0.14	0.07-**0.11**-0.15
	K	Cast Iron			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
		Ductile Cast Iron			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
	S	Exotic Alloy (Heat-Resistant Alloy, Super Alloy, Titanium Alloy, etc.)		200	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
	N	Aluminum 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

For the P and K grades for which ACP300 and ACK300 inserts are the first recommendation, ACP100 inserts are the second recommendation.
In that case, it is recommended to set the cutting speed (V_C) to 130% and the feed rate (f_Z) to 75% of the figures in the table above.

Recommended Cutting Conditions (for 5D) (PCT Type)

		Work Material		Workpiece Hardness HB	Recommended Chipbreaker	Recommended Insert Grade	v_c (cutting speed) (m/min)	f_z (feed rate) (mm/rev)		(Min. - **Optimum** - Max.)	
								ø16.0	ø20.0, ø25.0	ø32.0	ø40.0
5D	P	Steel, Carbon Steel	SS400	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
			S15C	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
			S45C	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
			S45C Hardened	250	G	ACP100	100-**170**-240	0.04-**0.07**-0.08	0.04-**0.07**-0.08	0.05-**0.07**-0.09	0.05-**0.08**-0.11
			S75C	270	G	ACP100	120-**180**-240	0.05-**0.08**-0.11	0.05-**0.08**-0.11	0.06-**0.08**-0.11	0.07-**0.09**-0.13
			S75C Hardened	300	G	ACP100	85-**150**-210	0.04-**0.07**-0.08	0.04-**0.07**-0.08	0.05-**0.07**-0.09	0.05-**0.08**-0.10
		Low-alloy Steel	SCM,SNCM	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
			SCM, SNCM Hardened	275	G	ACP100	100-**170**-240	0.04-**0.06**-0.09	0.04-**0.06**-0.09	0.04-**0.06**-0.09	0.05-**0.07**-0.10
			SCM, SNCM Hardened	300	G	ACP100	90-**150**-210	0.04-**0.06**-0.09	0.04-**0.06**-0.09	0.04-**0.06**-0.09	0.05-**0.07**-0.10
			SCM, SNCM Hardened	350	G	ACP100	75-**120**-165	0.04-**0.06**-0.09	0.04-**0.06**-0.09	0.04-**0.06**-0.09	0.05-**0.07**-0.10
		High-alloy Steel	SKD,SKT,SKH	200	G	ACP100	120-**180**-240	0.05-**0.08**-0.12	0.06-**0.09**-0.12	0.06-**0.09**-0.13	0.07-**0.10**-0.14
			SKD, SKT, SKH (Sintered)	325	G	ACP100	100-**140**-180	0.04-**0.06**-0.09	0.04-**0.06**-0.09	0.04-**0.06**-0.09	0.04-**0.06**-0.09
	M	Stainless Steel	SUS403/Others (Martensitic/Ferritic)	200	M	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
			SUS403/Others (Martensitic (hardened))	240	M	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
			SUS304, SUS316 (Austenitic)	180	M	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
	K	Cast Iron			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
		Ductile Cast Iron			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	Exotic Alloy (Heat-Resistant Alloy, Super Alloy, Titanium Alloy, etc.)		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	Aluminum 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

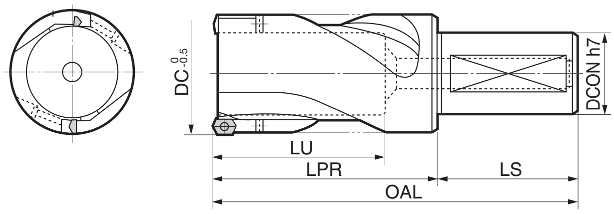
For the P and K grades for which ACP300 and ACK300 inserts are the first recommendation, ACP100 inserts are the second recommendation.
In that case, it is recommended to set the cutting speed (V_C) to 130% and the feed rate (f_Z) to 75% of the figures in the table above.

TCS Type

Uncoated Carbide | Coated Carbide | 2D | Indexable

Drilling
J
Solid
Indexable Head Type
Indexable Insert Type
Reamers
Brazed
Others

Fig 1



Holder

Dimensions (mm)

Dia. DC	Stock	Cat. No.	Effective Length LU	Overhang Length LPR	Overall Length OAL	Shank LS	Shank Dia. DCON	Fig
50 to 65		**TCS 050 to 065**	115 to 145	140 to 180	205 to 245	65	40	1
66 to 80		**066 to 080**	145 to 175	180 to 215	245 to 280	65	40	1
81 to 85		**081 to 085**	175 to 185	215 to 230	290 to 305	75	50	1
86 to 95		**086 to 095**	185 to 205	230 to 255	305 to 330	75	50	1
96 to 105		**096 to 105**	205 to 225	255 to 280	330 to 355	75	50	1
106 to 110		**106 to 110**	225 to 235	280 to 290	355 to 365	75	50	1

Other than the above, manufacturing up to DC = 200mm is possible.
Specify all dimensions and the mounting part shape when ordering.

Insert

Dimensions (mm)

Grade Classification		Coated Carbide	Cemented Carbide		
Process	High-speed/Light				
	General-purpose		P		
	Roughing				
Cat. No.		AC325	A30N	Applicable Holders	Fig
WPG 10R				For outer blade	1
10L				For inner blade	1

Fig 1

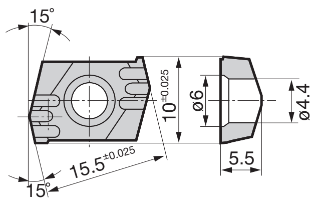


Figure shows WPG10R

Parts

Applicable Holders	Cartridges Stock	Cartridges For outer blade	Cap Screw	Set Screw	Cartridges Stock	Cartridges For inner blade	Cap Screw	Axial Adjustment Screw	Flat Insert Screw	N·m	Wrench
TCS 050 to 055		TU050055K1	BX 0408	BT 0306		TU050055K2	BX 0408	AJM4FT	BFTX 0409N	3.0	TRX 15
TCS 056 to 065		TU055065K1	BX 0410	BT 0306		TU055065K2	BX 0410	AJM4FT	BFTX 0409N	3.0	TRX 15
TCS 066 to 075		TU065075K1	BX 0414	BT 0306		TU065075K2	BX 0414	AJM4FT	BFTX 0409N	3.0	TRX 15
TCS 076 to 085		TU075085K1	BX 0418	BT 0306		TU075085K2	BX 0418	AJM4FT	BFTX 0409N	3.0	TRX 15
TCS 086 to 095		TU085095K1	BX 0418	BT 0306		TU085105K2	BX 0425	AJM4FT	BFTX 0409N	3.0	TRX 15
TCS 096 to 105		TU095105K1	BX 0425	BT 0306		TU085105K2	BX 0425	AJM4FT	BFTX 0409N	3.0	TRX 15
TCS 106 to 115		TU105135K1	BX 0430	BT 0306		TU105125K2	BX 0425	AJM4FT	BFTX 0409N	3.0	TRX 15

Recommended Cutting Conditions

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

Diameter DC (mm)	Cutting Conditions	Mild Steel Alloy Steel (Below 320HB)	Mild Steel Alloy Steel General Steel (Below 250HB)	Die Steel (250HB)	Ductile Cast Iron	Cast Iron
ø110	v_c	70 - **90** - 110	90 - **110** - 130	50 - **70** - 80	100 - **120** - 140	100 - **120** - 140
	f	0.05 - **0.1** - 0.15	0.05 - **0.1** - 0.15	0.05 - **0.1** - 0.15	0.1 - **0.15** - 0.2	0.15 - **0.2** - 0.25

Min. - **Optimum** - Max.

N·m Recommended Tightening Torque (N·m)

MEMO

SSR Type

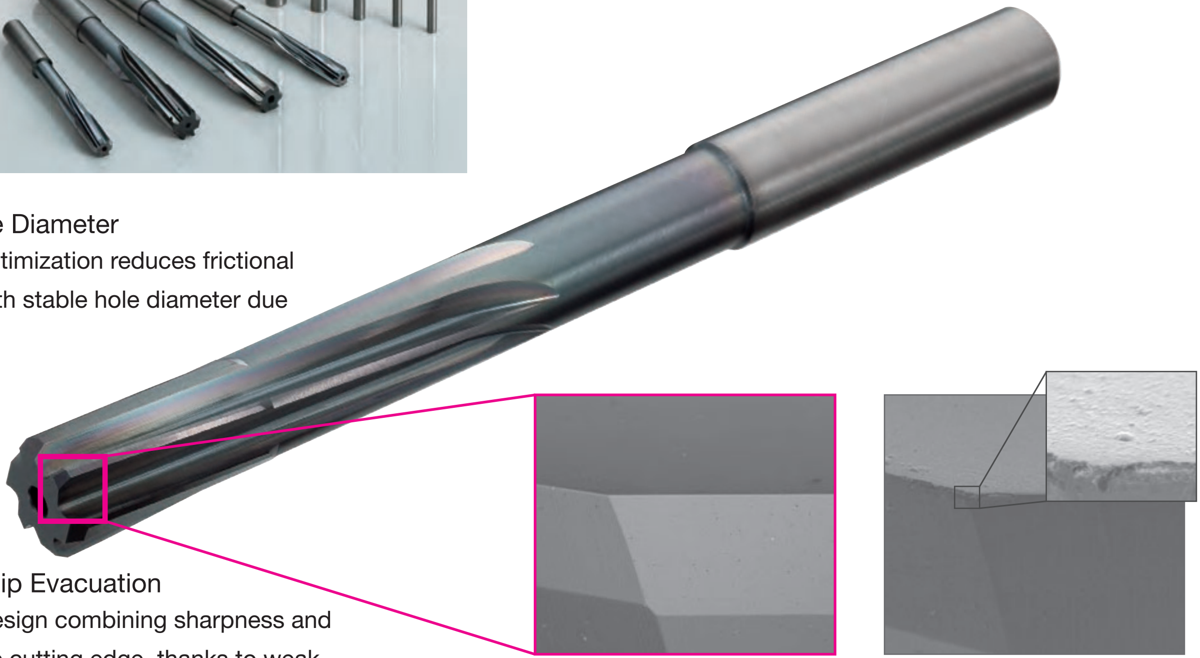
New

■ Features

- High efficiency and high-precision reaming achieved through excellent cutting edge quality and weak right-hand helix flutes
- Reamer-dedicated coating enables machining with long, stable tool life

● Stable Hole Diameter

· Back taper optimization reduces frictional resistance, with stable hole diameter due to a cut finish

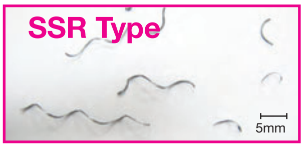


SSR Type

Conventional Product A

● Smooth Chip Evacuation

· A balanced design combining sharpness and strength in the cutting edge, thanks to weak right-hand helix flutes



Work Material : S50C Chips Tool : Diameter ø8mm Cutting Conditions : v_c=120m/min f=1.2mm/rev a_p=0.1mm	Work Material : S50C Chips Tool : Diameter ø8mm Cutting Conditions : v_c=20m/min f=0.09mm/rev a_p=0.1mm

● High-precision Reaming

· Excellent cutting edge quality free of microchipping realizes good hole surface quality

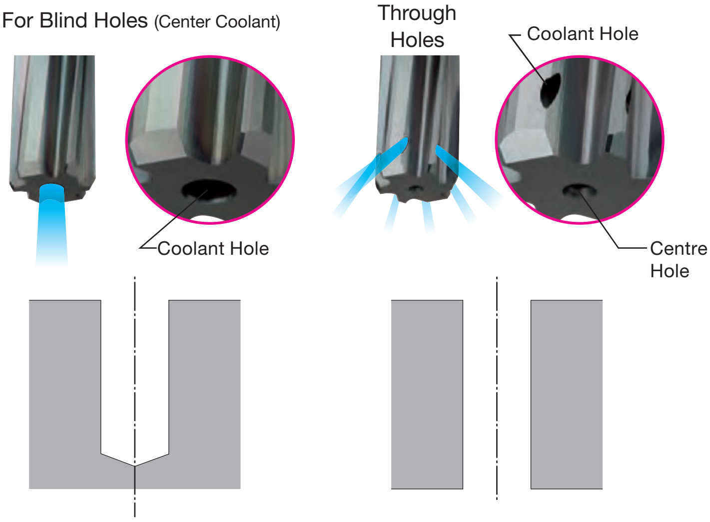
● Long, Stable Tool Life: Reamer-Dedicated Coating

· High quality, high hardness, high strength and excellent wear resistance and thermal resistance.

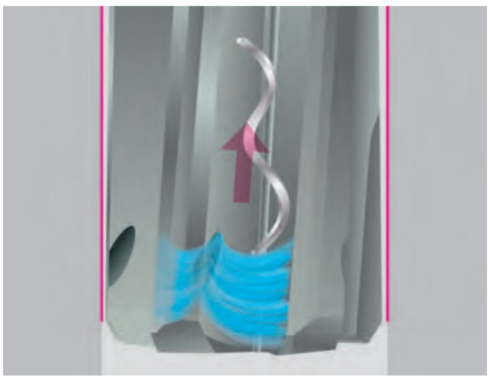
● Coolant Mechanism by Application

For Blind Holes (Center Coolant)

For Through Holes



Unique coolant supply mechanism which does not hamper chip evacuation (for through holes)



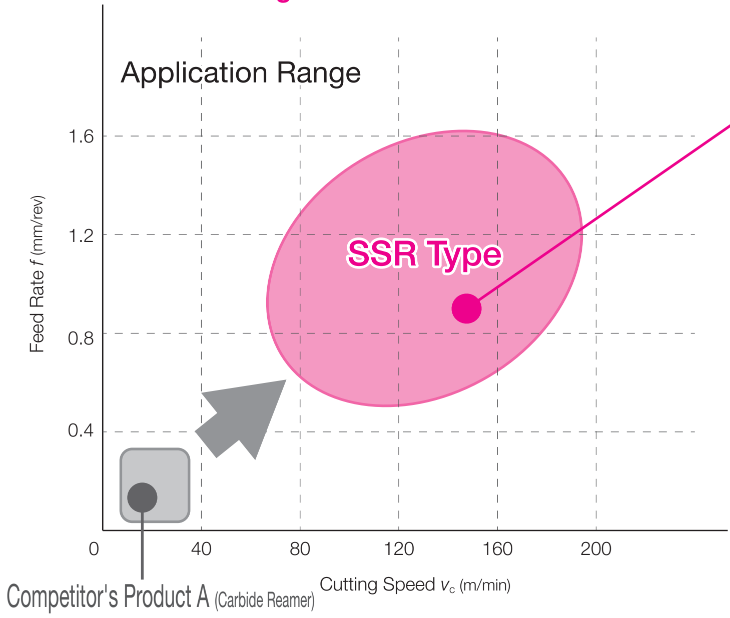
Coolant is supplied to the cutting edge from the flank side through the hole inner wall, achieving smooth chip evacuation without obstruction

■ Cutting Performance

● Machining Efficiency Comparison

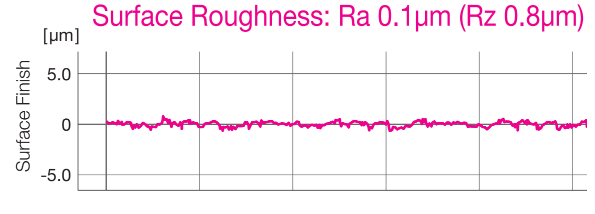
Realizes machining efficiency 60 times higher or more

An hour of machining reduced to a minute

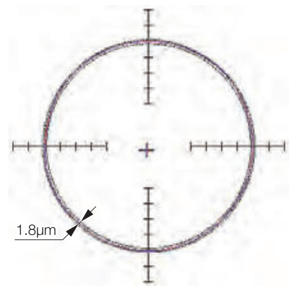


● Reaming Precision

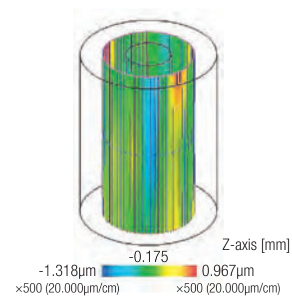
Surface Roughness: Ra 0.1μm (Rz 0.8μm)



Circularity: 1.8μm

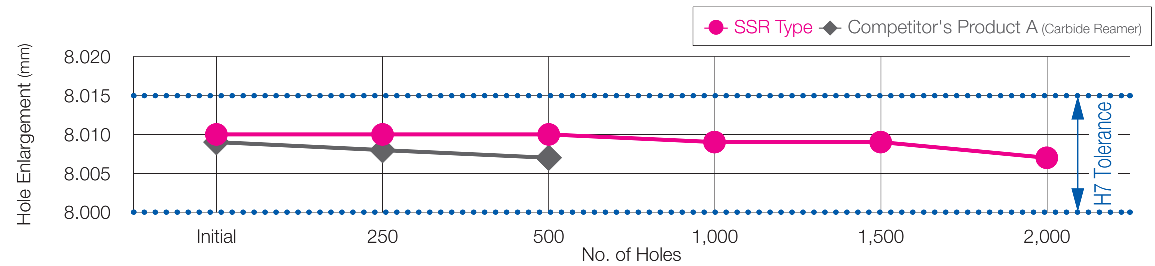


Cylindricity: 2.3μm

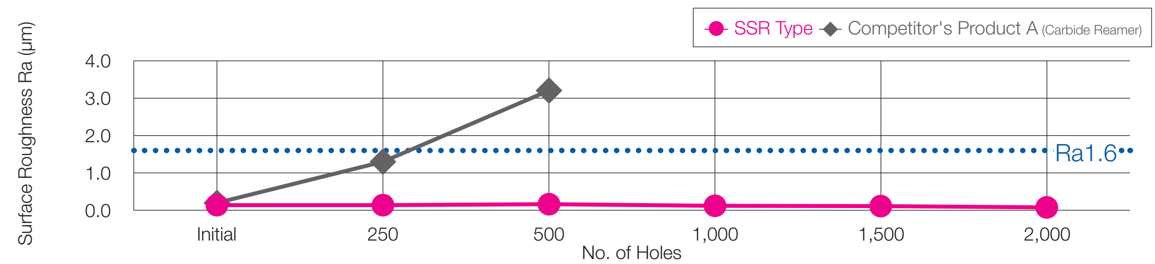


● Tool Life Comparison

Hole Diameter Shift



Surface Roughness Shift (Ra)



Cutting Edge Failure

SSR Type

At 2,000 Holes Reamed

Able to Continue

Competitor's Product A (Carbide Reamer)

At 500 Holes Reamed

Large Margin Wear

Machine	: BT30 (Internal Coolant Supply)	Work Material: S50C	Tool: SSR08000H7S (ø8mm H7 tolerance holes) *H*=16mm)		
Cutting Conditions	: SSR Type	v_c=150m/min	f=0.90mm/rev	v_f=5,374mm/min	a_p=0.1mm (Depth of Cut/Radius)
	Competitor's Product A	v_c=15m/min	f=0.15mm/rev	v_f=89.6mm/min	a_p=0.1mm (Depth of Cut/Radius)

SSR Type For H7 Tolerance Holes (Through Holes)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Cast Iron | Ductile Cast Iron

New | PVD Coat | Coolant Hole

Fig 1

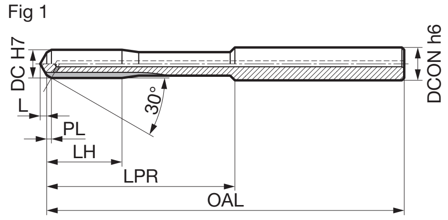
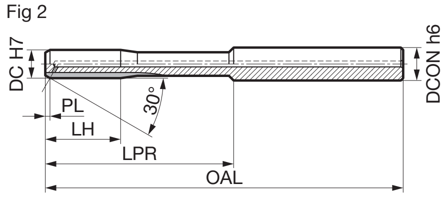


Fig 2



Diameter ø3.0 to 12.0mm

Dimensions (mm)

Dia. DC	Diameter Tolerance	Stock	Cat. No.	Overall Length OAL	Shank Dia. DCON	Neck Length LPR	Cutting Edge Length LH	Engagement Length PL	Tip L	Number of Teeth	Fig
3.0	+0.008 +0.004	●	**SSR 03000H7T**	68	4	40	12	0.5	0.7	4	1
3.5	+0.010 +0.005	●	**SSR 03500H7T**	68	4	40	12	0.5	0.9	4	1
4.0		●	**04000H7T**	76	5	40	12	0.5	1.0	4	1
4.5		●	**04500H7T**	76	5	40	12	0.5	1.2	4	1
5.0		●	**05000H7T**	76	6	40	12	0.5	1.3	4	1
5.5		●	**05500H7T**	76	6	40	12	0.5	1.5	4	1
6.0		●	**06000H7T**	76	7	40	16	1.0	—	4	2
6.5	+0.012 +0.006	●	**SSR 06500H7T**	76	7	40	16	1.0	—	4	2
7.0		●	**07000H7T**	101	8	65	16	1.0	—	6	2
7.5		●	**07500H7T**	101	8	65	16	1.0	—	6	2
8.0		●	**08000H7T**	101	9	65	19	1.0	—	6	2
8.5		●	**08500H7T**	101	9	65	19	1.0	—	6	2
9.0		●	**09000H7T**	101	10	65	19	1.0	—	6	2
9.5		●	**09500H7T**	101	10	65	19	1.0	—	6	2
10.0		●	**10000H7T**	130	11	85	22	1.0	—	6	2
10.5	+0.015 +0.008	●	**SSR 10500H7T**	130	11	85	22	1.0	—	6	2
11.0		●	**11000H7T**	130	12	85	22	1.0	—	6	2
11.5		●	**11500H7T**	130	12	85	22	1.0	—	6	2
12.0		●	**12000H7T**	130	13	85	22	1.0	—	6	2

Grade: ACR40

Recommended Cutting Conditions ☞ J148

Identification Code

SSR	**03500**	**H7T**
Series	Dia.	Hole Tolerance for Through Holes

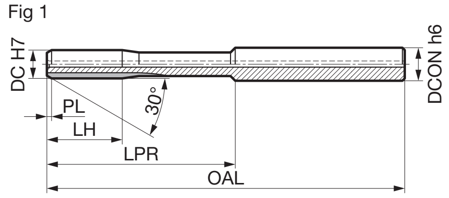
● mark: Standard stocked item (new product/expanded item)

SSR Type For H7 Tolerance Holes (Blind Holes)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Cast Iron | Ductile Cast Iron

New | PVD Coat | Coolant Hole

Fig 1



Diameter ø3.0 to 12.0mm

Dimensions (mm)

Dia. DC	Diameter Tolerance	Stock	Cat. No.	Overall Length OAL	Shank Dia. DCON	Neck Length LPR	Cutting Edge Length LH	Engagement Length PL	Number of Teeth	Fig
3.0	+0.008 +0.004	●	**SSR 03000H7S**	68	4	40	12	0.5	4	1
3.5	+0.010 +0.005	●	**SSR 03500H7S**	68	4	40	12	0.5	4	1
4.0		●	**04000H7S**	76	5	40	12	0.5	4	1
4.5		●	**04500H7S**	76	5	40	12	0.5	4	1
5.0		●	**05000H7S**	76	6	40	12	0.5	4	1
5.5		●	**05500H7S**	76	6	40	12	0.5	4	1
6.0		●	**06000H7S**	76	7	40	16	1.0	4	1
6.5	+0.012 +0.006	●	**SSR 06500H7S**	76	7	40	16	1.0	4	1
7.0		●	**07000H7S**	101	8	65	16	1.0	6	1
7.5		●	**07500H7S**	101	8	65	16	1.0	6	1
8.0		●	**08000H7S**	101	9	65	19	1.0	6	1
8.5		●	**08500H7S**	101	9	65	19	1.0	6	1
9.0		●	**09000H7S**	101	10	65	19	1.0	6	1
9.5		●	**09500H7S**	101	10	65	19	1.0	6	1
10.0		●	**10000H7S**	130	11	85	22	1.0	6	1
10.5	+0.015 +0.008	●	**SSR 10500H7S**	130	11	85	22	1.0	6	1
11.0		●	**11000H7S**	130	12	85	22	1.0	6	1
11.5		●	**11500H7S**	130	12	85	22	1.0	6	1
12.0		●	**12000H7S**	130	13	85	22	1.0	6	1

Grade: ACR40

Recommended Cutting Conditions ☞ J148

Identification Code

SSR | **03500** | **H7S**

Series | Dia. | Hole Tolerance for Blind Holes

● mark: Standard stocked item (new product/expanded item)

SumiReamer

SSR Type (Through Holes)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Cast Iron | Ductile Cast Iron

New | PVD Coat | Coolant Hole

Fig 1

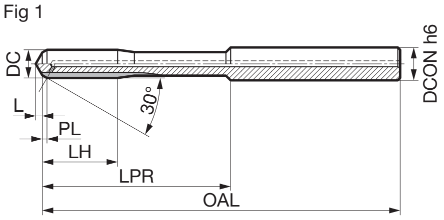
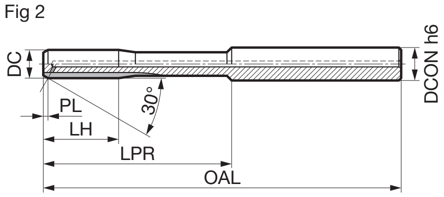


Fig 2



Diameter ø2.97 to 8.99mm

Dimensions (mm)

Dia. DC	Diameter Tolerance	Stock	Cat. No.	Overall Length OAL	Shank Dia. DCON	Neck Length LPR	Cutting Edge Length LH	Engagement Length PL	Tip L	Number of Teeth	Fig
2.97	+0.005 0	●	SSR 02970JT	68	4	40	12	0.5	0.7	4	1
2.98		●	02980JT	68	4	40	12	0.5	0.7	4	1
2.99		●	02990JT	68	4	40	12	0.5	0.7	4	1
3.00	+0.005 0	●	SSR 03000JT	68	4	40	12	0.5	0.7	4	1
3.01		●	03010JT	68	4	40	12	0.5	0.8	4	1
3.02		●	03020JT	68	4	40	12	0.5	0.8	4	1
3.03		●	03030JT	68	4	40	12	0.5	0.8	4	1
3.97		●	03970JT	76	5	40	12	0.5	1.0	4	1
3.98		●	03980JT	76	5	40	12	0.5	1.0	4	1
3.99		●	03990JT	76	5	40	12	0.5	1.0	4	1
4.00	+0.005 0	●	SSR 04000JT	76	5	40	12	0.5	1.0	4	1
4.01		●	04010JT	76	5	40	12	0.5	1.0	4	1
4.02		●	04020JT	76	5	40	12	0.5	1.0	4	1
4.03		●	04030JT	76	5	40	12	0.5	1.0	4	1
4.97		●	04970JT	76	6	40	12	0.5	1.3	4	1
4.98		●	04980JT	76	6	40	12	0.5	1.3	4	1
4.99		●	04990JT	76	6	40	12	0.5	1.3	4	1
5.00	+0.005 0	●	SSR 05000JT	76	6	40	12	0.5	1.3	4	1
5.01		●	05010JT	76	6	40	12	0.5	1.3	4	1
5.02		●	05020JT	76	6	40	12	0.5	1.3	4	1
5.03		●	05030JT	76	6	40	12	0.5	1.3	4	1
5.97		●	05970JT	76	7	40	16	1.0	—	4	2
5.98		●	05980JT	76	7	40	16	1.0	—	4	2
5.99		●	05990JT	76	7	40	16	1.0	—	4	2
6.00	+0.005 0	●	SSR 06000JT	76	7	40	16	1.0	—	4	2
6.01		●	06010JT	76	7	40	16	1.0	—	4	2
6.02		●	06020JT	76	7	40	16	1.0	—	4	2
6.03		●	06030JT	76	7	40	16	1.0	—	4	2
6.97		●	06970JT	101	8	65	16	1.0	—	6	2
6.98		●	06980JT	101	8	65	16	1.0	—	6	2
6.99		●	06990JT	101	8	65	16	1.0	—	6	2
7.00	+0.005 0	●	SSR 07000JT	101	8	65	16	1.0	—	6	2
7.01		●	07010JT	101	8	65	16	1.0	—	6	2
7.02		●	07020JT	101	8	65	16	1.0	—	6	2
7.03		●	07030JT	101	8	65	16	1.0	—	6	2
7.97		●	07970JT	101	9	65	19	1.0	—	6	2
7.98		●	07980JT	101	9	65	19	1.0	—	6	2
7.99		●	07990JT	101	9	65	19	1.0	—	6	2
8.00	+0.005 0	●	SSR 08000JT	101	9	65	19	1.0	—	6	2
8.01		●	08010JT	101	9	65	19	1.0	—	6	2
8.02		●	08020JT	101	9	65	19	1.0	—	6	2
8.03		●	08030JT	101	9	65	19	1.0	—	6	2
8.97		●	08970JT	101	10	65	19	1.0	—	6	2
8.98		●	08980JT	101	10	65	19	1.0	—	6	2
8.99		●	08990JT	101	10	65	19	1.0	—	6	2

Grade: ACR40

Recommended Cutting Conditions J148

Diameter ø9.00 to 12.00mm

Dimensions (mm)

Dia. DC	Diameter Tolerance	Stock	Cat. No.	Overall Length OAL	Shank Dia. DCON	Neck Length LPR	Cutting Edge Length LH	Engagement Length PL	Tip L	Number of Teeth	Fig
9.00	+0.005 0	●	SSR 09000JT	101	10	65	19	1.0	—	6	2
9.01		●	09010JT	101	10	65	19	1.0	—	6	2
9.02		●	09020JT	101	10	65	19	1.0	—	6	2
9.03		●	09030JT	101	10	65	19	1.0	—	6	2
9.97		●	09970JT	130	11	85	22	1.0	—	6	2
9.98		●	09980JT	130	11	85	22	1.0	—	6	2
9.99		●	09990JT	130	11	85	22	1.0	—	6	2
10.00	+0.005 0	●	SSR 10000JT	130	11	85	22	1.0	—	6	2
10.01		●	10010JT	130	11	85	22	1.0	—	6	2
10.02		●	10020JT	130	11	85	22	1.0	—	6	2
10.03		●	10030JT	130	11	85	22	1.0	—	6	2
10.97		●	10970JT	130	12	85	22	1.0	—	6	2
10.98		●	10980JT	130	12	85	22	1.0	—	6	2
10.99		●	10990JT	130	12	85	22	1.0	—	6	2
11.00	+0.005 0	●	SSR 11000JT	130	12	85	22	1.0	—	6	2
11.01		●	11010JT	130	12	85	22	1.0	—	6	2
11.02		●	11020JT	130	12	85	22	1.0	—	6	2
11.03		●	11030JT	130	12	85	22	1.0	—	6	2
11.97		●	11970JT	130	13	85	22	1.0	—	6	2
11.98		●	11980JT	130	13	85	22	1.0	—	6	2
11.99		●	11990JT	130	13	85	22	1.0	—	6	2
12.00		●	12000JT	130	13	85	22	1.0	—	6	2

Grade: ACR40

Recommended Cutting Conditions J148

Identification Code

SSR	03000	JT
Series	Dia.	For Through Holes

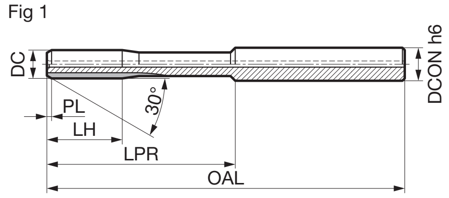
● mark: Standard stocked item (new product/expanded item)

SSR Type (Blind Hole)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Cast Iron | Ductile Cast Iron

New | PVD Coat | Coolant Hole

Fig 1



Diameter ø2.97 to 8.99mm

Dimensions (mm)

Dia. DC	Diameter Tolerance	Stock	Cat. No.	Overall Length OAL	Shank Dia. DCON	Neck Length LPR	Cutting Edge Length LH	Engagement Length PL	Number of Teeth	Fig
2.97	+0.005 0	●	SSR 02970JS	68	4	40	12	0.5	4	1
2.98		●	02980JS	68	4	40	12	0.5	4	1
2.99		●	02990JS	68	4	40	12	0.5	4	1
3.00	+0.005 0	●	SSR 03000JS	68	4	40	12	0.5	4	1
3.01		●	03010JS	68	4	40	12	0.5	4	1
3.02		●	03020JS	68	4	40	12	0.5	4	1
3.03		●	03030JS	68	4	40	12	0.5	4	1
3.97		●	03970JS	76	5	40	12	0.5	4	1
3.98		●	03980JS	76	5	40	12	0.5	4	1
3.99		●	03990JS	76	5	40	12	0.5	4	1
4.00	+0.005 0	●	SSR 04000JS	76	5	40	12	0.5	4	1
4.01		●	04010JS	76	5	40	12	0.5	4	1
4.02		●	04020JS	76	5	40	12	0.5	4	1
4.03		●	04030JS	76	5	40	12	0.5	4	1
4.97		●	04970JS	76	6	40	12	0.5	4	1
4.98		●	04980JS	76	6	40	12	0.5	4	1
4.99		●	04990JS	76	6	40	12	0.5	4	1
5.00	+0.005 0	●	SSR 05000JS	76	6	40	12	0.5	4	1
5.01		●	05010JS	76	6	40	12	0.5	4	1
5.02		●	05020JS	76	6	40	12	0.5	4	1
5.03		●	05030JS	76	6	40	12	0.5	4	1
5.97		●	05970JS	76	7	40	16	1.0	4	1
5.98		●	05980JS	76	7	40	16	1.0	4	1
5.99		●	05990JS	76	7	40	16	1.0	4	1
6.00	+0.005 0	●	SSR 06000JS	76	7	40	16	1.0	4	1
6.01		●	06010JS	76	7	40	16	1.0	4	1
6.02		●	06020JS	76	7	40	16	1.0	4	1
6.03		●	06030JS	76	7	40	16	1.0	4	1
6.97		●	06970JS	101	8	65	16	1.0	6	1
6.98		●	06980JS	101	8	65	16	1.0	6	1
6.99		●	06990JS	101	8	65	16	1.0	6	1
7.00	+0.005 0	●	SSR 07000JS	101	8	65	16	1.0	6	1
7.01		●	07010JS	101	8	65	16	1.0	6	1
7.02		●	07020JS	101	8	65	16	1.0	6	1
7.03		●	07030JS	101	8	65	16	1.0	6	1
7.97		●	07970JS	101	9	65	19	1.0	6	1
7.98		●	07980JS	101	9	65	19	1.0	6	1
7.99		●	07990JS	101	9	65	19	1.0	6	1
8.00	+0.005 0	●	SSR 08000JS	101	9	65	19	1.0	6	1
8.01		●	08010JS	101	9	65	19	1.0	6	1
8.02		●	08020JS	101	9	65	19	1.0	6	1
8.03		●	08030JS	101	9	65	19	1.0	6	1
8.97		●	08970JS	101	10	65	19	1.0	6	1
8.98		●	08980JS	101	10	65	19	1.0	6	1
8.99		●	08990JS	101	10	65	19	1.0	6	1

Grade: ACR40

Recommended Cutting Conditions ☞ J148

Diameter ø9.00 to 12.00mm

Dimensions (mm)

Dia. DC	Diameter Tolerance	Stock	Cat. No.	Overall Length OAL	Shank Dia. DCON	Neck Length LPR	Cutting Edge Length LH	Engagement Length PL	Number of Teeth	Fig
9.00	+0.005 0	●	SSR 09000JS	101	10	65	19	1.0	6	1
9.01		●	09010JS	101	10	65	19	1.0	6	1
9.02		●	09020JS	101	10	65	19	1.0	6	1
9.03		●	09030JS	101	10	65	19	1.0	6	1
9.97		●	09970JS	130	11	85	22	1.0	6	1
9.98		●	09980JS	130	11	85	22	1.0	6	1
9.99		●	09990JS	130	11	85	22	1.0	6	1
10.00	+0.005 0	●	SSR 10000JS	130	11	85	22	1.0	6	1
10.01		●	10010JS	130	11	85	22	1.0	6	1
10.02		●	10020JS	130	11	85	22	1.0	6	1
10.03		●	10030JS	130	11	85	22	1.0	6	1
10.97		●	10970JS	130	12	85	22	1.0	6	1
10.98		●	10980JS	130	12	85	22	1.0	6	1
10.99		●	10990JS	130	12	85	22	1.0	6	1
11.00	+0.005 0	●	SSR 11000JS	130	12	85	22	1.0	6	1
11.01		●	11010JS	130	12	85	22	1.0	6	1
11.02		●	11020JS	130	12	85	22	1.0	6	1
11.03		●	11030JS	130	12	85	22	1.0	6	1
11.97		●	11970JS	130	13	85	22	1.0	6	1
11.98		●	11980JS	130	13	85	22	1.0	6	1
11.99		●	11990JS	130	13	85	22	1.0	6	1
12.00		●	12000JS	130	13	85	22	1.0	6	1

Grade: ACR40

Recommended Cutting Conditions ☞ J148

Identification Code

SSR — Series
03000 — Dia.
JS — For Blind Holes

● mark: Standard stocked item (new product/expanded item)

Recommended Cutting Conditions

Work Material		Carbon Steel for Mechanical Structures Alloy Steel for Mechanical Structures General Structural Steel		Cast Iron		Ductile Cast Iron		Hardened Steel Up to 45HRC		Depth of Cut a_p (mm/radius)
Cutting Speed		80 to 180m/min		60 to 140m/min		60 to 180m/min		20 to 60m/min		
Diameter DC (mm)	Number of Teeth	Spindle Speed (min^{-1})	Feed Rate (mm/rev)	Spindle Speed (min^{-1})	Feed Rate (mm/rev)	Spindle Speed (min^{-1})	Feed Rate (mm/rev)	Spindle Speed (min^{-1})	Feed Rate (mm/rev)	
ø3	4	8,400-19,100	0.5-0.8	6,300-14,800	0.5-0.8	6,300-19,100	0.5-0.8	2,100-6,300	0.12-0.3	0.05-0.075
ø4	4	6,300-14,300	0.5-1.0	4,700-11,100	0.5-1.0	4,700-14,300	0.5-1.0	1,500-4,700	0.16-0.3	
ø5	4	5,000-11,400	0.6-1.0	3,800-8,900	0.6-1.0	3,800-11,400	0.6-1.0	1,200-3,800	0.16-0.4	
ø6	4	4,200-9,500	0.6-1.0	3,100-7,400	0.6-1.0	3,100-9,500	0.6-1.0	1,000-3,100	0.2-0.4	
ø7	6	3,600-8,100	0.6-1.8	2,700-6,300	0.6-1.8	2,700-8,100	0.6-1.8	900-2,700	0.25-0.6	0.05-0.10
ø8	6	3,100-7,100	0.6-1.8	2,300-5,500	0.6-1.8	2,300-7,100	0.6-1.8	800-2,300	0.25-0.6	
ø9	6	2,800-6,300	0.6-1.8	2,100-4,900	0.6-1.8	2,100-6,300	0.6-1.8	700-2,100	0.3-0.6	
ø10	6	2,500-5,700	0.6-1.8	1,900-4,400	0.6-1.8	1,900-5,700	0.6-1.8	630-1,900	0.3-0.6	
ø11	6	2,300-5,200	0.6-2.0	1,700-4,000	0.6-2.0	1,700-5,200	0.6-2.0	570-1,700	0.3-0.8	0.10-0.15
ø12	6	2,100-4,700	0.6-2.0	1,500-3,700	0.6-2.0	1,500-4.700	0.6-2.0	530-1,500	0.3-0.8	

1. The recommended conditions above are for cases where a water soluble coolant is used.
2. Supply sufficient water soluble coolant to the blade.
3. When performing intermittent cutting, reduce the feed rate for the interrupted part by about 30%.
4. Use with external coolant supply is also possible, but chip evacuation may suffer.
5. For machining with oil-based coolant and oil-based MQL, use the low speed side.

Precautions for Use

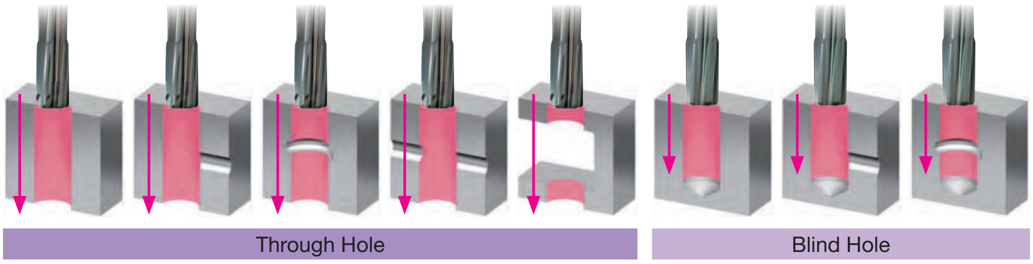
● Runout

Machining with poor runout negatively affects hole accuracy and tool life.

Mount on a high-accuracy tool holder and collet, etc., in order to minimize cutting edge runout as far as possible. (10μm or less is required.)

For the tool holder, a holder with hydraulic chuck, shrink-fit, and runout adjustment mechanism is recommended.

● Applicable Hole Shapes



*There is no bottom blade, so bottom finishing is not possible.

● Coolant

Internal coolant supply is recommended.

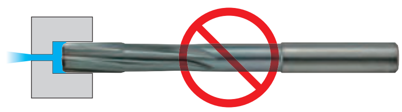
We recommend coolant pressure of 1.5MPa or higher, with attention to chip evacuation.

Use with external coolant supply may reduce chip evacuation performance and damage machined surface quality.

● Pull-out Holes

When reaming blind holes connected to through holes, use the through hole type. (Not usable for blind holes)

Also check that the process creates no problems with chip evacuation performance.



Not usable for blind holes

■ Troubleshooting

Failure	Countermeasures
Enlarged hole diameter	· Reduce runout as much as possible. (Use holder with hydraulic chuck, shrink-fit, and runout adjustment mechanism) · Decrease cutting speed. · Increase feed rate. · Reduce stock removal. · Check cutting edge for damage. · Change reamer diameter. · Increase coolant concentration.
Tapered hole	· Reduce runout as much as possible. (Use holder with hydraulic chuck, shrink-fit, and runout adjustment mechanism) · Decrease cutting speed. · Reduce feed rate. · Review pre-machining process. (Prepared hole deviation) · Review workpiece clamping method. · Compare hole diameters when the workpiece is clamped and unclamped. · Correct chip evacuation. (Increase coolant ejection pressure) · Adjust coolant concentration.
Chatter marks on machined surface	· Reduce runout as much as possible. (Use holder with hydraulic chuck, shrink-fit, and runout adjustment mechanism) · Decrease cutting speed. · Increase feed rate. · Review workpiece clamping method. · Change cutting edge approach angle to a made-to-order design.
Poor surface finish roughness	· Reduce runout as much as possible. (Use holder with hydraulic chuck, shrink-fit, and runout adjustment mechanism) · Increase cutting speed. · Check cutting edge for damage. · Check whether cutting conditions are within the recommended range. · Increase coolant concentration.

Failure	Countermeasures
Return mark	· Reduce runout as much as possible. (Use holder with hydraulic chuck, shrink-fit, and runout adjustment mechanism) · Check cutting edge for damage. · Reduce stock removal. · Decrease return rate after machining.
Abnormal cutting noise	· Check cutting edge for damage. · Increase the stock removal. · Decrease the coolant concentration. · Change cutting edge approach angle to a made-to-order design.
Smaller hole diameter	· Increase cutting speed. · Reduce feed rate. · Check cutting edge for damage. · Increase the stock removal. · Decrease the coolant concentration.

■ Application Examples

Steel S45C Automotive Component		Sumitomo	Competitor's Product
Horizontal Machining Centre	Cutter Dia. (mm)	7	7
	Number of Teeth	6	3
	v_c(m/min)	110	50
	f (mm/rev)	0.55	0.36
	v_f (mm/min)	2,752	819
	a_p(mm)	0.05	0.15
	Coolant	Wet	Wet
Required Precision Hole Dia.: ø7$^{+0.020}_{0}$ (Hole drilling depth: 23mm) Surface Roughness: Ra 1.0μm	Results	3x or more machining efficiency, 4x tool life achieved	

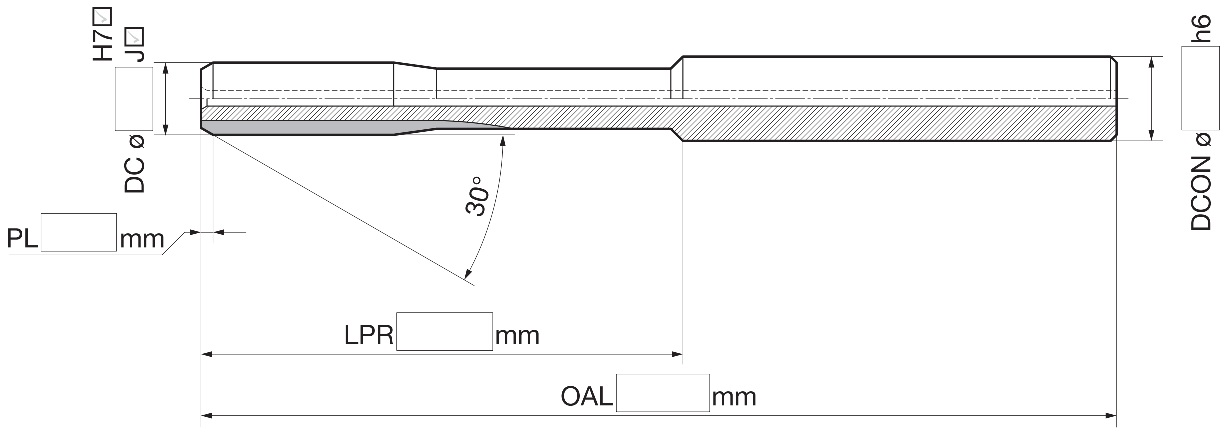
Cast Iron FCV420 Hydraulic Component		Sumitomo	Competitor's Product
Vertical Machining Centre	Cutter Dia. (mm)	11	11
	Number of Teeth	6	6
	v_c(m/min)	110	15
	f (mm/rev)	0.66	0.12
	v_f(mm/min)	2,101	52
	a_p(mm)	0.1	0.1
	Coolant	Wet	Wet
Required Precision Hole Dia.: ø11$^{+0.018}_{0}$ (Hole drilling depth: 15mm) Surface Roughness: Ra 1.6μm	Results	40x or more machining efficiency, 2.3x tool life achieved Machining cycle time reduced from 17.3 seconds to 0.4 seconds	

Steel S45C Automotive Component		Sumitomo	Competitor's Product
NC Lathe	Cutter Dia. (mm)	5.5	5.5
	Number of Teeth	4	4
	v_c(m/min)	90	90
	f (mm/rev)	1.0	1.0
	v_f(mm/min)	5,211	5,211
	a_p(mm)	0.1	0.1
	Coolant	Wet	Wet
Required Precision Hole Dia.: ø5.5$^{+0.030}_{0}$ (Hole drilling depth: 35mm) Surface Roughness: Rz 6.3μm	Results	Tool life doubled	

Steel SCM440 (45HRC) Automotive Component		Sumitomo	Competitor's Product
NC Lathe	Cutter Dia. (mm)	8	8
	Number of Teeth	6	6
	v_c(m/min)	40	20
	f (mm/rev)	0.14	0.09
	v_f(mm/min)	223	72
	a_p(mm)	0.15	0.15
	Coolant	Wet	Wet
Required Precision Hole Dia.: ø8$^{+0.030}_{0}$ (Hole drilling depth: 33mm) Surface Roughness: Ra 1.6μm	Results	3x or more machining efficiency, 2.9x tool life achieved	

*For diameters of ø12mm or larger, use the SumiReamer SR Type.

SumiReamer SSR Type Made-To-Order Request Sheet



■ Equipment Information

Manufacturer	:	
Type	:	☐ MC ☐ NC Lathe ☐ Multi-tasking Machine
Tool Folder	:	☐ BT ☐ HSK ☐ Other
Coolant	:	☐ Water-soluble ☐ Oil-based ☐ MQL
Coolant Supply	:	☐ Internal Coolant Supply ☐ External Coolant Supply

■ Workpiece Shape

■ Workpiece Information

Part Name	:	
Work Material	:	
Work Material Hardness	:	
Hole Type	:	☐ Through Hole ☐ Blind Hole
Interrupted Cutting	:	☐ Yes ☐ No
Hole Depth	:	

■ Required Precision

Hole Dia. Tolerance	:	
Surface Roughness	:	
Circularity	:	
Cylindricity	:	
Other	:	

■ Current Tool

Number of Teeth	:	
Cutting Conditions	:	v_c = m/min f = mm/rev a_p = mm
Tool Life	:	
Tool Life Criteria	:	

After filling in the required dimensions and other information, contact our nearest sales office or distributor.

Feel free to contact us with other requests as well.

Company Name/Contact

■ Remarks

MEMO

SR Type

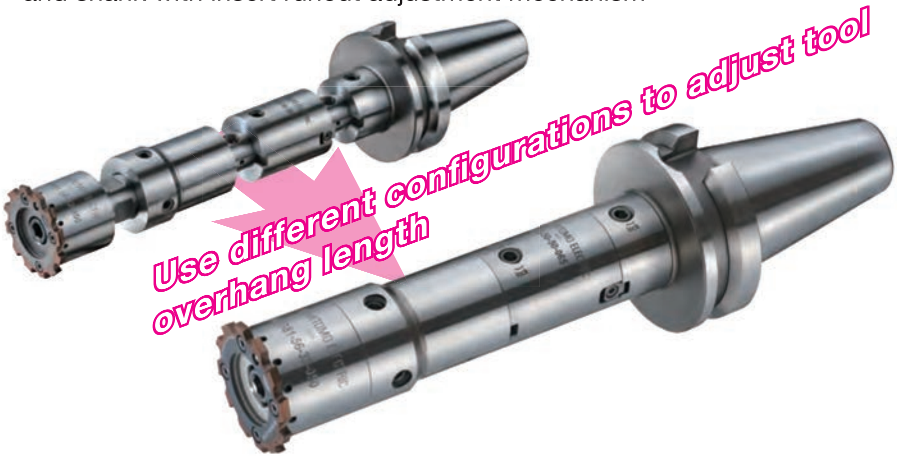
■ **Features**

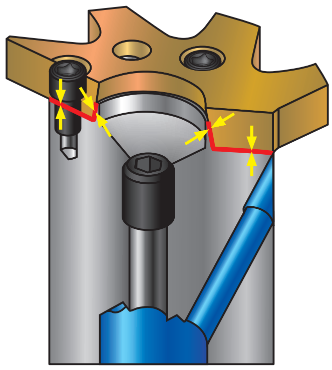
●Achieving high efficiency through high speed and high feed capabilities!
(v_c=50 to 500m/min, f=0.4 to 1.2mm/rev)

- Compatible with a wide range of cutting conditions, allowing management of cutting conditions and coolant supply
- Designed with minimal cutting edge length, eliminating galling and blemishes for improved quality
- Adoption of indexable cutting edge design improves reliability of quality and tool life, eliminating variability in tool life among reground inserts.
- Cutting edge diameters from ø11.9 to ø140.6 mm available

● Easy insert replacement

● Flexible tool overhang lengths possible by combining the modular extension/arbor and shank with insert runout adjustment mechanism





A taper supports the insert on two faces (based on the HSK standard) for repeatability within 4 μm using random inserts

■ **Application Examples**

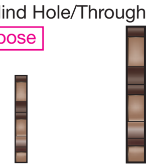
Workpiece	 Cylinder barrel	 Connection rod	 Sliding yoke	 Front axle	 Special holder with guide pads Control valve
Work Material	FCD600	Forged S55C	S45C	Forged S58C	Forged S55C
Holder Cat. No. Insert Cat. No.	**SRD19-12-115** SRG17.0H7-A01-T1212R1	**SRD36-25-170** SRG29.0H7-A01-F0512R1	**SRD19-12-115** SRG16.02Q+3-3-C01-F0512R1	**SRD29-20-240** SRL28.0H7-B01-F0512R1	Special holder with guide pads SRL14.0H7-B01-F0512R1
Max. Work Dia. (mm)	ø17.0	ø29.0	ø16.02	ø28.0	ø14.0
Hole Dia. Tolerance	H7	H7	H7	H7	H7
Surface Roughness (μm)	Rz10.0	Ra0.8	Ra3.2	Ra3.2	Ra1.6
Circularity (μm)	5	2	—	5	5
Cylindricity (μm)	5	4	—	5	5
Number of Teeth	6	8	6	8	6
v_c (m/min)	148	120	150	60	100
n (min^{-1})	2,772	1,318	2,982	682	2,230
f_z (mm/t)	0.20	0.15	0.10	0.075	0.10
v_f (m/min)	3,326	1,582	1,789	409	1,368
a_p (mm)	0.10	0.15	0.15	0.15	0.15
Wet / Dry	Wet	Wet	Wet	Wet	Wet
Tool life, etc.	57.9m	30.52m	—	15.8m	—

SumiReamer SR Type Configurations

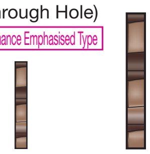
(1)

Insert

● SRG Type (Blind Hole/Through Hole)
General-purpose
J154



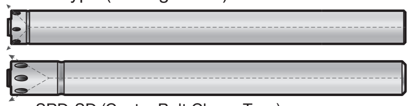
● SRL Type (Through Hole)
Chip Evacuation Performance Emphasised Type



Cutting edge diameter: ø11.900 to ø140.600mm

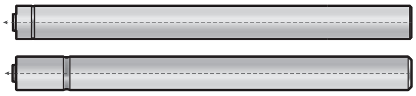
Holders

● SRD Type (Through Hole)
J156



SRD-SD (Centre Bolt Clamp Type)

● SRB Type (Blind Hole)

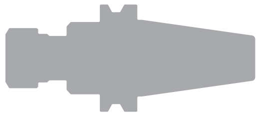


SRB-SD (Centre Bolt Clamp Type)

Cutting edge diameter application range: ø11.900 to ø35.600mm
Shank length: 100 to 274mm

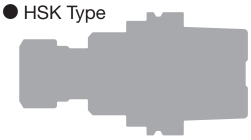
Arbor

● BT/A Type



Taper Size: 40 to 50

● HSK Type



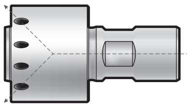
Taper Size: 50 to 100

Use Arbors that have runout adjustment mechanism available on the market.

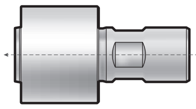
(2)

Head
J158

● SRKG Type (Through Hole)



● SRKB Type (Blind Hole)

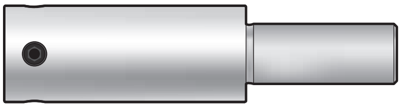


Applicable Diameter Range:
ø35.601 to ø140.600mm
Head Length 30 to 60mm

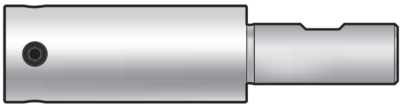
Insert Runout Adjustment Mechanism

Shank

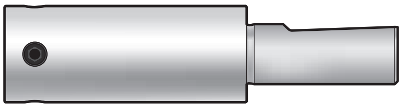
● SRA Type
J158



ZS (Cylindrical Shank) Type: ZS-20/25/32/40



WD (Weldon Shank) Type: WD-20/25/32/40

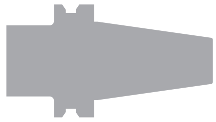


WN (Whistle Notch Shank) Type: WN-20/25/32/40

Cutting edge diameter application range: ø35.601 to ø140.600mm
Shank length: 80 to 160mm

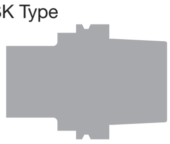
Arbor

● BT/A Type



Taper Size: 40 to 50

● HSK Type



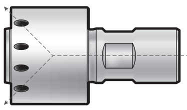
Taper Size: 50 to 100

Use an arbor available on the market.

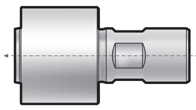
(3)

Head
J158

● SRKG Type (Through Hole)



● SRKB Type (Blind Hole)

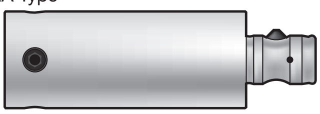


Applicable Diameter Range:
ø35.601 to ø140.600mm
Head Length 30 to 60mm

Insert Runout Adjustment Mechanism

Shank

● SRA Type
J158

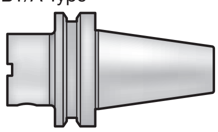


BM (Beta Module Shank) Type: BM-32/40/50/63

Cutting edge diameter application range: ø35.601 to ø140.600mm
Shank length: 55 to 160mm

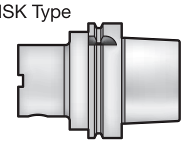
Arbor

● BT/A Type
J159



Taper Size: 40 to 50

● HSK Type

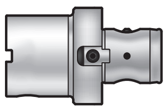


Taper Size: 50 to 100

⚠ **Check Sizes**
When using a BM (Beta Module) type shank, choose a matching standard size.

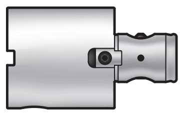
Extensions

● B12 Type



Shank length: 45 to 75mm

● B13 Type
J159



Shank length: 35 to 180mm

Multiple extensions can be connected together
When extending the overhang, we recommend using fewer extensions from the rigidity point of view.

Insert for SumiReamer SR Type

● SRG Type General-purpose Straight Flutes: Blind and Through Holes

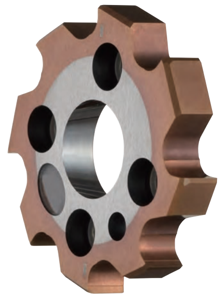
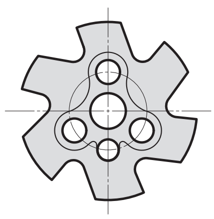


Fig 1



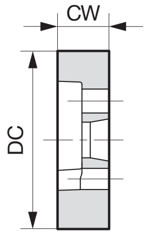
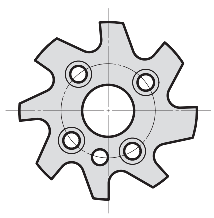
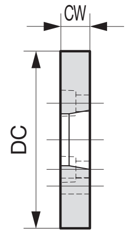
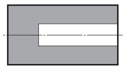


Fig 2

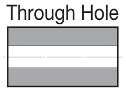




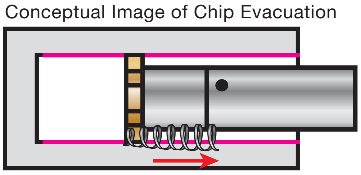
Blind Hole



Through Hole

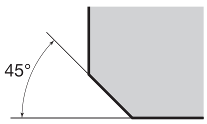


Conceptual Image of Chip Evacuation



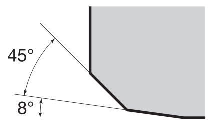
Chips Evacuated Toward Front

A01 Type



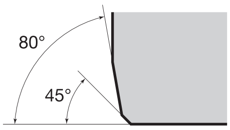
Standard Type

C01 Type



Good Surface Roughness

S02 Type



Good Straightness

Insert (SRG Type)

Dimensions (mm)

Diameter DC	Diameter Tolerance	Stock	Cat. No. (A01 Type) F05,T12	Stock	Cat. No. (C01 Type) F05,T12	Stock	Cat. No. (S02 Type) F05,T12	Work Material Hole Dia. Tolerance	CW	Number of Teeth	Fig
12.0	+0.017 +0.011	●	SRG 12.0H7-A01- □□□12R1	●	SRG 12.0H7-C01- □□□12R1	●	SRG 12.0H7-S02- □□□12R1	H7 +0.018 0	4.3	6	1
13.0		●	13.0H7-A01- □□□12R1	●	13.0H7-C01- □□□12R1	●	13.0H7-S02- □□□12R1				
14.0		●	14.0H7-A01- □□□12R1	●	14.0H7-C01- □□□12R1	●	14.0H7-S02- □□□12R1				
15.0		●	15.0H7-A01- □□□12R1	●	15.0H7-C01- □□□12R1	●	15.0H7-S02- □□□12R1				
16.0		●	16.0H7-A01- □□□12R1	●	16.0H7-C01- □□□12R1	●	16.0H7-S02- □□□12R1				
17.0		●	17.0H7-A01- □□□12R1	●	17.0H7-C01- □□□12R1	●	17.0H7-S02- □□□12R1				
18.0		●	18.0H7-A01- □□□12R1	●	18.0H7-C01- □□□12R1	●	18.0H7-S02- □□□12R1				
19.0	+0.019 +0.013	●	SRG 19.0H7-A01- □□□12R1	●	SRG 19.0H7-C01- □□□12R1	●	SRG 19.0H7-S02- □□□12R1	H7 +0.021 0			
20.0		●	20.0H7-A01- □□□12R1	●	20.0H7-C01- □□□12R1	●	20.0H7-S02- □□□12R1				
21.0		●	21.0H7-A01- □□□12R1	●	21.0H7-C01- □□□12R1	●	21.0H7-S02- □□□12R1				
22.0		●	22.0H7-A01- □□□12R1	●	22.0H7-C01- □□□12R1	●	22.0H7-S02- □□□12R1				
23.0		●	23.0H7-A01- □□□12R1	●	23.0H7-C01- □□□12R1	●	23.0H7-S02- □□□12R1				
24.0		●	SRG 24.0H7-A01- □□□12R1	●	SRG 24.0H7-C01- □□□12R1	●	SRG 24.0H7-S02- □□□12R1		4.3	8	2
25.0		●	25.0H7-A01- □□□12R1	●	25.0H7-C01- □□□12R1	●	25.0H7-S02- □□□12R1				
26.0		●	26.0H7-A01- □□□12R1	●	26.0H7-C01- □□□12R1	●	26.0H7-S02- □□□12R1				
27.0		●	27.0H7-A01- □□□12R1	●	27.0H7-C01- □□□12R1	●	27.0H7-S02- □□□12R1				
28.0		●	28.0H7-A01- □□□12R1	●	28.0H7-C01- □□□12R1	●	28.0H7-S02- □□□12R1				
29.0		●	29.0H7-A01- □□□12R1	●	29.0H7-C01- □□□12R1	●	29.0H7-S02- □□□12R1				
30.0		●	30.0H7-A01- □□□12R1	●	30.0H7-C01- □□□12R1	●	30.0H7-S02- □□□12R1				

Ordering Method: For the catalogue number, please indicate F05 (PVD grade) or T12 (Coated Cermet) in the □□□ when ordering. (e.g. SRG12.0H7-A01-F0512R1).
(It is also possible to order uncoated cermet/DLC grades.)

*Actual reamed hole diameter is near the upper limit of H7 tolerance.

SumiReamer SR Type Insert Identification

Specifying Inserts Using Work Material Hole Diameter Tolerance
The actual desired diameter will be near the upper limit of the median work material tolerance, and will differ depending on diameter, tolerance range and grade. Contact us for more details.

SR G 18.2 + 20 - 10 - A01 - F05 12R 1
(1) (2) (3) (4) (5) (6) (7)

(1) SR Type
(2) G = Straight, L = Left-hand helix
(3) Work Material Hole Diameter (mm)
(4) Tolerance (μm) +/- or standard (e.g. H7)
(5) Approach Angle Code
(6) Grade Symbol
(7) Coating Code

Specifying Inserts Using Desired Diameter
By adding a "Q" after the diameter, it is possible to specify exact desired reamer dimensions. Uncoated items are available within ±2 μm, and coated items within ±3 μm.

SR L 18.2 Q + 3 - 3 - A01 - F05 12R 1
(1) (2) (3) (4) (5) (6) (7)

(1) SR Type
(2) G = Straight, L = Left-hand helix
(3) Median Desired Cutting Edge Diameter (mm)
(4) Tolerance (μm) +/-
(5) Approach Angle Code
(6) Grade Symbol
(7) Coating Code

Insert for SumiReamer SR Type

● SRL Type Chip Evacuation Performance Emphasised Type Left-hand Helix: For Through Holes

Fig 1

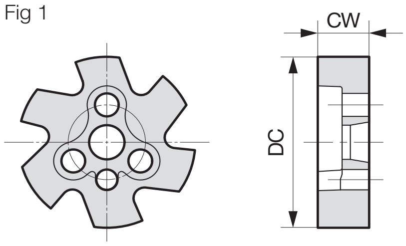
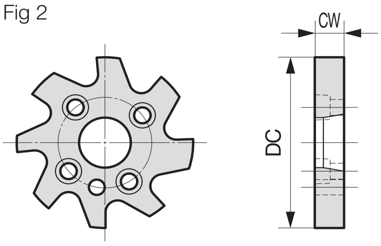
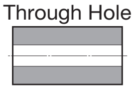


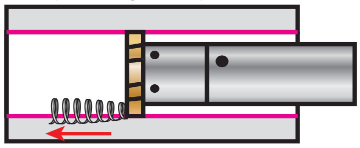
Fig 2



Through Hole

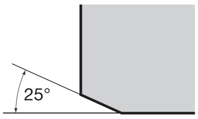


Conceptual Image of Chip Evacuation



Chips Evacuated Toward Back

B01 Type



For Steel Through Holes

Insert (SRL Type)

Dimensions (mm)

Diameter DC	Diameter Tolerance	Stock	Cat. No. (B01 Type) F05,T12	Work Material Hole Dia. Tolerance	CW	Number of Teeth	Fig
12.0	+0.017 +0.011	●	SRL 12.0H7-B01-□□□12R1	H7 +0.018 0	4.3	6	1
13.0		●	13.0H7-B01-□□□12R1				
14.0		●	14.0H7-B01-□□□12R1				
15.0		●	15.0H7-B01-□□□12R1				
16.0		●	16.0H7-B01-□□□12R1				
17.0		●	17.0H7-B01-□□□12R1				
18.0		●	18.0H7-B01-□□□12R1				
19.0	+0.019 +0.013	●	SRL 19.0H7-B01-□□□12R1	H7 +0.021 0			
20.0		●	20.0H7-B01-□□□12R1				
21.0		●	21.0H7-B01-□□□12R1				
22.0		●	22.0H7-B01-□□□12R1				
23.0		●	23.0H7-B01-□□□12R1				
24.0		●	SRL 24.0H7-B01-□□□12R1		4.3	8	2
25.0		●	25.0H7-B01-□□□12R1				
26.0		●	26.0H7-B01-□□□12R1				
27.0		●	27.0H7-B01-□□□12R1				
28.0		●	28.0H7-B01-□□□12R1				
29.0		●	29.0H7-B01-□□□12R1				
30.0		●	30.0H7-B01-□□□12R1				

● Made-to-order items

Dimensions (mm)

Diameter DC	CW	Number of Teeth
ø11.900 to ø15.600	4.3	6
ø15.601 to ø18.600		
ø18.601 to ø23.600		
ø23.601 to ø28.600	4.3	8
ø28.601 to ø35.600		
ø35.601 to ø43.600		
ø43.601 to ø51.600	4.3	10
ø51.601 to ø60.600		
ø60.601 to ø80.600	4.3	12
ø80.601 to ø100.600		
ø100.601 to ø120.600	5.3	
ø120.601 to ø140.600		

SRG type (Special) and SRL type (Special) are made-to-order items.
When ordering, refer to "SR Type Insert Identification Details" on page J154.
* Cermet grades (T1200A and T1212R1) are only available up to ø100.600mm.

Ordering Method: For the catalogue number, please indicate F05 (PVD grade) or T12 (Coated Cermet) in the □□□ when ordering. (e.g. SRG12.0H7-A01-F0512R1).
(It is also possible to order uncoated cermet/DLC grades.)

*Actual reamed hole diameter is near the upper limit of H7 tolerance.

Recommended Cutting Conditions

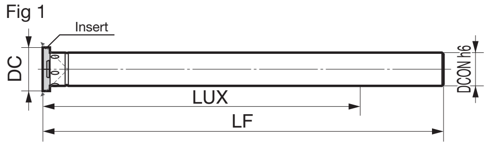
ISO	Work Materials	Insert	Grade	Grade Composition	Depth of Cut a_p (mm/radius) Below ø20	ø20 to ø35	ø35 and above	Cutting Speed V_c (m/min)	Feed Rate f_z (mm/t)
P	Carbon Steel	SRG Type	F0512R1	Micro-grained Carbide + PVD	0.05 to 0.12	0.08 to 0.15	0.10 to 0.25	80 to 220	0.10 to 0.25
		SRL Type			0.05 to 0.12	0.08 to 0.15	0.10 to 0.25	100 to 220	0.15 to 0.35
		SRG Type	T1200A	Cermet	0.05 to 0.12	0.08 to 0.15	0.10 to 0.25	120 to 250	0.10 to 0.25
		SRL Type			0.05 to 0.12	0.08 to 0.15	0.10 to 0.25	120 to 250	0.15 to 0.35
	Alloy Steel	SRG Type	F0512R1	Micro-grained Carbide + PVD	0.05 to 0.12	0.08 to 0.15	0.10 to 0.25	60 to 180	0.06 to 0.20
		SRL Type			0.05 to 0.12	0.08 to 0.15	0.10 to 0.25	60 to 180	0.10 to 0.22
		SRG Type	T1200A	Cermet	0.05 to 0.12	0.08 to 0.15	0.10 to 0.25	70 to 200	0.08 to 0.20
		SRL Type			0.05 to 0.12	0.08 to 0.15	0.10 to 0.25	70 to 200	0.12 to 0.25
	Die Steel	SRG Type	F0512R1	Micro-grained Carbide + PVD	0.05 to 0.10	0.08 to 0.15	0.10 to 0.20	15 to 60	0.06 to 0.20
	Tool Steels	SRG Type	F0512R1	Micro-grained Carbide + PVD	0.05 to 0.10	0.08 to 0.15	0.10 to 0.20	15 to 30	0.04 to 0.15
M	Stainless Steel	SRG Type	F0512R1	Micro-grained Carbide + PVD	0.05 to 0.10	0.08 to 0.15	0.08 to 0.20	15 to 60	0.06 to 0.20
K	Cast Iron	SRG Type	F0512R1	Micro-grained Carbide + PVD	0.05 to 0.18	0.08 to 0.20	0.10 to 0.25	80 to 250	0.10 to 0.30
	Ductile Cast Iron	SRG Type	T1212R1	Coated Cermet	0.05 to 0.12	0.08 to 0.15	0.10 to 0.25	80 to 250	0.10 to 0.30
N	Non-ferrous Alloys	SRG Type	F0510C	Micro-grained Carbide + DLC	0.05 to 0.12	0.08 to 0.15	0.10 to 0.25	250 to 500	0.10 to 0.30

SR Type

*For fitting tolerances, refer to Chapter N References.

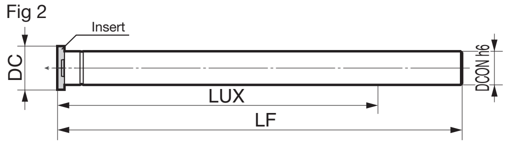
● SRD Type (Through Hole)

Fig 1



● SRB Type (Blind Hole)

Fig 2



Steel Shank Holder (ø11.900 to 35.600mm)

Dimensions (mm) Parts

	Diameter DC Range	Holder Cat. No. SRD Stock	SRD Cat. No.	Fig	SRB Stock	SRB Cat. No.	Fig	Shank Dia. DCON	Shoulder Length LF	Neck Length LUX	Group No.	N·m
Short	ø11.900 to ø15.600	●	SRD 16-10-100	1	●	SRB 16-10-100	2	10	100	60	(1)	0.9
Short	ø15.601 to ø18.600	●	19-12-115	1	●	19-12-115	2	12	115	70	(1)	0.9
Short	ø18.601 to ø23.600	●	24-16-128	1	●	24-16-128	2	16	128	80	(2)	1.5
Short	ø23.601 to ø28.600	●	29-20-145	1	●	29-20-145	2	20	145	95	(2)	1.5
Short	ø28.601 to ø35.600	●	36-25-170	1	●	36-25-170	2	25	170	110	(2)	1.5
Long	ø11.900 to ø15.600		SRD 16-10-160	1		SRB 16-10-160	2	10	160	120	(1)	0.9
Long	ø15.601 to ø18.600		19-12-185	1		19-12-185	2	12	185	140	(1)	0.9
Long	ø18.601 to ø23.600		24-16-208	1		24-16-208	2	16	208	160	(2)	1.5
Long	ø23.601 to ø28.600		29-20-240	1		29-20-240	2	20	240	190	(2)	1.5
Long	ø28.601 to ø35.600		36-25-274	1		36-25-274	2	25	274	214	(2)	1.5

*Refer to the table at the bottom of J157 for the catalogue numbers of cap screws and wrenches applicable for each product.

Carbide Shank Holder (ø11.900 to 35.600mm)

Dimensions (mm) Parts

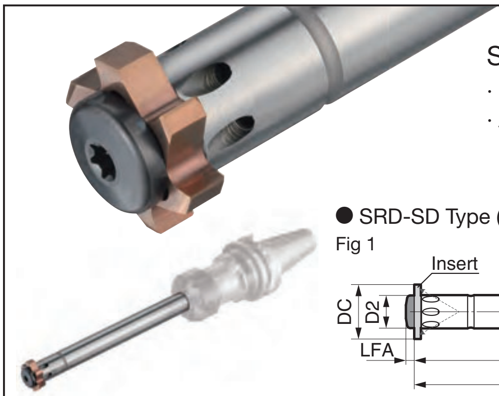
	Diameter DC Range	Holder Cat. No. SRD Stock	SRD Cat. No.	Fig	SRB Stock	SRB Cat. No.	Fig	Shank Dia. DCON	Shoulder Length LF	Neck Length LUX	Group No.	N·m
Long	ø11.900 to ø15.600		SRD 16-10-160HM	1		SRB 16-10-160HM	2	10	160	120	(1)	0.9
Long	ø15.601 to ø18.600		19-12-185HM	1		19-12-185HM	2	12	185	140	(1)	0.9
Long	ø18.601 to ø23.600		24-16-208HM	1		24-16-208HM	2	16	208	160	(2)	1.5
Long	ø23.601 to ø28.600		29-20-240HM	1		29-20-240HM	2	20	240	190	(2)	1.5
Long	ø28.601 to ø35.600		36-25-274HM	1		36-25-274HM	2	25	274	214	(2)	1.5

*Refer to the table at the bottom of J157 for the catalogue numbers of cap screws and wrenches applicable for each product.

N·m Recommended Tightening Torque (N·m)

*For fitting tolerances, refer to Chapter N References.

Precautions for Use ☞ J161

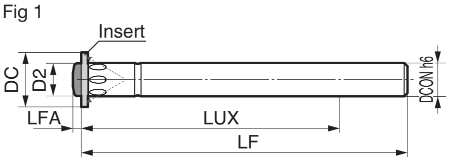


SD Type (Centre Bolt Clamp Type)

· Can be clamped using one centre bolt to improve work efficiency
· Applicable to high-torque (high-load) machining

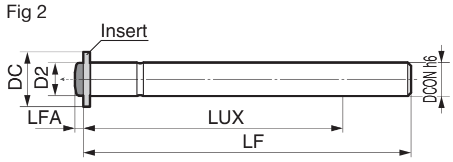
● SRD-SD Type (Through Hole)

Fig 1



● SRB-SD Type (Blind Hole)

Fig 2



Steel Shank Holder SRD-SD Type /SRB-SD Type (Centre Bolt Clamp Type)

Dimensions (mm) **Parts**

	Diameter DC Range	Holder Cat. No.						Shank Dia.	Shoulder Length	Neck Length	Bolt	Bolt	Group No.		N·m
		SRD Type (Through Hole)			SRB Type (Blind Hole)										
		Stock	Cat. No.	Fig	Stock	Cat. No.	Fig	DCON	LF	LUX	D2	LFA	SRD	SRB	
Short	ø11.900 to ø15.600	●	**SRD 16-10-100SD**	1	●	**SRB 16-10-100SD**	2	10	100	60	9.8	2.5	(3)	(3)	4.0
	ø15.601 to ø18.600	●	**19-12-115SD**	1	●	**19-12-115SD**	2	12	115	70	11.8	3.0	(4)	(7)	6.0
	ø18.601 to ø23.600	●	**24-16-128SD**	1	●	**24-16-128SD**	2	16	128	80	15.8	4.0	(5)	(8)	16.0
	ø23.601 to ø28.600	●	**29-20-145SD**	1	●	**29-20-145SD**	2	20	145	95	15.8	4.0	(5)	(8)	16.0
	ø28.601 to ø35.600	●	**36-25-170SD**	1	●	**36-25-170SD**	2	25	170	110	24.5	4.0	(6)	(9)	18.0
Long	ø11.900 to ø15.600	●	**SRD 16-10-160SD**	1	●	**SRB 16-10-160SD**	2	10	160	120	9.8	2.5	(3)	(3)	4.0
	ø15.601 to ø18.600	●	**19-12-185SD**	1	●	**19-12-185SD**	2	12	185	140	11.8	3.0	(4)	(7)	6.0
	ø18.601 to ø23.600	●	**24-16-208SD**	1	●	**24-16-208SD**	2	16	208	160	15.8	4.0	(5)	(8)	16.0
	ø23.601 to ø28.600	●	**29-20-240SD**	1	●	**29-20-240SD**	2	20	240	190	15.8	4.0	(5)	(8)	16.0
	ø28.601 to ø35.600	●	**36-25-274SD**	1	●	**36-25-274SD**	2	25	274	214	24.5	4.0	(6)	(9)	18.0

*Refer to the table at the bottom of J157 for the catalogue numbers of cap screws and wrenches applicable for each product.

Carbide Shank Holder SRD-SD Type /SRB-SD Type (Centre Bolt Clamp Type)

Dimensions (mm) **Parts**

	Diameter DC Range	Holder Cat. No.						Shank Dia.	Shoulder Length	Neck Length	Bolt	Bolt	Group No.		N·m
		SRD Type (Through Hole)			SRB Type (Blind Hole)										
		Stock	Cat. No.	Fig	Stock	Cat. No.	Fig	DCON	LF	LUX	D2	LFA	SRD	SRB	
Long	ø11.900 to ø15.600		**SRD 16-10-160HMSD**	1		**SRB 16-10-160HMSD**	2	10	160	120	9.8	2.5	(3)	(3)	4.0
	ø15.601 to ø18.600		**19-12-185HMSD**	1		**19-12-185HMSD**	2	12	185	140	11.8	3.0	(4)	(7)	6.0
	ø18.601 to ø23.600		**24-16-208HMSD**	1		**24-16-208HMSD**	2	16	208	160	15.8	4.0	(5)	(8)	16.0
	ø23.601 to ø28.600		**29-20-240HMSD**	1		**29-20-240HMSD**	2	20	240	190	15.8	4.0	(5)	(8)	16.0
	ø28.601 to ø35.600		**36-25-274HMSD**	1		**36-25-274HMSD**	2	25	274	214	24.5	4.0	(6)	(9)	18.0

*Refer to the table at the bottom of J157 for the catalogue numbers of cap screws and wrenches applicable for each product.

Torque Wrench

Wrench Cat. No.	Applicable Holder Cat. No.	Torx	Torque Rating
G00-40-11	SR☐ 16 / SR☐ 19	T 6	**0.9N·m**
G00-40-12	SR☐ 24 to SR☐ 61	T 8	**1.5N·m**
G00-40-13	SR☐ 81 / SR☐ 101	T 15	**3.5N·m**

All in stock.

☐ D,B,KG,A

Fig 1

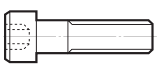


Fig 2

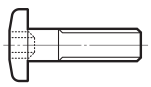


Fig 3

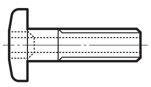


Fig 4

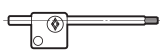
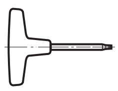


Fig 5



Cap Screws and Wrench

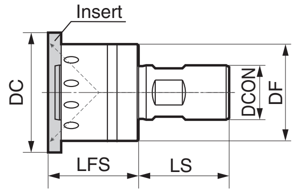
Group No.	Cat. No.				Torx	N·m
	Cap Screw	Fig	Wrench	Fig		
(1)	**C00-90-00**	1	**G00-02-01**	4	T 6	**0.9**
(2)	**C00-90-01**		**G00-02-02**		T 8	**1.5**
(3)	**C00-90-22**	2	**G00-20-27**	5	T15	**4.0**
(4)	**C00-90-23**		**G00-20-28**		T20	**6.0**
(5)	**C00-90-24**		**G00-20-29**		T30	**16.0**
(6)	**C00-90-25**		**G00-20-29**		T30	**18.0**
(7)	**C00-90-23B**	3	**G00-20-28**		T20	**6.0**
(8)	**C00-90-24B**		**G00-20-29**		T30	**16.0**
(9)	**C00-90-25B**		**G00-20-29**		T30	**18.0**

Drilling
J
Solid
Indexable Head Type
Indexable Insert Type
Reamers
Brazed
Others

SR Type

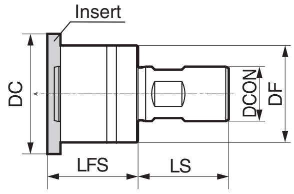
● SRKG Type (Through Hole)

Fig 1



● SRKB Type (Blind Hole)

Fig 2



Head (ø35.601 to 140.6mm)

Dimensions (mm) Parts

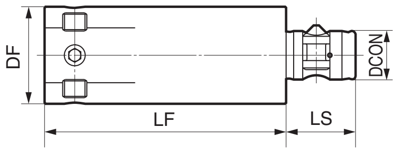
Diameter DC Range	Cat. No.						Diameter	Shank Dia.	Length	Shank	For mounting insert		For centre locking			
	Stock	SRKG	Fig	Stock	SRKB	Fig	DF	DCON	LFS	LS	Group No.	N·m	Group No. SRKG	N·m	Group No. SRKB	N·m
ø35.601 to ø43.600		SRKG 44-32-18-030	1		SRKB 44-32-18-030	2	32	18	30	30	(1)	1.5	(3)	35.0	(8)	35.0
ø43.601 to ø51.600		52-39-20-035	1		52-39-20-035	2	39	20	35	30	(1)	1.5	(4)	35.0	(9)	35.0
ø51.601 to ø60.600		61-46-25-040	1		61-46-25-040	2	46	25	40	35	(1)	1.5	(5)	55.0	(10)	55.0
ø60.601 to ø80.600		81-56-32-050	1		81-56-32-050	2	56	32	50	40	(2)	3.5	(6)	85.0	(11)	85.0
ø80.601 to ø100.600		101-76-40-060	1		101-76-40-060	2	76	40	60	50	(2)	3.5	(7)	120.0	(12)	120.0
ø100.601 to ø120.600		SRKG 121-76-40-060	1		SRKB 121-76-40-060	2	76	40	60	50	(2)	3.5	(7)	120.0	(12)	120.0
ø120.601 to ø140.600		141-76-40-060	1		141-76-40-060	2	76	40	60	50	(2)	3.5	(7)	120.0	(12)	120.0

*Refer to the table at the bottom of J159 for the catalogue numbers of cap screws and wrenches applicable for each product.

● SRA Type

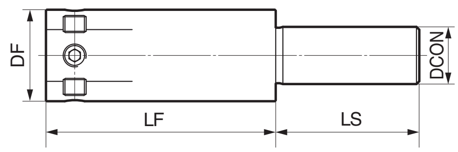
BM (Beta Module Shank) Type

Fig 1



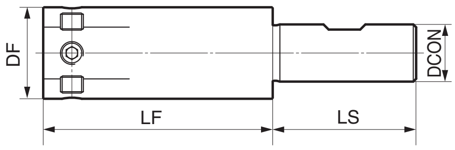
ZS (Cylindrical Shank) Type

Fig 2



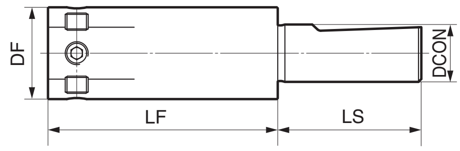
WD (Weldon Shank) Type

Fig 3



WN (Whistle Notch Shank) Type

Fig 4



Shank (with Insert Runout Adjustment Mechanism)

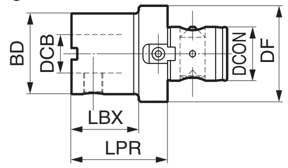
Dimensions (mm) Parts

Shank type	Diameter DC Range	Shank Cat. No.		Diameter	Shank Dia.	Length	Shank	Fig	Cap Screw	Wrench	Clamp	Bolt
		Stock	SRA	DF	DCON	LF	LS					
BM	ø35.601 to ø43.600		SRA 44-32-BM32-055	32	BM-32	55	8.5	1	C00-90-08	G00-02-05	Z00-32-21	Z00-32-23
			44-32-BM32-080	32	BM-32	80	8.5	1				
	ø43.601 to ø51.600		SRA 52-39-BM40-060	39	BM-40	60	26.0	1	C00-90-10	G00-02-06	Z00-40-21	Z00-40-23
			52-39-BM40-100	39	BM-40	100	26.0	1				
	ø51.601 to ø60.600		SRA 61-46-BM50-070	46	BM-50	70	31.0	1	C00-90-10	G00-02-06	Z00-40-21	Z00-40-23
			61-46-BM50-120	46	BM-50	120	31.0	1				
	ø60.601 to ø80.600		SRA 81-56-BM50-080	56	BM-50	80	31.0	1	C00-90-12	G00-02-07	Z00-50-21	Z00-50-23
			81-56-BM50-140	56	BM-50	140	31.0	1				
	ø80.601 to ø140.600		SRA 101-76-BM63-100	76	BM-63	100	38.0	1	C00-90-16	G00-02-08	Z00-63-21	Z00-63-23
			101-76-BM63-160	76	BM-63	160	38.0	1				
ZS	ø35.601 to ø43.600		SRA 44-32-ZS20-080	32	ZS-20	80	50.0	2	C00-90-08	G00-02-05	—	—
	ø43.601 to ø51.600		SRA 52-39-ZS25-100	39	ZS-25	100	56.0	2	C00-90-10	G00-02-06	—	—
	ø51.601 to ø60.600		SRA 61-46-ZS32-120	46	ZS-32	120	60.0	2			—	—
	ø60.601 to ø80.600		SRA 81-56-ZS40-080	56	ZS-40	80	70.0	2	C00-90-12	G00-02-07	—	—
			81-56-ZS40-140	56	ZS-40	140	70.0	2				
	ø80.601 to ø140.600		SRA 101-76-ZS40-100	76	ZS-40	100	70.0	2	C00-90-16	G00-02-08	—	—
			101-76-ZS40-160	76	ZS-40	160	70.0	2				
WD	ø35.601 to ø43.600		SRA 44-32-WD20-080	32	WD-20	80	50.0	3	C00-90-08	G00-02-05	—	—
	ø43.601 to ø51.600		SRA 52-39-WD25-100	39	WD-25	100	56.0	3	C00-90-10	G00-02-06	—	—
	ø51.601 to ø60.600		SRA 61-46-WD32-120	46	WD-32	120	60.0	3	C00-90-10	G00-02-06	—	—
	ø60.601 to ø80.600		SRA 81-56-WD40-080	56	WD-40	80	70.0	3	C00-90-12	G00-02-07	—	—
			81-56-WD40-140	56	WD-40	140	70.0	3				
	ø80.601 to ø140.600		SRA 101-76-WD40-100	76	WD-40	100	70.0	3	C00-90-16	G00-02-08	—	—
			101-76-WD40-160	76	WD-40	160	70.0	3				
WN	ø35.601 to ø43.600		SRA 44-32-WN20-080	32	WN-20	80	50.0	4	C00-90-08	G00-02-05	—	—
	ø43.601 to ø51.600		SRA 52-39-WN25-100	39	WN-25	100	56.0	4	C00-90-10	G00-02-06	—	—
	ø51.601 to ø60.600		SRA 61-46-WN32-120	46	WN-32	120	60.0	4	C00-90-10	G00-02-06	—	—
	ø60.601 to ø80.600		SRA 81-56-WN40-080	56	WN-40	80	70.0	4	C00-90-12	G00-02-07	—	—
			81-56-WN40-140	56	WN-40	140	70.0	4				
	ø80.601 to ø140.600		SRA 101-76-WN40-100	76	WN-40	100	70.0	4	C00-90-16	G00-02-08	—	—
			101-76-WN40-160	76	WN-40	160	70.0	4				

N·m Recommended Tightening Torque (N·m)

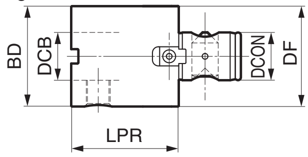
● B12 Type

Fig 1



● B13 Type

Fig 2



Extension B12 Type

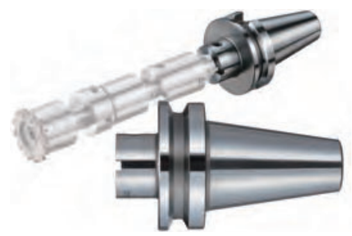
Dimensions (mm)

Cat. No.	Stock	Diameter BD	Bore Dia. DCB	Diameter DF	Shank Dia. DCON	Overhang Length LPR	Body LBX	Weight (kg)	Fig
B12-40-32-045		32	BM-32	42	BM-40	45	30	0.3	1
B12-50-40-050		42	BM-40	50	BM-50	50	35	0.5	1
B12-63-32-050		32	BM-32	63	BM-63	50	30	0.9	1
40-055		42	BM-40	63	BM-63	55	35	1.1	1
B12-80-40-060		42	BM-40	80	BM-80	60	35	2.2	1
63-060		63	BM-63	80	BM-80	60	35	2.4	1
B12-100-40-060		42	BM-40	100	BM-100	60	35	3.1	1
63-060		63	BM-63	100	BM-100	60	35	3.3	1
80-075		80	BM-80	100	BM-100	75	50	3.5	1

B13 Type

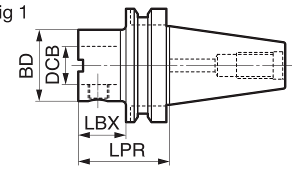
Dimensions (mm)

Cat. No.	Stock	Diameter BD	Bore Dia. DCB	Diameter DF	Shank Dia. DCON	Overhang Length LPR	Body LBX	Weight (kg)	Fig
B13-32-32-035		32	BM-32	32	BM-32	35	—	0.2	2
070		32	BM-32	32	BM-32	70	—	0.4	2
B13-40-40-045		42	BM-40	42	BM-40	45	—	0.4	2
070		42	BM-40	42	BM-40	70	—	0.7	2
B13-50-50-065		50	BM-50	50	BM-50	65	—	1.0	2
100		50	BM-50	50	BM-50	100	—	1.5	2
B13-63-63-060		63	BM-63	63	BM-63	60	—	1.3	2
125		63	BM-63	63	BM-63	100	—	2.9	2
B13-80-80-080		80	BM-80	80	BM-80	80	—	2.9	2
160		80	BM-80	80	BM-80	160	—	4.9	2
B13-100-100-080		100	BM-100	100	BM-100	80	—	4.9	2
180		100	BM-100	100	BM-100	180	—	10.9	2



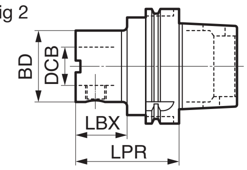
● BT/A Type

Fig 1



● HSK Type

Fig 2



Arbor (BETA Module)

BT/A Type

Dimensions (mm)

Cat. No.	Stock	Taper Size	Diameter BD	Bore Dia. DCB	Overhang Length LPR	Body LBX	Weight (kg)	Fig
BT10-40A-32-060		40	32	BM-32	60	33	0.9	1
40-028		40	42	BM-40	28	1	0.9	1
40-060		40	42	BM-40	60	33	1.2	1
50-060		40	50	BM-50	60	33	1.3	1
63-055		40	63	BM-63	55	28	1.4	1
BT10-50A-32-070		50	32	BM-32	70	32	3.7	1
40-070		50	42	BM-40	70	32	3.9	1
50-070		50	50	BM-50	70	32	4.1	1
63-080		50	63	BM-63	80	42	4.3	1
80-100		50	80	BM-80	100	62	5.5	1
100-110		50	100	BM-100	110	72	7.0	1

HSK Type (Coolant tube sold separately)

Dimensions (mm)

Cat. No.	Stock	Taper Size	Diameter BD	Bore Dia. DCB	Overhang Length LPR	Body LBX	Weight (kg)	Fig
BH10-50A-40-065		50	42	BM-40	65	39	0.7	2
BH10-63A-32-060		63	32	BM-32	60	34	1.0	2
40-065		63	42	BM-40	65	23	1.1	2
50-070		63	50	BM-50	70	44	1.5	2
63-080		63	63	BM-63	80	38	1.5	2
BH10-100A-40-080		100	42	BM-40	80	35	2.3	2
50-080		100	50	BM-50	80	35	2.5	2
63-080		100	63	BM-63	80	35	2.8	2
80-090		100	80	BM-80	90	45	3.8	2
100-100		100	100	BM-100	100	55	4.0	2

Parts

Fig 1

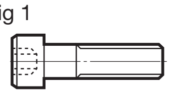


Fig 2

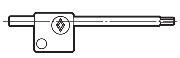
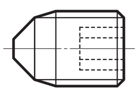


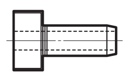
Fig 3

Group No.	Cat. No. Cap Screw	Fig	Wrench	Fig	Torx/Hex	N·m
(1)	C00-90-02	1	G00-20-02	2	T 8	1.5
(2)	C00-90-04	1	G00-20-03	2	T15	3.5
(3)	C00-26-23G	1	G00-02-07	3	6	35.0
(4)	C00-26-38G	1	G00-02-07	3	6	35.0
(5)	C00-24-26G	1	G00-02-08	3	8	55.0
(6)	C00-26-37G	1	G00-02-09	3	10	85.0
(7)	C00-24-31G	1	G00-02-16	3	14	120.0
(8)	C00-26-23B	1	G00-02-07	3	6	35.0
(9)	C00-26-38B	1	G00-02-07	3	6	35.0
(10)	C00-24-26B	1	G00-02-08	3	8	55.0
(11)	C00-26-37B	1	G00-02-09	3	10	85.0
(12)	C00-24-31B	1	G00-20-16	3	14	120.0



Clamp Screw

Size	Cat. No.
25	Z00-25-24
32	Z00-32-24
40	Z00-40-24
63	Z00-63-24
80	Z00-80-24
100	Z00-100-24



Coolant Tubes

Taper Size	Cat. No.
50	H00-50-01
63	H00-63-01
100	H00-100-01

For the HSK type arbor.

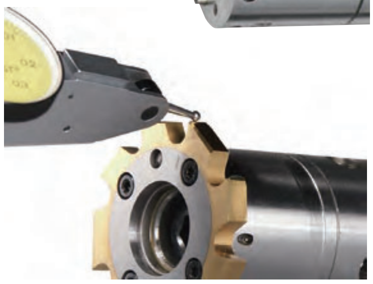
■ SR Type Usage Instructions (Adjusting Runout)

The runout at the cutting edge of a reamer should be zero (0.005mm or less recommended) to obtain optimum reaming precision. To correct runout in the holder or the machine's spindle, use of holders with a runout adjustment mechanism, hydro chucks and shrink-fitting is recommended. Various methods can be used to measure runout on a SumiReamer SR type reamer. With good runout repeatability, it is recommended that inserts be replaced without removing the shank holder from the spindle.

● Runout Adjustment

A. Simple measurement method (measure holder short taper)
The short taper on the holder where the insert is mounted provides the easiest and most accurate measurement before mounting the insert.

B. Precise method for measuring runout (measure insert arc-shaped land)
Measuring the land immediately after the outer diameter of the insert eliminates all mounting error. This allows the most accurate runout measurement.

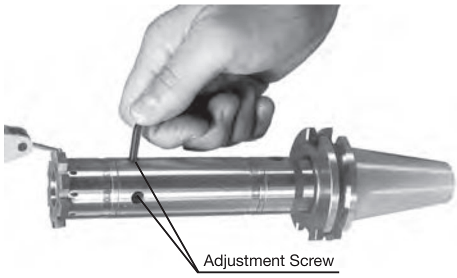


C. Simple measurement method (measure holder outer diameter)
The high-precision machined outer diameter of the shank holder provides a good estimate of the runout measurement.

*A has the greatest runout accuracy, followed by B and then C.

● Runout adjustment using shank with runout adjustment mechanism (>ø35.6mm)

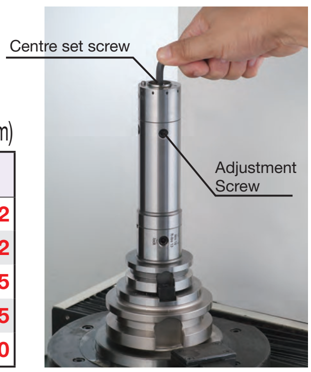
(1) Tighten the centre set screw to torque value A in the table below, then attach the insert and measure the runout of the cutting edge.
(2) Verify the cutting edge where runout peaks and adjust with the adjustment screw.
(3) Repeat this adjustment for each tooth as necessary.
(4) Remove the adjusted insert, tighten the centre set screw to torque value B in the table below and then re-attach the insert.



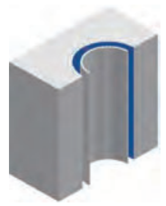
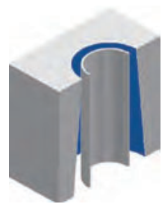
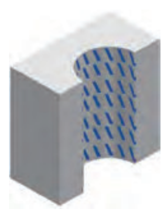
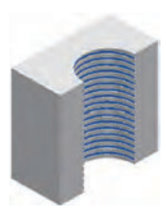
Recommended Tightening Torque for Centre Set Screw (N·m)

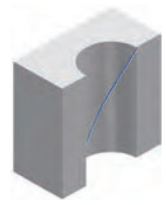
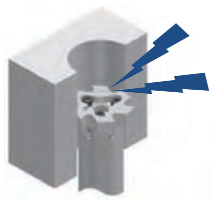
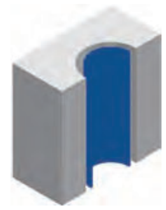
Head Size	Cap Screw	Size	A	B
SRK □44	C00-26-23G/B	M8×60	25	32
SRK □52	C00-26-38G/B	M8×70	25	32
SRK □61	C00-24-26G/B	M10×80	40	55
SRK □81	C00-26-37G/B	M12×100	65	85
SRK □101	C00-24-31G/B	M16×100	95	120

G, B



■ Troubleshooting

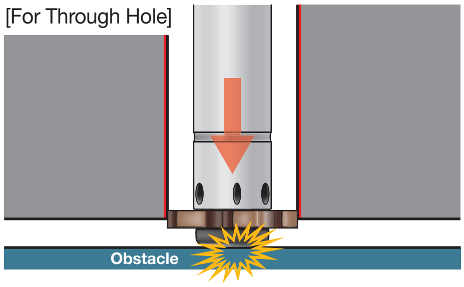
Failure	Countermeasures
Enlarged hole diameter 	· Reduce runout as much as possible. (use a holder with a diameter correction mechanism). · Decrease cutting speed. · Increase the feed rate. · Increase coolant concentration. · Reduce stock removal. · Check cutting edge for damage. (whether there are built-up edges). · Change reamer diameter.
Tapered hole 	· Reduce runout as much as possible. (use a holder with a diameter correction mechanism). · Decrease cutting speed. · Decrease the feed rate. · Adjust coolant concentration. · Review pre-maching process. · Review workpiece clamping method. · Compare the hole diameters when the workpiece is clamped and when it is unclamped. · Check and correct the direction of chip evacuation.
Chatter marks on machined surface 	· Reduce runout as much as possible. (use a holder with a diameter correction mechanism). · Change the approach angle of the insert cutting edge. · Review workpiece clamping method. · Decrease cutting speed. · Increase the feed rate.
Poor surface finish roughness 	· Check cutting edge for damage. · Reduce runout as much as possible. (use a holder with a diameter correction mechanism). · Check whether cutting conditions are within the recommended range. · Change to internal coolant supply. · Increase coolant concentration.

Failure	Countermeasures
Return mark 	· Reduce runout as much as possible. (use a holder with a diameter correction mechanism). · Check cutting edge for damage. (whether there are built-up edges). · Reduce stock removal. · Change to an insert with a sharper cutting edge shape. · Decrease the return (lifting) feed.
Irregular cutting noise 	· Decrease the coolant concentration. · Increase the stock removal. · Check cutting edge for damage. · Change the approach angle of the insert cutting edge.
Smaller hole diameter 	· Replace the insert. · Decrease the coolant concentration. · Increase the stock removal. · Increase cutting speed. · Decrease the feed rate.

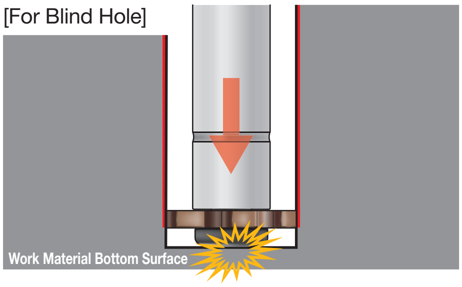
● Precautions for SD Type (Centre Bolt Clamp Type)

This product can be used for both through-hole and blind-hole drilling.
However, the head of the centre bolt protrudes from the end of the body, so ensure clearance by referring to the protrusion of the centre bolt (LFA) shown in the dimension table.

[For Through Hole]



[For Blind Hole]



AK Type

● MAK Type

● BAK Type

● LAK Type/DAK Type

■ General Features

The SUPER MULTIDRILL AK type is a brazed carbide-tip drill with through-tool oil holes that utilises a tough cemented carbide substrate coupled with ZX Coat. Double the conventional regrinding allowance is provided, achieving a lower running cost.

■ Features and Applications

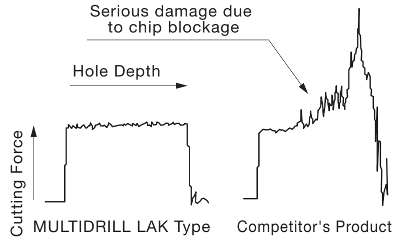
- **Stable tool life up to 1.5 times longer**
  Tough substrate with ZX Coat improves fracture resistance and tool life.
- **Double the regrinding possibilities**
  Double the carbide tip length for low running costs
- **Unique flute design for using mist**
  Both flute shape and flute surface quality are designed for hole depths of L/D=5 using mist.

■ Product Range

Type and Series Code	Diameter Range (mm)	Hole Depth (L/D)	Features
Standard type (MAK)	ø13.6 to ø40.5	up to 3	Up to 3 times greater total tool life expectancy resulting from 1.5 times greater tool life and 2 times greater regrindability
Long type (LAK)	ø13.6 to ø40.5	up to 5	
Deep hole type (DAK)	ø13.0 to ø40.5	up to 7	
Standard type (BAK)	ø13.6 to ø30.5	up to 3	Designed for drilling stacked plates.

■ Performance

● Chip Removal Comparison
Chip evacuation comparison with L/D=5 using mist

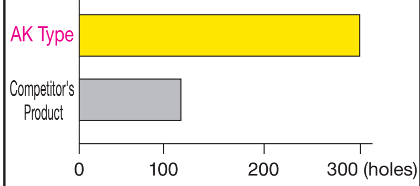


Drill: ø18, Work Material: S50C (230HB) using mist
v_c=50m/min, f=0.3mm/rev, H=90mm (L/D=5)

■ Application Examples

● Automotive components: SCM440 (250HB)

Great improvement in tool life!



Drill: KDS250MAK ø25
v_c=60m/min, f=0.25mm/rev, H=65mm, through

■ Recommended Cutting Conditions (Brazed Carbide Tip Type)

● General-purpose Holes (L/D: Up to 5): MAK Type/LAK Type/BAK Type

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

Dia. DC	Work Material / Series	Mild Steel	General Steel	Hardened Steel	For Bridge	Stainless Steel	Gray Cast Iron	Ductile Cast Iron	Aluminum Alloy	Titanium Alloy	Ni-based Heat-resistant Alloy
		(up to 200HB)	(up to 300HB)	45HRC	SM/SS	(up to 200HB)	FC250	FCD450	—	6Al-4V-Ti	Inconel 718
		MAK Type LAK Type	MAK Type LAK Type	MAK Type LAK Type	BAK Type	MAK Type LAK Type	MAK Type LAK Type	MAK Type LAK Type	MAK Type LAK Type	MAK Type LAK Type	MAK Type LAK Type
ø15.0	v_c	50 - **60** - 75	50 - **60** - 70	30 - **35** - 45	50 - **55** - 60	35 - **40** - 50	60 - **70** - 100	55 - **60** - 75	70 - **80** - 100	20 - **25** - 35	10 - **20** - 30
	f	0.15 - **0.20** - 0.30	0.15 - **0.20** - 0.30	0.10 - **0.15** - 0.20	0.20 - **0.22** - 0.25	0.10 - **0.12** - 0.20	0.20 - **0.25** - 0.30	0.15 - **0.20** - 0.30	0.25 - **0.30** - 0.35	0.10 - **0.12** - 0.15	0.05 - **0.08** - 0.10
ø20.0	v_c	50 - **60** - 75	50 - **60** - 70	35 - **40** - 50	50 - **55** - 65	35 - **40** - 50	60 - **70** - 100	60 - **65** - 80	70 - **90** - 110	20 - **25** - 40	10 - **20** - 30
	f	0.15 - **0.25** - 0.35	0.15 - **0.20** - 0.35	0.15 - **0.20** - 0.25	0.20 - **0.22** - 0.25	0.15 - **0.17** - 0.25	0.20 - **0.25** - 0.35	0.15 - **0.20** - 0.35	0.25 - **0.32** - 0.40	0.10 - **0.12** - 0.15	0.05 - **0.08** - 0.10
ø30.0	v_c	55 - **65** - 90	55 - **65** - 90	35 - **40** - 50	50 - **60** - 70	35 - **40** - 50	60 - **75** - 110	60 - **70** - 90	75 - **100** - 120	25 - **30** - 40	15 - **20** - 35
	f	0.20 - **0.30** - 0.40	0.20 - **0.25** - 0.35	0.15 - **0.20** - 0.25	0.20 - **0.25** - 0.35	0.15 - **0.20** - 0.25	0.25 - **0.30** - 0.40	0.20 - **0.25** - 0.40	0.30 - **0.35** - 0.45	0.10 - **0.14** - 0.20	0.08 - **0.10** - 0.12
ø40.0	v_c	60 - **70** - 90	60 - **70** - 90	35 - **40** - 50	50 - **60** - 75	35 - **40** - 50	60 - **75** - 110	60 - **70** - 100	75 - **100** - 120	25 - **30** - 40	15 - **20** - 35
	f	0.20 - **0.30** - 0.40	0.20 - **0.25** - 0.30	0.15 - **0.50** - 0.25	0.25 - **0.30** - 0.35	0.15 - **0.20** - 0.25	0.25 - **0.35** - 0.45	0.20 - **0.25** - 0.40	0.30 - **0.35** - 0.45	0.10 - **0.14** - 0.20	0.08 - **0.10** - 0.12

Min. - **Optimum** - Max.

● Deep Hole (L/D: Up to 7): DAK Type

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

Dia. DC	Work Material	Mild Steel	General Steel	Hardened Steel	Stainless Steel	Gray Cast Iron	Ductile Cast Iron	Aluminum Alloy	Titanium Alloy	Ni-based Heat-resistant Alloy
		(up to 200HB)	(up to 300HB)	45HRC	(up to 200HB)	FC250	FCD450	—	6Al-4V-Ti	Inconel 718
ø15.0	v_c	50 - **55** - 65	50 - **55** - 60	20 - **30** - 45	35 - **40** - 50	60 - **65** - 80	45 - **50** - 65	70 - **80** - 90	20 - **25** - 35	10 - **15** - 30
	f	0.15 - **0.20** - 0.25	0.15 - **0.20** - 0.25	0.10 - **0.15** - 0.15	0.10 - **0.12** - 0.15	0.20 - **0.22** - 0.25	0.15 - **0.20** - 0.25	0.25 - **0.27** - 0.30	0.08 - **0.10** - 0.12	0.05 - **0.08** - 0.10
ø20.0	v_c	50 - **55** - 65	50 - **55** - 60	25 - **30** - 45	35 - **40** - 50	60 - **65** - 80	50 - **55** - 70	70 - **80** - 90	20 - **25** - 40	10 - **15** - 30
	f	0.15 - **0.20** - 0.25	0.15 - **0.20** - 0.25	0.15 - **0.17** - 0.20	0.12 - **0.15** - 0.20	0.20 - **0.22** - 0.25	0.15 - **0.17** - 0.25	0.25 - **0.27** - 0.35	0.08 - **0.10** - 0.12	0.05 - **0.08** - 0.10
ø30.0	v_c	55 - **60** - 75	55 - **60** - 70	25 - **35** - 50	35 - **40** - 50	60 - **70** - 90	50 - **55** - 80	75 - **85** - 100	25 - **30** - 40	15 - **20** - 35
	f	0.20 - **0.25** - 0.30	0.20 - **0.25** - 0.30	0.15 - **0.17** - 0.20	0.15 - **0.17** - 0.20	0.25 - **0.27** - 0.30	0.20 - **0.25** - 0.30	0.30 - **0.32** - 0.35	0.10 - **0.12** - 0.15	0.08 - **0.10** - 0.12
ø40.0	v_c	60 - **60** - 70	60 - **65** - 70	25 - **35** - 50	35 - **40** - 50	60 - **70** - 90	50 - **55** - 80	75 - **85** - 100	25 - **30** - 40	15 - **20** - 35
	f	0.20 - **0.25** - 0.30	0.20 - **0.25** - 0.30	0.15 - **0.17** - 0.20	0.15 - **0.17** - 0.20	0.25 - **0.27** - 0.30	0.20 - **0.25** - 0.30	0.30 - **0.35** - 0.40	0.10 - **0.12** - 0.15	0.08 - **0.10** - 0.12

Min. - **Optimum** - Max.

Brazed Series (Internal Coolant Supply)

AK: Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron

BAK: Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29%

ZX Coat | Coolant Hole | 3D | 5D | 7D

*Refer to N38 for the tolerance of h6 and h7

Fig. 1 (MAK Type)

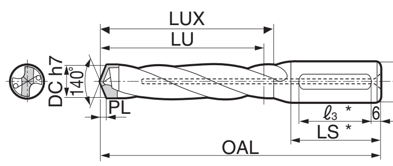


Fig. 2 (BAK Type)

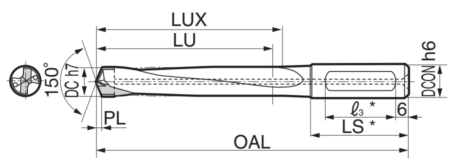
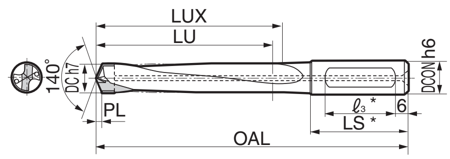


Fig. 3 (LAK Type/DAK Type)



Diameter ø13.0 to 16.3mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Neck Length LUX	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
13.0	7	●	**KDS 130DAK**	108.4	108.4	177.4	2.4	16	3
13.5	5		**KDS 135LAK**	76.5	76.5	142.5	2.5	16	3
	7	●	**135DAK**	108.5	108.5	177.5			3
13.7	3		**KDS 137MAK**	53.5	53.5	117.5	2.5	16	1
			137BAK	57.8	57.8	119.8	1.8		2
	5		**137LAK**	82.5	82.5	147.5	2.5		3
	7		**137DAK**	115.5	115.5	182.5			3
14.0	3	●	**KDS 140MAK**	53.5	53.5	117.5	2.5	16	1
			140BAK	57.9	57.9	119.9	1.9		2
	5	●	**140LAK**	82.5	82.5	147.5	2.5		3
	7	●	**140DAK**	115.5	115.5	182.5			3
14.2	3	●	**KDS 142MAK**	53.6	53.6	117.6	2.6	16	1
			142BAK	57.9	57.9	119.9	1.9		2
	5	●	**142LAK**	82.6	82.6	147.6	2.6		3
	7		**142DAK**	115.6	115.6	182.6			3
14.5	3	●	**KDS 145MAK**	53.6	53.6	117.6	2.6	16	1
			145BAK	57.9	57.9	119.9	1.9		2
	5	●	**145LAK**	82.6	82.6	147.6	2.6		3
	7	●	**145DAK**	115.6	115.6	182.6			3
14.7	3		**KDS 147MAK**	56.7	56.7	127.7	2.7	20	1
			147BAK	62.0	62.0	127.0	2.0		2
	5		**147LAK**	87.7	87.7	157.7	2.7		3
	7		**147DAK**	124.7	124.7	197.7			3
14.8	3		**KDS 148MAK**	56.7	56.7	127.7	2.7	20	1
			148BAK	62.0	62.0	127.0	2.0		2
	5		**148LAK**	87.7	87.7	157.7	2.7		3
	7		**148DAK**	124.7	124.7	197.7			3
15.0	3	●	**KDS 150MAK**	56.7	56.7	127.7	2.7	20	1
			150BAK	62.0	62.0	127.0	2.0		2
	5	●	**150LAK**	87.7	87.7	157.7	2.7		3
	7	●	**150DAK**	124.7	124.7	197.7			3
15.5	3	●	**KDS 155MAK**	56.8	56.8	127.8	2.8	20	1
			155BAK	62.1	62.1	127.1	2.1		2
	5	●	**155LAK**	87.8	87.8	157.8	2.8		3
	7	●	**155DAK**	124.8	124.8	197.8			3
15.7	3		**KDS 157MAK**	60.9	60.9	132.9	2.9	20	1
			157BAK	66.1	66.1	132.1	2.1		2
	5		**157LAK**	93.9	93.9	167.9	2.9		3
	7		**157DAK**	131.9	131.9	207.9			3
16.0	3	●	**KDS 160MAK**	60.9	60.9	132.9	2.9	20	1
			160BAK	66.1	66.1	132.1	2.1		2
	5	●	**160LAK**	93.9	93.9	167.9	2.9		3
	7	●	**160DAK**	131.9	131.9	207.9			3
16.2	3	●	**KDS 162MAK**	60.9	60.9	132.9	2.9	20	1
			162BAK	66.2	66.2	132.2	2.2		2
	5	●	**162LAK**	93.9	93.9	167.9	2.9		3
	7		**162DAK**	131.9	131.9	207.9			3
16.3	3	●	**KDS 163MAK**	61.0	61.0	133.0	3.0	20	1
			163BAK	66.2	66.2	132.2	2.2		2
	5		**163LAK**	94.0	94.0	168.0	3.0		3
	7		**163DAK**	132.0	132.0	208.0			3

Grade: ACZ70S

Diameter ø16.5 to 19.1mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Neck Length LUX	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
16.5	3	●	**KDS 165MAK**	61.0	61.0	133.0	3.0	20	1
			165BAK	66.2	66.2	132.2	2.2		2
	5	●	**165LAK**	94.0	94.0	168.0	3.0		3
	7	●	**165DAK**	132.0	132.0	208.0			3
16.7	3	●	**KDS 167MAK**	64.0	64.0	138.0	3.0	20	1
			167BAK	70.2	70.2	137.2	2.2		2
	5		**167LAK**	99.0	99.0	173.0	3.0		3
	7		**167DAK**	141.0	141.0	218.0			3
17.0	3	●	**KDS 170MAK**	64.1	64.1	138.1	3.1	20	1
			170BAK	70.3	70.3	137.3	2.3		2
	5	●	**170LAK**	99.1	99.1	173.1	3.1		3
	7	●	**170DAK**	141.1	141.1	218.1			3
17.5	3	●	**KDS 175MAK**	64.2	64.2	138.2	3.2	20	1
			175BAK	70.3	70.3	137.3	2.3		2
	5	●	**175LAK**	99.2	99.2	173.2	3.2		3
	7	●	**175DAK**	141.2	141.2	218.2			3
17.6	3	●	**KDS 176MAK**	68.2	68.2	143.2	3.2	20	1
			176BAK	74.4	74.4	142.4	2.4		2
	5		**176LAK**	105.2	105.2	178.2	3.2		3
	7		**176DAK**	148.2	148.2	223.2			3
17.7	3	●	**KDS 177MAK**	68.2	68.2	143.2	3.2	20	1
			177BAK	74.4	74.4	142.4	2.4		2
	5	●	**177LAK**	105.2	105.2	178.2	3.2		3
	7		**177DAK**	148.2	148.2	223.2			3
17.8	3		**KDS 178MAK**	68.2	68.2	143.2	3.2	20	1
			178BAK	74.4	74.4	142.4	2.4		2
	5		**178LAK**	105.2	105.2	178.2	3.2		3
	7		**178DAK**	148.2	148.2	223.2			3
18.0	3	●	**KDS 180MAK**	68.3	68.3	143.3	3.3	20	1
		●	**180BAK**	74.4	74.4	142.4	2.4		2
	5	●	**180LAK**	105.3	105.3	178.3	3.3		3
	7	●	**180DAK**	148.3	148.3	223.3			3
18.5	3	●	**KDS 185MAK**	68.4	68.4	143.4	3.4	20	1
			185BAK	74.5	74.5	142.5	2.5		2
	5	●	**185LAK**	105.4	105.4	178.4	3.4		3
	7	●	**185DAK**	148.4	148.4	223.4			3
18.7	3		**KDS 187MAK**	71.4	71.4	158.4	3.4	25	1
			187BAK	78.5	78.5	153.5	2.5		2
	5		**187LAK**	110.4	110.4	193.4	3.4		3
	7		**187DAK**	157.4	157.4	243.4			3
18.9	3		**KDS 189MAK**	71.4	71.4	158.4	3.4	25	1
			189BAK	78.5	78.5	153.5	2.5		2
	5		**189LAK**	110.4	110.4	193.4	3.4		3
	7		**189DAK**	157.4	157.4	243.4			3
19.0	3	●	**KDS 190MAK**	71.5	71.5	158.5	3.5	25	1
			190BAK	78.5	78.5	153.5	2.5		2
	5	●	**190LAK**	110.5	110.5	193.5	3.5		3
	7	●	**190DAK**	157.5	157.5	243.5			3
19.1	3		**KDS 191MAK**	71.5	71.5	158.5	3.5	25	1
			191BAK	78.6	78.6	153.6	2.6		2
	5		**191LAK**	110.5	110.5	193.5	3.5		3
	7		**191DAK**	157.5	157.5	243.5			3

Grade: ACZ70S

*Brazed Series Common Dimensions

DCON	16.0	20.0	25.0	32.0	40.0
LS	48	50	56	60	70
ℓ_3	35	40	45	50	60

Shank length (**LS**) and shank diameter length (ℓ_3)

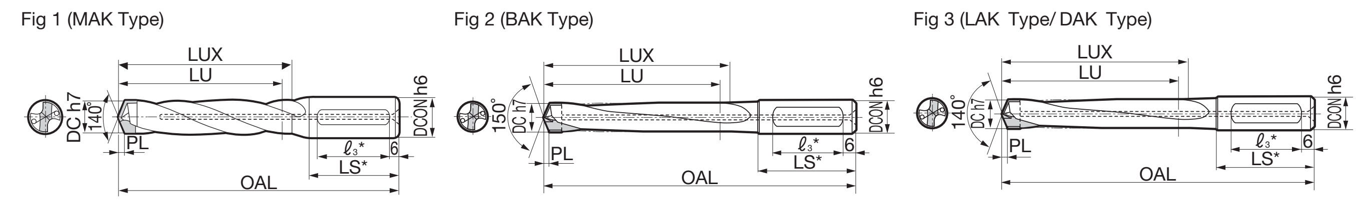
Brazed Series (Internal Coolant Supply)

AK: Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron

BAK: Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29%

ZX Coat | Coolant Hole | 3D | 5D | 7D

*Refer to N38 for the tolerance of h6 and h7



Diameter ø19.2 to 21.2mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Neck Length LUX	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
19.2	3		KDS 192MAK	71.5	71.5	158.5	3.5	25	1
			192BAK	78.6	78.6	153.6	2.6		2
	5		192LAK	110.5	110.5	193.5	3.5		3
	7		192DAK	157.5	157.5	243.5			3
19.4	3		KDS 194MAK	71.5	71.5	158.5	3.5	25	1
			194BAK	78.6	78.6	153.6	2.6		2
	5		194LAK	110.5	110.5	193.5	3.5		3
	7		194DAK	157.5	157.5	243.5			3
19.5	3	●	KDS 195MAK	71.5	71.5	158.5	3.5	25	1
			195BAK	78.6	78.6	153.6	2.6		2
	5	●	195LAK	110.5	110.5	193.5	3.5		3
	7	●	195DAK	157.5	157.5	243.5			3
19.7	3		KDS 197MAK	75.6	75.6	158.6	3.6	25	1
			197BAK	82.6	82.6		2.6		2
	5		197LAK	116.6	116.6	198.6	3.6		3
	7		197DAK	164.6	164.6	248.6			3
20.0	3	●	KDS 200MAK	75.6	75.6	158.6	3.6	25	1
			200BAK	82.7	82.7	158.7	2.7		2
	5	●	200LAK	116.6	116.6	198.6	3.6		3
	7	●	200DAK	164.6	164.6	248.6			3
20.2	3		KDS 202MAK	75.7	75.7	158.7	3.7	25	1
			202BAK	82.7	82.7		2.7		2
	5		202LAK	116.7	116.7	198.7	3.7		3
	7		202DAK	164.7	164.7	248.7			3
20.3	3		KDS 203MAK	75.7	75.7	158.7	3.7	25	1
			203BAK	82.7	82.7		2.7		2
	5		203LAK	116.7	116.7	198.7	3.7		3
	7		203DAK	164.7	164.7	248.7			3
20.4	3		KDS 204MAK	75.7	75.7	158.7	3.7	25	1
			204BAK	82.7	82.7		2.7		2
	5		204LAK	116.7	116.7	198.7	3.7		3
	7		204DAK	164.7	164.7	248.7			3
20.5	3	●	KDS 205MAK	75.7	75.7	158.7	3.7	25	1
			205BAK	82.7	82.7		2.7		2
	5	●	205LAK	116.7	116.7	198.7	3.7		3
	7	●	205DAK	164.7	164.7	248.7			3
20.6	3		KDS 206MAK	78.7	78.7	158.7	3.7	25	1
			206BAK	86.8	86.8	163.8	2.8		2
	5		206LAK	121.7	121.7	198.7	3.7		3
	7		206DAK	169.7	169.7	248.7			3
20.7	3		KDS 207MAK	78.8	78.8	158.8	3.8	25	1
			207BAK	86.8	86.8	163.8	2.8		2
	5		207LAK	121.8	121.8	198.8	3.8		3
	7		207DAK	169.8	169.8	248.8			3
21.0	3	●	KDS 210MAK	78.8	78.8	158.8	3.8	25	1
			210BAK	86.8	86.8	163.8	2.8		2
	5	●	210LAK	121.8	121.8	198.8	3.8		3
	7	●	210DAK	169.8	169.8	248.8			3
21.2	3	●	KDS 212MAK	78.9	78.9	158.9	3.9	25	1
			212BAK	86.8	86.8	163.8	2.8		2
	5	●	212LAK	121.9	121.9	198.9	3.9		3
	7		212DAK	169.9	169.9	248.9			3

Grade: ACZ70S

Diameter ø21.5 to 24.6mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Neck Length LUX	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
21.5	3	●	KDS 215MAK	78.9	78.9	158.9	3.9	25	1
			215BAK	86.9	86.9	163.9	2.9		2
	5	●	215LAK	121.9	121.9	198.9	3.9		3
	7	●	215DAK	169.9	169.9	248.9			3
21.6	3		KDS 216MAK	82.9	82.9	163.9	3.9	25	1
			216BAK	90.9	90.9	168.9	2.9		2
	5		216LAK	127.9	127.9	203.9	3.9		3
	7		216DAK	180.9	180.9	253.9			3
22.0	3	●	KDS 220MAK	83.0	83.0	164.0	4.0	25	1
			220BAK	90.9	90.9	168.9	2.9		2
	5	●	220LAK	128.0	128.0	204.0	4.0		3
	7	●	220DAK	181.0	181.0	254.0			3
22.1	3		KDS 221MAK	83.0	83.0	164.0	4.0	25	1
			221BAK	91.0	91.0	169.0	3.0		2
	5		221LAK	128.0	128.0	204.0	4.0		3
	7		221DAK	181.0	181.0	254.0			3
22.2	3		KDS 222MAK	83.0	83.0	164.0	4.0	25	1
			222BAK	91.0	91.0	169.0	3.0		2
	5		222LAK	128.0	128.0	204.0	4.0		3
	7		222DAK	181.0	181.0	254.0			3
22.4	3		KDS 224MAK	83.1	83.1	164.1	4.1	25	1
			224BAK	91.0	91.0	169.0	3.0		2
	5		224LAK	128.1	128.1	204.1	4.1		3
	7		224DAK	181.1	181.1	254.1			3
22.5	3	●	KDS 225MAK	83.1	83.1	164.1	4.1	25	1
			225BAK	91.0	91.0	169.0	3.0		2
	5	●	225LAK	128.1	128.1	204.1	4.1		3
	7	●	225DAK	181.1	181.1	254.1			3
23.0	3	●	KDS 230MAK	86.2	86.2	164.2	4.2	25	1
			230BAK	95.1	95.1	174.1	3.1		2
	5	●	230LAK	133.2	133.2	214.2	4.2		3
	7	●	230DAK	190.2	190.2	274.2			3
23.5	3	●	KDS 235MAK	86.3	86.3	164.3	4.3	25	1
			235BAK	95.1	95.1	174.1	3.1		2
	5	●	235LAK	133.3	133.3	214.3	4.3		3
	7	●	235DAK	190.3	190.3	274.3			3
24.0	3	●	KDS 240MAK	90.4	90.4	174.4	4.4	32	1
		●	240BAK	99.2	99.2	183.2	3.2		2
	5	●	240LAK	139.4	139.4	224.4	4.4		3
	7	●	240DAK	194.4	194.4	284.4			3
24.1	3	●	KDS 241MAK	90.4	90.4	174.4	4.4	32	1
			241BAK	99.2	99.2	183.2	3.2		2
	5		241LAK	139.4	139.4	224.4	4.4		3
	7		241DAK	194.4	194.4	284.4			3
24.5	3	●	KDS 245MAK	90.5	90.5	174.5	4.5	32	1
		●	245BAK	99.3	99.3	183.3	3.3		2
	5	●	245LAK	139.5	139.5	224.5	4.5		3
	7	●	245DAK	194.5	194.5	284.5			3
24.6	3	●	KDS 246MAK	92.5	92.5	174.5	4.5	32	1
		●	246BAK	103.3	103.3	188.3	3.3		2
	5		246LAK	144.5	144.5	229.5	4.5		3
	7		246DAK	204.5	204.5	294.5			3

Grade: ACZ70S

*Brazed Series Common Dimensions

DCON	16.0	20.0	25.0	32.0	40.0
LS	48	50	56	60	70
ℓ_3	35	40	45	50	60

Shank length (**LS**) and shank diameter length (ℓ_3)

Brazed Series (Internal Coolant Supply)

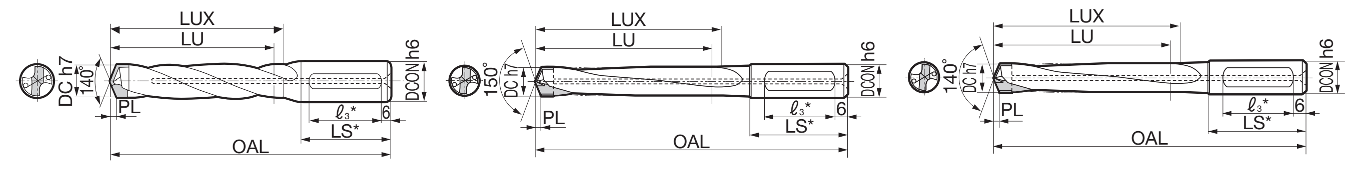
AK: Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron

BAK: Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29%

ZX Coat | Coolant Hole | 3D | 5D | 7D

*Refer to N38 for the tolerance of h6 and h7

Fig 1 (MAK Type) Fig 2 (BAK Type) Fig 3 (LAK Type/ DAK Type)



Diameter ø24.7 to 28.6mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Neck Length LUX	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
24.7	3	●	KDS 247MAK	92.5	92.5	174.5	4.5	32	1
		●	247BAK	103.3	103.3	188.3	3.3		2
	5		247LAK	144.5	144.5	229.5	4.5		3
	7		247DAK	204.5	204.5	294.5			3
25.0	3	●	KDS 250MAK	92.5	92.5	174.5	4.5	32	1
			250BAK	103.3	103.3	188.3	3.3		2
	5	●	250LAK	144.5	144.5	229.5	4.5		3
	7	●	250DAK	204.5	204.5	294.5			3
25.5	3	●	KDS 255MAK	92.6	92.6	174.6	4.6	32	1
			255BAK	103.4	103.4	188.4	3.4		2
	5	●	255LAK	144.6	144.6	229.6	4.6		3
	7	●	255DAK	204.6	204.6	294.6			3
26.0	3	●	KDS 260MAK	96.7	96.7	179.7	4.7	32	1
			260BAK	107.5	107.5	193.5	3.5		2
	5	●	260LAK	150.7	150.7	234.7	4.7		3
	7	●	260DAK	214.7	214.7	304.7			3
26.5	3	●	KDS 265MAK	96.8	96.8	179.8	4.8	32	1
		●	265BAK	107.6	107.6	193.6	3.6		2
	5	●	265LAK	150.8	150.8	234.8	4.8		3
	7	●	265DAK	214.8	214.8	304.8			3
26.7	3		KDS 267MAK	98.9	98.9	179.9	4.9	32	1
		●	267BAK	111.6	111.6	198.6	3.6		2
	5		267LAK	155.9	155.9	239.9	4.9		3
	7		267DAK	219.9	219.9	309.9			3
27.0	3	●	KDS 270MAK	98.9	98.9	179.9	4.9	32	1
			270BAK	111.6	111.6	198.6	3.6		2
	5	●	270LAK	155.9	155.9	239.9	4.9		3
	7	●	270DAK	219.9	219.9	309.9			3
27.5	3	●	KDS 275MAK	99.0	99.0	180.0	5.0	32	1
			275BAK	111.7	111.7	198.7	3.7		2
	5	●	275LAK	156.0	156.0	240.0	5.0		3
	7		275DAK	220.0	220.0	310.0			3
28.0	3	●	KDS 280MAK	102.1	102.1	185.1	5.1	32	1
			280BAK	115.8	115.8	203.8	3.8		2
	5	●	280LAK	162.1	162.1	245.1	5.1		3
	7	●	280DAK	225.1	225.1	315.1			3
28.1	3		KDS 281MAK	102.1	102.1	185.1	5.1	32	1
			281BAK	115.8	115.8	203.8	3.8		2
	5		281LAK	162.1	162.1	245.1	5.1		3
	7		281DAK	225.1	225.1	315.1			3
28.3	3		KDS 283MAK	102.2	102.2	185.2	5.2	32	1
			283BAK	115.8	115.8	203.8	3.8		2
	5		283LAK	162.2	162.2	245.2	5.2		3
	7		283DAK	225.2	225.2	315.2			3
28.5	3	●	KDS 285MAK	102.2	102.2	185.2	5.2	32	1
			285BAK	115.8	115.8	203.8	3.8		2
	5	●	285LAK	162.2	162.2	245.2	5.2		3
	7		285DAK	225.2	225.2	315.2			3
28.6	3		KDS 286MAK	105.2	105.2	190.2	5.2	32	1
			286BAK	119.8	119.8	208.8	3.8		2
	5		286LAK	167.2	167.2	250.2	5.2		3
	7		286DAK	235.2	235.2	325.2			3

Grade: ACZ70S

Diameter ø28.7 to 33.5mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Neck Length LUX	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
28.7	3		KDS 287MAK	105.2	105.2	190.2	5.2	32	1
			287BAK	119.8	119.8	208.8	3.8		2
	5		287LAK	167.2	167.2	250.2	5.2		3
	7		287DAK	235.2	235.2	325.2			3
29.0	3	●	KDS 290MAK	105.3	105.3	190.3	5.3	32	1
			290BAK	119.9	119.9	208.9	3.9		2
	5	●	290LAK	167.3	167.3	250.3	5.3		3
	7	●	290DAK	235.3	235.3	325.3			3
29.4	3		KDS 294MAK	105.4	105.4	190.4	5.4	32	1
			294BAK	119.9	119.9	208.9	3.9		2
	5		294LAK	167.4	167.4	250.4	5.4		3
	7		294DAK	235.4	235.4	325.4			3
29.5	3	●	KDS 295MAK	105.4	105.4	190.4	5.4	32	1
			295BAK	120.0	120.0	209.0	4.0		2
	5	●	295LAK	167.4	167.4	250.4	5.4		3
	7		295DAK	235.4	235.4	325.4			3
29.8	3		KDS 298MAK	109.4	109.4	190.4	5.4	32	1
			298BAK	124.0	124.0	214.0	4.0		2
	5		298LAK	172.4	172.4	260.4	5.4		3
	7		298DAK	245.4	245.4	335.4			3
30.0	3	●	KDS 300MAK	109.5	109.5	190.5	5.5	32	1
			300BAK	124.0	124.0	214.0	4.0		2
	5	●	300LAK	172.5	172.5	260.5	5.5		3
	7	●	300DAK	245.5	245.5	335.5			3
30.5	3	●	KDS 305MAK	109.6	109.6	190.6	5.6	32	1
			305BAK	124.1	124.1	214.1	4.1		2
	5	●	305LAK	172.6	172.6	260.6	5.6		3
	7		305DAK	245.6	245.6	335.6			3
31.0	3		KDS 310MAK	117.6	117.6	210.6	5.6	40	1
	5		310LAK	192.6	192.6	280.6			3
	7		310DAK	250.6	250.6	350.6			3
31.5	3		KDS 315MAK	117.7	117.7	210.7	5.7	40	1
	5		315LAK	192.7	192.7	280.7			3
	7		315DAK	250.7	250.7	350.7			3
32.0	3		KDS 320MAK	120.8	120.8	215.8	5.8	40	1
	5		320LAK	195.8	195.8	285.8			3
	7		320DAK	255.8	255.8	360.8			3
32.5	3		KDS 325MAK	120.9	120.9	215.9	5.9	40	1
	5		325LAK	195.9	195.9	285.9			3
	7		325DAK	255.9	255.9	360.9			3
33.0	3		KDS 330MAK	125.0	125.0	221.0	6.0	40	1
	5	●	330LAK	200.0	200.0	291.0			3
	7		330DAK	266.0	266.0	371.0			3
33.5	3		KDS 335MAK	125.1	125.1	221.1	6.1	40	1
	5		335LAK	200.1	200.1	291.1			3
	7		335DAK	266.1	266.1	371.1			3

Grade: ACZ70S

*Brazed Series Common Dimensions

DCON	16.0	20.0	25.0	32.0	40.0
LS	48	50	56	60	70
ℓ_3	35	40	45	50	60

Shank length (**LS**) and shank diameter length (ℓ_3)

Drilling | J | Solid | Indexable Head Type | Indexable Insert Type | Reamers | Brazed | Others

Brazed Series (Internal Coolant Supply)

AK: Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron

BAK: Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29%

ZX Coat | Coolant Hole | 3D | 5D | 7D

*Refer to N38 for the tolerance of h6 and h7

Fig 1 (MAK Type)

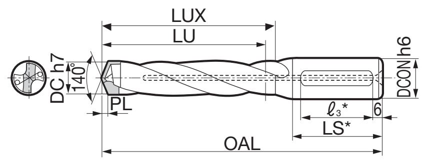


Fig 2 (BAK Type)

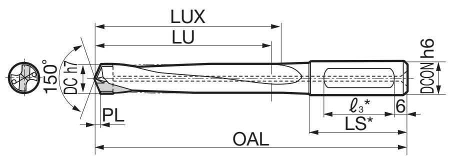
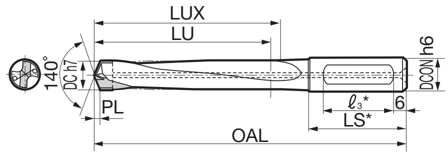


Fig 3 (LAK Type/ DAK Type)



Diameter ø34.0 to 40.5mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Neck Length LUX	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
34.0	3		**KDS 340MAK**	128.2	128.2	226.2	6.2	40	1
	5		**340LAK**	203.2	203.2	296.2			3
	7		**340DAK**	276.2	276.2	381.2			3
34.5	3		**KDS 345MAK**	128.3	128.3	226.3	6.3	40	1
	5		**345LAK**	203.3	203.3	296.3			3
	7		**345DAK**	276.3	276.3	381.3			3
35.0	3		**KDS 350MAK**	131.4	131.4	231.4	6.4	40	1
	5		**350LAK**	206.4	206.4	301.4			3
	7		**350DAK**	281.4	281.4	391.4			3
35.5	3		**KDS 355MAK**	131.5	131.5	231.5	6.5	40	1
	5		**355LAK**	206.5	206.5	301.5			3
	7		**355DAK**	281.5	281.5	391.5			3
36.0	3		**KDS 360MAK**	134.6	134.6	231.6	6.6	40	1
	5		**360LAK**	209.6	209.6	306.6			3
	7		**360DAK**	286.6	286.6	396.6			3
36.5	3		**KDS 365MAK**	134.6	134.6	231.6	6.6	40	1
	5		**365LAK**	209.6	209.6	306.6			3
	7		**365DAK**	286.6	286.6	396.6			3
37.0	3		**KDS 370MAK**	138.7	138.7	236.7	6.7	40	1
	5		**370LAK**	213.7	213.7	311.7			3
	7		**370DAK**	296.7	296.7	406.7			3
37.5	3		**KDS 375MAK**	138.8	138.8	236.8	6.8	40	1
	5		**375LAK**	213.8	213.8	311.8			3
	7		**375DAK**	296.8	296.8	406.8			3
38.0	3		**KDS 380MAK**	171.9	171.9	241.9	6.9	40	1
	5		**380LAK**	251.9	251.9	321.9			3
	7		**380DAK**	346.9	346.9	416.9			3
38.5	3		**KDS 385MAK**	172.0	172.0	242.0	7.0	40	1
	5		**385LAK**	252.0	252.0	322.0			3
	7		**385DAK**	347.0	347.0	417.0			3
39.0	3		**KDS 390MAK**	177.1	177.1	247.1	7.1	40	1
	5		**390LAK**	257.1	257.1	327.1			3
	7		**390DAK**	352.1	352.1	422.1			3
39.5	3		**KDS 395MAK**	177.2	177.2	247.2	7.2	40	1
	5		**395LAK**	257.2	257.2	327.2			3
	7		**395DAK**	352.2	352.2	422.2			3
40.0	3		**KDS 400MAK**	182.3	182.3	252.3	7.3	40	1
	5		**400LAK**	262.3	262.3	332.3			3
	7		**400DAK**	357.3	357.3	427.3			3
40.5	3		**KDS 405MAK**	182.4	182.4	252.4	7.4	40	1
	5		**405LAK**	262.4	262.4	332.4			3
	7		**405DAK**	357.4	357.4	427.4			3

Grade: ACZ70S

*Brazed Series Common Dimensions

DCON	16.0	20.0	25.0	32.0	40.0
LS	48	50	56	60	70
ℓ_3	35	40	45	50	60

Shank length (**LS**) and shank diameter length (ℓ_3)

M E M O

HMD-S/HMD-M Type

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Stainless Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

PVD Coat | 3D | 5D

*Refer to N38 for the tolerance of h8

Fig 1 (Stepped Shank)

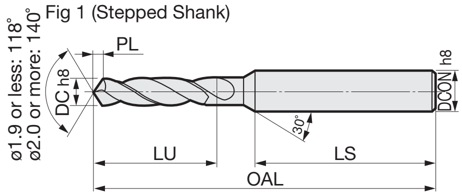


Fig 2 (Straight Shank)

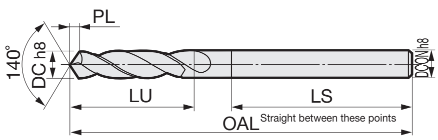
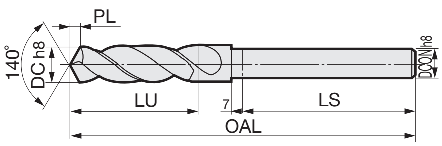


Fig 3 (Relief Shank)



Diameter ø1.0 to 4.2mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Overall Length OAL	Tip PL	Shank LS	Shank Dia. DCON	Fig
1.0	3	●	HMD 010S	4.5	38	0.3	28.0	3.0	1
1.1	3	●	011S	5.4	39	0.3	28.0	3.0	1
1.2	3	●	012S	6.2	40	0.4	28.0	3.0	1
1.3	3	●	013S	6.1	40	0.4	28.0	3.0	1
1.4	3	●	014S	6.9	41	0.4	28.0	3.0	1
1.5	3	●	015S	6.8	41	0.5	28.0	3.0	1
1.6	3	●	016S	7.6	42	0.5	28.0	3.0	1
1.7	3	●	017S	7.5	42	0.5	28.0	3.0	1
1.8	3	●	018S	8.3	43	0.5	28.0	3.0	1
1.9	3	●	019S	8.2	43	0.6	28.0	3.0	1
2.0	3	●	HMD 020S	9.0	44	0.4	28.0	3.0	1
	5	●	020M	21.0	56				1
2.1	3	●	HMD 021S	8.9	44	0.4	28.0	3.0	1
	5	●	021M	20.9	56				1
2.2	3	●	HMD 022S	9.7	45	0.4	28.0	3.0	1
	5	●	022M	21.7	56				1
2.3	3	●	HMD 023S	9.6	45	0.4	28.0	3.0	1
	5	●	023M	21.6	56				1
2.4	3	●	HMD 024S	10.4	46	0.4	28.0	3.0	1
	5	●	024M	26.4	61				1
2.5	3	●	HMD 025S	10.3	46	0.5	28.0	3.0	1
	5	●	025M	26.3	61				1
2.6	3	●	HMD 026S	10.1	46	0.5	28.0	3.0	1
	5	●	026M	26.1	61				1
2.7	3	●	HMD 027S	12.0	48	0.5	28.0	3.0	1
	5	●	027M	29.0	64				1
2.8	3	●	HMD 028S	11.8	48	0.5	28.0	3.0	1
	5	●	028M	28.8	64				1
2.9	3	●	HMD 029S	11.7	48	0.5	28.0	3.0	1
	5	●	029M	28.7	64				1
3.0	3	●	HMD 030S	11.5	48	0.5	28.0	3.0	2
	5	●	030M	28.5	64				2
3.1	3	●	HMD 031S	13.4	50	0.6	30.0	4.0	1
	5	●	031M	31.4	68				1
3.2	3	●	HMD 032S	13.2	50	0.6	30.0	4.0	1
	5	●	032M	31.2	68				1
3.3	3	●	HMD 033S	13.1	50	0.6	30.0	4.0	1
	5	●	033M	31.1	68				1
3.4	3	●	HMD 034S	14.9	52	0.6	30.0	4.0	1
	5	●	034M	33.9	71				1
3.5	3	●	HMD 035S	14.8	52	0.6	30.0	4.0	1
	5	●	035M	33.8	71				1
3.6	3	●	HMD 036S	14.6	52	0.7	30.0	4.0	1
	5	●	036M	33.6	71				1
3.7	3	●	HMD 037S	14.5	52	0.7	30.0	4.0	1
	5	●	037M	33.5	71				1
3.8	3	●	HMD 038S	16.3	54	0.7	30.0	4.0	1
	5	●	038M	37.3	75				1
3.9	3	●	HMD 039S	16.2	54	0.7	30.0	4.0	1
	5	●	039M	37.2	75				1
4.0	3	●	HMD 040S	16.0	54	0.7	30.0	4.0	2
	5	●	040M	37.0	75				2
4.1	3	●	HMD 041S	15.9	66	0.7	38.0	6.0	1
	5	●	041M	36.9	85				1
4.2	3	●	HMD 042S	15.7	66	0.8	38.0	6.0	1
	5	●	042M	36.7	85				1

Diameter ø4.3 to 7.0mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Overall Length OAL	Tip PL	Shank LS	Shank Dia. DCON	Fig
4.3	3	●	HMD 043S	17.6	68	0.8	38.0	6.0	1
	5	●	043M	40.6	89				1
4.4	3	●	HMD 044S	17.4	68	0.8	38.0	6.0	1
	5	●	044M	40.4	89				1
4.5	3	●	HMD 045S	17.3	68	0.8	38.0	6.0	1
	5	●	045M	40.3	89				1
4.6	3	●	HMD 046S	17.1	68	0.8	38.0	6.0	1
	5	●	046M	40.1	89				1
4.7	3	●	HMD 047S	17.0	68	0.9	38.0	6.0	1
	5	●	047M	40.0	89				1
4.8	3	●	HMD 048S	18.8	70	0.9	38.0	6.0	1
	5	●	048M	44.8	94				1
4.9	3	●	HMD 049S	18.7	70	0.9	38.0	6.0	1
	5	●	049M	44.7	94				1
5.0	3	●	HMD 050S	18.5	70	0.9	38.0	6.0	1
	5	●	050M	44.5	94				1
5.1	3	●	HMD 051S	18.4	70	0.9	38.0	6.0	1
	5	●	051M	44.4	94				1
5.2	3	●	HMD 052S	18.2	70	0.9	38.0	6.0	1
	5	●	052M	44.2	94				1
5.3	3	●	HMD 053S	18.1	70	1.0	38.0	6.0	1
	5	●	053M	44.1	94				1
5.4	3	●	HMD 054S	19.9	72	1.0	38.0	6.0	1
	5	●	054M	48.9	99				1
5.5	3	●	HMD 055S	19.8	72	1.0	38.0	6.0	1
	5	●	055M	48.8	99				1
5.6	3	●	HMD 056S	19.6	72	1.0	38.0	6.0	1
	5	●	056M	48.6	99				1
5.7	3	●	HMD 057S	19.5	72	1.0	38.0	6.0	1
	5	●	057M	48.5	99				1
5.8	3	●	HMD 058S	19.3	72	1.1	38.0	6.0	1
	5	●	058M	48.3	99				1
5.9	3	●	HMD 059S	19.2	72	1.1	38.0	6.0	1
	5	●	059M	48.2	99				1
6.0	3	●	HMD 060S	19.0	72	1.1	38.0	6.0	2
	5	●	060M	48.0	99				2
6.1	3	●	HMD 061S	21.9	75	1.1	38.0	8.0	1
	5	●	061M	53.9	107				1
6.2	3	●	HMD 062S	21.7	75	1.1	38.0	8.0	1
	5	●	062M	53.7	107				1
6.3	3	●	HMD 063S	21.6	75	1.1	38.0	8.0	1
	5	●	063M	53.6	107				1
6.4	3	●	HMD 064S	21.4	75	1.2	38.0	8.0	1
	5	●	064M	53.4	107				1
6.5	3	●	HMD 065S	21.3	75	1.2	38.0	8.0	1
	5	●	065M	53.3	107				1
6.6	3	●	HMD 066S	21.1	75	1.2	38.0	8.0	1
	5	●	066M	53.1	107				1
6.7	3	●	HMD 067S	21.0	75	1.2	38.0	8.0	1
	5	●	067M	53.0	107				1
6.8	3	●	HMD 068S	23.8	78	1.2	38.0	8.0	1
	5	●	068M	58.8	113				1
6.9	3	●	HMD 069S	23.7	78	1.3	38.0	8.0	1
	5	●	069M	58.7	113				1
7.0	3	●	HMD 070S	23.5	78	1.3	38.0	8.0	1
	5	●	070M	58.5	113				1

HMD-S/HMD-M Type

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Stainless Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

PVD Coat | 3D | 5D

*Refer to N38 for the tolerance of h8

Fig 1 (Stepped Shank)

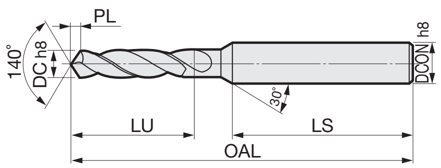


Fig 2 (Straight Shank)

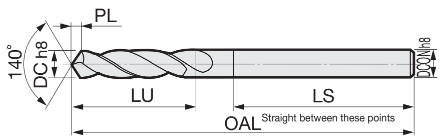
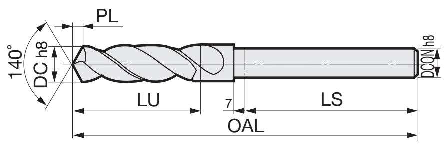


Fig 3 (Relief Shank)



Diameter ø7.1 to 9.8mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Overall Length OAL	Tip PL	Shank LS	Shank Dia. DCON	Fig
7.1	3	●	HMD 071S	23.4	78	1.3	38.0	8.0	1
	5	●	071M	58.4	113				1
7.2	3	●	HMD 072S	23.2	78	1.3	38.0	8.0	1
	5	●	072M	58.2	113				1
7.3	3	●	HMD 073S	23.1	78	1.3	38.0	8.0	1
	5	●	073M	58.1	113				1
7.4	3	●	HMD 074S	22.9	78	1.3	38.0	8.0	1
	5	●	074M	57.9	113				1
7.5	3	●	HMD 075S	22.8	78	1.4	38.0	8.0	1
	5	●	075M	57.8	113				1
7.6	3	●	HMD 076S	25.6	81	1.4	38.0	8.0	1
	5	●	076M	63.6	119				1
7.7	3	●	HMD 077S	25.5	81	1.4	38.0	8.0	1
	5	●	077M	63.5	119				1
7.8	3	●	HMD 078S	25.3	81	1.4	38.0	8.0	1
	5	●	078M	63.3	119				1
7.9	3	●	HMD 079S	25.2	81	1.4	38.0	8.0	1
	5	●	079M	63.2	119				1
8.0	3	●	HMD 080S	25.0	81	1.5	38.0	8.0	2
	5	●	080M	63.0	119				2
8.1	3	●	HMD 081S	24.9	87	1.5	43.5	10.0	1
	5	●	081M	62.9	125				1
8.2	3	●	HMD 082S	24.7	87	1.5	43.5	10.0	1
	5	●	082M	62.7	125				1
8.3	3	●	HMD 083S	24.6	87	1.5	43.5	10.0	1
	5	●	083M	62.6	125				1
8.4	3	●	HMD 084S	24.4	87	1.5	43.5	10.0	1
	5	●	084M	62.4	125				1
8.5	3	●	HMD 085S	24.3	87	1.5	43.5	10.0	1
	5	●	085M	62.3	125				1
8.6	3	●	HMD 086S	27.1	90	1.6	43.5	10.0	1
	5	●	086M	68.1	131				1
8.7	3	●	HMD 087S	27.0	90	1.6	43.5	10.0	1
	5	●	087M	68.0	131				1
8.8	3	●	HMD 088S	26.8	90	1.6	43.5	10.0	1
	5	●	088M	67.8	131				1
8.9	3	●	HMD 089S	26.7	90	1.6	43.5	10.0	1
	5	●	089M	67.7	131				1
9.0	3	●	HMD 090S	26.5	90	1.6	43.5	10.0	1
	5	●	090M	67.5	131				1
9.1	3	●	HMD 091S	26.4	90	1.7	43.5	10.0	1
	5	●	091M	67.4	131				1
9.2	3	●	HMD 092S	26.2	90	1.7	43.5	10.0	1
	5	●	092M	67.2	131				1
9.3	3	●	HMD 093S	26.1	90	1.7	43.5	10.0	1
	5	●	093M	67.1	131				1
9.4	3	●	HMD 094S	25.9	90	1.7	43.5	10.0	1
	5	●	094M	66.9	131				1
9.5	3	●	HMD 095S	25.8	90	1.7	43.5	10.0	1
	5	●	095M	66.8	131				1
9.6	3	●	HMD 096S	28.6	93	1.7	43.5	10.0	1
	5	●	096M	72.6	137				1
9.7	3	●	HMD 097S	28.5	93	1.8	43.5	10.0	1
	5	●	097M	72.5	137				1
9.8	3	●	HMD 098S	28.3	93	1.8	43.5	10.0	1
	5	●	098M	72.3	137				1

Diameter ø9.9 to 12.6mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Overall Length OAL	Tip PL	Shank LS	Shank Dia. DCON	Fig
9.9	3	●	HMD 099S	28.2	93	1.8	43.5	10.0	1
	5	●	099M	72.2	137				1
10.0	3	●	HMD 100S	28.0	93	1.8	43.5	10.0	2
	5	●	100M	72.0	137				2
10.1	3	●	HMD 101S	27.9	100	1.8	46.0	12.0	1
	5	●	101M	71.9	144				1
10.2	3	●	HMD 102S	27.7	100	1.9	46.0	12.0	1
	5	●	102M	71.7	144				1
10.3	3	●	HMD 103S	27.6	100	1.9	46.0	12.0	1
	5	●	103M	71.6	144				1
10.4	3	●	HMD 104S	27.4	100	1.9	46.0	12.0	1
	5	●	104M	71.4	144				1
10.5	3	●	HMD 105S	27.3	100	1.9	46.0	12.0	1
	5	●	105M	71.3	144				1
10.6	3	●	HMD 106S	27.1	100	1.9	46.0	12.0	1
	5	●	106M	71.1	144				1
10.7	3	●	HMD 107S	31.0	104	1.9	46.0	12.0	1
	5	●	107M	78.0	151				1
10.8	3	●	HMD 108S	30.8	104	2.0	46.0	12.0	1
	5	●	108M	77.8	151				1
10.9	3	●	HMD 109S	30.7	104	2.0	46.0	12.0	1
	5	●	109M	77.7	151				1
11.0	3	●	HMD 110S	30.5	104	2.0	46.0	12.0	1
	5	●	110M	77.5	151				1
11.1	3	●	HMD 111S	30.4	104	2.0	46.0	12.0	1
	5	●	111M	77.4	151				1
11.2	3	●	HMD 112S	30.2	104	2.0	46.0	12.0	1
	5	●	112M	77.2	151				1
11.3	3	●	HMD 113S	30.1	104	2.1	46.0	12.0	1
	5	●	113M	77.1	151				1
11.4	3	●	HMD 114S	29.9	104	2.1	46.0	12.0	1
	5	●	114M	76.9	151				1
11.5	3	●	HMD 115S	29.8	104	2.1	46.0	12.0	1
	5	●	115M	76.8	151				1
11.6	3	●	HMD 116S	29.6	104	2.1	46.0	12.0	1
	5	●	116M	76.6	151				1
11.7	3	●	HMD 117S	29.5	104	2.1	46.0	12.0	1
	5	●	117M	76.5	151				1
11.8	3	●	HMD 118S	29.3	104	2.1	46.0	12.0	1
	5	●	118M	76.3	151				1
11.9	3	●	HMD 119S	33.2	108	2.2	46.0	12.0	1
	5	●	119M	83.2	158				1
12.0	3	●	HMD 120S	33.0	108	2.2	46.0	12.0	2
	5	●	120M	83.0	158				2
12.1	3	●	HMD 121S	32.9	108	2.2	46.0	12.0	3
	5	●	121M	82.9	158				3
12.2	3	●	HMD 122S	32.7	108	2.2	46.0	12.0	3
	5	●	122M	82.7	158				3
12.3	3	●	HMD 123S	32.6	108	2.2	46.0	12.0	3
	5	●	123M	82.6	158				3
12.4	3	●	HMD 124S	32.4	108	2.3	46.0	12.0	3
	5	●	124M	82.4	158				3
12.5	3	●	HMD 125S	32.3	108	2.3	46.0	12.0	3
	5	●	125M	82.3	158				3
12.6	3	●	HMD 126S	32.1	108	2.3	46.0	12.0	3
	5	●	126M	82.1	158				3

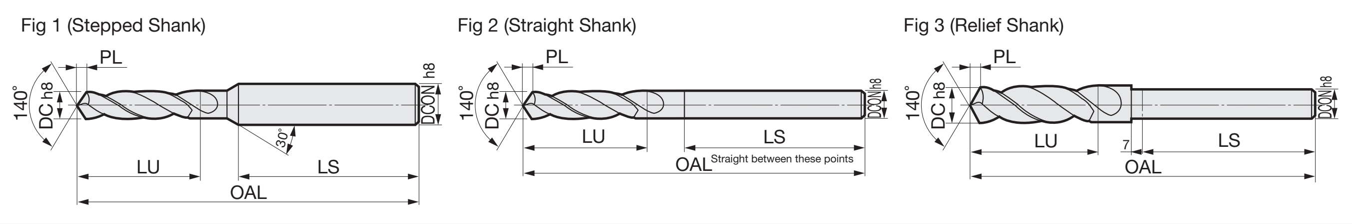
H's (High Speed Steel) MULTIDRILL

HMD-S/HMD-M Type

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Stainless Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

PVD Coat | 3D | 5D

*Refer to N38 for the tolerance of h8



Diameter ø12.7 to 15.5mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Overall Length OAL	Tip PL	Shank LS	Shank Dia. DCON	Fig
12.7	3	●	HMD 127S	32.0	108	2.3	46.0	12.0	3
	5	●	127M	82.0	158				3
12.8	3	●	HMD 128S	31.8	108	2.3	46.0	12.0	3
	5	●	128M	81.8	158				3
12.9	3	●	HMD 129S	31.7	108	2.3	46.0	12.0	3
	5	●	129M	81.7	158				3
13.0	3	●	HMD 130S	31.5	108	2.4	46.0	12.0	3
	5	●	130M	81.5	158				3
13.5	3	●	HMD 135S	51.8	132	2.5	50.0	16.0	1
	5	●	135M	87.8	168				1
14.0	3	●	HMD 140S	51.0	132	2.5	50.0	16.0	1
	5	●	140M	87.0	168				1
14.5	3	●	HMD 145S	54.3	136	2.6	50.0	16.0	1
	5	●	145M	92.3	173				1
15.0	3	●	HMD 150S	53.5	142	2.7	52.0	20.0	1
	5	●	150M	91.5	180				1
15.5	3	●	HMD 155S	56.8	146	2.8	52.0	20.0	1
	5	●	155M	96.8	185				1

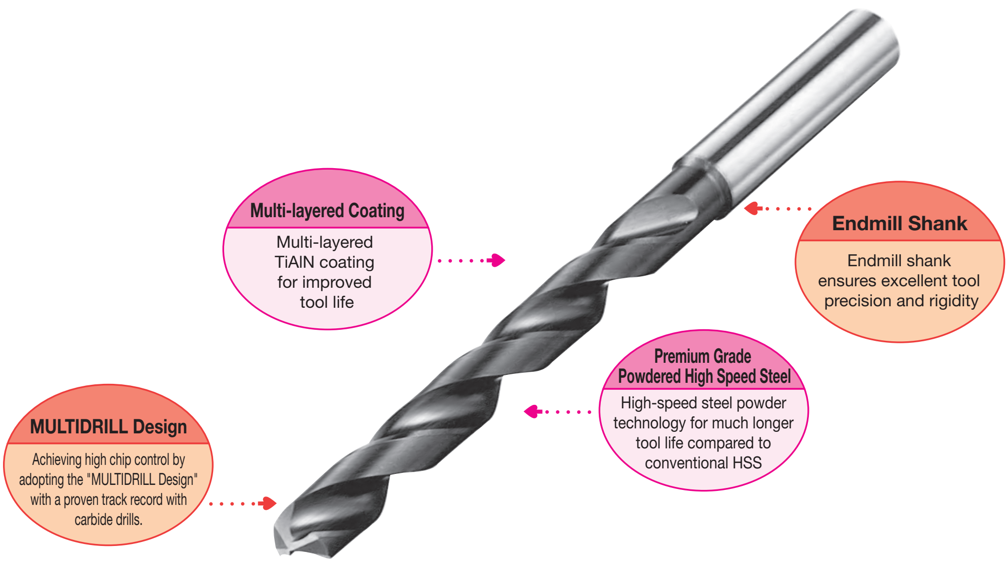
Diameter ø16.0 to 20.0mm

Dimensions (mm)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Overall Length OAL	Tip PL	Shank LS	Shank Dia. DCON	Fig
16.0	3	●	HMD 160S	56.0	146	2.9	52.0	20.0	1
	5	●	160M	96.0	185				1
16.5	3	●	HMD 165S	59.3	150	3.0	52.0	20.0	1
	5	●	165M	100.3	189				1
17.0	3	●	HMD 170S	58.5	150	3.1	52.0	20.0	1
	5	●	170M	99.5	189				1
17.5	3	●	HMD 175S	60.8	153	3.2	52.0	20.0	1
	5	●	175M	103.8	194				1
18.0	3	●	HMD 180S	60.0	153	3.3	52.0	20.0	1
	5	●	180M	103.0	194				1
18.5	3	●	HMD 185S	62.3	156	3.4	52.0	20.0	1
	5	●	185M	107.3	198				1
19.0	3	●	HMD 190S	61.5	164	3.5	60.0	25.0	1
	5	●	190M	106.5	206				1
19.5	3	●	HMD 195S	64.8	168	3.5	60.0	25.0	1
	5	●	195M	110.8	210				1
20.0	3	●	HMD 200S	64.0	168	3.6	60.0	25.0	1
	5	●	200M	110.0	210				1

Recommended Cutting Conditions

Type	Work Material / Cutting Conditions / Dia. DC (mm)	Structural Steel SS Carbon Steel (SC)		Alloy Steel (SCM) Pre-hardened Steel (NAK)		Die Steel (SKD) Stainless Steel Tempered Steel (35 to 45HRC)		Cast Iron (FC)		Aluminum Alloy Non-ferrous Metal	
		Spindle Speed (min-1)	Feed Rate (mm/min)	Spindle Speed (min-1)	Feed Rate (mm/min)	Spindle Speed (min-1)	Feed Rate (mm/min)	Spindle Speed (min-1)	Feed Rate (mm/min)	Spindle Speed (min-1)	Feed Rate (mm/min)
Standard	ø2.0	5,700	300	4,600	200	3,400	130	6,300	410	9,700	630
	ø3.0	4,200	380	3,400	260	2,500	170	4,700	530	7,200	820
	ø5.0	2,500	360	2,000	240	1,500	160	2,800	500	4,300	770
	ø8.0	1,600	310	1,300	210	960	140	1,800	440	2,700	660
	ø10.0	1,300	280	1,000	190	760	130	1,400	390	2,200	610
	ø12.0	1,100	260	850	180	640	120	1,200	360	1,800	560
	ø16.0	800	240	640	160	480	110	880	330	1,400	500
	ø20.0	640	220	510	150	380	96	700	300	1,100	460



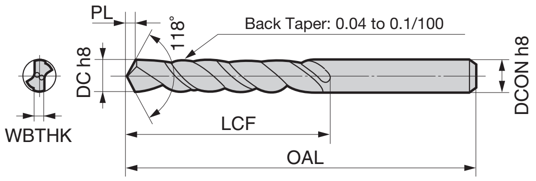
SD Type

Cast Iron | Ductile Cast Iron | Aluminum Alloy

Uncoated Carbide | 6to15 D

*Refer to N38 for the tolerance of h8

Fig 1



Cat. No.	Stock Size	Dia. (Shank Dia.) DC(DCON)	Flute Length LCF	Overall Length OAL	Tip PL	Web Thickness WBTHK	Fig
SD 080 to 090		**0.80 to 0.89**	12	30	0.3	0.2	1
SD 091 to 140		**0.90 to 1.39**	16	30	0.4	0.2 to 0.3	1
SD 141 to 190		**1.40 to 1.90**	20	35	0.5	0.4	1
SD 191 to 240		**1.91 to 2.40**	23	41	0.6	0.5	1
SD 241 to 300		**2.41 to 3.00**	26	46	0.8	0.6	1
SD 301 to 350		**3.01 to 3.50**	29	51	1.0	0.7	1
SD 351 to 400		**3.51 to 4.00**	31	56	1.1	0.8	1
SD 401 to 450		**4.01 to 4.50**	35	61	1.4	0.9	1
SD 451 to 550		**4.51 to 5.50**	40	67	1.5	1.0	1
SD 551 to 600		**5.51 to 6.00**	42	72	1.7	1.1	1
SD 601 to 650		**6.01 to 6.50**	45	77	1.9	1.2	1
SD 651 to 700		**6.51 to 7.00**	48	82	2.0	1.3	1
SD 701 to 750		**7.01 to 7.50**	48	82	2.2	1.4	1
SD 751 to 800		**7.51 to 8.00**	52	87	2.3	1.5	1

Ordering numbers should be handled according to this example: ø4.6mm drill → SD460.
Grade: H1

Recommended Cutting Conditions for SD Type

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

Dia. DC (mm)	Cutting Conditions	Die Steel (About 250HB)	Cast Iron	Non-Ferrous Alloy
ø5.0	v_c	5 - **8** - 10	10 - **30** - 40	20 - **50** - 80
	f	0.03 - **0.04** - 0.05	0.1 - **0.15** - 0.2	0.1 - **0.15** - 0.2
ø13.0	v_c	10 - **15** - 20	20 - **40** - 60	30 - **80** - 100
	f	0.05 - **0.06** - 0.07	0.1 - **0.15** - 0.2	0.1 - **0.15** - 0.2

Min. - **Optimum** - Max.

Straight Flute Drill

SV Type/SVH Type

Cast Iron | Ductile Cast Iron | Aluminum Alloy

Uncoated Carbide | 5to10 D

*Refer to N38 for the tolerance of h8

Fig 1

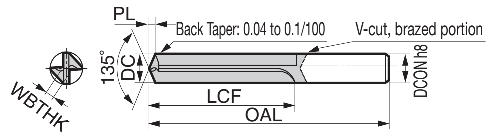
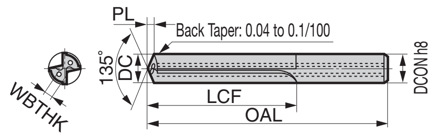


Fig 2



SV Type

Dimensions (mm)

Cat. No.	Dia. (Shank Dia.) DC(DCON)	Flute Length LCF	Overall Length OAL	Web Thickness WBTHK	Specifications	Fig
SV 200 to 250	2.0 ≤ DC ≤ 2.5	20	50	0.5	Solid Type	1
251 to 300	2.5 < DC ≤ 3.0	23	51	0.6		1
301 to 350	3.0 < DC ≤ 3.5	26	56	0.7		1
351 to 400	3.5 < DC ≤ 4.0	29		0.8		1
401 to 450	4.0 < DC ≤ 4.5	31	61	0.9		1
451 to 500	4.5 < DC ≤ 5.0	34	66	1.0		1
501 to 550	5.0 < DC ≤ 5.5	36	71	1.1		1
551 to 600	5.5 < DC ≤ 6.0	41	76	1.2		1
601 to 650	6.0 < DC ≤ 6.5	44	81	1.3		1
651 to 700	6.5 < DC ≤ 7.0	47	86	1.4		1
701 to 800	7.0 < DC ≤ 8.0	52	92	1.6		1
801 to 900	8.0 < DC ≤ 9.0	55	97	1.8		1
901 to 1000	9.0 < DC ≤ 10.0	57	102	2.0		1
1001 to 1100	10.0 < DC ≤ 11.0	67	117	2.2		1
1101 to 1200	11.0 < DC ≤ 12.0			2.4		1
SV 1201 to 1400	12.0 < DC ≤ 14.0	73	123	2.7	Brazed Type	1
1401 to 1600	14.0 < DC ≤ 16.0	78	133	3.2		1
1601 to 1800	16.0 < DC ≤ 18.0	83	143	3.5		1
1801 to 2000	18.0 < DC ≤ 20.0	93	153	3.9		1

SVH Type

Dimensions (mm)

Cat. No.	Dia. (Shank Dia.) DC(DCON)	Flute Length LCF	Overall Length OAL	Web Thickness WBTHK	Specifications	Fig
SVH 400 to 500	4.0 ≤ DC ≤ 5.0	62	101	0.9	Solid Type	2
501 to 600	5.0 < DC ≤ 6.0	73	116	1.1		2
601 to 700	6.0 < DC ≤ 7.0	85	131	1.4		2
701 to 800	7.0 < DC ≤ 8.0	98	147	1.6		2
801 to 900	8.0 < DC ≤ 9.0	110	157	1.8		2
901 to 1000	9.0 < DC ≤ 10.0	122	172	2.0		2
1001 to 1100	10.0 < DC ≤ 11.0	134	184	2.2		2
1101 to 1200	11.0 < DC ≤ 12.0	146	196	2.4		2
1201 to 1300	12.0 < DC ≤ 13.0	159	209	2.6		2
1301 to 1400	13.0 < DC ≤ 14.0	171	221	2.8		2
1401 to 1500	14.0 < DC ≤ 15.0	183	233	3.0		2
1501 to 1600	15.0 < DC ≤ 16.0	195	245	3.2		2

Recommended Cutting Conditions for SV Type and SVH Type

SV Type

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

Diameter DC (mm)	Cutting Conditions	Ductile Cast Iron	Cast Iron	Non-Ferrous Alloy
ø10.0	v_c	20 - **40** - 60	20 - **35** - 50	50 - **80** - 100
	f	0.05 - **0.06** - 0.08	0.05 - **0.07** - 0.1	0.05 - **0.07** - 0.1
ø20.0	v_c	30 - **50** - 70	30 - **60** - 80	80 - **100** - 120
	f	0.05 - **0.07** - 0.08	0.05 - **0.08** - 0.1	0.05 - **0.1** - 0.15

Min. - **Optimum** - Max.

SVH Type

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

Diameter DC (mm)	Cutting Conditions	Ductile Cast Iron	Cast Iron	Non-Ferrous Alloy
ø10.0	v_c	40 - **70** - 100	50 - **70** - 100	50 - **100** - 150
	f	0.15 - **0.17** - 0.2	0.2 - **0.25** - 0.3	0.25 - **0.27** - 0.3
ø20.0	v_c	60 - **90** - 120	100 - **130** - 160	100 - **150** - 200
	f	0.2 - **0.25** - 0.3	0.2 - **0.25** - 0.3	0.3 - **0.32** - 0.35

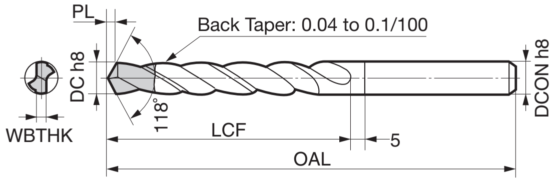
Min. - **Optimum** - Max.

DLS Type

Cast Iron | Ductile Cast Iron | Aluminum Alloy | Copper Alloy

Uncoated Carbide | 5 to 8 D

Fig 1



Straight Shank (For Cast Iron)

Dimensions (mm)

Cat. No.	Dia. (Shank Dia.) DC(DCON)	Flute Length LCF	Overall Length OAL	Tip PL	Web Thickness WBTHK	Fig
DLS 060 to 065	**6.0 to 6.5**	52	97	1.9	1.2	1
066 to 070	**6.6 to 7.0**	52	97	2.0	1.3	1
071 to 075	**7.1 to 7.5**	52	97	2.2	1.4	1
076 to 080	**7.6 to 8.0**	52	97	2.4	1.5	1
081 to 085	**8.1 to 8.5**	62	112	2.5	1.5	1
086 to 090	**8.6 to 9.0**	63	113	2.7	1.6	1
091 to 095	**9.1 to 9.5**	63	113	2.8	1.7	1
096 to 100	**9.6 to 10.0**	63	113	3.0	1.8	1
101 to 105	**10.1 to 10.5**	63	128	3.1	1.8	1
106 to 110	**10.6 to 11.0**	63	128	3.2	1.9	1
111 to 115	**11.1 to 11.5**	63	128	3.4	2.0	1
116 to 120	**11.6 to 12.0**	64	129	3.6	2.0	1

· Ordering numbers should be handled according to this example: ø10.5mm drill → DLS105. Please also advise work material.
· This series does not have a drill tang. Drills with tang can be made-to-order, please advise the J and K dimensions.
· Helix angle 28°, flute width ratio 1.2:1.

Straight Shank (For Aluminum Alloy)

Dimensions (mm)

Cat. No.	Diameter DC	Flute Length LCF	Overall Length OAL	Tip PL	Web Thickness WBTHK	Fig
DLS 060A to 065A	**6.0 to 6.5**	52	97	1.9	1.2	1
066A to 070A	**6.6 to 7.0**	52	97	2.0	1.3	1
071A to 075A	**7.1 to 7.5**	52	97	2.2	1.4	1
076A to 080A	**7.6 to 8.0**	52	97	2.4	1.5	1
081A to 085A	**8.1 to 8.5**	62	112	2.5	1.5	1
086A to 090A	**8.6 to 9.0**	63	113	2.7	1.6	1
091A to 095A	**9.1 to 9.5**	63	113	2.8	1.7	1
096A to 100A	**9.6 to 10.0**	63	113	3.0	1.8	1
101A to 105A	**10.1 to 10.5**	63	128	3.1	1.8	1
106A to 110A	**10.6 to 11.0**	63	128	3.2	1.9	1
111A to 115A	**11.1 to 11.5**	63	128	3.4	2.0	1
116A to 120A	**11.6 to 12.0**	64	129	3.6	2.0	1

· Ordering numbers should be handled according to this example: ø7.6mm drill → DLS076A. Please also advise work material.
· This series does not have a drill tang. Drills with tang can be made-to-order, please advise the J and K dimensions.
· Helix angle 28°, flute width ratio 1.2:1.

Recommended Cutting Conditions

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

Dia. DC (mm)	Cutting Conditions	Ductile Cast Iron	Cast Iron	Non-Ferrous Alloy
ø10.0	v_c	20 - **35** - 55	20 - **40** - 60	50 - **100** - 150
	f	0.2 - **0.3** - 0.4	0.2 - **0.3** - 0.4	0.1 - **0.15** - 0.2
ø15.0	v_c	30 - **50** - 70	30 - **60** - 80	70 - **130** - 200
	f	0.3 - **0.35** - 0.4	0.3 - **0.35** - 0.4	0.1 - **0.15** - 0.2
ø25.0	v_c	50 - **60** - 90	50 - **75** - 100	100 - **150** - 250
	f	0.3 - **0.35** - 0.45	0.3 - **0.4** - 0.5	0.1 - **0.15** - 0.2

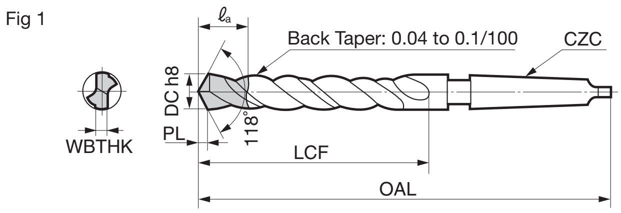
Min. - **Optimum** - Max.

Carbide-Tipped Twist Drill

DLT Type

Cast Iron | Ductile Cast Iron | Aluminum Alloy

Uncoated Carbide | 6to12 D



Diameter ø6.0 to 14.0mm

Dimensions (mm)

Dia. DC	Stock Size	Cat. No.	Flute Length LCF	Overall Length OAL	Tip PL	Web Thickness WB THK	CZC*	Fig
6.0 to 6.5	6.0,6.5	**DLT 060 to 065**	74	154	1.9	1.2	MT1	1
6.6 to 7.0	6.8,7.0	**066 to 070**	77	157	2.1	1.3		1
7.1 to 7.5	7.5	**071 to 075**	80	160	2.2	1.4		1
7.6 to 8.0	8.0	**076 to 080**	84	164	2.4	1.5		1
8.1 to 8.5	8.5	**081 to 085**	88	171	2.6			1
8.6 to 9.0	8.6,8.7,9.0	**086 to 090**	91	175	2.7	1.6		1
9.1 to 9.5	9.5	**091 to 095**	95	178	2.8	1.7		1
9.6 to 10.0	10.0	**096 to 100**	98	181	3.0	1.8		1
10.1 to 10.5	10.2,10.3,10.5	**101 to 105**	101	185	3.1			1
10.6 to 11.0	11.0	**106 to 110**	105	188	3.2	1.9		1
11.1 to 11.5	11.5	**111 to 115**	108	191	3.4	2.0		1
11.6 to 12.0	11.7,12.0	**116 to 120**	112	196	3.5			1
12.1 to 12.5	12.5	**121 to 125**	116	199	3.7	2.2		1
12.6 to 13.0	13.0	**126 to 130**	119	202	3.8			1
13.1 to 13.5	13.5	**131 to 135**	122	206	4.0	2.3		1
13.6 to 14.0	14.0	**136 to 140**	126	209	4.1			1

*CZC: Morse Taper No.
Grade: A1

Diameter ø14.1 to 25.0mm

Dimensions (mm)

Dia. DC	Stock Size	Cat. No.	Flute Length LCF	Overall Length OAL	Tip PL	Web Thickness WB THK	CZC*	Fig
14.1 to 14.5	14.5	**DLT 141 to 145**	126	226	4.3	2.5	MT2	1
14.6 to 15.0	15.0	**146 to 150**	130	230	4.4			1
15.1 to 15.5	15.5	**151 to 155**		233	4.6	2.6		1
15.6 to 16.0	16.0	**156 to 160**	135	235	4.8			1
16.1 to 16.5	16.5	**161 to 165**	137	237	4.9	2.7		1
16.6 to 17.0	17.0	**166 to 170**	140	240	5.1			1
17.1 to 17.5	17.5	**171 to 175**	145	245	5.2	2.9		1
17.6 to 18.0	18.0	**176 to 180**			5.4			1
18.1 to 18.5	18.5	**181 to 185**	150	250	5.5	3.0		1
18.6 to 19.0	19.0	**186 to 190**	151	251	5.6			1
19.1 to 19.5		**191 to 195**	156	256	5.8	3.1		1
19.6 to 20.0	20.0	**196 to 200**			5.9			1
20.1 to 20.5	20.5	**201 to 205**	161	261	6.1	3.3		1
20.6 to 21.0	21.0	**206 to 210**			6.3			1
21.1 to 21.5		**211 to 215**	166	266	6.4	3.4		1
21.6 to 22.0	22.0	**216 to 220**	167	267	6.5			1
22.1 to 22.5		**221 to 225**	172	272	6.7	3.5		1
22.6 to 23.0	23.0	**226 to 230**			6.8			1
23.1 to 23.5	23.5	**231 to 235**		292	7.0	3.7		1
23.6 to 24.0	24.0	**DLT 236 to 240**	172	292	7.1	3.7	MT3	1
24.1 to 24.5	24.5	**241 to 245**			7.3	3.8		1
24.6 to 25.0		**246 to 250**	173	293	7.5			1

*CZC: Morse Taper No.
Grade: A1

Carbide Tip Dimensions (ℓa)

DC	6.0 to 7.0	7.1 to 8.0	8.1 to 9.0	9.1 to 13.0	13.1 to 18.0	18.1 to 23.0	23.1 to 25.0
ℓa	15	20	25	26	27	30	34

Note:
- Ordering numbers should be handled according to this example: ø8.6mm drill → DLT086.
- A standard morse-taper shank (JIS B4302) is used.
  The length of the drill is the same as that of an ø8mm LCF drill or an ø8.1mm to ø8.5mm OAL drill.
- ø25.1mm to ø50mm drills can be made to order.
- For items in stock, contact your nearest sales office (see back of booklet).

Recommended Cutting Conditions

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

Dia. DC (mm)	Cutting Conditions	Ductile Cast Iron	Cast Iron	Non-Ferrous Alloy
ø10.0	v_c	20 - **35** - 55	20 - **40** - 60	50 - **100** - 150
	f	0.2 - **0.3** - 0.4	0.2 - **0.3** - 0.4	0.1 - **0.15** - 0.2
ø15.0	v_c	30 - **50** - 70	30 - **60** - 80	70 - **130** - 200
	f	0.3 - **0.35** - 0.4	0.3 - **0.35** - 0.4	0.1 - **0.15** - 0.2
ø25.0	v_c	50 - **60** - 90	50 - **75** - 100	100 - **150** - 250
	f	0.3 - **0.35** - 0.45	0.3 - **0.4** - 0.5	0.1 - **0.15** - 0.2

Min. - **Optimum** - Max.

Work Material	Helix Angle	Groove Width Ratio
Cast Iron	* 28° to 30°	1.2:1
Non-Ferrous Alloy	40°	1.6:1

* Below ø13mm: 28°, ø13mm and above: 30°.

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