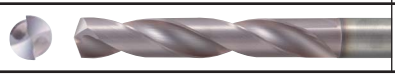
Drills J

J1 to J170

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 MULTIDRILL **GS** series	MDW○○○○GS2	ø1.0 to 20.0		J38
			MDW○○○○GS4	ø1.0 to 20.0		
	P M K S	Super MULTIDRILL **HGS** series	MDW○○○○HGS3	ø1.5 to 20.0		J38
			MDW○○○○HGS5	ø1.5 to 20.0		
			MDW○○○○HGS8	ø1.5 to 16.0		
	P K	Strong MULTIDRILL **HY** series	MDW○○○○HY3	ø5.0 to 16.0		J70
			MDW○○○○HY5	ø5.0 to 16.0		
			MDW○○○○HY8	ø5.0 to 16.0		
Flat Bottom Hole	P M K N	Flat MULTIDRILL **MDF** series	MDF○○○○S2D	ø0.3 to 20.0		J26
			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 MULTIDRILL **XHGS** series	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** series	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 MULTIDRILL **WGS** series	MDW○○○○WGS2	ø6.8 to 16.0		J50
Stainless Steel	M S	MULTIDRILL **MDM** series	MDM○○○○S○○H03	ø3.0 to ø16.0		J52
			MDM○○○○S○○H05	ø3.0 to ø16.0		
Cast Iron	K	Strong MULTIDRILL **HX** series	MDW○○○○HX3	ø3.0 to 20.0		J62
			MDW○○○○HX5	ø3.0 to 20.0		
			MDW○○○○HX8	ø3.0 to 18.0		
Non-Ferrous Metals	N	MULTIDRILL **MDA** series	MDA○○○○S○○H03	ø1.0 to 12.0		J84
			MDA○○○○S○○H05	ø1.0 to 12.0		
			MDA○○○○S○○H10	ø1.0 to 12.0		
			MDA○○○○S○○H15	ø1.0 to 3.0		
			MDA○○○○S○○H20	ø1.0 to 3.0		
		Super MULTIDRILL **NHGS** series	MDW○○○○NHGS3	ø3.0 to 16.0		J92
			MDW○○○○NHGS5	ø3.0 to 16.0		
			MDW○○○○NHGS10	ø3.0 to 16.0		
		SUMIDIA Drills **DAL** series	DAL○○○○H	ø5.0 to 12.0		J98
		SUMIDIA Drills **DDL** series	DDL○○○○H	ø5.0 to 12.0		J98
Hardened Steel	S H	Super MULTIDRILL **D** series	MDS○○○MD	ø1.0 to 20.0		J72

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 below	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 series	2D 4D	DEX Coat	External	○	◎	◎	○	○	○	○	○	○	◎				J38
HGS series	3D 5D 8D	DEX Coat	Internal	◎	◎	◎	○	○	◎	◎	○	○	◎		○		J38
HY series	3D 5D 8D	DEX Coat	Internal	◎	◎							◎	◎				J70
MDF series	2D 3D 5D	PVD Coat	External S2D	◎	◎	◎	○		○	○	○	○	○	○			J26
			External L2D	◎	◎	◎	○		○			○	○	○			
			Internal	◎	◎	◎	○		○			○	○	○			
XHGS series	10D 12D 15D 20D 25D 30D	DEX Coat	Internal	○	◎	◎	○		○			○	◎				J76
PHT series	Pilot 3D	DEX Coat	Internal	○	◎	◎	○		○			○	◎				J76
MDE-E type For Hub Drilling	2D	NX Coat	External	○	◎	◎	○		○	○	○	◎	◎				J8
WGS series	2D	DEX Coat	External	○	◎	◎	○		○			○	○				J50
MDM series	3D 5D	NX Coat	Internal	○	○				◎	◎	○	○	○				J52
HX series	3D 5D 8D	DEX Coat	Internal									◎	◎				J62
MDA series	3D 5D 10D 15D 20D	AURORA Coat DLC	Internal											◎	◎		J84
NHGS series	3D 5D 10D	AURORA Coat DLC	Internal											◎	◎		J92
DAL series	3D	–	External											◎		○	J98
DDL series	3D	–	External											◎		○	J98
D series	3D	ZX Coat	External				◎	◎		◎							J72

Drill Selection Guide

Applications/ Specifications	Work Material	Series	Cat. No.	Diameter (mm)	Appearance	Ref. Page
Heat-Resistant Alloy	S	Drill for Heat-Resistant Alloys **SGS** series	MDWOOOOSGS3	ø3.0 to 12.0		J74
CFRP	CFRP	SUMIDIA Coat Drills **SDC** series	MDSOOOOOSDC3	ø2.0 to 10.0		J97
Small Diameter Deep Hole	P M K	Micro Long Drill **MLDH** series	MLDHOOOOL5	ø0.8 to 2.0		J99
			MLDHOOOOL12	ø0.8 to 2.0		
			MLDHOOOOL20	ø0.8 to 2.0		
			MLDHOOOOL30	ø0.8 to 2.0		
		Guide Drill for MLDH series **MLDH-P** type	MLDHOOOOP	ø0.8 to 2.0		J99
Very Small Diameter	P M K H	MINI-MULTIDRILL **MDSS** series	MDSSOOOO	ø0.2 to 1.0		J102
	P M N	Micro MULTIDRILL **MDUS** series	MDUSOOOO-30C	ø0.03 to 0.19		J102
		Micro Multi Pointing Drill **MDUP** series	MDUPOOOO-30C	ø0.03 to 0.18		J102
Indexable Head type Emphasis on Edge Sharpness	P M K	SEC-MULTIDRILL **SMD-MSL** type Head	SMDHOOO-1.5D/-1.5DF	ø12.0 to 30.8 D: ø13.5 to 30.8		J104
			SMDHOOOM/-3D/-3DF			
			SMDHOOOL/-5D/-5DF			
			SMDHOOOD/-8D/-8DF			
			SMDHOOO-12D			
Indexable Head type High-efficiency	P K	SEC-MULTIDRILL **SMD-MTL** type Head	SMDHOOO-1.5D/-1.5DF	ø12.0 to 30.8 M, L: ø12.0 to 42.5 D: ø13.5 to 30.8		J104
			SMDHOOOM/-3D/-3DF			
			SMDHOOOL/-5D/-5DF			
			SMDHOOOD/-8D/-8DF			
			SMDHOOO-12D			
Indexable Head type Low Resistance	P M K	SEC-MULTIDRILL **SMD-MEL** type Head	SMDHOOO-1.5D/-1.5DF	ø12.0 to 30.8 D: ø13.5 to 30.8		J104
			SMDHOOOM/-3D/-3DF			
			SMDHOOOL/-5D/-5DF			
			SMDHOOOD/-8D/-8DF			
			SMDHOOO-12D			
Indexable Head type For Flat Bottom Hole	P M K N	SEC-MULTIDRILL **SMD-MFS** type Head	SMDHOOO-1.5D/1.5DF/S	ø12.0 to 30.0		J118
Indexable Head type For Bridge	P	SEC-MULTIDRILL **SMD-MB** type Head	SMDHOOOB3	ø24.5 to 26.7		J126
Indexable Insert type	P M K N	SumiDrill **WDX** series	WDXOOOD2SOO	ø13.0 to 68.0		J128
			WDXOOOD3SOO	ø13.0 to 68.0		
			WDXOOOD4SOO	ø13.0 to 63.0		
			WDXOOOD5SOO	ø13.0 to 55.0		
	P K S N	SEC-Plunge Drill **PDL** series	PDLOOOD2SOO	ø16.0 to 40.0		J142
			PDLOOOD3SOO	ø16.0 to 40.0		
	P K S N	SEC-Plunge Mill **PCT** series	PCTOOOD3SOO	ø16.0 to 40.0		J142
			PCTOOOD5SOO	ø16.0 to 40.0		
Solid Reamer	P K	SumiReamer **SSR** series	SSROOOH7T	ø2.97 to 12.0		J150
			SSROOOH7S			
			SSROOOJT			
			SSROOOJS			
Indexable Insert type Reamer	P M K N	SumiReamer **SR** series	SRGOO.OH7-OOO-OOO12R1	ø11.9 to 140.6		J160
			SRLOO.OH7-OOO-OOO12R1	ø11.9 to 140.6		

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 below	C 0.29%	SKD SKS	45HRC or less	46HRC or more	SUS	Ti	Inconel	FC	FCD	Al	Cu	CFRP	
SGS series	3D	PVD Coat	External						○	○	◎						J74
SDC series	3D	SUMIDIA Coat	Dry											○		◎	J97
MLDH series	5D 12D 20D 30D	PVD Coat	Internal	◎	◎	○	○		◎	○	○	◎	◎	○			J99
MLDH-P series	Pilot 2D	PVD Coat	Internal	◎	◎	○	○		◎	○	○	◎	◎	○			J99
MDSS series	10D	FB Coat	External	◎	◎	◎	◎	○	◎		○	◎	◎	○			J102
MDUS series	10D	PVD Coat	External	◎	◎				◎					○	◎		J102
MDUP series	Pilot 1D	PVD Coat	External	◎	◎				◎					○	◎		J102
SMD -MSL type Head	1.5D 3D 5D 8D 12D	NX Coat		◎	○				◎	○	○	◎	◎				J104
SMD -MTL type Head	1.5D 3D 5D 8D 12D	DEX Coat	Internal	◎	◎	○	○					◎	◎				J104
SMD -MEL type Head	1.5D 3D 5D 8D 12D	DEX Coat	Internal	◎	○		○		◎	○	○	◎	◎	○			J104
SMD -MFS type Head	1.5D 3D 5D 8D 12D	DEX Coat	Internal	◎	◎		○		○			○	○	○			J118
SMD -MB type Head	3D	DEX Coat	Internal	◎	◎												J126
WDX series	2D 3D 4D 5D	PVD Coat / AURORA Coat DLC / CVD Coat	Internal	◎	◎		○		◎			◎	◎	◎			J128
PDL series	2D 3D	PVD Coat / AURORA Coat DLC / CVD Coat	Internal	◎	◎		○		○	◎		◎	◎	◎	○		J142
PCT series	3D 5D	PVD Coat / AURORA Coat DLC / CVD Coat	Internal	◎	◎		○		○	◎		◎	◎	◎	○		J142
SSR series		PVD Coat	Internal	◎	◎	◎	○					◎	◎				J150
SR series		PVD Coat / AURORA Coat DLC	Internal	◎	◎	◎	○		◎			◎	◎	○	○		J160

Effective Length List by Diameter

● 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	J102
	0.26	38.0	MDUS 0030-30C	J103
0.04	0.04	38.2	MDUP 0040-30C	J102
	0.34	38.0	MDUS 0040-30C	J103
0.05	0.05	38.2	MDUP 0050-30C	J102
	0.45	38.0	MDUS 0050-30C	J103
0.08	0.06	38.2	MDUP 0080-30C	J102
	0.72	38.0	MDUS 0080-30C	J103
0.1	0.1	38.2	MDUP 0100-30C	J102
	0.9	38.0	MDUS 0100-30C	J103
0.12	0.08	38.2	MDUP 0120-30C	J102
	1.08	38.0	MDUS 0120-30C	J103
0.15	0.08	38.2	MDUP 0150-30C	J102
	1.35	38.0	MDUS 0150-30C	J103
0.18	0.17	38.2	MDUP 0180-30C	J102
	1.62	38.0	MDUS 0180-30C	J103
0.2	2.25	38.0	MDSS 0020	J103
0.21	2.24	38.0	MDSS 0021	J103
0.22	2.23	38.0	MDSS 0022	J103
0.23	2.21	38.0	MDSS 0023	J103
0.24	2.2	38.0	MDSS 0024	J103
0.25	2.19	38.0	MDSS 0025	J103
0.26	2.18	38.0	MDSS 0026	J103
0.27	2.16	38.0	MDSS 0027	J103
0.28	2.15	38.0	MDSS 0028	J103
0.29	2.14	38.0	MDSS 0029	J103
0.3	0.9	40.0	MDF 0030S2D	J28
	2.6	38.0	MDSS 0030	J103
0.31	2.6	38.0	MDSS 0031	J103
0.32	2.6	38.0	MDSS 0032	J103
0.33	2.6	38.0	MDSS 0033	J103
0.34	2.6	38.0	MDSS 0034	J103
0.35	3.6	38.0	MDSS 0035	J103
0.36	3.6	38.0	MDSS 0036	J103
0.37	3.5	38.0	MDSS 0037	J103
0.38	3.5	38.0	MDSS 0038	J103
0.39	3.5	38.0	MDSS 0039	J103
0.4	1.2	40.0	MDF 0040S2D	J28
	4.5	38.0	MDSS 0040	J103
0.41	4.5	38.0	MDSS 0041	J103
0.42	4.5	38.0	MDSS 0042	J103
0.43	4.5	38.0	MDSS 0043	J103
0.44	4.5	38.0	MDSS 0044	J103
0.45	4.4	38.0	MDSS 0045	J103
0.46	4.4	38.0	MDSS 0046	J103
0.47	4.4	38.0	MDSS 0047	J103
0.48	4.4	38.0	MDSS 0048	J103
0.49	4.4	38.0	MDSS 0049	J103
0.5	1.5	40.0	MDF 0050S2D	J28
	5.4	38.0	MDSS 0050	J103
0.51	5.4	38.0	MDSS 0051	J103
0.52	5.4	38.0	MDSS 0052	J103
0.53	5.3	38.0	MDSS 0053	J103
0.54	5.3	38.0	MDSS 0054	J103
0.55	5.3	38.0	MDSS 0055	J103
0.56	5.3	38.0	MDSS 0056	J103
0.57	5.3	38.0	MDSS 0057	J103
0.58	5.3	38.0	MDSS 0058	J103
0.59	5.3	38.0	MDSS 0059	J103
0.6	1.8	40.0	MDF 0060S2D	J28
	6.3	38.0	MDSS 0060	J103
0.61	6.2	38.0	MDSS 0061	J103
0.62	6.2	38.0	MDSS 0062	J103
0.63	6.2	38.0	MDSS 0063	J103
0.64	6.2	38.0	MDSS 0064	J103
0.65	6.2	38.0	MDSS 0065	J103
0.66	6.2	38.0	MDSS 0066	J103
0.67	6.2	38.0	MDSS 0067	J103
0.68	6.2	38.0	MDSS 0068	J103
0.69	6.1	38.0	MDSS 0069	J103
0.7	2.1	40.0	MDF 0070S2D	J28
	8.1	38.0	MDSS 0070	J103
0.71	8.1	38.0	MDSS 0071	J103
0.72	8.1	38.0	MDSS 0072	J103
0.73	8.1	38.0	MDSS 0073	J103
0.74	8.1	38.0	MDSS 0074	J103
0.75	8.1	38.0	MDSS 0075	J103
0.76	8.1	38.0	MDSS 0076	J103
0.77	8.0	38.0	MDSS 0077	J103
0.78	8.0	38.0	MDSS 0078	J103

(Blue text: Flat head ■Indexable cutting edge type)

● 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	J103
0.8	2.0	45.0	MLDH 0800P	J100
	2.4	40.0	MDF 0080S2D	J28
	6.8	50.0	MLDH 0800L5	J100
	9.0	38.0	MDSS 0080	J103
	12.8	55.0	MLDH 0800L12	J100
	17.8	60.0	MLDH 0800L20	J100
	26.8	70.0	MLDH 0800L30	J100
0.81	2.0	45.0	MLDH 0810P	J100
	7.8	50.0	MLDH 0810L5	J100
	9.0	38.0	MDSS 0081	J103
	12.8	55.0	MLDH 0810L12	J100
	17.8	60.0	MLDH 0810L20	J100
	26.8	70.0	MLDH 0810L30	J100
0.82	2.1	45.0	MLDH 0820P	J100
	7.8	50.0	MLDH 0820L5	J100
	9.0	38.0	MDSS 0082	J103
	12.8	55.0	MLDH 0820L12	J100
	18.8	60.0	MLDH 0820L20	J100
	26.8	70.0	MLDH 0820L30	J100
0.83	2.1	45.0	MLDH 0830P	J100
	7.8	50.0	MLDH 0830L5	J100
	9.0	38.0	MDSS 0083	J103
	12.8	55.0	MLDH 0830L12	J100
	18.8	60.0	MLDH 0830L20	J100
	26.8	70.0	MLDH 0830L30	J100
0.84	2.1	45.0	MLDH 0840P	J100
	7.7	50.0	MLDH 0840L5	J100
	9.0	38.0	MDSS 0084	J103
	12.7	55.0	MLDH 0840L12	J100
	18.7	60.0	MLDH 0840L20	J100
	27.7	70.0	MLDH 0840L30	J100
0.85	2.1	45.0	MLDH 0850P	J100
	7.7	50.0	MLDH 0850L5	J100
	8.9	38.0	MDSS 0085	J103
	12.7	55.0	MLDH 0850L12	J100
	18.7	60.0	MLDH 0850L20	J100
	27.7	70.0	MLDH 0850L30	J100
0.86	2.1	45.0	MLDH 0860P	J100
	7.7	50.0	MLDH 0860L5	J100
	8.9	38.0	MDSS 0086	J103
	13.7	55.0	MLDH 0860L12	J100
	19.7	65.0	MLDH 0860L20	J100
	27.7	70.0	MLDH 0860L30	J100
0.87	2.2	45.0	MLDH 0870P	J100
	7.7	50.0	MLDH 0870L5	J100
	8.9	38.0	MDSS 0087	J103
	13.7	55.0	MLDH 0870L12	J100
	19.7	65.0	MLDH 0870L20	J100
	28.7	70.0	MLDH 0870L30	J100
0.88	2.2	45.0	MLDH 0880P	J100
	7.7	50.0	MLDH 0880L5	J100
	8.9	38.0	MDSS 0088	J103
	13.7	55.0	MLDH 0880L12	J100
	19.7	65.0	MLDH 0880L20	J100
	28.7	70.0	MLDH 0880L30	J100
0.89	2.3	45.0	MLDH 0890P	J100
	7.7	50.0	MLDH 0890L5	J100
	8.9	38.0	MDSS 0089	J103
	13.7	55.0	MLDH 0890L12	J100
	19.7	65.0	MLDH 0890L20	J100
	28.7	70.0	MLDH 0890L30	J100
0.9	2.3	45.0	MLDH 0900P	J100
	2.7	40.0	MDF 0090S2D	J28
	7.7	50.0	MLDH 0900L5	J100
	9.9	38.0	MDSS 0090	J103
	13.7	55.0	MLDH 0900L12	J100
	20.7	65.0	MLDH 0900L20	J100
	29.7	75.0	MLDH 0900L30	J100
0.91	2.2	45.0	MLDH 0910P	J100
	8.6	50.0	MLDH 0910L5	J100
	9.9	38.0	MDSS 0091	J103
	13.6	55.0	MLDH 0910L12	J100
	20.6	65.0	MLDH 0910L20	J100
	29.6	75.0	MLDH 0910L30	J100
0.92	2.3	45.0	MLDH 0920P	J100
	8.6	50.0	MLDH 0920L5	J100
	9.9	38.0	MDSS 0092	J103
	14.6	60.0	MLDH 0920L12	J100
	20.6	65.0	MLDH 0920L20	J100

(Blue text: Flat head ■Indexable cutting edge type)

● Diameter ø0.92 to ø1.1mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
0.92	29.6	75.0	MLDH 0920L30	J100
0.93	2.3	45.0	MLDH 0930P	J100
	8.6	50.0	MLDH 0930L5	J100
	9.8	38.0	MDSS 0093	J103
	14.6	60.0	MLDH 0930L12	J100
	20.6	65.0	MLDH 0930L20	J100
	30.6	75.0	MLDH 0930L30	J100
0.94	2.4	45.0	MLDH 0940P	J100
	8.6	50.0	MLDH 0940L5	J100
	9.8	38.0	MDSS 0094	J103
	14.6	60.0	MLDH 0940L12	J100
	21.6	65.0	MLDH 0940L20	J100
	30.6	75.0	MLDH 0940L30	J100
0.95	2.4	45.0	MLDH 0950P	J100
	8.6	50.0	MLDH 0950L5	J100
	9.8	38.0	MDSS 0095	J103
	14.6	60.0	MLDH 0950L12	J100
	21.6	65.0	MLDH 0950L20	J100
	30.6	75.0	MLDH 0950L30	J100
0.96	2.4	45.0	MLDH 0960P	J100
	8.6	50.0	MLDH 0960L5	J100
	9.8	38.0	MDSS 0096	J103
	14.6	60.0	MLDH 0960L12	J100
	21.6	65.0	MLDH 0960L20	J100
	31.6	75.0	MLDH 0960L30	J100
0.97	2.4	45.0	MLDH 0970P	J100
	8.5	50.0	MLDH 0970L5	J100
	9.8	38.0	MDSS 0097	J103
	14.5	60.0	MLDH 0970L12	J100
	21.5	65.0	MLDH 0970L20	J100
	31.5	75.0	MLDH 0970L30	J100
0.98	2.4	45.0	MLDH 0980P	J100
	8.5	50.0	MLDH 0980L5	J100
	9.8	38.0	MDSS 0098	J103
	15.5	60.0	MLDH 0980L12	J100
	22.5	65.0	MLDH 0980L20	J100
	31.5	75.0	MLDH 0980L30	J100
0.99	2.5	45.0	MLDH 0990P	J100
	8.5	50.0	MLDH 0990L5	J100
	9.8	38.0	MDSS 0099	J103
	15.5	60.0	MLDH 0990L12	J100
	22.5	65.0	MLDH 0990L20	J100
	32.5	75.0	MLDH 0990L30	J100
1.0	2.5	45.0	MLDH 1000P	J100
	3.0	45.0	MDF 0100S2D	J28
	4.5	45.0	MDA 0100S03H03	J86
	4.7	45.2	MDW 0100GS2	J40
	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	MDA 0100S03H05	J86
	8.5	50.0	MLDH 1000L5	J100
	8.7	59.2	MDE 0100S03H05	J19
	10.7	49.2	MDW 0100GS4	J40
	10.8	38.0	MDSS 0100	J103
	11.7	62.2	MDE 0100S03H08	J19
	12.5	55.0	MDA 0100S03H10	J86
	15.5	60.0	MLDH 1000L12	J100
	17.5	60.0	MDA 0100S03H15	J86
	22.5	65.0	MDA 0100S03H20	J86
	22.5	65.0	MLDH 1000L20	J100
	32.5	75.0	MLDH 1000L30	J100
1.05	2.6	45.0	MLDH 1050P	J100
	10.4	55.0	MLDH 1050L5	J100
	16.4	60.0	MLDH 1050L12	J100
	23.4	65.0	MLDH 1050L20	J100
	34.4	80.0	MLDH 1050L30	J100
1.1	2.8	45.0	MLDH 1100P	J101
	3.3	45.0	MDF 0110S2D	J28
	4.6	45.2	MDW 0110GS2	J40
	5.6	45.2	MDE 0110S03E02	J13
	6.4	45.0	MDA 0110S03H03	J86
	6.6	57.2	MDE 0110S03H03	J19
	7.6	49.2	MDE 0110S03E04	J13
	8.6	59.2	MDE 0110S03H05	J19
	10.4	50.0	MDA 0110S03H05	J86
	10.4	55.0	MLDH 1100L5	J101
	10.6	49.2	MDW 0110GS4	J40
	12.6	62.2	MDE 0110S03H08	J19
	16.4	55.0	MDA 0110S03H10	J86

(Blue text: Flat head ■Indexable cutting edge type)

The 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 ø1.1 to ø1.5mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
1.1	17.4	60.0	MLDH 1100L12	J101
	19.4	65.0	MDA 0110S03H15	J86
	24.4	70.0	MDA 0110S03H20	J86
	24.4	70.0	MLDH 1100L20	J101
	35.4	80.0	MLDH 1100L30	J101
1.15	2.9	45.0	MLDH 1150P	J101
	10.3	55.0	MLDH 1150L5	J101
	18.3	60.0	MLDH 1150L12	J101
	26.3	70.0	MLDH 1150L20	J101
	37.3	80.0	MLDH 1150L30	J101
1.2	3.0	45.0	MLDH 1200P	J101
	3.6	45.0	MDF 0120S2D	J28
	4.4	45.2	MDW 0120GS2	J40
	6.2	48.0	MDA 0120S03H03	J86
	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	MDA 0120S03H05	J86
	10.2	55.0	MLDH 1200L5	J101
	10.4	49.2	MDW 0120GS4	J40
	13.4	62.2	MDE 0120S03H08	J19
	16.2	60.0	MDA 0120S03H10	J86
	18.2	60.0	MLDH 1200L12	J101
	21.2	65.0	MDA 0120S03H15	J86
	27.2	70.0	MDA 0120S03H20	J86
	27.2	70.0	MLDH 1200L20	J101
	39.2	85.0	MLDH 1200L30	J101
1.25	3.1	45.0	MLDH 1250P	J101
	12.1	55.0	MLDH 1250L5	J101
	19.1	65.0	MLDH 1250L12	J101
	28.1	70.0	MLDH 1250L20	J101
	41.1	85.0	MLDH 1250L30	J101
1.3	3.3	45.0	MLDH 1300P	J101
	3.9	45.0	MDF 0130S2D	J28
	4.4	45.3	MDW 0130GS2	J40
	6.1	48.0	MDA 0130S03H03	J86
	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	J40
	12.1	55.0	MDA 0130S03H05	J86
	12.1	55.0	MLDH 1300L5	J101
	14.3	62.2	MDE 0130S03H08	J19
	18.1	60.0	MDA 0130S03H10	J86
	20.1	65.0	MLDH 1300L12	J101
	23.1	65.0	MDA 0130S03H15	J86
	29.1	75.0	MDA 0130S03H20	J86
	29.1	75.0	MLDH 1300L20	J101
	42.1	85.0	MLDH 1300L30	J101
1.35	3.4	45.0	MLDH 1350P	J101
	12.0	55.0	MLDH 1350L5	J101
	21.0	65.0	MLDH 1350L12	J101
	30.0	75.0	MLDH 1350L20	J101
	44.0	90.0	MLDH 1350L30	J101
1.4	3.5	45.0	MLDH 1400P	J101
	4.2	45.0	MDF 0140S2D	J28
	4.2	45.3	MDW 0140GS2	J40
	5.9	48.0	MDA 0140S03H03	J86
	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	J40
	11.2	59.3	MDE 0140S03H05	J19
	11.9	55.0	MDA 0140S03H05	J86
	11.9	55.0	MLDH 1400L5	J101
	15.2	62.3	MDE 0140S03H08	J19
	17.9	60.0	MDA 0140S03H10	J86
	21.9	65.0	MLDH 1400L12	J101
	25.9	70.0	MDA 0140S03H15	J86
	31.9	75.0	MDA 0140S03H20	J86
	31.9	75.0	MLDH 1400L20	J101
	45.9	90.0	MLDH 1400L30	J101
1.45	3.6	45.0	MLDH 1450P	J101
	13.8	55.0	MLDH 1450L5	J101
	22.8	65.0	MLDH 1450L12	J101
	32.8	75.0	MLDH 1450L20	J101
	46.8	90.0	MLDH 1450L30	J101
1.5	3.8	45.0	MLDH 1500P	J101

● Diameter ø1.5 to ø1.8mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
1.5	4.1	45.3	MDW 0150GS2	J40
	4.5	45.0	MDF 0150S2D	J28
	5.8	48.0	MDA 0150S03H03	J86
	7.1	45.3	MDE 0150S03E02	J13
	8.1	63.3	MDW 0150HGS3	J44
	9.1	57.3	MDE 0150S03H03	J19
	10.1	49.3	MDE 0150S03E04	J13
	10.1	49.3	MDW 0150GS4	J40
	12.1	59.3	MDE 0150S03H05	J19
	12.1	70.3	MDW 0150HGS5	J44
	13.8	55.0	MDA 0150S03H05	J86
	13.8	55.0	MLDH 1500L5	J101
	16.1	62.3	MDE 0150S03H08	J19
	16.6	76.3	MDW 0150HGS8	J44
	20.8	65.0	MDA 0150S03H10	J86
	23.8	65.0	MLDH 1500L12	J101
	25.8	70.0	MDA 0150S03H15	J86
	33.8	75.0	MDA 0150S03H20	J86
	33.8	75.0	MLDH 1500L20	J101
	48.8	90.0	MLDH 1500L30	J101
1.55	3.9	45.0	MLDH 1550P	J101
	13.7	55.0	MLDH 1550L5	J101
	23.7	65.0	MLDH 1550L12	J101
	34.7	80.0	MLDH 1550L20	J101
	50.7	95.0	MLDH 1550L30	J101
1.6	4.0	45.0	MLDH 1600P	J101
	4.8	45.0	MDF 0160S2D	J28
	5.9	45.3	MDW 0160GS2	J40
	7.6	50.0	MDA 0160S03H03	J86
	7.9	45.3	MDE 0160S03E02	J13
	8.9	59.3	MDE 0160S03H03	J19
	10.4	63.3	MDW 0160HGS3	J44
	10.9	49.3	MDE 0160S03E04	J13
	11.9	62.3	MDE 0160S03H05	J19
	12.9	49.3	MDW 0160GS4	J40
	13.6	55.0	MDA 0160S03H05	J86
	13.6	55.0	MLDH 1600L5	J101
	16.9	67.3	MDE 0160S03H08	J19
	16.9	70.3	MDW 0160HGS5	J44
	21.9	76.3	MDW 0160HGS8	J44
	22.6	65.0	MDA 0160S03H10	J86
	24.6	70.0	MLDH 1600L12	J101
	29.6	75.0	MDA 0160S03H15	J86
	35.6	80.0	MDA 0160S03H20	J86
	35.6	80.0	MLDH 1600L20	J101
	51.6	95.0	MLDH 1600L30	J101
1.65	4.1	50.0	MLDH 1650P	J101
	15.5	60.0	MLDH 1650L5	J101
	25.5	70.0	MLDH 1650L12	J101
	37.5	80.0	MLDH 1650L20	J101
	53.5	95.0	MLDH 1650L30	J101
1.7	4.3	50.0	MLDH 1700P	J101
	5.1	45.0	MDF 0170S2D	J28
	5.9	45.4	MDW 0170GS2	J40
	7.5	50.0	MDA 0170S03H03	J86
	7.8	45.3	MDE 0170S03E02	J13
	9.8	59.3	MDE 0170S03H03	J19
	10.4	63.4	MDW 0170HGS3	J44
	10.8	49.3	MDE 0170S03E04	J13
	12.8	62.3	MDE 0170S03H05	J19
	12.9	49.4	MDW 0170GS4	J40
	15.5	60.0	MDA 0170S03H05	J86
	15.5	60.0	MLDH 1700L5	J101
	16.9	70.4	MDW 0170HGS5	J44
	17.8	67.3	MDE 0170S03H08	J19
	21.9	76.4	MDW 0170HGS8	J44
	22.5	65.0	MDA 0170S03H10	J86
	26.5	70.0	MLDH 1700L12	J101
	29.5	75.0	MDA 0170S03H15	J86
	38.5	80.0	MDA 0170S03H20	J86
	38.5	80.0	MLDH 1700L20	J101
	55.5	100.0	MLDH 1700L30	J101
1.75	4.4	50.0	MLDH 1750P	J101
	15.4	60.0	MLDH 1750L5	J101
	27.4	70.0	MLDH 1750L12	J101
	39.4	85.0	MLDH 1750L20	J101
	57.4	100.0	MLDH 1750L30	J101
1.8	4.5	50.0	MLDH 1800P	J101
	5.4	45.0	MDF 0180S2D	J28
	5.7	45.4	MDW 0180GS2	J40

● Diameter ø1.8 to ø2.1mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
1.8	7.3	50.0	MDA 0180S03H03	J86
	8.6	45.3	MDE 0180S03E02	J13
	9.6	59.3	MDE 0180S03H03	J19
	10.2	63.4	MDW 0180HGS3	J44
	11.6	49.3	MDE 0180S03E04	J13
	12.7	49.4	MDW 0180GS4	J40
	13.6	62.3	MDE 0180S03H05	J19
	15.3	60.0	MDA 0180S03H05	J86
	15.3	60.0	MLDH 1800L5	J101
	16.7	70.4	MDW 0180HGS5	J44
	18.6	67.3	MDE 0180S03H08	J19
	21.7	76.4	MDW 0180HGS8	J44
	25.3	70.0	MDA 0180S03H10	J86
	28.3	70.0	MLDH 1800L12	J101
	32.3	75.0	MDA 0180S03H15	J86
	40.3	85.0	MDA 0180S03H20	J86
	40.3	85.0	MLDH 1800L20	J101
	58.3	100.0	MLDH 1800L30	J101
1.85	4.6	50.0	MLDH 1850P	J101
	17.2	60.0	MLDH 1850L5	J101
	28.2	70.0	MLDH 1850L12	J101
	41.2	85.0	MLDH 1850L20	J101
	59.2	103.0	MLDH 1850L30	J101
1.9	4.8	50.0	MLDH 1900P	J101
	5.6	45.4	MDW 0190GS2	J40
	5.7	45.0	MDF 0190S2D	J28
	7.2	50.0	MDA 0190S03H03	J86
	8.5	45.3	MDE 0190S03E02	J13
	10.1	63.4	MDW 0190HGS3	J44
	10.5	59.3	MDE 0190S03H03	J19
	12.5	49.3	MDE 0190S03E04	J13
	12.6	49.4	MDW 0190GS4	J40
	14.5	62.3	MDE 0190S03H05	J19
	16.6	70.4	MDW 0190HGS5	J44
	17.2	60.0	MDA 0190S03H05	J86
	17.2	60.0	MLDH 1900L5	J101
	19.5	70.3	MDE 0190S03H08	J19
	21.6	76.4	MDW 0190HGS8	J44
	25.2	70.0	MDA 0190S03H10	J86
	29.2	75.0	MLDH 1900L12	J101
	32.2	75.0	MDA 0190S03H15	J86
	43.2	85.0	MDA 0190S03H20	J86
	43.2	85.0	MLDH 1900L20	J101
	60.2	103.0	MLDH 1900L30	J101
1.95	4.9	50.0	MLDH 1950P	J101
	17.1	60.0	MLDH 1950L5	J101
	30.1	75.0	MLDH 1950L12	J101
	44.1	85.0	MLDH 1950L20	J101
	61.1	103.0	MLDH 1950L30	J101
2.0	5.0	50.0	MLDH 2000P	J101
	5.4	45.4	MDW 0200GS2	J40
	6.0	50.0	MDF 0200S2D	J28
	7.0	50.0	MDA 0200S03H03	J86
	9.4	45.4	MDE 0200S03E02	J13
	9.9	63.4	MDW 0200HGS3	J44
	10.5	50.0	MDS 02000SDC3	J97
	11.4	59.4	MDE 0200S03H03	J19
	12.4	49.4	MDW 0200GS4	J40
	13.4	49.4	MDE 0200S03E04	J13
	15.4	62.4	MDE 0200S03H05	J19
	16.4	70.4	MDW 0200HGS5	J44
	17.0	60.0	MDA 0200S03H05	J86
	17.0	60.0	MLDH 2000L5	J101
	21.4	70.4	MDE 0200S03H08	J19
	21.4	76.4	MDW 0200HGS8	J44
	27.0	70.0	MDA 0200S03H10	J86
	31.0	75.0	MLDH 2000L12	J101
	37.0	80.0	MDA 0200S03H15	J86
	45.0	90.0	MDA 0200S03H20	J86
	45.0	90.0	MLDH 2000L20	J101
	63.0	103.0	MLDH 2000L30	J101
2.1	6.3	50.0	MDF 0210S2D	J28
	7.3	45.4	MDW 0210GS2	J40
	9.3	45.4	MDE 0210S03E02	J13
	9.9	55.0	MDA 0210S03H03	J86
	11.3	59.4	MDE 0210S03H03	J19
	12.2	68.3	MDW 0210PHT	J78
	12.3	68.4	MDW 0210HGS3	J44
	13.3	49.4	MDE 0210S03E04	J13
	14.3	49.4	MDW 0210GS4	J40

(Blue text: Flat head ■Indexable cutting edge type)

(Blue text: Flat head ■Indexable cutting edge type)

(Blue text: Flat head ■Indexable cutting edge type)

The 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 ø2.1 to ø2.489mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
2.1	15.3	62.4	MDE 0210S03H05	J19
	18.9	65.0	MDA 0210S03H05	J86
	21.3	78.4	MDW 0210HGS5	J44
	22.3	70.4	MDE 0210S03H08	J19
	24.8	81.4	MDW 0210HGS8	J44
	26.9	70.0	MDA 0210S03H10	J86
	35.3	88.4	MDW 0210XHGS10	J78
	36.9	80.0	MDA 0210S03H15	J86
	45.3	98.4	MDW 0210XHGS15	J78
	46.9	95.0	MDA 0210S03H20	J86
	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	J28
	7.2	45.5	MDW 0220GS2	J40
	9.7	55.0	MDA 0220S03H03	J86
	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	J44
	14.1	49.4	MDE 0220S03E04	J13
	14.2	49.5	MDW 0220GS4	J40
	16.1	62.4	MDE 0220S03H05	J19
	18.7	65.0	MDA 0220S03H05	J86
	21.2	78.5	MDW 0220HGS5	J44
	23.1	70.4	MDE 0220S03H08	J19
	24.7	81.5	MDW 0220HGS8	J44
	28.7	75.0	MDA 0220S03H10	J86
	35.1	88.4	MDW 0220XHGS10	J78
	38.7	85.0	MDA 0220S03H15	J86
	45.1	98.4	MDW 0220XHGS15	J78
	47.7	95.0	MDA 0220S03H20	J86
	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	J28
	7.1	45.5	MDW 0230GS2	J40
	9.6	55.0	MDA 0230S03H03	J86
	10.0	45.4	MDE 0230S03E02	J13
	11.9	68.3	MDW 0230PHT	J78
	12.0	63.4	MDE 0230S03H03	J19
	12.1	68.5	MDW 0230HGS3	J44
	14.0	49.4	MDE 0230S03E04	J13
	14.1	49.5	MDW 0230GS4	J40
	17.0	68.4	MDE 0230S03H05	J19
	20.6	65.0	MDA 0230S03H05	J86
	21.1	78.5	MDW 0230HGS5	J44
	24.0	75.4	MDE 0230S03H08	J19
	24.6	81.5	MDW 0230HGS8	J44
	28.6	75.0	MDA 0230S03H10	J86
	35.0	88.4	MDW 0230XHGS10	J78
	41.6	85.0	MDA 0230S03H15	J86
	45.0	98.4	MDW 0230XHGS15	J78
	49.6	100.0	MDA 0230S03H20	J86
	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	J40
	7.2	50.0	MDF 0240S2D	J28
	9.4	55.0	MDA 0240S03H03	J86
	10.8	45.4	MDE 0240S03E02	J13
	11.7	68.3	MDW 0240PHT	J78
	11.9	68.5	MDW 0240HGS3	J44
	12.8	63.4	MDE 0240S03H03	J19
	13.9	49.5	MDW 0240GS4	J40
	14.8	49.4	MDE 0240S03E04	J13
	17.8	68.4	MDE 0240S03H05	J19
	20.4	65.0	MDA 0240S03H05	J86
	20.9	78.5	MDW 0240HGS5	J44
	24.4	81.5	MDW 0240HGS8	J44
	24.8	75.4	MDE 0240S03H08	J19
	31.4	75.0	MDA 0240S03H10	J86
	34.8	88.4	MDW 0240XHGS10	J78
	41.4	85.0	MDA 0240S03H15	J86
	44.8	98.4	MDW 0240XHGS15	J78
	52.4	100.0	MDA 0240S03H20	J86
	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	J97

(Blue text: Flat head ■Indexable cutting edge type)

● Diameter ø2.5 to ø2.8mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
2.5	6.8	45.5	MDW 0250GS2	J40
	7.5	50.0	MDF 0250S2D	J28
	9.3	55.0	MDA 0250S03H03	J86
	10.8	45.5	MDE 0250S03E02	J13
	11.6	68.3	MDW 0250PHT	J78
	11.8	68.5	MDW 0250HGS3	J44
	13.8	49.5	MDW 0250GS4	J40
	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	J44
	22.3	65.0	MDA 0250S03H05	J86
	24.3	81.5	MDW 0250HGS8	J44
	25.8	75.5	MDE 0250S03H08	J19
	31.3	75.0	MDA 0250S03H10	J86
	34.8	88.5	MDW 0250XHGS10	J78
	37.8	91.5	MDW 0250XHGS12	J78
	41.3	85.0	MDA 0250S03H15	J86
	44.8	98.5	MDW 0250XHGS15	J78
	56.3	105.0	MDA 0250S03H20	J86
	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	J28
	9.6	45.5	MDW 0260GS2	J40
	11.1	60.0	MDA 0260S03H03	J86
	11.6	45.5	MDE 0260S03E02	J13
	13.6	63.5	MDE 0260S03H03	J19
	13.9	68.3	MDW 0260PHT	J78
	14.1	68.5	MDW 0260HGS3	J44
	15.6	49.5	MDE 0260S03E04	J13
	15.6	49.5	MDW 0260GS4	J40
	18.6	68.5	MDE 0260S03H05	J19
	22.1	70.0	MDA 0260S03H05	J86
	24.6	78.5	MDW 0260HGS5	J44
	26.6	75.5	MDE 0260S03H08	J19
	29.6	81.5	MDW 0260HGS8	J44
	34.1	80.0	MDA 0260S03H10	J86
	41.6	93.5	MDW 0260XHGS10	J78
	46.1	90.0	MDA 0260S03H15	J86
	56.6	108.5	MDW 0260XHGS15	J78
	57.1	105.0	MDA 0260S03H20	J86
	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	J28
	9.6	45.6	MDW 0270GS2	J40
	11.0	60.0	MDA 0270S03H03	J86
	11.5	45.5	MDE 0270S03E02	J13
	13.9	68.4	MDW 0270PHT	J78
	14.1	68.6	MDW 0270HGS3	J44
	14.5	68.5	MDE 0270S03H03	J19
	15.5	49.5	MDE 0270S03E04	J13
	15.6	49.6	MDW 0270GS4	J40
	19.5	78.5	MDE 0270S03H05	J19
	24.0	70.0	MDA 0270S03H05	J86
	24.6	78.6	MDW 0270HGS5	J44
	27.5	81.5	MDE 0270S03H08	J19
	29.6	81.6	MDW 0270HGS8	J44
	34.0	80.0	MDA 0270S03H10	J86
	41.5	93.5	MDW 0270XHGS10	J78
	46.0	90.0	MDA 0270S03H15	J86
	56.5	108.5	MDW 0270XHGS15	J78
	59.0	105.0	MDA 0270S03H20	J86
	71.5	123.5	MDW 0270XHGS20	J78
	86.5	138.5	MDW 0270XHGS25	J78
	101.5	153.5	MDW 0270XHGS30	J78
2.76	8.3	50.0	MDF 0276S2D	J28
	11.3	45.5	MDE 0276S03E02	J13
	20.3	78.5	MDE 0276S03H05	J19
2.78	8.3	50.0	MDF 0278S2D	J28
	11.3	45.5	MDE 0278S03E02	J13
	20.3	78.5	MDE 0278S03H05	J19
2.8	8.4	50.0	MDF 0280S2D	J28
	9.4	45.6	MDW 0280GS2	J40
	10.8	60.0	MDA 0280S03H03	J86
	11.3	45.5	MDE 0280S03E02	J13
	13.7	68.4	MDW 0280PHT	J78
	13.9	68.6	MDW 0280HGS3	J44
	14.3	68.5	MDE 0280S03H03	J19

(Blue text: Flat head ■Indexable cutting edge type)

● Diameter ø2.8 to ø3.1mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
2.8	15.3	49.5	MDE 0280S03E04	J13
	15.4	49.6	MDW 0280GS4	J40
	20.3	78.5	MDE 0280S03H05	J19
	23.8	70.0	MDA 0280S03H05	J86
	24.4	78.6	MDW 0280HGS5	J44
	28.3	81.5	MDE 0280S03H08	J19
	29.4	81.6	MDW 0280HGS8	J44
	35.8	80.0	MDA 0280S03H10	J86
	41.3	93.5	MDW 0280XHGS10	J78
	50.8	95.0	MDA 0280S03H15	J86
	56.3	108.5	MDW 0280XHGS15	J78
	60.8	110.0	MDA 0280S03H20	J86
	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	J28
	9.3	45.6	MDW 0290GS2	J40
	10.7	60.0	MDA 0290S03H03	J86
	11.2	45.5	MDE 0290S03E02	J13
	13.6	68.4	MDW 0290PHT	J78
	13.8	68.6	MDW 0290HGS3	J44
	15.2	49.5	MDE 0290S03E04	J13
	15.2	68.5	MDE 0290S03H03	J19
	15.3	49.6	MDW 0290GS4	J40
	21.2	78.5	MDE 0290S03H05	J19
	24.3	78.6	MDW 0290HGS5	J44
	25.7	70.0	MDA 0290S03H05	J86
	29.2	81.5	MDE 0290S03H08	J19
	29.3	81.6	MDW 0290HGS8	J44
	35.7	80.0	MDA 0290S03H10	J86
	41.2	93.5	MDW 0290XHGS10	J78
	50.7	95.0	MDA 0290S03H15	J86
	56.2	108.5	MDW 0290XHGS15	J78
	62.7	110.0	MDA 0290S03H20	J86
	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	J28
	9.0	100.0	MDF 0300L2D	J32
	9.1	45.6	MDW 0300GS2	J40
	10.5	60.0	MDA 0300S03H03	J86
	12.0	68.0	MDF 0300H3D	J34
	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	J44
	13.6	68.6	MDW 0300NHGS3	J93
	14.0	68.5	MDE 0300S03H03	J19
	14.0	68.5	MDM 0300S03H03	J56
	14.5	50.5	MDS 03000SDC3	J97
	15.0	49.5	MDE 0300S03E04	J13
	15.1	49.6	MDW 0300GS4	J40
	18.0	78.0	MDF 0300H5D	J34
	24.0	78.5	MDE 0300S03H05	J19
	24.0	78.5	MDM 0300S03H05	J56
	24.0	78.5	MDW 0300HX5	J64
	24.1	78.6	MDW 0300HGS5	J44
	24.1	78.6	MDW 0300NHGS5	J93
	25.5	70.0	MDA 0300S03H05	J86
	29.0	81.5	MDE 0300S03H08	J19
	29.0	81.5	MDW 0300HX8	J64
	29.1	81.6	MDW 0300HGS8	J44
	37.5	82.0	MDA 0300S03H10	J86
	38.1	92.6	MDW 0300NHGS10	J93
	41.0	93.5	MDW 0300XHGS10	J78
	47.0	99.5	MDW 0300XHGS12	J78
	53.5	98.0	MDA 0300S03H15	J86
	56.0	108.5	MDW 0300XHGS15	J78
	64.5	110.0	MDA 0300S03H20	J86
	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	J28
	9.3	100.0	MDF 0310L2D	J32
	12.4	72.0	MDF 0310H3D	J34
	15.0	54.6	MDE 0310S04E02	J13
	15.0	54.6	MDW 0310GS2	J40
	15.8	72.4	MDA 0310S04H03	J87
	15.8	72.4	MDW 0310PHT	J78

(Blue text: Flat head ■Indexable cutting edge type)

The 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 ø3.1 to ø3.3mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
3.1	16.0	72.6	MDE 0310S04H03	J19
	16.0	72.6	MDM 0310S04H03	J56
	16.0	72.6	MDW 0310HGS3	J44
	16.0	72.6	MDW 0310HX3	J64
	18.6	86.0	MDF 0310H5D	J34
	20.0	60.6	MDE 0310S04E04	J13
	20.0	60.6	MDW 0310GS4	J40
	27.8	86.4	MDA 0310S04H05	J87
	28.0	86.6	MDE 0310S04H05	J19
	28.0	86.6	MDM 0310S04H05	J56
	28.0	86.6	MDW 0310HGS5	J44
	28.0	86.6	MDW 0310HX5	J64
	28.0	86.6	MDW 0310NHGS5	J93
	34.5	92.6	MDE 0310S04H08	J19
	34.5	92.6	MDW 0310HGS8	J44
	44.9	106.6	MDA 0310S04H10	J87
	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	J28
	9.6	100.0	MDF 0320L2D	J32
	12.8	72.0	MDF 0320H3D	J34
	14.8	54.6	MDE 0320S04E02	J13
	14.9	54.7	MDW 0320GS2	J40
	15.6	72.4	MDA 0320S04H03	J87
	15.6	72.4	MDW 0320PHT	J78
	15.8	72.6	MDE 0320S04H03	J19
	15.8	72.6	MDM 0320S04H03	J56
	15.8	72.6	MDW 0320HX3	J64
	15.9	72.7	MDW 0320HGS3	J44
	15.9	72.7	MDW 0320NHGS3	J93
	19.2	86.0	MDF 0320H5D	J34
	19.8	60.6	MDE 0320S04E04	J13
	19.9	60.7	MDW 0320GS4	J40
	27.6	86.4	MDA 0320S04H05	J87
	27.8	86.6	MDE 0320S04H05	J19
	27.8	86.6	MDM 0320S04H05	J56
	27.8	86.6	MDW 0320HX5	J64
	27.9	86.7	MDW 0320HGS5	J44
	27.9	86.7	MDW 0320NHGS5	J93
	34.3	92.6	MDE 0320S04H08	J19
	34.4	92.7	MDW 0320HGS8	J44
	44.8	106.6	MDA 0320S04H10	J87
	44.9	106.7	MDW 0320NHGS10	J93
	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	J28
	9.9	100.0	MDF 0330L2D	J32
	13.2	72.0	MDF 0330H3D	J34
	14.7	54.6	MDE 0330S04E02	J13
	14.8	54.7	MDW 0330GS2	J40
	15.5	72.4	MDA 0330S04H03	J87
	15.5	72.4	MDW 0330PHT	J78
	15.7	72.6	MDE 0330S04H03	J19
	15.7	72.6	MDM 0330S04H03	J56
	15.7	72.6	MDW 0330HX3	J64
	15.8	72.7	MDW 0330HGS3	J44
	15.8	72.7	MDW 0330NHGS3	J93
	16.8	61.7	MDS 03300SDC3	J97
	19.7	60.6	MDE 0330S04E04	J13
	19.8	60.7	MDW 0330GS4	J40
	19.8	86.0	MDF 0330H5D	J34
	27.5	86.4	MDA 0330S04H05	J87
	27.7	86.6	MDE 0330S04H05	J19
	27.7	86.6	MDM 0330S04H05	J56
	27.7	86.6	MDW 0330HX5	J64
	27.8	86.7	MDW 0330HGS5	J44
	27.8	86.7	MDW 0330NHGS5	J93
	34.2	92.6	MDE 0330S04H08	J19
	34.3	92.7	MDW 0330HGS8	J44
	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

(Blue text: Flat head ■Indexable cutting edge type)

● Diameter ø3.4 to ø3.6mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
3.4	10.2	50.0	MDF 0340S2D	J28
	10.2	100.0	MDF 0340L2D	J32
	13.6	72.0	MDF 0340H3D	J34
	14.5	54.6	MDE 0340S04E02	J13
	14.6	54.7	MDW 0340GS2	J40
	15.4	72.5	MDW 0340PHT	J78
	15.5	72.6	MDE 0340S04H03	J19
	15.5	72.6	MDM 0340S04H03	J56
	15.5	72.6	MDW 0340HX3	J64
	15.6	72.7	MDW 0340HGS3	J44
	19.5	60.6	MDE 0340S04E04	J13
	19.6	60.7	MDW 0340GS4	J40
	20.4	86.0	MDF 0340H5D	J34
	27.4	86.5	MDA 0340S04H05	J87
	27.5	86.6	MDE 0340S04H05	J19
	27.5	86.6	MDM 0340S04H05	J56
	27.5	86.6	MDW 0340HX5	J64
	27.6	86.7	MDW 0340HGS5	J44
	27.6	86.7	MDW 0340NHGS5	J93
	34.0	92.6	MDE 0340S04H08	J19
	34.1	92.7	MDW 0340HGS8	J44
	44.5	106.6	MDA 0340S04H10	J87
	44.6	106.7	MDW 0340NHGS10	J93
	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	J28
	10.5	100.0	MDF 0350L2D	J32
	14.0	72.0	MDF 0350H3D	J34
	14.4	54.6	MDE 0350S04E02	J13
	14.5	54.7	MDW 0350GS2	J40
	15.2	72.5	MDA 0350S04H03	J87
	15.3	72.5	MDW 0350PHT	J78
	15.4	72.6	MDE 0350S04H03	J19
	15.4	72.6	MDM 0350S04H03	J56
	15.4	72.6	MDW 0350HX3	J64
	15.5	60.7	MDW 0350SGS3	J75
	15.5	72.7	MDW 0350HGS3	J44
	15.5	72.7	MDW 0350NHGS3	J93
	19.4	60.6	MDE 0350S04E04	J13
	19.5	60.7	MDW 0350GS4	J40
	21.0	86.0	MDF 0350H5D	J34
	27.2	86.5	MDA 0350S04H05	J87
	27.4	86.6	MDE 0350S04H05	J19
	27.4	86.6	MDM 0350S04H05	J56
	27.4	86.6	MDW 0350HX5	J64
	27.5	86.7	MDW 0350HGS5	J44
	27.5	86.7	MDW 0350NHGS5	J93
	33.9	92.6	MDE 0350S04H08	J19
	33.9	92.6	MDW 0350HX8	J64
	34.0	92.7	MDW 0350HGS8	J44
	44.4	106.6	MDA 0350S04H10	J87
	44.5	106.7	MDW 0350NHGS10	J93
	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
	116.4	171.6	MDW 0350XHGS30	J78
3.6	10.8	50.0	MDF 0360S2D	J28
	10.8	100.0	MDF 0360L2D	J32
	14.4	72.0	MDF 0360H3D	J34
	16.3	54.7	MDE 0360S04E02	J13
	16.3	54.7	MDW 0360GS2	J40
	17.6	72.5	MDW 0360PHT	J78
	17.8	72.7	MDE 0360S04H03	J19
	17.8	72.7	MDM 0360S04H03	J56
	17.8	72.7	MDW 0360HGS3	J44
	17.8	72.7	MDW 0360HX3	J64
	21.6	86.0	MDF 0360H5D	J34
	22.3	60.7	MDE 0360S04E04	J13
	22.3	60.7	MDW 0360GS4	J40
	31.1	86.5	MDA 0360S04H05	J87
	31.3	86.7	MDE 0360S04H05	J19
	31.3	86.7	MDM 0360S04H05	J56
	31.3	86.7	MDW 0360HGS5	J44
	31.3	86.7	MDW 0360HX5	J64
	31.3	86.7	MDW 0360NHGS5	J93

(Blue text: Flat head ■Indexable cutting edge type)

● Diameter ø3.6 to ø3.9mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
3.6	39.3	92.7	MDE 0360S04H08	J19
	39.3	92.7	MDW 0360HGS8	J44
	51.3	106.7	MDA 0360S04H10	J87
	51.3	106.7	MDW 0360NHGS10	J93
	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	17.4	72.5	MDA 0365S04H03	J87
	17.8	72.8	MDW 0365NHGS3	J93
	30.9	86.5	MDA 0365S04H05	J87
	31.3	86.8	MDW 0365NHGS5	J93
3.66	10.9	50.0	MDF 0366S2D	J28
	16.2	54.7	MDE 0366S04E02	J13
	30.9	86.5	MDA 0366S04H05	J87
	31.2	86.7	MDE 0366S04H05	J19
	31.3	86.8	MDW 0366NHGS5	J93
3.68	11.0	50.0	MDF 0368S2D	J28
	16.2	54.7	MDE 0368S04E02	J13
	31.2	86.7	MDE 0368S04H05	J19
3.7	11.1	50.0	MDF 0370S2D	J28
	11.1	100.0	MDF 0370L2D	J32
	14.8	72.0	MDF 0370H3D	J34
	16.2	54.7	MDE 0370S04E02	J13
	16.3	54.8	MDW 0370GS2	J40
	17.5	72.5	MDW 0370PHT	J79
	17.7	72.7	MDE 0370S04H03	J19
	17.7	72.7	MDM 0370S04H03	J56
	17.7	72.7	MDW 0370HX3	J64
	17.8	72.8	MDW 0370HGS3	J44
	22.2	60.7	MDE 0370S04E04	J13
	22.2	86.0	MDF 0370H5D	J34
	22.3	60.8	MDW 0370GS4	J40
	30.9	86.5	MDA 0370S04H05	J87
	31.2	86.7	MDE 0370S04H05	J19
	31.2	86.7	MDM 0370S04H05	J56
	31.2	86.7	MDW 0370HX5	J64
	31.3	86.8	MDW 0370HGS5	J44
	31.3	86.8	MDW 0370NHGS5	J93
	39.2	92.7	MDE 0370S04H08	J19
	39.3	92.8	MDW 0370HGS8	J44
	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	J28
	11.4	100.0	MDF 0380L2D	J32
	15.2	72.0	MDF 0380H3D	J34
	16.0	54.7	MDE 0380S04E02	J13
	16.1	54.8	MDW 0380GS2	J40
	17.3	72.5	MDW 0380PHT	J79
	17.5	72.7	MDE 0380S04H03	J20
	17.5	72.7	MDM 0380S04H03	J56
	17.5	72.7	MDW 0380HX3	J64
	17.6	72.8	MDW 0380HGS3	J44
	22.0	60.7	MDE 0380S04E04	J13
	22.1	60.8	MDW 0380GS4	J40
	22.8	86.0	MDF 0380H5D	J34
	30.8	86.5	MDA 0380S04H05	J87
	31.0	86.7	MDE 0380S04H05	J20
	31.0	86.7	MDM 0380S04H05	J56
	31.0	86.7	MDW 0380HX5	J64
	31.1	86.8	MDW 0380HGS5	J44
	31.1	86.8	MDW 0380NHGS5	J93
	39.0	92.7	MDE 0380S04H08	J20
	39.1	92.8	MDW 0380HGS8	J44
	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	J28
	11.7	100.0	MDF 0390L2D	J32
	15.6	72.0	MDF 0390H3D	J34
	15.9	54.7	MDE 0390S04E02	J13
	16.0	54.8	MDW 0390GS2	J40
	17.2	72.5	MDW 0390PHT	J79
	17.4	72.7	MDE 0390S04H03	J20

(Blue text: Flat head ■Indexable cutting edge type)

The 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 ø3.9 to ø4.1mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
3.9	17.4	72.7	MDM 0390S04H03	J56
	17.4	72.7	MDW 0390HX3	J64
	17.5	72.8	MDW 0390HGS3	J44
	21.9	60.7	MDE 0390S04E04	J13
	22.0	60.8	MDW 0390GS4	J40
	23.4	86.0	MDF 0390H5D	J34
	30.7	86.5	MDA 0390S04H05	J87
	30.9	86.7	MDE 0390S04H05	J20
	30.9	86.7	MDM 0390S04H05	J56
	30.9	86.7	MDW 0390HX5	J64
	31.0	86.8	MDW 0390HGS5	J44
	31.0	86.8	MDW 0390NHGS5	J93
	38.9	92.7	MDE 0390S04H08	J20
	39.0	92.8	MDW 0390HGS8	J44
	51.0	106.8	MDW 0390NHGS10	J93
	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	J28
	12.0	100.0	MDF 0400L2D	J32
	15.7	54.7	MDE 0400S04E02	J13
	15.8	54.8	MDW 0400GS2	J40
	16.0	72.0	MDF 0400H3D	J34
	17.0	72.5	MDA 0400S04H03	J87
	17.0	72.5	MDW 0400PHT	J79
	17.2	72.7	MDE 0400S04H03	J20
	17.2	72.7	MDM 0400S04H03	J56
	17.2	72.7	MDW 0400HX3	J64
	17.3	60.8	MDW 0400SGS3	J75
	17.3	72.8	MDW 0400HGS3	J44
	17.3	72.8	MDW 0400NHGS3	J93
	18.5	62.0	MDS 04000SDC3	J97
	21.7	60.7	MDE 0400S04E04	J13
	21.8	60.8	MDW 0400GS4	J40
	24.0	86.0	MDF 0400H5D	J34
	30.5	86.5	MDA 0400S04H05	J87
	30.7	86.7	MDE 0400S04H05	J20
	30.7	86.7	MDM 0400S04H05	J56
	30.7	86.7	MDW 0400HX5	J64
	30.8	86.8	MDW 0400HGS5	J44
	30.8	86.8	MDW 0400NHGS5	J93
	38.7	92.7	MDE 0400S04H08	J20
	38.7	92.7	MDW 0400HX8	J64
	38.8	92.8	MDW 0400HGS8	J44
	50.7	106.7	MDA 0400S04H10	J87
	50.8	106.8	MDW 0400NHGS10	J93
	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	J28
	12.3	100.0	MDF 0410L2D	J32
	16.4	80.0	MDF 0410H3D	J34
	17.6	61.7	MDE 0410S05E02	J13
	17.7	61.8	MDW 0410GS2	J40
	19.4	80.5	MDA 0410S06H03	J87
	19.4	80.5	MDW 0410PHT	J79
	19.6	80.7	MDE 0410S05H03	J20
	19.6	80.7	MDM 0410S05H03	J56
	19.6	80.7	MDW 0410HX3	J64
	19.7	80.8	MDW 0410HGS3	J44
	19.7	80.8	MDW 0410NHGS3	J93
	24.6	98.0	MDF 0410H5D	J34
	25.6	76.7	MDE 0410S05E04	J13
	25.7	76.8	MDW 0410GS4	J40
	34.4	98.5	MDA 0410S06H05	J87
	34.6	98.7	MDE 0410S05H05	J20
	34.6	98.7	MDM 0410S05H05	J56
	34.6	98.7	MDW 0410HX5	J64
	34.7	98.8	MDW 0410HGS5	J44
	34.7	98.8	MDW 0410NHGS5	J93
	44.1	105.7	MDE 0410S05H08	J20
	44.2	105.8	MDW 0410HGS8	J44
	62.6	120.7	MDW 0410XHGS10	J79
	82.6	140.7	MDW 0410XHGS15	J79
	105.6	163.7	MDW 0410XHGS20	J79

(Blue text: Flat head ■Indexable cutting edge type)

● Diameter ø4.1 to ø4.4mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
4.1	127.6	185.7	MDW 0410XHGS25	J79
	150.6	208.7	MDW 0410XHGS30	J79
4.2	12.6	60.0	MDF 0420S2D	J28
	12.6	100.0	MDF 0420L2D	J32
	16.8	80.0	MDF 0420H3D	J34
	17.5	61.8	MDE 0420S05E02	J13
	17.6	61.9	MDW 0420GS2	J40
	19.3	80.6	MDA 0420S06H03	J87
	19.3	80.6	MDW 0420PHT	J79
	19.5	80.8	MDE 0420S05H03	J20
	19.5	80.8	MDM 0420S05H03	J56
	19.5	80.8	MDW 0420HX3	J64
	19.6	80.9	MDW 0420HGS3	J44
	19.6	80.9	MDW 0420NHGS3	J93
	25.2	98.0	MDF 0420H5D	J34
	25.5	76.8	MDE 0420S05E04	J13
	25.6	76.9	MDW 0420GS4	J40
	34.3	98.6	MDA 0420S06H05	J87
	34.5	98.8	MDE 0420S05H05	J20
	34.5	98.8	MDM 0420S05H05	J56
	34.5	98.8	MDW 0420HX5	J64
	34.6	98.9	MDW 0420HGS5	J44
	34.6	98.9	MDW 0420NHGS5	J93
	44.0	105.8	MDE 0420S05H08	J20
	44.1	105.9	MDW 0420HGS8	J44
	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	J28
	12.9	100.0	MDF 0430L2D	J32
	17.2	80.0	MDF 0430H3D	J34
	17.4	61.8	MDE 0430S05E02	J13
	17.5	61.9	MDW 0430GS2	J40
	19.2	80.6	MDW 0430PHT	J79
	19.4	80.8	MDE 0430S05H03	J20
	19.4	80.8	MDM 0430S05H03	J56
	19.4	80.8	MDW 0430HX3	J64
	19.5	80.9	MDW 0430HGS3	J44
	25.4	76.8	MDE 0430S05E04	J13
	25.5	76.9	MDW 0430GS4	J40
	25.8	98.0	MDF 0430H5D	J34
	34.1	98.6	MDA 0430S06H05	J87
	34.4	98.8	MDE 0430S05H05	J20
	34.4	98.8	MDM 0430S05H05	J56
	34.4	98.8	MDW 0430HX5	J64
	34.5	98.9	MDW 0430HGS5	J44
	34.5	98.9	MDW 0430NHGS5	J93
	43.9	105.8	MDE 0430S05H08	J20
	44.0	105.9	MDW 0430HGS8	J44
	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
	150.4	208.8	MDW 0430XHGS30	J79
4.4	13.2	60.0	MDF 0440S2D	J28
	13.2	100.0	MDF 0440L2D	J32
	17.2	61.8	MDE 0440S05E02	J13
	17.3	61.9	MDW 0440GS2	J40
	17.6	80.0	MDF 0440H3D	J34
	19.0	80.6	MDW 0440PHT	J79
	19.2	80.8	MDE 0440S05H03	J20
	19.2	80.8	MDM 0440S05H03	J56
	19.2	80.8	MDW 0440HX3	J64
	19.3	80.9	MDW 0440HGS3	J44
	25.2	76.8	MDE 0440S05E04	J13
	25.3	76.9	MDW 0440GS4	J40
	26.4	98.0	MDF 0440H5D	J34
	34.0	98.6	MDA 0440S06H05	J87
	34.2	98.8	MDE 0440S05H05	J20
	34.2	98.8	MDM 0440S05H05	J56
	34.2	98.8	MDW 0440HX5	J64
	34.3	98.9	MDW 0440HGS5	J44
	34.3	98.9	MDW 0440NHGS5	J93
	43.7	105.8	MDE 0440S05H08	J20
	43.8	105.9	MDW 0440HGS8	J44
	62.2	120.8	MDW 0440XHGS10	J79
	82.2	140.8	MDW 0440XHGS15	J79
	105.2	163.8	MDW 0440XHGS20	J79

(Blue text: Flat head ■Indexable cutting edge type)

● Diameter ø4.4 to ø4.7mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
4.4	127.2	185.8	MDW 0440XHGS25	J79
	150.2	208.8	MDW 0440XHGS30	J79
4.5	13.5	60.0	MDF 0450S2D	J28
	13.5	100.0	MDF 0450L2D	J32
	17.1	61.8	MDE 0450S05E02	J13
	17.2	61.9	MDW 0450GS2	J40
	18.0	80.0	MDF 0450H3D	J34
	18.9	80.6	MDA 0450S06H03	J87
	18.9	80.6	MDW 0450PHT	J79
	19.1	80.8	MDE 0450S05H03	J20
	19.1	80.8	MDM 0450S05H03	J56
	19.1	80.8	MDW 0450HX3	J64
	19.2	76.9	MDW 0450SGS3	J75
	19.2	80.9	MDW 0450HGS3	J44
	19.2	80.9	MDW 0450NHGS3	J93
	25.1	76.8	MDE 0450S05E04	J13
	25.2	76.9	MDW 0450GS4	J40
	27.0	98.0	MDF 0450H5D	J34
	33.9	98.6	MDA 0450S06H05	J87
	34.1	98.8	MDE 0450S05H05	J20
	34.1	98.8	MDM 0450S05H05	J56
	34.1	98.8	MDW 0450HX5	J64
	34.2	98.9	MDW 0450HGS5	J44
	34.2	98.9	MDW 0450NHGS5	J93
	43.6	105.8	MDE 0450S05H08	J20
	43.6	105.8	MDW 0450HX8	J64
	43.7	105.9	MDW 0450HGS8	J44
	57.1	121.8	MDA 0450S06H10	J87
	57.2	121.9	MDW 0450NHGS10	J93
	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	J28
	13.8	100.0	MDF 0460L2D	J32
	18.4	80.0	MDF 0460H3D	J34
	18.9	61.8	MDE 0460S05E02	J13
	19.1	62.0	MDW 0460GS2	J40
	20.7	80.6	MDA 0460S06H03	J87
	21.2	80.6	MDW 0460PHT	J79
	21.4	80.8	MDE 0460S05H03	J20
	21.4	80.8	MDM 0460S05H03	J56
	21.4	80.8	MDW 0460HX3	J64
	21.6	81.0	MDW 0460HGS3	J44
	21.6	81.0	MDW 0460NHGS3	J93
	27.6	98.0	MDF 0460H5D	J34
	31.9	76.8	MDE 0460S05E04	J13
	32.1	77.0	MDW 0460GS4	J40
	37.7	98.6	MDA 0460S06H05	J87
	37.9	98.8	MDE 0460S05H05	J20
	37.9	98.8	MDM 0460S05H05	J56
	37.9	98.8	MDW 0460HX5	J64
	38.1	99.0	MDW 0460HGS5	J44
	38.1	99.0	MDW 0460NHGS5	J93
	48.9	105.8	MDE 0460S05H08	J20
	49.1	106.0	MDW 0460HGS8	J44
	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	13.8	60.0	MDF 0462S2D	J28
	18.9	61.8	MDE 0462S05E02	J13
	37.9	98.8	MDE 0462S05H05	J20
4.64	13.9	60.0	MDF 0464S2D	J28
	18.9	61.8	MDE 0464S05E02	J13
	37.9	98.8	MDE 0464S05H05	J20
4.7	14.1	60.0	MDF 0470S2D	J28
	14.1	100.0	MDF 0470L2D	J32
	18.8	80.0	MDF 0470H3D	J34
	18.9	61.9	MDE 0470S05E02	J13
	19.0	62.0	MDW 0470GS2	J40
	21.1	80.6	MDW 0470PHT	J79
	21.4	80.9	MDE 0470S05H03	J20
	21.4	80.9	MDM 0470S05H03	J56
	21.4	80.9	MDW 0470HX3	J64
	21.5	81.0	MDW 0470HGS3	J44
	28.2	98.0	MDF 0470H5D	J34

(Blue text: Flat head ■Indexable cutting edge type)

The 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 ø4.7 to ø5.0mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
4.7	31.9	76.9	MDE 0470S05E04	J13
	32.0	77.0	MDW 0470GS4	J40
	37.6	98.6	MDA 0470S06H05	J87
	37.9	98.9	MDE 0470S05H05	J20
	37.9	98.9	MDM 0470S05H05	J56
	37.9	98.9	MDW 0470HX5	J64
	38.0	99.0	MDW 0470HGS5	J44
	38.0	99.0	MDW 0470NHGS5	J93
	48.9	105.9	MDE 0470S05H08	J20
	49.0	106.0	MDW 0470HGS8	J44
	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	J28
	14.4	100.0	MDF 0480L2D	J32
	18.7	61.9	MDE 0480S05E02	J13
	18.8	62.0	MDW 0480GS2	J40
	19.2	80.0	MDF 0480H3D	J34
	20.9	80.6	MDW 0480PHT	J79
	21.2	80.9	MDE 0480S05H03	J20
	21.2	80.9	MDM 0480S05H03	J56
	21.2	80.9	MDW 0480HX3	J64
	21.3	81.0	MDW 0480HGS3	J44
	28.8	98.0	MDF 0480H5D	J34
	31.7	76.9	MDE 0480S05E04	J13
	31.8	77.0	MDW 0480GS4	J40
	37.4	98.6	MDA 0480S06H05	J87
	37.7	98.9	MDE 0480S05H05	J20
	37.7	98.9	MDM 0480S05H05	J56
	37.7	98.9	MDW 0480HX5	J64
	37.8	99.0	MDW 0480HGS5	J44
	37.8	99.0	MDW 0480NHGS5	J93
	48.7	105.9	MDE 0480S05H08	J20
	48.8	106.0	MDW 0480HGS8	J44
	61.7	121.9	MDA 0480S06H10	J87
	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	J97
4.9	14.7	60.0	MDF 0490S2D	J28
	14.7	100.0	MDF 0490L2D	J32
	18.6	61.9	MDE 0490S05E02	J13
	18.7	62.0	MDW 0490GS2	J40
	19.6	80.0	MDF 0490H3D	J34
	20.9	80.7	MDW 0490PHT	J79
	21.1	80.9	MDE 0490S05H03	J20
	21.1	80.9	MDM 0490S05H03	J56
	21.1	80.9	MDW 0490HX3	J64
	21.2	81.0	MDW 0490HGS3	J44
	29.4	98.0	MDF 0490H5D	J34
	31.6	76.9	MDE 0490S05E04	J13
	31.7	77.0	MDW 0490GS4	J40
	37.5	98.7	MDA 0490S06H05	J87
	37.6	98.9	MDE 0490S05H05	J20
	37.6	98.9	MDM 0490S05H05	J56
	37.6	98.9	MDW 0490HX5	J64
	37.7	99.0	MDW 0490HGS5	J44
	37.7	99.0	MDW 0490NHGS5	J93
	48.6	105.9	MDE 0490S05H08	J20
	48.7	106.0	MDW 0490HGS8	J44
	61.7	121.9	MDA 0490S06H10	J87
	63.7	122.0	MDW 0490NHGS10	J93
	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	J28
	15.0	100.0	MDF 0500L2D	J32
	18.4	61.9	MDE 0500S05E02	J13
	18.5	62.0	MDW 0500GS2	J40
	20.0	80.0	MDF 0500H3D	J34
	20.2	80.7	MDA 0500S06H03	J87
	20.7	80.7	MDW 0500PHT	J79
	20.9	80.9	MDE 0500S05H03	J20
	20.9	80.9	MDM 0500S05H03	J56

● Diameter ø5.0 to ø5.2mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
5.0	20.9	80.9	MDW 0500HX3	J64
	21.0	77.0	MDW 0500SGS3	J75
	21.0	81.0	MDW 0500HGS3	J44
	21.0	81.0	MDW 0500HY3	J71
	21.0	81.0	MDW 0500NHGS3	J93
	21.2	77.2	MDS 05000SDC3	J97
	30.0	98.0	MDF 0500H5D	J34
	31.4	76.9	MDE 0500S05E04	J13
	31.5	77.0	MDW 0500GS4	J40
	37.2	98.7	MDA 0500S06H05	J87
	37.4	98.9	MDE 0500S05H05	J20
	37.4	98.9	MDM 0500S05H05	J56
	37.4	98.9	MDW 0500HX5	J64
	37.5	99.0	MDW 0500HGS5	J44
	37.5	99.0	MDW 0500HY5	J71
	37.5	99.0	MDW 0500NHGS5	J93
	48.4	105.9	MDE 0500S05H08	J20
	48.4	105.9	MDW 0500HX8	J64
	48.5	106.0	MDW 0500HGS8	J44
	48.5	106.0	MDW 0500HY8	J71
	61.4	121.9	MDA 0500S06H10	J87
	63.5	122.0	MDW 0500NHGS10	J93
	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	J28
	15.3	110.0	MDF 0510L2D	J32
	18.3	65.9	MDE 0510S06E02	J14
	18.5	66.1	MDW 0510GS2	J40
	20.4	82.0	MDF 0510H3D	J34
	20.6	82.7	MDW 0510PHT	J79
	20.8	82.9	MDE 0510S06H03	J20
	20.8	82.9	MDM 0510S06H03	J56
	20.8	82.9	MDW 0510HX3	J64
	21.0	83.1	MDW 0510HGS3	J45
	21.0	83.1	MDW 0510HY3	J71
	30.6	100.0	MDF 0510H5D	J34
	32.3	81.9	MDE 0510S06E04	J14
	32.5	82.1	MDW 0510GS4	J40
	37.0	100.7	MDA 0510S06H05	J87
	37.3	100.9	MDE 0510S06H05	J20
	37.3	100.9	MDM 0510S06H05	J56
	37.3	100.9	MDW 0510HX5	J64
	37.5	101.1	MDW 0510HGS5	J45
	37.5	101.1	MDW 0510HY5	J71
	37.5	101.1	MDW 0510NHGS5	J93
	53.8	118.9	MDE 0510S06H08	J20
	53.8	118.9	MDW 0510HX8	J64
	54.0	119.1	MDW 0510HGS8	J45
	70.3	136.9	MDA 0510S06H10	J87
	70.5	137.1	MDW 0510NHGS10	J93
	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	J28
	15.6	110.0	MDF 0520L2D	J32
	18.1	65.9	MDE 0520S06E02	J14
	18.3	66.1	MDW 0520GS2	J40
	20.4	82.7	MDA 0520S06H03	J87
	20.4	82.7	MDW 0520PHT	J79
	20.6	82.9	MDE 0520S06H03	J20
	20.6	82.9	MDM 0520S06H03	J56
	20.6	82.9	MDW 0520HX3	J64
	20.8	82.0	MDF 0520H3D	J34
	20.8	83.1	MDW 0520HGS3	J45
	20.8	83.1	MDW 0520NHGS3	J93
	31.2	100.0	MDF 0520H5D	J34
	32.1	81.9	MDE 0520S06E04	J14
	32.3	82.1	MDW 0520GS4	J40
	36.9	100.7	MDA 0520S06H05	J87
	37.1	100.9	MDE 0520S06H05	J20
	37.1	100.9	MDM 0520S06H05	J56
	37.1	100.9	MDW 0520HX5	J64
	37.3	101.1	MDW 0520HGS5	J45
	37.3	101.1	MDW 0520NHGS5	J93

● Diameter ø5.2 to ø5.5mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
5.2	53.6	118.9	MDE 0520S06H08	J20
	53.8	119.1	MDW 0520HGS8	J45
	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	J28
	15.9	110.0	MDF 0530L2D	J32
	18.1	66.0	MDE 0530S06E02	J14
	18.2	66.1	MDW 0530GS2	J40
	20.3	82.7	MDA 0530S06H03	J87
	20.3	82.7	MDW 0530PHT	J80
	20.6	83.0	MDE 0530S06H03	J20
	20.6	83.0	MDM 0530S06H03	J56
	20.6	83.0	MDW 0530HX3	J64
	20.7	83.1	MDW 0530HGS3	J45
	20.7	83.1	MDW 0530NHGS3	J93
	21.2	82.0	MDF 0530H3D	J34
	31.8	100.0	MDF 0530H5D	J34
	32.1	82.0	MDE 0530S06E04	J14
	32.2	82.1	MDW 0530GS4	J40
	36.8	100.7	MDA 0530S06H05	J87
	37.1	101.0	MDE 0530S06H05	J20
	37.1	101.0	MDM 0530S06H05	J56
	37.1	101.0	MDW 0530HX5	J64
	37.2	101.1	MDW 0530HGS5	J45
	37.2	101.1	MDW 0530NHGS5	J93
	53.6	119.0	MDE 0530S06H08	J20
	53.7	119.1	MDW 0530HGS8	J45
	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	J28
	16.2	110.0	MDF 0540L2D	J32
	17.9	66.0	MDE 0540S06E02	J14
	18.0	66.1	MDW 0540GS2	J40
	20.1	82.7	MDW 0540PHT	J80
	20.4	83.0	MDE 0540S06H03	J20
	20.4	83.0	MDM 0540S06H03	J56
	20.4	83.0	MDW 0540HX3	J64
	20.5	83.1	MDW 0540HGS3	J45
	21.6	82.0	MDF 0540H3D	J34
	31.9	82.0	MDE 0540S06E04	J14
	32.0	82.1	MDW 0540GS4	J40
	32.4	100.0	MDF 0540H5D	J34
	36.6	100.7	MDA 0540S06H05	J87
	36.9	101.0	MDE 0540S06H05	J20
	36.9	101.0	MDM 0540S06H05	J56
	36.9	101.0	MDW 0540HX5	J64
	37.0	101.1	MDW 0540HGS5	J45
	37.0	101.1	MDW 0540NHGS5	J93
	53.4	119.0	MDE 0540S06H08	J20
	53.5	119.1	MDW 0540HGS8	J45
	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	J28
	16.5	110.0	MDF 0550L2D	J32
	17.8	66.0	MDE 0550S06E02	J14
	17.9	66.1	MDW 0550GS2	J40
	20.0	82.7	MDA 0550S06H03	J87
	20.0	82.7	MDW 0550PHT	J80
	20.3	83.0	MDE 0550S06H03	J20
	20.3	83.0	MDM 0550S06H03	J56
	20.3	83.0	MDW 0550HX3	J64
	20.4	82.1	MDW 0550SGS3	J75
	20.4	83.1	MDW 0550HGS3	J45
	20.4	83.1	MDW 0550NHGS3	J93
	22.0	82.0	MDF 0550H3D	J34
	31.8	82.0	MDE 0550S06E04	J14
	31.9	82.1	MDW 0550GS4	J40
	33.0	100.0	MDF 0550H5D	J34
	36.5	100.7	MDA 0550S06H05	J87
	36.8	101.0	MDE 0550S06H05	J20
	36.8	101.0	MDM 0550S06H05	J56

(Blue text: Flat head ■Indexable cutting edge type)

(Blue text: Flat head ■Indexable cutting edge type)

(Blue text: Flat head ■Indexable cutting edge type)

The 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 ø5.5 to ø5.8mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
5.5	36.8	101.0	MDW 0550HX5	J64
	36.9	101.1	MDW 0550HGS5	J45
	36.9	101.1	MDW 0550NHGS5	J93
	53.3	119.0	MDE 0550S06H08	J20
	53.3	119.0	MDW 0550HX8	J64
	53.4	119.1	MDW 0550HGS8	J45
	69.8	137.0	MDA 0550S06H10	J87
	69.9	137.1	MDW 0550NHGS10	J93
	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	16.5	60.0	MDF 0552S2D	J28
	19.6	66.0	MDE 0552S06E02	J14
	40.6	101.0	MDE 0552S06H05	J20
5.54	16.6	60.0	MDF 0554S2D	J28
	19.6	66.0	MDE 0554S06E02	J14
	40.6	101.0	MDE 0554S06H05	J20
5.6	16.8	60.0	MDF 0560S2D	J28
	16.8	110.0	MDF 0560L2D	J32
	19.6	66.0	MDE 0560S06E02	J14
	19.8	66.2	MDW 0560GS2	J40
	22.4	82.0	MDF 0560H3D	J34
	22.4	82.8	MDW 0560PHT	J80
	22.6	83.0	MDE 0560S06H03	J20
	22.6	83.0	MDM 0560S06H03	J56
	22.6	83.0	MDW 0560HX3	J64
	22.8	83.2	MDW 0560HGS3	J45
	22.9	82.3	MDS 05600SDC3	J97
	33.6	82.0	MDE 0560S06E04	J14
	33.6	100.0	MDF 0560H5D	J34
	33.8	82.2	MDW 0560GS4	J40
	40.3	100.7	MDA 0560S06H05	J87
	40.6	101.0	MDE 0560S06H05	J20
	40.6	101.0	MDM 0560S06H05	J56
	40.6	101.0	MDW 0560HX5	J64
	40.8	101.2	MDW 0560HGS5	J45
	40.8	101.2	MDW 0560NHGS5	J93
	58.6	119.0	MDE 0560S06H08	J20
	58.8	119.2	MDW 0560HGS8	J45
	76.6	137.0	MDA 0560S06H10	J87
	82.6	143.0	MDW 0560XHGS10	J80
	112.6	173.0	MDW 0560XHGS15	J80
	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	J28
	17.1	110.0	MDF 0570L2D	J32
	19.5	66.0	MDE 0570S06E02	J14
	19.7	66.2	MDW 0570GS2	J40
	22.3	82.8	MDW 0570PHT	J80
	22.5	83.0	MDE 0570S06H03	J20
	22.5	83.0	MDM 0570S06H03	J56
	22.5	83.0	MDW 0570HX3	J64
	22.7	83.2	MDW 0570HGS3	J45
	22.8	82.0	MDF 0570H3D	J34
	33.5	82.0	MDE 0570S06E04	J14
	33.7	82.2	MDW 0570GS4	J40
	34.2	100.0	MDF 0570H5D	J34
	40.2	100.8	MDA 0570S06H05	J87
	40.5	101.0	MDE 0570S06H05	J20
	40.5	101.0	MDM 0570S06H05	J56
	40.5	101.0	MDW 0570HX5	J64
	40.7	101.2	MDW 0570HGS5	J45
	40.7	101.2	MDW 0570NHGS5	J93
	58.5	119.0	MDE 0570S06H08	J20
	58.7	119.2	MDW 0570HGS8	J45
	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	J28
	17.4	110.0	MDF 0580L2D	J32
	19.4	66.1	MDE 0580S06E02	J14
	19.5	66.2	MDW 0580GS2	J40
	22.1	82.8	MDW 0580PHT	J80
	22.4	83.1	MDE 0580S06H03	J20

● Diameter ø5.8 to ø6.0mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
5.8	22.4	83.1	MDM 0580S06H03	J56
	22.4	83.1	MDW 0580HX3	J64
	22.5	83.2	MDW 0580HGS3	J45
	23.2	82.0	MDF 0580H3D	J34
	33.4	82.1	MDE 0580S06E04	J14
	33.5	82.2	MDW 0580GS4	J40
	34.8	100.0	MDF 0580H5D	J34
	40.1	100.8	MDA 0580S06H05	J87
	40.4	101.1	MDE 0580S06H05	J20
	40.4	101.1	MDM 0580S06H05	J56
	40.4	101.1	MDW 0580HX5	J64
	40.5	101.2	MDW 0580HGS5	J45
	40.5	101.2	MDW 0580NHGS5	J93
	58.4	119.1	MDE 0580S06H08	J20
	58.4	119.1	MDW 0580HX8	J64
	58.5	119.2	MDW 0580HGS8	J45
	76.4	137.1	MDA 0580S06H10	J87
	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	J28
	17.7	110.0	MDF 0590L2D	J32
	19.3	66.1	MDE 0590S06E02	J14
	19.4	66.2	MDW 0590GS2	J40
	21.9	82.8	MDA 0590S06H03	J87
	22.0	82.8	MDW 0590PHT	J80
	22.3	83.1	MDE 0590S06H03	J20
	22.3	83.1	MDM 0590S06H03	J56
	22.3	83.1	MDW 0590HX3	J64
	22.4	83.2	MDW 0590HGS3	J45
	22.4	83.2	MDW 0590NHGS3	J93
	23.6	82.0	MDF 0590H3D	J34
	33.3	82.1	MDE 0590S06E04	J14
	33.4	82.2	MDW 0590GS4	J40
	35.4	100.0	MDF 0590H5D	J34
	39.9	100.8	MDA 0590S06H05	J87
	40.3	101.1	MDE 0590S06H05	J20
	40.3	101.1	MDM 0590S06H05	J56
	40.3	101.1	MDW 0590HX5	J64
	40.4	101.2	MDW 0590HGS5	J45
	40.4	101.2	MDW 0590NHGS5	J93
	58.3	119.1	MDE 0590S06H08	J20
	58.3	119.1	MDW 0590HX8	J64
	58.4	119.2	MDW 0590HGS8	J45
	76.2	137.1	MDA 0590S06H10	J87
	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	60.0	MDF 0600S2D	J28
	18.0	110.0	MDF 0600L2D	J32
	18.0	110.0	MDF 0600L2D-S5	J32
	19.1	66.1	MDE 0600S06E02	J14
	19.2	66.2	MDW 0600GS2	J40
	21.8	82.8	MDA 0600S06H03	J87
	21.8	82.8	MDW 0600PHT	J80
	22.1	83.1	MDE 0600S06H03	J20
	22.1	83.1	MDM 0600S06H03	J56
	22.1	83.1	MDW 0600HX3	J64
	22.2	82.2	MDW 0600SGS3	J75
	22.2	83.2	MDW 0600HGS3	J45
	22.2	83.2	MDW 0600HY3	J71
	22.2	83.2	MDW 0600NHGS3	J93
	22.4	82.4	MDS 06000SDC3	J97
	24.0	82.0	MDF 0600H3D	J34
	33.1	82.1	MDE 0600S06E04	J14
	33.2	82.2	MDW 0600GS4	J40
	36.0	100.0	MDF 0600H5D	J34
	39.8	100.8	MDA 0600S06H05	J87
	40.1	101.1	MDE 0600S06H05	J20
	40.1	101.1	MDM 0600S06H05	J56
	40.1	101.1	MDW 0600HX5	J64
	40.2	101.2	MDW 0600HGS5	J45
	40.2	101.2	MDW 0600HY5	J71
	40.2	101.2	MDW 0600NHGS5	J93
	58.1	119.1	MDE 0600S06H08	J20
	58.1	119.1	MDW 0600HX8	J64

● Diameter ø6.0 to ø6.3mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
6.0	58.2	119.2	MDW 0600HGS8	J45
	58.2	119.2	MDW 0600HY8	J71
	76.1	137.1	MDA 0600S06H10	J87
	76.2	137.2	MDW 0600NHGS10	J93
	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	J28
	18.3	120.0	MDF 0610L2D	J32
	23.0	74.1	MDE 0610S07E02	J14
	23.2	74.3	MDW 0610GS2	J40
	24.2	88.8	MDW 0610PHT	J80
	24.4	88.0	MDF 0610H3D	J34
	24.5	89.1	MDE 0610S07H03	J20
	24.5	89.1	MDM 0610S07H03	J56
	24.5	89.1	MDW 0610HX3	J64
	24.7	89.3	MDW 0610HGS3	J45
	34.0	84.1	MDE 0610S07E04	J14
	34.2	84.3	MDW 0610GS4	J40
	36.6	109.0	MDF 0610H5D	J34
	43.7	109.8	MDA 0610S08H05	J88
	44.0	110.1	MDE 0610S07H05	J20
	44.0	110.1	MDM 0610S07H05	J56
	44.0	110.1	MDW 0610HX5	J64
	44.2	110.3	MDW 0610HGS5	J45
	44.2	110.3	MDW 0610NHGS5	J93
	63.5	131.1	MDE 0610S07H08	J20
	63.7	131.3	MDW 0610HGS8	J45
	83.0	152.1	MDA 0610S08H10	J88
	83.2	152.3	MDW 0610NHGS10	J93
	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	J28
	18.6	120.0	MDF 0620L2D	J32
	22.8	74.1	MDE 0620S07E02	J14
	23.0	74.3	MDW 0620GS2	J40
	24.0	88.8	MDW 0620PHT	J80
	24.3	89.1	MDE 0620S07H03	J20
	24.3	89.1	MDM 0620S07H03	J56
	24.3	89.1	MDW 0620HX3	J64
	24.5	89.3	MDW 0620HGS3	J45
	24.8	88.0	MDF 0620H3D	J34
	33.8	84.1	MDE 0620S07E04	J14
	34.0	84.3	MDW 0620GS4	J40
	37.2	109.0	MDF 0620H5D	J34
	43.5	109.8	MDA 0620S08H05	J88
	43.8	110.1	MDE 0620S07H05	J20
	43.8	110.1	MDM 0620S07H05	J56
	43.8	110.1	MDW 0620HX5	J64
	44.0	110.3	MDW 0620HGS5	J45
	44.0	110.3	MDW 0620NHGS5	J93
	63.3	131.1	MDE 0620S07H08	J20
	63.5	131.3	MDW 0620HGS8	J45
	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	J28
	18.9	120.0	MDF 0630L2D	J32
	22.7	74.1	MDE 0630S07E02	J14
	22.9	74.3	MDW 0630GS2	J40
	23.9	88.8	MDW 0630PHT	J80
	24.2	89.1	MDE 0630S07H03	J20
	24.2	89.1	MDM 0630S07H03	J56
	24.2	89.1	MDW 0630HX3	J64
	24.4	89.3	MDW 0630HGS3	J45
	25.2	88.0	MDF 0630H3D	J34
	33.7	84.1	MDE 0630S07E04	J14
	33.9	84.3	MDW 0630GS4	J40
	37.8	109.0	MDF 0630H5D	J34
	43.4	109.8	MDA 0630S08H05	J88
	43.7	110.1	MDE 0630S07H05	J20
	43.7	110.1	MDM 0630S07H05	J56

(Blue text: Flat head ■Indexable cutting edge type)

(Blue text: Flat head ■Indexable cutting edge type)

(Blue text: Flat head ■Indexable cutting edge type)

The 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 ø6.3 to ø6.6mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
6.3	43.7	110.1	MDW 0630HX5	J64
	43.9	110.3	MDW 0630HGS5	J45
	43.9	110.3	MDW 0630NHGS5	J93
	63.2	131.1	MDE 0630S07H08	J20
	63.4	131.3	MDW 0630HGS8	J45
	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	J97
6.4	19.2	70.0	MDF 0640S2D	J28
	19.2	120.0	MDF 0640L2D	J32
	22.6	74.2	MDE 0640S07E02	J14
	22.7	74.3	MDW 0640GS2	J40
	23.8	88.9	MDW 0640PHT	J80
	24.1	89.2	MDE 0640S07H03	J20
	24.1	89.2	MDM 0640S07H03	J56
	24.1	89.2	MDW 0640HX3	J64
	24.2	89.3	MDW 0640HGS3	J45
	25.6	88.0	MDF 0640H3D	J34
	33.6	84.2	MDE 0640S07E04	J14
	33.7	84.3	MDW 0640GS4	J40
	38.4	109.0	MDF 0640H5D	J34
	43.3	109.9	MDA 0640S08H05	J88
	43.6	110.2	MDE 0640S07H05	J20
	43.6	110.2	MDM 0640S07H05	J56
	43.6	110.2	MDW 0640HX5	J64
	43.7	110.3	MDW 0640HGS5	J45
	43.7	110.3	MDW 0640NHGS5	J94
	63.1	131.2	MDE 0640S07H08	J20
	63.2	131.3	MDW 0640HGS8	J45
	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	J28
	19.5	120.0	MDF 0650L2D	J32
	22.5	74.2	MDE 0650S07E02	J14
	22.6	74.3	MDW 0650GS2	J40
	23.6	88.9	MDA 0650S08H03	J88
	23.7	88.9	MDW 0650PHT	J80
	24.0	89.2	MDE 0650S07H03	J20
	24.0	89.2	MDM 0650S07H03	J56
	24.0	89.2	MDW 0650HX3	J64
	24.1	84.3	MDW 0650SGS3	J75
	24.1	89.3	MDW 0650HGS3	J45
	24.1	89.3	MDW 0650HY3	J71
	24.1	89.3	MDW 0650NHGS3	J94
	26.0	88.0	MDF 0650H3D	J34
	33.5	84.2	MDE 0650S07E04	J14
	33.6	84.3	MDW 0650GS4	J40
	39.0	109.0	MDF 0650H5D	J34
	43.1	109.9	MDA 0650S08H05	J88
	43.5	110.2	MDE 0650S07H05	J20
	43.5	110.2	MDM 0650S07H05	J56
	43.5	110.2	MDW 0650HX5	J64
	43.6	110.3	MDW 0650HGS5	J45
	43.6	110.3	MDW 0650HY5	J71
	43.6	110.3	MDW 0650NHGS5	J94
	63.0	131.2	MDE 0650S07H08	J20
	63.0	131.2	MDW 0650HX8	J64
	63.1	131.3	MDW 0650HGS8	J45
	82.4	152.2	MDA 0650S08H10	J88
	82.6	152.3	MDW 0650NHGS10	J94
	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	J28
	19.8	120.0	MDF 0660L2D	J32
	24.3	74.2	MDE 0660S07E02	J14
	24.5	74.4	MDW 0660GS2	J41
	26.0	88.9	MDW 0660PHT	J80
	26.3	89.2	MDE 0660S07H03	J21
	26.3	89.2	MDM 0660S07H03	J56
	26.3	89.2	MDW 0660HX3	J65

● Diameter ø6.6 to ø6.8mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
6.6	26.4	88.0	MDF 0660H3D	J34
	26.5	89.4	MDW 0660HGS3	J45
	34.3	84.2	MDE 0660S07E04	J14
	34.5	84.4	MDW 0660GS4	J41
	39.6	109.0	MDF 0660H5D	J34
	45.0	109.9	MDA 0660S08H05	J88
	47.3	110.2	MDE 0660S07H05	J21
	47.3	110.2	MDM 0660S07H05	J56
	47.3	110.2	MDW 0660HX5	J65
	47.5	110.4	MDW 0660HGS5	J45
	47.5	110.4	MDW 0660NHGS5	J94
	68.3	131.2	MDE 0660S07H08	J21
	68.5	131.4	MDW 0660HGS8	J45
	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	J28
	20.1	120.0	MDF 0670L2D	J32
	24.0	88.9	MDA 0670S08H03	J88
	24.2	74.2	MDE 0670S07E02	J14
	24.4	74.4	MDW 0670GS2	J41
	25.9	88.9	MDW 0670PHT	J81
	26.2	89.2	MDE 0670S07H03	J21
	26.2	89.2	MDM 0670S07H03	J56
	26.2	89.2	MDW 0670HX3	J65
	26.4	89.4	MDW 0670HGS3	J45
	26.4	89.4	MDW 0670NHGS3	J94
	26.8	88.0	MDF 0670H3D	J34
	34.2	84.2	MDE 0670S07E04	J14
	34.4	84.4	MDW 0670GS4	J41
	40.2	109.0	MDF 0670H5D	J34
	45.0	109.9	MDA 0670S08H05	J88
	47.2	110.2	MDE 0670S07H05	J21
	47.2	110.2	MDM 0670S07H05	J56
	47.2	110.2	MDW 0670HX5	J65
	47.4	110.4	MDW 0670HGS5	J45
	47.4	110.4	MDW 0670NHGS5	J94
	68.2	131.2	MDE 0670S07H08	J21
	68.2	131.2	MDW 0670HX8	J65
	68.4	131.4	MDW 0670HGS8	J45
	89.4	152.4	MDW 0670NHGS10	J94
	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	J28
	20.4	120.0	MDF 0680L2D	J32
	23.7	88.9	MDA 0680S08H03	J88
	24.0	74.2	MDE 0680S07E02	J14
	24.2	74.4	MDW 0680GS2	J41
	25.7	88.9	MDW 0680PHT	J81
	26.0	89.2	MDE 0680S07H03	J21
	26.0	89.2	MDM 0680S07H03	J56
	26.0	89.2	MDW 0680HX3	J65
	26.2	89.4	MDW 0680HGS3	J45
	26.2	89.4	MDW 0680HY3	J71
	26.2	89.4	MDW 0680NHGS3	J94
	27.2	88.0	MDF 0680H3D	J34
	34.0	84.2	MDE 0680S07E04	J14
	34.2	84.4	MDW 0680GS4	J41
	40.8	109.0	MDF 0680H5D	J34
	44.7	109.9	MDA 0680S08H05	J88
	47.0	110.2	MDE 0680S07H05	J21
	47.0	110.2	MDM 0680S07H05	J56
	47.0	110.2	MDW 0680HX5	J65
	47.2	110.4	MDW 0680HGS5	J45
	47.2	110.4	MDW 0680HY5	J71
	47.2	110.4	MDW 0680NHGS5	J94
	68.0	131.2	MDE 0680S07H08	J21
	68.0	131.2	MDW 0680HX8	J65
	68.2	131.4	MDW 0680HGS8	J45
	68.2	131.4	MDW 0680HY8	J71
	87.0	152.2	MDA 0680S08H10	J88
	89.2	152.4	MDW 0680NHGS10	J94
	96.0	159.2	MDW 0680XHGS10	J81
	131.0	194.2	MDW 0680XHGS15	J81
	166.0	229.2	MDW 0680XHGS20	J81

● Diameter ø6.8 to ø7.1mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
6.8	201.0	264.2	MDW 0680XHGS25	J81
	236.0	299.2	MDW 0680XHGS30	J81
6.9	20.7	70.0	MDF 0690S2D	J28
	20.7	120.0	MDF 0690L2D	J32
	24.0	74.3	MDE 0690S07E02	J14
	24.1	74.4	MDW 0690GS2	J41
	25.6	88.9	MDW 0690PHT	J81
	26.0	89.3	MDE 0690S07H03	J21
	26.0	89.3	MDM 0690S07H03	J56
	26.0	89.3	MDW 0690HX3	J65
	26.1	89.4	MDW 0690HGS3	J45
	27.6	88.0	MDF 0690H3D	J34
	34.0	84.3	MDE 0690S07E04	J14
	34.1	84.4	MDW 0690GS4	J41
	41.4	109.0	MDF 0690H5D	J34
	47.0	110.3	MDE 0690S07H05	J21
	47.0	110.3	MDM 0690S07H05	J56
	47.0	110.3	MDW 0690HX5	J65
	47.1	110.4	MDW 0690HGS5	J45
	47.1	110.4	MDW 0690NHGS5	J94
	68.0	131.3	MDE 0690S07H08	J21
	68.0	131.3	MDW 0690HX8	J65
	68.1	131.4	MDW 0690HGS8	J45
	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	J28
	21.0	120.0	MDF 0700L2D	J32
	23.4	88.9	MDA 0700S08H03	J88
	23.8	74.3	MDE 0700S07E02	J14
	23.9	74.4	MDW 0700GS2	J41
	25.4	88.9	MDW 0700PHT	J81
	25.8	89.3	MDE 0700S07H03	J21
	25.8	89.3	MDM 0700S07H03	J57
	25.8	89.3	MDW 0700HX3	J65
	25.9	84.4	MDW 0700SGS3	J75
	25.9	89.4	MDW 0700HGS3	J45
	25.9	89.4	MDW 0700HY3	J71
	25.9	89.4	MDW 0700NHGS3	J94
	26.1	84.6	MDS 07000SDC3	J97
	28.0	88.0	MDF 0700H3D	J34
	33.8	84.3	MDE 0700S07E04	J14
	33.9	84.4	MDW 0700GS4	J41
	42.0	109.0	MDF 0700H5D	J34
	44.4	109.9	MDA 0700S08H05	J88
	46.8	110.3	MDE 0700S07H05	J21
	46.8	110.3	MDM 0700S07H05	J57
	46.8	110.3	MDW 0700HX5	J65
	46.9	110.4	MDW 0700HGS5	J45
	46.9	110.4	MDW 0700HY5	J71
	46.9	110.4	MDW 0700NHGS5	J94
	67.8	131.3	MDE 0700S07H08	J21
	67.8	131.3	MDW 0700HX8	J65
	67.9	131.4	MDW 0700HGS8	J45
	86.8	152.3	MDA 0700S08H10	J88
	88.9	152.4	MDW 0700NHGS10	J94
	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	J28
	21.3	130.0	MDF 0710L2D	J32
	23.7	79.3	MDE 0710S08E02	J14
	23.9	79.5	MDW 0710GS2	J41
	27.9	95.0	MDW 0710PHT	J81
	28.2	95.3	MDE 0710S08H03	J21
	28.2	95.3	MDM 0710S08H03	J57
	28.2	95.3	MDW 0710HX3	J65
	28.4	94.0	MDF 0710H3D	J34
	28.4	95.5	MDW 0710HGS3	J45
	35.7	91.3	MDE 0710S08E04	J14
	35.9	91.5	MDW 0710GS4	J41
	42.6	118.0	MDF 0710H5D	J34
	50.3	118.9	MDA 0710S08H05	J88
	50.7	119.3	MDE 0710S08H05	J21
	50.7	119.3	MDM 0710S08H05	J57

(Blue text: Flat head ■Indexable cutting edge type)

(Blue text: Flat head ■Indexable cutting edge type)

(Blue text: Flat head ■Indexable cutting edge type)

The 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 ø7.1 to ø7.4mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
7.1	50.7	119.3	MDW 0710HX5	J65
	50.9	119.5	MDW 0710HGS5	J45
	50.9	119.5	MDW 0710NHGS5	J94
	73.2	143.3	MDE 0710S08H08	J21
	73.4	143.5	MDW 0710HGS8	J45
	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	J28
	21.6	130.0	MDF 0720L2D	J32
	23.5	79.3	MDE 0720S08E02	J14
	23.7	79.5	MDW 0720GS2	J41
	27.7	95.0	MDW 0720PHT	J81
	28.0	95.3	MDE 0720S08H03	J21
	28.0	95.3	MDM 0720S08H03	J57
	28.0	95.3	MDW 0720HX3	J65
	28.2	95.5	MDW 0720HGS3	J45
	28.8	94.0	MDF 0720H3D	J34
	35.5	91.3	MDE 0720S08E04	J14
	35.7	91.5	MDW 0720GS4	J41
	43.2	118.0	MDF 0720H5D	J34
	50.2	119.0	MDA 0720S08H05	J88
	50.5	119.3	MDE 0720S08H05	J21
	50.5	119.3	MDM 0720S08H05	J57
	50.5	119.3	MDW 0720HX5	J65
	50.7	119.5	MDW 0720HGS5	J45
	50.7	119.5	MDW 0720NHGS5	J94
	73.0	143.3	MDE 0720S08H08	J21
	73.2	143.5	MDW 0720HGS8	J45
	95.7	167.5	MDW 0720NHGS10	J94
	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
	251.5	318.3	MDW 0720XHGS30	J81
7.3	21.9	70.0	MDF 0730S2D	J28
	21.9	130.0	MDF 0730L2D	J32
	23.4	79.3	MDE 0730S08E02	J14
	23.6	79.5	MDW 0730GS2	J41
	27.6	95.0	MDW 0730PHT	J81
	27.9	95.3	MDE 0730S08H03	J21
	27.9	95.3	MDM 0730S08H03	J57
	27.9	95.3	MDW 0730HX3	J65
	28.1	95.5	MDW 0730HGS3	J45
	29.2	94.0	MDF 0730H3D	J34
	35.4	91.3	MDE 0730S08E04	J14
	35.6	91.5	MDW 0730GS4	J41
	43.8	118.0	MDF 0730H5D	J34
	50.0	119.0	MDA 0730S08H05	J88
	50.4	119.3	MDE 0730S08H05	J21
	50.4	119.3	MDM 0730S08H05	J57
	50.4	119.3	MDW 0730HX5	J65
	50.6	119.5	MDW 0730HGS5	J45
	50.6	119.5	MDW 0730NHGS5	J94
	72.9	143.3	MDE 0730S08H08	J21
	73.1	143.5	MDW 0730HGS8	J45
	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	27.4	95.0	MDA 0735S08H03	J88
	28.0	95.5	MDW 0735NHGS3	J94
	49.9	119.0	MDA 0735S08H05	J88
	50.5	119.5	MDW 0735NHGS5	J94
7.36	22.0	70.0	MDF 0736S2D	J28
	23.2	79.3	MDE 0736S08E02	J14
	50.2	119.3	MDE 0736S08H05	J21
7.38	22.1	70.0	MDF 0738S2D	J28
	23.2	79.3	MDE 0738S08E02	J14
	50.2	119.3	MDE 0738S08H05	J21
7.4	22.2	70.0	MDF 0740S2D	J28
	22.2	130.0	MDF 0740L2D	J32
	23.2	79.3	MDE 0740S08E02	J14
	23.4	79.5	MDW 0740GS2	J41
	27.4	95.0	MDA 0740S08H03	J88
	27.4	95.0	MDW 0740PHT	J81
	27.7	95.3	MDE 0740S08H03	J21

(Blue text: Flat head ■Indexable cutting edge type)

● Diameter ø7.4 to ø7.6mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
7.4	27.7	95.3	MDM 0740S08H03	J57
	27.7	95.3	MDW 0740HX3	J65
	27.9	95.5	MDW 0740HGS3	J45
	27.9	95.5	MDW 0740NHGS3	J94
	29.6	94.0	MDF 0740H3D	J34
	35.2	91.3	MDE 0740S08E04	J14
	35.4	91.5	MDW 0740GS4	J41
	44.4	118.0	MDF 0740H5D	J34
	49.9	119.0	MDA 0740S08H05	J88
	50.2	119.3	MDE 0740S08H05	J21
	50.2	119.3	MDM 0740S08H05	J57
	50.2	119.3	MDW 0740HX5	J65
	50.4	119.5	MDW 0740HGS5	J45
	50.4	119.5	MDW 0740NHGS5	J94
	72.7	143.3	MDE 0740S08H08	J21
	72.9	143.5	MDW 0740HGS8	J45
	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	J28
	22.5	130.0	MDF 0750L2D	J32
	23.2	79.4	MDE 0750S08E02	J14
	23.4	79.6	MDW 0750GS2	J41
	27.3	95.0	MDA 0750S08H03	J88
	27.3	95.0	MDW 0750PHT	J81
	27.7	95.4	MDE 0750S08H03	J21
	27.7	95.4	MDM 0750S08H03	J57
	27.7	95.4	MDW 0750HX3	J65
	27.9	91.6	MDW 0750SGS3	J75
	27.9	95.6	MDW 0750HGS3	J45
	27.9	95.6	MDW 0750NHGS3	J94
	30.0	94.0	MDF 0750H3D	J34
	35.2	91.4	MDE 0750S08E04	J14
	35.4	91.6	MDW 0750GS4	J41
	45.0	118.0	MDF 0750H5D	J34
	49.8	119.0	MDA 0750S08H05	J88
	50.2	119.4	MDE 0750S08H05	J21
	50.2	119.4	MDM 0750S08H05	J57
	50.2	119.4	MDW 0750HX5	J65
	50.4	119.6	MDW 0750HGS5	J45
	50.4	119.6	MDW 0750NHGS5	J94
	72.7	143.4	MDE 0750S08H08	J21
	72.7	143.4	MDW 0750HX8	J65
	72.9	143.6	MDW 0750HGS8	J45
	95.1	167.4	MDA 0750S08H10	J88
	95.4	167.6	MDW 0750NHGS10	J94
	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	22.5	70.0	MDF 0752S2D	J28
	26.0	79.4	MDE 0752S08E02	J14
	54.0	119.4	MDE 0752S08H05	J21
7.54	22.6	70.0	MDF 0754S2D	J28
	26.0	79.4	MDE 0754S08E02	J14
	54.0	119.4	MDE 0754S08H05	J21
7.6	22.8	70.0	MDF 0760S2D	J28
	22.8	130.0	MDF 0760L2D	J32
	26.0	79.4	MDE 0760S08E02	J14
	26.2	79.6	MDW 0760GS2	J41
	29.6	95.0	MDW 0760PHT	J81
	30.0	95.4	MDE 0760S08H03	J21
	30.0	95.4	MDM 0760S08H03	J57
	30.0	95.4	MDW 0760HX3	J65
	30.2	95.6	MDW 0760HGS3	J45
	30.4	94.0	MDF 0760H3D	J34
	38.0	91.4	MDE 0760S08E04	J14
	38.2	91.6	MDW 0760GS4	J41
	45.6	118.0	MDF 0760H5D	J34
	53.6	119.0	MDA 0760S08H05	J88
	54.0	119.4	MDE 0760S08H05	J21
	54.0	119.4	MDM 0760S08H05	J57
	54.0	119.4	MDW 0760HX5	J65
	54.2	119.6	MDW 0760HGS5	J45
	54.2	119.6	MDW 0760NHGS5	J94
	78.0	143.4	MDE 0760S08H08	J21

(Blue text: Flat head ■Indexable cutting edge type)

● Diameter ø7.6 to ø7.9mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
7.6	78.2	143.6	MDW 0760HGS8	J45
	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	J28
	23.1	130.0	MDF 0770L2D	J32
	25.9	79.4	MDE 0770S08E02	J14
	26.1	79.6	MDW 0770GS2	J41
	29.5	95.0	MDW 0770PHT	J81
	29.9	95.4	MDE 0770S08H03	J21
	29.9	95.4	MDM 0770S08H03	J57
	29.9	95.4	MDW 0770HX3	J65
	30.1	95.6	MDW 0770HGS3	J45
	30.8	94.0	MDF 0770H3D	J34
	37.9	91.4	MDE 0770S08E04	J14
	38.1	91.6	MDW 0770GS4	J41
	46.2	118.0	MDF 0770H5D	J34
	53.5	119.0	MDA 0770S08H05	J88
	53.9	119.4	MDE 0770S08H05	J21
	53.9	119.4	MDM 0770S08H05	J57
	53.9	119.4	MDW 0770HX5	J65
	54.1	119.6	MDW 0770HGS5	J45
	54.1	119.6	MDW 0770NHGS5	J94
	77.9	143.4	MDE 0770S08H08	J21
	78.1	143.6	MDW 0770HGS8	J45
	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	J28
	23.4	130.0	MDF 0780L2D	J32
	25.7	79.4	MDE 0780S08E02	J14
	25.9	79.6	MDW 0780GS2	J41
	29.3	95.0	MDA 0780S08H03	J88
	29.3	95.0	MDW 0780PHT	J81
	29.7	95.4	MDE 0780S08H03	J21
	29.7	95.4	MDM 0780S08H03	J57
	29.7	95.4	MDW 0780HX3	J65
	29.9	95.6	MDW 0780HGS3	J45
	29.9	95.6	MDW 0780NHGS3	J94
	31.2	94.0	MDF 0780H3D	J34
	37.7	91.4	MDE 0780S08E04	J14
	37.9	91.6	MDW 0780GS4	J41
	46.8	118.0	MDF 0780H5D	J34
	53.3	119.0	MDA 0780S08H05	J88
	53.7	119.4	MDE 0780S08H05	J21
	53.7	119.4	MDM 0780S08H05	J57
	53.7	119.4	MDW 0780HX5	J65
	53.9	119.6	MDW 0780HGS5	J45
	53.9	119.6	MDW 0780NHGS5	J94
	77.7	143.4	MDE 0780S08H08	J21
	77.9	143.6	MDW 0780HGS8	J45
	101.7	167.4	MDA 0780S08H10	J88
	101.9	167.6	MDW 0780NHGS10	J94
	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	J28
	23.7	130.0	MDF 0790L2D	J32
	25.6	79.4	MDE 0790S08E02	J14
	25.8	79.6	MDW 0790GS2	J41
	29.3	95.1	MDW 0790PHT	J81
	29.6	95.4	MDE 0790S08H03	J21
	29.6	95.4	MDM 0790S08H03	J57
	29.6	95.4	MDW 0790HX3	J65
	29.8	95.6	MDW 0790HGS3	J45
	31.6	94.0	MDF 0790H3D	J34
	37.6	91.4	MDE 0790S08E04	J14
	37.8	91.6	MDW 0790GS4	J41
	47.4	118.0	MDF 0790H5D	J34
	53.2	119.1	MDA 0790S08H05	J88
	53.6	119.4	MDE 0790S08H05	J21
	53.6	119.4	MDM 0790S08H05	J57
	53.6	119.4	MDW 0790HX5	J65
	53.8	119.6	MDW 0790HGS5	J45

(Blue text: Flat head ■Indexable cutting edge type)

The 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 ø7.9 to ø8.2mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
7.9	53.8	119.6	MDW 0790NHGS5	J94
	77.6	143.4	MDE 0790S08H08	J21
	77.8	143.6	MDW 0790HGS8	J45
	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	J97
8.0	24.0	70.0	MDF 0800S2D	J28
	24.0	130.0	MDF 0800L2D	J32
	24.0	130.0	MDF 0800L2D-S6	J32
	25.5	79.5	MDE 0800S08E02	J14
	25.7	79.7	MDW 0800GS2	J41
	29.1	95.1	MDA 0800S08H03	J88
	29.1	95.1	MDW 0800PHT	J81
	29.5	95.5	MDE 0800S08H03	J21
	29.5	95.5	MDM 0800S08H03	J57
	29.5	95.5	MDW 0800HX3	J65
	29.7	91.7	MDW 0800SGS3	J75
	29.7	95.7	MDW 0800HGS3	J45
	29.7	95.7	MDW 0800HY3	J71
	29.7	95.7	MDW 0800NHGS3	J94
	29.9	91.9	MDS 08000SDC3	J97
	32.0	94.0	MDF 0800H3D	J34
	37.5	91.5	MDE 0800S08E04	J14
	37.7	91.7	MDW 0800GS4	J41
	48.0	118.0	MDF 0800H5D	J34
	53.1	119.1	MDA 0800S08H05	J88
	53.5	119.5	MDE 0800S08H05	J21
	53.5	119.5	MDM 0800S08H05	J57
	53.5	119.5	MDW 0800HX5	J65
	53.7	119.7	MDW 0800HGS5	J45
	53.7	119.7	MDW 0800HY5	J71
	53.7	119.7	MDW 0800NHGS5	J94
	77.5	143.5	MDE 0800S08H08	J21
	77.5	143.5	MDW 0800HX8	J65
	77.7	143.7	MDW 0800HGS8	J45
	101.5	167.5	MDA 0800S08H10	J88
	101.7	167.7	MDW 0800NHGS10	J94
	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	J28
	24.3	140.0	MDF 0810L2D	J32
	25.4	83.5	MDE 0810S09E02	J14
	25.6	83.7	MDW 0810GS2	J41
	31.9	101.5	MDE 0810S09H03	J21
	31.9	101.5	MDM 0810S09H03	J57
	31.9	101.5	MDW 0810HX3	J65
	32.1	101.7	MDW 0810HGS3	J45
	32.4	100.0	MDF 0810H3D	J34
	42.4	99.5	MDE 0810S09E04	J14
	42.6	99.7	MDW 0810GS4	J41
	48.6	127.0	MDF 0810H5D	J34
	56.9	128.1	MDA 0810S10H05	J88
	57.4	128.5	MDE 0810S09H05	J21
	57.4	128.5	MDM 0810S09H05	J57
	57.4	128.5	MDW 0810HX5	J65
	57.6	128.7	MDW 0810HGS5	J45
	57.6	128.7	MDW 0810NHGS5	J94
	82.9	155.5	MDE 0810S09H08	J21
	83.1	155.7	MDW 0810HGS8	J45
	108.3	182.5	MDA 0810S10H10	J88
8.2	24.6	80.0	MDF 0820S2D	J28
	24.6	140.0	MDF 0820L2D	J32
	25.2	83.5	MDE 0820S09E02	J14
	25.4	83.7	MDW 0820GS2	J41
	31.7	101.5	MDE 0820S09H03	J21
	31.7	101.5	MDM 0820S09H03	J57
	31.7	101.5	MDW 0820HX3	J65
	31.9	101.7	MDW 0820HGS3	J45
	32.8	100.0	MDF 0820H3D	J34
	42.2	99.5	MDE 0820S09E04	J14
	42.4	99.7	MDW 0820GS4	J41
	49.2	127.0	MDF 0820H5D	J34
	56.8	128.1	MDA 0820S10H05	J88

(Blue text: Flat head ■Indexable cutting edge type)

● Diameter ø8.2 to ø8.5mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
8.2	57.2	128.5	MDE 0820S09H05	J21
	57.2	128.5	MDM 0820S09H05	J57
	57.2	128.5	MDW 0820HX5	J65
	57.4	128.7	MDW 0820HGS5	J45
	57.4	128.7	MDW 0820NHGS5	J94
	82.7	155.5	MDE 0820S09H08	J21
	82.9	155.7	MDW 0820HGS8	J45
	108.2	182.5	MDA 0820S10H10	J88
8.3	24.9	80.0	MDF 0830S2D	J28
	24.9	140.0	MDF 0830L2D	J32
	25.1	83.5	MDE 0830S09E02	J14
	25.3	83.7	MDW 0830GS2	J41
	31.6	101.5	MDE 0830S09H03	J21
	31.6	101.5	MDM 0830S09H03	J57
	31.6	101.5	MDW 0830HX3	J65
	31.8	101.7	MDW 0830HGS3	J45
	33.2	100.0	MDF 0830H3D	J34
	42.1	99.5	MDE 0830S09E04	J14
	42.3	99.7	MDW 0830GS4	J41
	49.8	127.0	MDF 0830H5D	J34
	56.7	128.1	MDA 0830S10H05	J88
	57.1	128.5	MDE 0830S09H05	J21
	57.1	128.5	MDM 0830S09H05	J57
	57.1	128.5	MDW 0830HX5	J65
	57.3	128.7	MDW 0830HGS5	J45
	57.3	128.7	MDW 0830NHGS5	J94
	82.6	155.5	MDE 0830S09H08	J21
	82.8	155.7	MDW 0830HGS8	J45
8.4	24.9	83.5	MDE 0840S09E02	J14
	25.1	83.7	MDW 0840GS2	J41
	25.2	80.0	MDF 0840S2D	J28
	25.2	140.0	MDF 0840L2D	J32
	31.4	101.5	MDE 0840S09H03	J21
	31.4	101.5	MDM 0840S09H03	J57
	31.4	101.5	MDW 0840HX3	J65
	31.6	101.7	MDW 0840HGS3	J45
	33.6	100.0	MDF 0840H3D	J34
	41.9	99.5	MDE 0840S09E04	J14
	42.1	99.7	MDW 0840GS4	J41
	50.4	127.0	MDF 0840H5D	J34
	56.5	128.1	MDA 0840S10H05	J88
	56.9	128.5	MDE 0840S09H05	J21
	56.9	128.5	MDM 0840S09H05	J57
	56.9	128.5	MDW 0840HX5	J65
	57.1	128.7	MDW 0840HGS5	J45
	57.1	128.7	MDW 0840NHGS5	J94
	82.4	155.5	MDE 0840S09H08	J21
	82.6	155.7	MDW 0840HGS8	J45
8.5	24.8	83.5	MDE 0850S09E02	J14
	25.1	83.8	MDW 0850GS2	J41
	25.5	80.0	MDF 0850S2D	J28
	25.5	140.0	MDF 0850L2D	J32
	30.9	101.1	MDW 0850PHT	J82
	31.0	101.1	MDA 0850S10H03	J88
	31.3	101.5	MDE 0850S09H03	J21
	31.3	101.5	MDM 0850S09H03	J57
	31.3	101.5	MDW 0850HX3	J65
	31.6	99.8	MDW 0850SGS3	J75
	31.6	101.8	MDW 0850HGS3	J45
	31.6	101.8	MDW 0850HY3	J71
	31.6	101.8	MDW 0850NHGS3	J94
	34.0	100.0	MDF 0850H3D	J34
	41.8	99.5	MDE 0850S09E04	J14
	42.1	99.8	MDW 0850GS4	J41
	51.0	127.0	MDF 0850H5D	J34
	56.5	128.1	MDA 0850S10H05	J88
	56.8	128.5	MDE 0850S09H05	J21
	56.8	128.5	MDM 0850S09H05	J57
	56.8	128.5	MDW 0850HX5	J65
	57.1	128.8	MDW 0850HGS5	J45
	57.1	128.8	MDW 0850HY5	J71
	57.1	128.8	MDW 0850NHGS5	J94
	82.3	155.5	MDE 0850S09H08	J21
	82.3	155.5	MDW 0850HX8	J65
	82.6	155.8	MDW 0850HGS8	J45
	82.6	155.8	MDW 0850HY8	J71
	107.9	182.5	MDA 0850S10H10	J88
	108.1	182.8	MDW 0850NHGS10	J94
	116.8	186.5	MDW 0850XHGS10	J82
	131.8	201.5	MDW 0850XHGS12	J82

(Blue text: Flat head ■Indexable cutting edge type)

● Diameter ø8.5 to ø8.9mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
8.5	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	J28
	25.8	140.0	MDF 0860L2D	J32
	26.7	83.6	MDE 0860S09E02	J14
	26.9	83.8	MDW 0860GS2	J41
	31.2	101.1	MDA 0860S10H03	J88
	33.7	101.6	MDE 0860S09H03	J21
	33.7	101.6	MDM 0860S09H03	J57
	33.7	101.6	MDW 0860HX3	J65
	33.9	101.8	MDW 0860HGS3	J45
	33.9	101.8	MDW 0860HY3	J71
	33.9	101.8	MDW 0860NHGS3	J94
	34.4	100.0	MDF 0860H3D	J35
	43.7	99.6	MDE 0860S09E04	J14
	43.9	99.8	MDW 0860GS4	J41
	51.6	127.0	MDF 0860H5D	J35
	58.2	128.1	MDA 0860S10H05	J88
	60.7	128.6	MDE 0860S09H05	J21
	60.7	128.6	MDM 0860S09H05	J57
	60.7	128.6	MDW 0860HX5	J65
	60.9	128.8	MDW 0860HGS5	J45
	60.9	128.8	MDW 0860HY5	J71
	60.9	128.8	MDW 0860NHGS5	J94
	87.7	155.6	MDE 0860S09H08	J21
	87.9	155.8	MDW 0860HGS8	J45
8.7	26.1	80.0	MDF 0870S2D	J28
	26.1	140.0	MDF 0870L2D	J32
	26.6	83.6	MDE 0870S09E02	J14
	26.8	83.8	MDW 0870GS2	J41
	33.6	101.6	MDE 0870S09H03	J21
	33.6	101.6	MDM 0870S09H03	J57
	33.6	101.6	MDW 0870HX3	J65
	33.8	101.8	MDW 0870HGS3	J46
	34.8	100.0	MDF 0870H3D	J35
	43.6	99.6	MDE 0870S09E04	J14
	43.8	99.8	MDW 0870GS4	J41
	52.2	127.0	MDF 0870H5D	J35
	58.1	128.2	MDA 0870S10H05	J88
	60.6	128.6	MDE 0870S09H05	J21
	60.6	128.6	MDM 0870S09H05	J57
	60.6	128.6	MDW 0870HX5	J65
	60.8	128.8	MDW 0870HGS5	J46
	60.8	128.8	MDW 0870NHGS5	J94
	87.6	155.6	MDE 0870S09H08	J21
	87.8	155.8	MDW 0870HGS8	J46
8.8	26.4	80.0	MDF 0880S2D	J28
	26.4	83.6	MDE 0880S09E02	J14
	26.4	83.6	MDE 0880S09E02H	J17
	26.4	140.0	MDF 0880L2D	J32
	26.6	83.8	MDW 0880GS2	J41
	31.0	101.2	MDA 0880S10H03	J88
	33.4	101.6	MDE 0880S09H03	J21
	33.4	101.6	MDM 0880S09H03	J57
	33.4	101.6	MDW 0880HX3	J65
	33.6	101.8	MDW 0880HGS3	J46
	33.6	101.8	MDW 0880HY3	J71
	33.6	101.8	MDW 0880NHGS3	J94
	35.2	100.0	MDF 0880H3D	J35
	43.4	99.6	MDE 0880S09E04	J14
	43.6	99.8	MDW 0880GS4	J41
	52.8	127.0	MDF 0880H5D	J35
	58.0	128.2	MDA 0880S10H05	J88
	60.4	128.6	MDE 0880S09H05	J21
	60.4	128.6	MDM 0880S09H05	J57
	60.4	128.6	MDW 0880HX5	J65
	60.6	128.8	MDW 0880HGS5	J46
	60.6	128.8	MDW 0880HY5	J71
	60.6	128.8	MDW 0880NHGS5	J94
	87.4	155.6	MDE 0880S09H08	J21
	87.4	155.6	MDW 0880HX8	J65
	87.6	155.8	MDW 0880HGS8	J46
8.9	26.3	83.6	MDE 0890S09E02	J14
	26.5	83.8	MDW 0890GS2	J41
	26.7	80.0	MDF 0890S2D	J28
	26.7	140.0	MDF 0890L2D	J32
	33.3	101.6	MDE 0890S09H03	J21
	33.3	101.6	MDM 0890S09H03	J57

(Blue text: Flat head ■Indexable cutting edge type)

The 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 ø8.9 to ø9.2mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
8.9	33.3	101.6	MDW 0890HX3	J65
	33.5	101.8	MDW 0890HGS3	J46
	35.6	100.0	MDF 0890H3D	J35
	43.3	99.6	MDE 0890S09E04	J14
	43.5	99.8	MDW 0890GS4	J41
	53.4	127.0	MDF 0890H5D	J35
	57.8	128.2	MDA 0890S10H05	J88
	60.3	128.6	MDE 0890S09H05	J21
	60.3	128.6	MDM 0890S09H05	J57
	60.3	128.6	MDW 0890HX5	J65
	60.5	128.8	MDW 0890HGS5	J46
	60.5	128.8	MDW 0890NHGS5	J94
	87.3	155.6	MDE 0890S09H08	J21
	87.5	155.8	MDW 0890HGS8	J46
9.0	26.1	83.6	MDE 0900S09E02	J14
	26.4	83.9	MDW 0900GS2	J41
	27.0	80.0	MDF 0900S2D	J28
	27.0	140.0	MDF 0900L2D	J32
	30.7	101.2	MDA 0900S10H03	J88
	32.7	101.2	MDW 0900PHT	J82
	33.1	101.6	MDE 0900S09H03	J21
	33.1	101.6	MDM 0900S09H03	J57
	33.1	101.6	MDW 0900HX3	J65
	33.4	99.9	MDW 0900SGS3	J75
	33.4	101.9	MDW 0900HGS3	J46
	33.4	101.9	MDW 0900HY3	J71
	33.4	101.9	MDW 0900NHGS3	J94
	33.6	100.1	MDS 09000SDC3	J97
	36.0	100.0	MDF 0900H3D	J35
	43.1	99.6	MDE 0900S09E04	J14
	43.4	99.9	MDW 0900GS4	J41
	54.0	127.0	MDF 0900H5D	J35
	57.7	128.2	MDA 0900S10H05	J88
	60.1	128.6	MDE 0900S09H05	J21
	60.1	128.6	MDM 0900S09H05	J57
	60.1	128.6	MDW 0900HX5	J65
	60.4	128.9	MDW 0900HGS5	J46
	60.4	128.9	MDW 0900HY5	J71
	60.4	128.9	MDW 0900NHGS5	J94
	87.1	155.6	MDE 0900S09H08	J21
	87.1	155.6	MDW 0900HX8	J65
	87.4	155.9	MDW 0900HGS8	J46
	112.1	182.6	MDA 0900S10H10	J88
	114.4	182.9	MDW 0900NHGS10	J94
	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	J41
	27.3	80.0	MDF 0910S2D	J28
	27.3	150.0	MDF 0910L2D	J32
	35.6	107.7	MDE 0910S10H03	J21
	35.6	107.7	MDM 0910S10H03	J57
	35.6	107.7	MDW 0910HX3	J65
	35.8	107.9	MDW 0910HGS3	J46
	36.4	106.0	MDF 0910H3D	J35
	46.1	106.7	MDE 0910S10E04	J14
	46.3	106.9	MDW 0910GS4	J41
	54.6	136.0	MDF 0910H5D	J35
	63.6	137.2	MDA 0910S10H05	J89
	64.1	137.7	MDE 0910S10H05	J21
	64.1	137.7	MDM 0910S10H05	J57
	64.1	137.7	MDW 0910HX5	J65
	64.3	137.9	MDW 0910HGS5	J46
	64.3	137.9	MDW 0910NHGS5	J94
	92.6	167.7	MDE 0910S10H08	J21
	92.8	167.9	MDW 0910HGS8	J46
9.2	25.9	88.7	MDE 0920S10E02	J15
	26.1	88.9	MDW 0920GS2	J41
	27.6	80.0	MDF 0920S2D	J28
	27.6	150.0	MDF 0920L2D	J32
	35.4	107.7	MDE 0920S10H03	J21
	35.4	107.7	MDM 0920S10H03	J57
	35.4	107.7	MDW 0920HX3	J65
	35.6	107.9	MDW 0920HGS3	J46
	36.8	106.0	MDF 0920H3D	J35
	45.9	106.7	MDE 0920S10E04	J15

● Diameter ø9.2 to ø9.5mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
9.2	46.1	106.9	MDW 0920GS4	J41
	55.2	136.0	MDF 0920H5D	J35
	63.4	137.2	MDA 0920S10H05	J89
	63.9	137.7	MDE 0920S10H05	J21
	63.9	137.7	MDM 0920S10H05	J57
	63.9	137.7	MDW 0920HX5	J65
	64.1	137.9	MDW 0920HGS5	J46
	64.1	137.9	MDW 0920NHGS5	J94
	92.4	167.7	MDE 0920S10H08	J21
	92.6	167.9	MDW 0920HGS8	J46
9.21	35.6	107.9	MDW 0921NHGS3	J94
	63.3	137.2	MDA 0921S10H05	J89
	64.1	137.9	MDW 0921NHGS5	J94
9.24	25.8	88.7	MDE 0924S10E02	J15
	27.7	80.0	MDF 0924S2D	J28
	63.8	137.7	MDE 0924S10H05	J22
9.26	25.8	88.7	MDE 0926S10E02	J15
	27.7	80.0	MDF 0926S2D	J28
	63.8	137.7	MDE 0926S10H05	J22
9.3	25.8	88.7	MDE 0930S10E02	J15
	26.0	88.9	MDW 0930GS2	J41
	27.9	80.0	MDF 0930S2D	J28
	27.9	150.0	MDF 0930L2D	J32
	35.3	107.7	MDE 0930S10H03	J22
	35.3	107.7	MDM 0930S10H03	J57
	35.3	107.7	MDW 0930HX3	J65
	35.5	107.9	MDW 0930HGS3	J46
	37.2	106.0	MDF 0930H3D	J35
	45.8	106.7	MDE 0930S10E04	J15
	46.0	106.9	MDW 0930GS4	J41
	55.8	136.0	MDF 0930H5D	J35
	63.3	137.2	MDA 0930S10H05	J89
	63.8	137.7	MDE 0930S10H05	J22
	63.8	137.7	MDM 0930S10H05	J57
	63.8	137.7	MDW 0930HX5	J65
	64.0	137.9	MDW 0930HGS5	J46
	64.0	137.9	MDW 0930NHGS5	J94
	92.3	167.7	MDE 0930S10H08	J22
	92.5	167.9	MDW 0930HGS8	J46
	120.7	197.7	MDA 0930S10H10	J89
9.36	25.6	88.7	MDE 0936S10E02	J15
	28.0	80.0	MDF 0936S2D	J28
	63.6	137.7	MDE 0936S10H05	J22
9.38	25.6	88.7	MDE 0938S10E02	J15
	28.1	80.0	MDF 0938S2D	J28
	63.6	137.7	MDE 0938S10H05	J22
9.4	25.6	88.7	MDE 0940S10E02	J15
	25.8	88.9	MDW 0940GS2	J41
	28.2	80.0	MDF 0940S2D	J28
	28.2	150.0	MDF 0940L2D	J32
	34.7	107.3	MDA 0940S10H03	J89
	35.1	107.7	MDE 0940S10H03	J22
	35.1	107.7	MDM 0940S10H03	J57
	35.1	107.7	MDW 0940HX3	J65
	35.3	107.9	MDW 0940HGS3	J46
	35.3	107.9	MDW 0940NHGS3	J94
	37.6	106.0	MDF 0940H3D	J35
	45.6	106.7	MDE 0940S10E04	J15
	45.8	106.9	MDW 0940GS4	J41
	56.4	136.0	MDF 0940H5D	J35
	63.2	137.3	MDA 0940S10H05	J89
	63.6	137.7	MDE 0940S10H05	J22
	63.6	137.7	MDM 0940S10H05	J57
	63.6	137.7	MDW 0940HX5	J65
	63.8	137.9	MDW 0940HGS5	J46
	63.8	137.9	MDW 0940NHGS5	J94
	92.1	167.7	MDE 0940S10H08	J22
	92.3	167.9	MDW 0940HGS8	J46
9.5	25.5	88.7	MDE 0950S10E02	J15
	25.8	89.0	MDW 0950GS2	J41
	28.5	80.0	MDF 0950S2D	J28
	28.5	150.0	MDF 0950L2D	J32
	34.5	107.3	MDA 0950S10H03	J89
	34.6	107.3	MDW 0950PHT	J82
	35.0	107.7	MDE 0950S10H03	J22
	35.0	107.7	MDM 0950S10H03	J57
	35.0	107.7	MDW 0950HX3	J65
	35.3	107.0	MDW 0950SGS3	J75
	35.3	108.0	MDW 0950HGS3	J46
	35.3	108.0	MDW 0950HY3	J71

● Diameter ø9.5 to ø9.8mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
9.5	35.3	108.0	MDW 0950NHGS3	J94
	38.0	106.0	MDF 0950H3D	J35
	45.5	106.7	MDE 0950S10E04	J15
	45.8	107.0	MDW 0950GS4	J41
	57.0	136.0	MDF 0950H5D	J35
	63.0	137.3	MDA 0950S10H05	J89
	63.5	137.7	MDE 0950S10H05	J22
	63.5	137.7	MDM 0950S10H05	J57
	63.5	137.7	MDW 0950HX5	J65
	63.8	138.0	MDW 0950HGS5	J46
	63.8	138.0	MDW 0950HY5	J71
	63.8	138.0	MDW 0950NHGS5	J94
	92.0	167.7	MDE 0950S10H08	J22
	92.0	167.7	MDW 0950HX8	J65
	92.3	168.0	MDW 0950HGS8	J46
	120.5	197.7	MDA 0950S10H10	J89
	120.8	198.0	MDW 0950NHGS10	J94
	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	28.3	88.7	MDE 0952S10E02	J15
	28.5	80.0	MDF 0952S2D	J28
	67.3	137.7	MDE 0952S10H05	J22
9.54	28.3	88.7	MDE 0954S10E02	J15
	28.6	80.0	MDF 0954S2D	J29
	67.3	137.7	MDE 0954S10H05	J22
9.55	37.9	107.2	MDS 09550SDC3	J97
9.6	28.3	88.7	MDE 0960S10E02	J15
	28.6	89.0	MDW 0960GS2	J41
	28.8	80.0	MDF 0960S2D	J29
	28.8	150.0	MDF 0960L2D	J32
	36.9	107.3	MDA 0960S10H03	J89
	37.3	107.7	MDE 0960S10H03	J22
	37.3	107.7	MDM 0960S10H03	J57
	37.3	107.7	MDW 0960HX3	J65
	37.6	108.0	MDW 0960HGS3	J46
	38.4	106.0	MDF 0960H3D	J35
	47.3	106.7	MDE 0960S10E04	J15
	47.6	107.0	MDW 0960GS4	J41
	57.6	136.0	MDF 0960H5D	J35
	66.9	137.3	MDA 0960S10H05	J89
	67.3	137.7	MDE 0960S10H05	J22
	67.3	137.7	MDM 0960S10H05	J57
	67.3	137.7	MDW 0960HX5	J65
	67.6	138.0	MDW 0960HGS5	J46
	67.6	138.0	MDW 0960NHGS5	J94
	97.3	167.7	MDE 0960S10H08	J22
	97.6	168.0	MDW 0960HGS8	J46
9.7	28.3	88.8	MDE 0970S10E02	J15
	28.5	89.0	MDW 0970GS2	J41
	29.1	80.0	MDF 0970S2D	J29
	29.1	150.0	MDF 0970L2D	J32
	37.3	107.8	MDE 0970S10H03	J22
	37.3	107.8	MDM 0970S10H03	J57
	37.3	107.8	MDW 0970HX3	J65
	37.5	108.0	MDW 0970HGS3	J46
	38.8	106.0	MDF 0970H3D	J35
	47.3	106.8	MDE 0970S10E04	J15
	47.5	107.0	MDW 0970GS4	J41
	58.2	136.0	MDF 0970H5D	J35
	67.3	137.8	MDE 0970S10H05	J22
	67.3	137.8	MDM 0970S10H05	J57
	67.3	137.8	MDW 0970HX5	J65
	67.5	138.0	MDW 0970HGS5	J46
	67.5	138.0	MDW 0970NHGS5	J94
	97.3	167.8	MDE 0970S10H08	J22
	97.5	168.0	MDW 0970HGS8	J46
9.8	28.1	88.8	MDE 0980S10E02	J15
	28.3	89.0	MDW 0980GS2	J41
	29.4	80.0	MDF 0980S2D	J29
	29.4	150.0	MDF 0980L2D	J32
	37.1	107.8	MDE 0980S10H03	J22
	37.1	107.8	MDM 0980S10H03	J57
	37.1	107.8	MDW 0980HX3	J65
	37.3	108.0	MDW 0980HGS3	J46
	39.2	106.0	MDF 0980H3D	J35
	47.1	106.8	MDE 0980S10E04	J15

(Blue text: Flat head ■Indexable cutting edge type)

(Blue text: Flat head ■Indexable cutting edge type)

(Blue text: Flat head ■Indexable cutting edge type)

The 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 ø9.8 to ø10.1mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
9.8	47.3	107.0	MDW 0980GS4	J41
	58.8	136.0	MDF 0980H5D	J35
	66.6	137.3	MDA 0980S10H05	J89
	67.1	137.8	MDE 0980S10H05	J22
	67.1	137.8	MDM 0980S10H05	J57
	67.1	137.8	MDW 0980HX5	J65
	67.3	138.0	MDW 0980HGS5	J46
	67.3	138.0	MDW 0980NHGS5	J95
	97.1	167.8	MDE 0980S10H08	J22
	97.3	168.0	MDW 0980HGS8	J46
	127.1	197.8	MDA 0980S10H10	J89
	127.3	198.0	MDW 0980NHGS10	J95
9.9	28.0	88.8	MDE 0990S10E02	J15
	28.2	89.0	MDW 0990GS2	J41
	29.7	80.0	MDF 0990S2D	J29
	29.7	150.0	MDF 0990L2D	J32
	37.0	107.8	MDE 0990S10H03	J22
	37.0	107.8	MDM 0990S10H03	J57
	37.0	107.8	MDW 0990HX3	J65
	37.2	108.0	MDW 0990HGS3	J46
	39.6	106.0	MDF 0990H3D	J35
	47.0	106.8	MDE 0990S10E04	J15
	47.2	107.0	MDW 0990GS4	J41
	59.4	136.0	MDF 0990H5D	J35
	67.0	137.8	MDE 0990S10H05	J22
	67.0	137.8	MDM 0990S10H05	J57
	67.0	137.8	MDW 0990HX5	J65
	67.2	138.0	MDW 0990HGS5	J46
	67.2	138.0	MDW 0990NHGS5	J95
	97.0	167.8	MDE 0990S10H08	J22
	97.2	168.0	MDW 0990HGS8	J46
10.0	27.8	88.8	MDE 1000S10E02	J15
	27.8	88.8	MDE 1000S10E02H	J17
	28.1	89.1	MDW 1000GS2	J41
	30.0	80.0	MDF 1000S2D	J29
	30.0	150.0	MDF 1000L2D	J32
	30.0	150.0	MDF 1000L2D-S8	J32
	36.3	107.3	MDA 1000S10H03	J89
	36.3	107.3	MDW 1000PHT	J82
	36.8	107.8	MDE 1000S10H03	J22
	36.8	107.8	MDM 1000S10H03	J57
	36.8	107.8	MDW 1000HX3	J65
	37.1	107.1	MDW 1000SGS3	J75
	37.1	108.1	MDW 1000HGS3	J46
	37.1	108.1	MDW 1000HY3	J71
	37.1	108.1	MDW 1000NHGS3	J95
	37.3	107.3	MDS 10000SDC3	J97
	40.0	106.0	MDF 1000H3D	J35
	46.8	106.8	MDE 1000S10E04	J15
	47.1	107.1	MDW 1000GS4	J41
	60.0	136.0	MDF 1000H5D	J35
	66.3	137.3	MDA 1000S10H05	J89
	66.8	137.8	MDE 1000S10H05	J22
	66.8	137.8	MDM 1000S10H05	J57
	66.8	137.8	MDW 1000HX5	J65
	67.1	138.1	MDW 1000HGS5	J46
	67.1	138.1	MDW 1000HY5	J71
	67.1	138.1	MDW 1000NHGS5	J95
	96.8	167.8	MDE 1000S10H08	J22
	96.8	167.8	MDW 1000HX8	J65
	97.1	168.1	MDW 1000HGS8	J46
	126.8	197.8	MDA 1000S10H10	J89
	127.1	198.1	MDW 1000NHGS10	J95
	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
	28.0	95.1	MDW 1010GS2	J41
	30.3	90.0	MDF 1010S2D	J29
	30.3	160.0	MDF 1010L2D	J32
	38.7	117.3	MDA 1010S12H03	J89
	39.2	117.8	MDE 1010S11H03	J22
	39.2	117.8	MDM 1010S11H03	J57
	39.2	117.8	MDW 1010HX3	J65
	39.5	118.1	MDW 1010HGS3	J46
	39.5	118.1	MDW 1010NHGS3	J95
	40.4	116.0	MDF 1010H3D	J35

(Blue text: Flat head ■Indexable cutting edge type)

● Diameter ø10.1 to ø10.5mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
10.1	52.7	115.8	MDE 1010S11E04	J15
	53.0	116.1	MDW 1010GS4	J41
	60.6	149.0	MDF 1010H5D	J35
	70.2	150.3	MDA 1010S12H05	J89
	70.7	150.8	MDE 1010S11H05	J22
	70.7	150.8	MDM 1010S11H05	J57
	70.7	150.8	MDW 1010HX5	J65
	71.0	151.1	MDW 1010HGS5	J46
	102.2	183.8	MDE 1010S11H08	J22
	102.5	184.1	MDW 1010HGS8	J46
10.2	27.6	94.9	MDE 1020S11E02	J15
	27.8	95.1	MDW 1020GS2	J41
	30.6	90.0	MDF 1020S2D	J29
	30.6	160.0	MDF 1020L2D	J32
	39.1	117.9	MDE 1020S11H03	J22
	39.1	117.9	MDM 1020S11H03	J57
	39.1	117.9	MDW 1020HX3	J66
	39.3	118.1	MDW 1020HGS3	J46
	39.3	118.1	MDW 1020HY3	J71
	40.8	116.0	MDF 1020H3D	J35
	52.6	115.9	MDE 1020S11E04	J15
	52.8	116.1	MDW 1020GS4	J41
	61.2	149.0	MDF 1020H5D	J35
	70.6	150.9	MDE 1020S11H05	J22
	70.6	150.9	MDM 1020S11H05	J57
	70.6	150.9	MDW 1020HX5	J66
	70.8	151.1	MDW 1020HGS5	J46
	70.8	151.1	MDW 1020HY5	J71
	102.1	183.9	MDE 1020S11H08	J22
	102.3	184.1	MDW 1020HGS8	J46
10.3	27.5	94.9	MDE 1030S11E02	J15
	27.7	95.1	MDW 1030GS2	J41
	30.9	90.0	MDF 1030S2D	J29
	30.9	160.0	MDF 1030L2D	J32
	38.6	117.4	MDA 1030S12H03	J89
	39.0	117.9	MDE 1030S11H03	J22
	39.0	117.9	MDM 1030S11H03	J57
	39.0	117.9	MDW 1030HX3	J66
	39.2	118.1	MDW 1030HGS3	J46
	39.2	118.1	MDW 1030HY3	J71
	39.2	118.1	MDW 1030NHGS3	J95
	41.2	116.0	MDF 1030H3D	J35
	52.5	115.9	MDE 1030S11E04	J15
	52.7	116.1	MDW 1030GS4	J41
	61.8	149.0	MDF 1030H5D	J35
	70.1	150.4	MDA 1030S12H05	J89
	70.5	150.9	MDE 1030S11H05	J22
	70.5	150.9	MDM 1030S11H05	J57
	70.5	150.9	MDW 1030HX5	J66
	70.7	151.1	MDW 1030HGS5	J46
	70.7	151.1	MDW 1030HY5	J71
	70.7	151.1	MDW 1030NHGS5	J95
	102.0	183.9	MDE 1030S11H08	J22
	102.0	183.9	MDW 1030HX8	J66
	102.2	184.1	MDW 1030HGS8	J46
	102.2	184.1	MDW 1030HY8	J71
10.4	27.3	94.9	MDE 1040S11E02	J15
	27.6	95.2	MDW 1040GS2	J41
	31.2	90.0	MDF 1040S2D	J29
	31.2	160.0	MDF 1040L2D	J32
	38.3	117.4	MDA 1040S12H03	J89
	38.8	117.9	MDE 1040S11H03	J22
	38.8	117.9	MDM 1040S11H03	J57
	38.8	117.9	MDW 1040HX3	J66
	39.1	118.2	MDW 1040HGS3	J46
	41.6	116.0	MDF 1040H3D	J35
	52.3	115.9	MDE 1040S11E04	J15
	52.6	116.2	MDW 1040GS4	J41
	62.4	149.0	MDF 1040H5D	J35
	69.8	150.4	MDA 1040S12H05	J89
	70.3	150.9	MDE 1040S11H05	J22
	70.3	150.9	MDM 1040S11H05	J57
	70.3	150.9	MDW 1040HX5	J66
	70.6	151.2	MDW 1040HGS5	J46
	70.6	151.2	MDW 1040NHGS5	J95
	101.8	183.9	MDE 1040S11H08	J22
	102.1	184.2	MDW 1040HGS8	J46
10.5	27.2	94.9	MDE 1050S11E02	J15
	27.5	95.2	MDW 1050GS2	J41
	31.5	90.0	MDF 1050S2D	J29

(Blue text: Flat head ■Indexable cutting edge type)

● Diameter ø10.5 to ø10.8mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
10.5	31.5	160.0	MDF 1050L2D	J32
	38.2	117.4	MDA 1050S12H03	J89
	38.2	117.4	MDW 1050PHT	J82
	38.7	117.9	MDE 1050S11H03	J22
	38.7	117.9	MDM 1050S11H03	J57
	38.7	117.9	MDW 1050HX3	J66
	39.0	116.2	MDW 1050SGS3	J75
	39.0	118.2	MDW 1050HGS3	J46
	39.0	118.2	MDW 1050NHGS3	J95
	42.0	116.0	MDF 1050H3D	J35
	52.2	115.9	MDE 1050S11E04	J15
	52.5	116.2	MDW 1050GS4	J41
	63.0	149.0	MDF 1050H5D	J35
	69.7	150.4	MDA 1050S12H05	J89
	70.2	150.9	MDE 1050S11H05	J22
	70.2	150.9	MDM 1050S11H05	J57
	70.2	150.9	MDW 1050HX5	J66
	70.5	151.2	MDW 1050HGS5	J46
	70.5	151.2	MDW 1050NHGS5	J95
	101.7	183.9	MDE 1050S11H08	J22
	101.7	183.9	MDW 1050HX8	J66
	102.0	184.2	MDW 1050HGS8	J46
	133.2	216.9	MDA 1050S12H10	J89
	133.5	217.2	MDW 1050NHGS10	J95
	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	31.0	94.9	MDE 1060S11E02	J15
	31.3	95.2	MDW 1060GS2	J41
	31.8	90.0	MDF 1060S2D	J29
	31.8	160.0	MDF 1060L2D	J32
	38.5	117.4	MDA 1060S12H03	J89
	41.0	117.9	MDE 1060S11H03	J22
	41.0	117.9	MDM 1060S11H03	J57
	41.0	117.9	MDW 1060HX3	J66
	41.3	118.2	MDW 1060HGS3	J46
	41.3	118.2	MDW 1060NHGS3	J95
	42.4	116.0	MDF 1060H3D	J35
	54.0	115.9	MDE 1060S11E04	J15
	54.3	116.2	MDW 1060GS4	J41
	63.6	149.0	MDF 1060H5D	J35
	71.5	150.4	MDA 1060S12H05	J89
	74.0	150.9	MDE 1060S11H05	J22
	74.0	150.9	MDM 1060S11H05	J57
	74.0	150.9	MDW 1060HX5	J66
	74.3	151.2	MDW 1060HGS5	J46
	74.3	151.2	MDW 1060NHGS5	J95
	107.0	183.9	MDE 1060S11H08	J22
	107.3	184.2	MDW 1060HGS8	J46
10.7	30.9	94.9	MDE 1070S11E02	J15
	31.2	95.2	MDW 1070GS2	J41
	32.1	90.0	MDF 1070S2D	J29
	32.1	160.0	MDF 1070L2D	J32
	40.9	117.9	MDE 1070S11H03	J22
	40.9	117.9	MDM 1070S11H03	J57
	40.9	117.9	MDW 1070HX3	J66
	41.2	118.2	MDW 1070HGS3	J46
	42.8	116.0	MDF 1070H3D	J35
	53.9	115.9	MDE 1070S11E04	J15
	54.2	116.2	MDW 1070GS4	J41
	64.2	149.0	MDF 1070H5D	J35
	73.9	150.9	MDE 1070S11H05	J22
	73.9	150.9	MDM 1070S11H05	J57
	73.9	150.9	MDW 1070HX5	J66
	74.2	151.2	MDW 1070HGS5	J46
	106.9	183.9	MDE 1070S11H08	J22
	107.2	184.2	MDW 1070HGS8	J46
10.8	30.8	95.0	MDE 1080S11E02	J15
	30.8	95.0	MDE 1080S11E02H	J17
	31.0	95.2	MDW 1080GS2	J41
	32.4	90.0	MDF 1080S2D	J29
	32.4	160.0	MDF 1080L2D	J32
	40.8	118.0	MDE 1080S11H03	J22
	40.8	118.0	MDM 1080S11H03	J57
	40.8	118.0	MDW 1080HX3	J66
	41.0	118.2	MDW 1080HGS3	J46
	43.2	116.0	MDF 1080H3D	J35
	53.8	116.0	MDE 1080S11E04	J15

(Blue text: Flat head ■Indexable cutting edge type)

The 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 ø10.8 to ø11.1mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
10.8	54.0	116.2	MDW 1080GS4	J41
	64.8	149.0	MDF 1080H5D	J35
	71.2	150.4	MDA 1080S12H05	J89
	73.8	151.0	MDE 1080S11H05	J22
	73.8	151.0	MDM 1080S11H05	J57
	73.8	151.0	MDW 1080HX5	J66
	74.0	151.2	MDW 1080HGS5	J46
	106.8	184.0	MDE 1080S11H08	J22
	107.0	184.2	MDW 1080HGS8	J46
	137.8	217.0	MDA 1080S12H10	J89
10.9	30.7	95.0	MDE 1090S11E02	J15
	31.0	95.3	MDW 1090GS2	J41
	32.7	90.0	MDF 1090S2D	J29
	32.7	160.0	MDF 1090L2D	J32
	40.7	118.0	MDE 1090S11H03	J22
	40.7	118.0	MDM 1090S11H03	J57
	40.7	118.0	MDW 1090HX3	J66
	41.0	118.3	MDW 1090HGS3	J46
	43.6	116.0	MDF 1090H3D	J35
	53.7	116.0	MDE 1090S11E04	J15
	54.0	116.3	MDW 1090GS4	J41
	65.4	149.0	MDF 1090H5D	J35
	73.7	151.0	MDE 1090S11H05	J22
	73.7	151.0	MDM 1090S11H05	J57
	73.7	151.0	MDW 1090HX5	J66
	74.0	151.3	MDW 1090HGS5	J46
	106.7	184.0	MDE 1090S11H08	J22
	107.0	184.3	MDW 1090HGS8	J46
11.0	30.5	95.0	MDE 1100S11E02	J15
	30.8	95.3	MDW 1100GS2	J41
	33.0	90.0	MDF 1100S2D	J29
	33.0	160.0	MDF 1100L2D	J32
	38.0	117.5	MDA 1100S12H03	J89
	40.0	117.5	MDW 1100PHT	J82
	40.5	118.0	MDE 1100S11H03	J22
	40.5	118.0	MDM 1100S11H03	J58
	40.5	118.0	MDW 1100HX3	J66
	40.8	116.3	MDW 1100SGS3	J75
	40.8	118.3	MDW 1100HGS3	J46
	40.8	118.3	MDW 1100HY3	J71
	40.8	118.3	MDW 1100NHGS3	J95
	44.0	116.0	MDF 1100H3D	J35
	53.5	116.0	MDE 1100S11E04	J15
	53.8	116.3	MDW 1100GS4	J41
	66.0	149.0	MDF 1100H5D	J35
	71.0	150.5	MDA 1100S12H05	J89
	73.5	151.0	MDE 1100S11H05	J22
	73.5	151.0	MDM 1100S11H05	J58
	73.5	151.0	MDW 1100HX5	J66
	73.8	151.3	MDW 1100HGS5	J46
	73.8	151.3	MDW 1100HY5	J71
	73.8	151.3	MDW 1100NHGS5	J95
	106.5	184.0	MDE 1100S11H08	J22
	106.5	184.0	MDW 1100HX8	J66
	106.8	184.3	MDW 1100HGS8	J46
	137.5	217.0	MDA 1100S12H10	J89
	139.8	217.3	MDW 1100NHGS10	J95
	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	J95
	77.7	160.3	MDW 1108NHGS5	J95
11.1	30.4	102.0	MDE 1110S12E02	J15
	30.7	102.3	MDW 1110GS2	J41
	33.3	90.0	MDF 1110S2D	J29
	33.3	170.0	MDF 1110L2D	J32
	42.3	123.5	MDA 1110S12H03	J89
	42.9	124.0	MDE 1110S12H03	J22
	42.9	124.0	MDM 1110S12H03	J58
	42.9	124.0	MDW 1110HX3	J66
	43.2	124.3	MDW 1110HGS3	J46
	43.2	124.3	MDW 1110NHGS3	J95
	44.4	122.0	MDF 1110H3D	J35
	56.4	123.0	MDE 1110S12E04	J15
	56.7	123.3	MDW 1110GS4	J41
	66.6	158.0	MDF 1110H5D	J35
	76.8	159.5	MDA 1110S12H05	J89
	77.4	160.0	MDE 1110S12H05	J22

(Blue text: Flat head ■Indexable cutting edge type)

● Diameter ø11.1 to ø11.4mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
11.1	77.4	160.0	MDM 1110S12H05	J58
	77.4	160.0	MDW 1110HX5	J66
	77.7	160.3	MDW 1110HGS5	J46
	77.7	160.3	MDW 1110NHGS5	J95
	111.9	196.0	MDE 1110S12H08	J22
	112.2	196.3	MDW 1110HGS8	J46
11.2	30.2	102.0	MDE 1120S12E02	J15
	30.5	102.3	MDW 1120GS2	J41
	33.6	90.0	MDF 1120S2D	J29
	33.6	160.0	MDF 1120L2D	J32
	42.7	124.0	MDE 1120S12H03	J22
	42.7	124.0	MDM 1120S12H03	J58
	42.7	124.0	MDW 1120HX3	J66
	43.0	124.3	MDW 1120HGS3	J46
	43.0	124.3	MDW 1120NHGS3	J95
	44.8	122.0	MDF 1120H3D	J35
	56.2	123.0	MDE 1120S12E04	J15
	56.5	123.3	MDW 1120GS4	J41
	67.2	158.0	MDF 1120H5D	J35
	76.7	159.5	MDA 1120S12H05	J89
	77.2	160.0	MDE 1120S12H05	J22
	77.2	160.0	MDM 1120S12H05	J58
	77.2	160.0	MDW 1120HX5	J66
	77.5	160.3	MDW 1120HGS5	J46
	77.5	160.3	MDW 1120NHGS5	J95
	111.7	196.0	MDE 1120S12H08	J22
	112.0	196.3	MDW 1120HGS8	J46
11.22	30.2	102.0	MDE 1122S12E02	J15
	33.6	90.0	MDF 1122S2D	J29
	77.2	160.0	MDE 1122S12H05	J22
11.24	30.2	102.0	MDE 1124S12E02	J15
	33.7	90.0	MDF 1124S2D	J29
	77.2	160.0	MDE 1124S12H05	J22
11.3	30.2	102.1	MDE 1130S12E02	J15
	30.4	102.3	MDW 1130GS2	J41
	33.9	90.0	MDF 1130S2D	J29
	33.9	160.0	MDF 1130L2D	J32
	42.7	124.1	MDE 1130S12H03	J22
	42.7	124.1	MDM 1130S12H03	J58
	42.7	124.1	MDW 1130HX3	J66
	42.9	124.3	MDW 1130HGS3	J46
	45.2	122.0	MDF 1130H3D	J35
	56.2	123.1	MDE 1130S12E04	J15
	56.4	123.3	MDW 1130GS4	J41
	67.8	158.0	MDF 1130H5D	J35
	77.2	160.1	MDE 1130S12H05	J22
	77.2	160.1	MDM 1130S12H05	J58
	77.2	160.1	MDW 1130HX5	J66
	77.4	160.3	MDW 1130HGS5	J46
	111.7	196.1	MDE 1130S12H08	J22
	111.9	196.3	MDW 1130HGS8	J46
11.36	30.0	102.1	MDE 1136S12E02	J15
	34.0	90.0	MDF 1136S2D	J29
	77.0	160.1	MDE 1136S12H05	J22
11.38	30.0	102.1	MDE 1138S12E02	J15
	34.1	90.0	MDF 1138S2D	J29
	77.0	160.1	MDE 1138S12H05	J22
11.4	30.0	102.1	MDE 1140S12E02	J15
	30.3	102.4	MDW 1140GS2	J41
	34.2	90.0	MDF 1140S2D	J29
	34.2	160.0	MDF 1140L2D	J32
	42.5	124.1	MDE 1140S12H03	J22
	42.5	124.1	MDM 1140S12H03	J58
	42.5	124.1	MDW 1140HX3	J66
	42.8	124.4	MDW 1140HGS3	J46
	42.8	124.4	MDW 1140HY3	J71
	42.8	124.4	MDW 1140NHGS3	J95
	45.6	122.0	MDF 1140H3D	J35
	56.0	123.1	MDE 1140S12E04	J15
	56.3	123.4	MDW 1140GS4	J41
	68.4	158.0	MDF 1140H5D	J35
	76.4	159.5	MDA 1140S12H05	J89
	77.0	160.1	MDE 1140S12H05	J22
	77.0	160.1	MDM 1140S12H05	J58
	77.0	160.1	MDW 1140HX5	J66
	77.3	160.4	MDW 1140HGS5	J46
	77.3	160.4	MDW 1140HY5	J71
	77.3	160.4	MDW 1140NHGS5	J95
	111.5	196.1	MDE 1140S12H08	J22
	111.8	196.4	MDW 1140HGS8	J46

(Blue text: Flat head ■Indexable cutting edge type)

● Diameter ø11.5 to ø11.8mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
11.5	29.9	102.1	MDE 1150S12E02	J15
	30.2	102.4	MDW 1150GS2	J41
	34.5	90.0	MDF 1150S2D	J29
	34.5	160.0	MDF 1150L2D	J32
	41.8	123.5	MDA 1150S12H03	J89
	41.8	123.5	MDW 1150PHT	J82
	42.4	124.1	MDE 1150S12H03	J22
	42.4	124.1	MDM 1150S12H03	J58
	42.4	124.1	MDW 1150HX3	J66
	42.7	123.4	MDW 1150SGS3	J75
	42.7	124.4	MDW 1150HGS3	J46
	42.7	124.4	MDW 1150HY3	J71
	42.7	124.4	MDW 1150NHGS3	J95
	46.0	122.0	MDF 1150H3D	J35
	55.9	123.1	MDE 1150S12E04	J15
	56.2	123.4	MDW 1150GS4	J41
	69.0	158.0	MDF 1150H5D	J35
	76.3	159.5	MDA 1150S12H05	J89
	76.9	160.1	MDE 1150S12H05	J22
	76.9	160.1	MDM 1150S12H05	J58
	76.9	160.1	MDW 1150HX5	J66
	77.2	160.4	MDW 1150HGS5	J46
	77.2	160.4	MDW 1150HY5	J71
	77.2	160.4	MDW 1150NHGS5	J95
	111.4	196.1	MDE 1150S12H08	J22
	111.4	196.1	MDW 1150HX8	J66
	111.7	196.4	MDW 1150HGS8	J46
	145.8	232.1	MDA 1150S12H10	J89
	146.2	232.4	MDW 1150NHGS10	J95
	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	31.7	102.1	MDE 1160S12E02	J15
	32.0	102.4	MDW 1160GS2	J41
	34.8	90.0	MDF 1160S2D	J29
	34.8	160.0	MDF 1160L2D	J32
	44.7	124.1	MDE 1160S12H03	J22
	44.7	124.1	MDM 1160S12H03	J58
	44.7	124.1	MDW 1160HX3	J66
	45.0	124.4	MDW 1160HGS3	J46
	46.4	122.0	MDF 1160H3D	J35
	57.7	123.1	MDE 1160S12E04	J15
	58.0	123.4	MDW 1160GS4	J41
	69.6	158.0	MDF 1160H5D	J35
	80.7	160.1	MDE 1160S12H05	J22
	80.7	160.1	MDM 1160S12H05	J58
	80.7	160.1	MDW 1160HX5	J66
	81.0	160.4	MDW 1160HGS5	J46
	116.7	196.1	MDE 1160S12H08	J22
	117.0	196.4	MDW 1160HGS8	J46
11.7	31.6	102.1	MDE 1170S12E02	J15
	31.9	102.4	MDW 1170GS2	J41
	35.1	90.0	MDF 1170S2D	J29
	35.1	160.0	MDF 1170L2D	J32
	44.6	124.1	MDE 1170S12H03	J22
	44.6	124.1	MDM 1170S12H03	J58
	44.6	124.1	MDW 1170HX3	J66
	44.9	124.4	MDW 1170HGS3	J46
	46.8	122.0	MDF 1170H3D	J35
	57.6	123.1	MDE 1170S12E04	J15
	57.9	123.4	MDW 1170GS4	J41
	70.2	158.0	MDF 1170H5D	J35
	80.6	160.1	MDE 1170S12H05	J22
	80.6	160.1	MDM 1170S12H05	J58
	80.6	160.1	MDW 1170HX5	J66
	80.9	160.4	MDW 1170HGS5	J46
	116.6	196.1	MDE 1170S12H08	J22
	116.9	196.4	MDW 1170HGS8	J46
11.8	31.4	102.1	MDE 1180S12E02	J15
	31.7	102.4	MDW 1180GS2	J41
	35.4	90.0	MDF 1180S2D	J29
	35.4	160.0	MDF 1180L2D	J32
	44.4	124.1	MDE 1180S12H03	J23
	44.4	124.1	MDM 1180S12H03	J58
	44.4	124.1	MDW 1180HX3	J66
	44.7	124.4	MDW 1180HGS3	J46
	47.2	122.0	MDF 1180H3D	J35
	57.4	123.1	MDE 1180S12E04	J15

(Blue text: Flat head ■Indexable cutting edge type)

The 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 ø11.8 to ø12.0mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
11.8	57.7	123.4	MDW 1180GS4	J41
	70.8	158.0	MDF 1180H5D	J35
	79.9	159.6	MDA 1180S12H05	J89
	80.4	160.1	MDE 1180S12H05	J23
	80.4	160.1	MDM 1180S12H05	J58
	80.4	160.1	MDW 1180HX5	J66
	80.7	160.4	MDW 1180HGS5	J46
	116.4	196.1	MDE 1180S12H08	J23
	116.7	196.4	MDW 1180HGS8	J46
11.9	31.4	102.2	MDE 1190S12E02	J15
	31.7	102.5	MDW 1190GS2	J41
	35.7	90.0	MDF 1190S2D	J29
	35.7	160.0	MDF 1190L2D	J32
	44.4	124.2	MDE 1190S12H03	J23
	44.4	124.2	MDM 1190S12H03	J58
	44.4	124.2	MDW 1190HX3	J66
	44.7	124.5	MDW 1190HGS3	J46
	47.6	122.0	MDF 1190H3D	J35
	57.4	123.2	MDE 1190S12E04	J15
	57.7	123.5	MDW 1190GS4	J41
	71.4	158.0	MDF 1190H5D	J35
	80.4	160.2	MDE 1190S12H05	J23
	80.4	160.2	MDM 1190S12H05	J58
	80.4	160.2	MDW 1190HX5	J66
	80.7	160.5	MDW 1190HGS5	J46
	116.4	196.2	MDE 1190S12H08	J23
	116.7	196.5	MDW 1190HGS8	J46
12.0	21.0	88.5	SMDT 1200 MFS+SMDH 120-1.5D	J124
	21.0	88.5	SMDT 1200 MFS+SMDH 120-1.5DF	J122
	23.0	90.5	SMDT 1200 MTL/MSL/MEL+SMDH 120-1.5D	J116
	23.0	90.5	SMDT 1200 MTL/MSL/MEL+SMDH 120-1.5DF	J114
	31.2	102.2	MDE 1200S12E02	J15
	31.5	102.5	MDW 1200GS2	J41
	36.0	90.0	MDF 1200S2D	J29
	36.0	160.0	MDF 1200L2D-S10	J32
	36.0	170.0	MDF 1200L2D	J32
	40.0	105.2	SMDT 1200 MFS+SMDH 120-3D	J124
	40.0	105.2	SMDT 1200 MFS+SMDH 120-3DF	J122
	40.0	105.2	SMDT 1200 MFS+SMDH 120M	J120
	42.0	107.2	SMDT 1200 MTL/MSL/MEL+SMDH 120-3D	J116
	42.0	107.2	SMDT 1200 MTL/MSL/MEL+SMDH 120-3DF	J114
	42.0	107.2	SMDT 1200 MTL/MSL/MEL+SMDH 120M	J112
	43.6	123.6	MDA 1200S12H03	J89
	43.6	123.6	MDW 1200PHT	J82
	44.2	124.2	MDE 1200S12H03	J23
	44.2	124.2	MDM 1200S12H03	J58
	44.2	124.2	MDW 1200HX3	J66
	44.5	123.5	MDW 1200SGS3	J75
	44.5	124.5	MDW 1200HGS3	J46
	44.5	124.5	MDW 1200HY3	J71
	44.5	124.5	MDW 1200NHGS3	J95
	48.0	122.0	MDF 1200H3D	J35
	57.2	123.2	MDE 1200S12E04	J15
	57.5	123.5	MDW 1200GS4	J41
	65.0	130.2	SMDT 1200 MFS+SMDH 120-5D	J124
	65.0	130.2	SMDT 1200 MFS+SMDH 120-5DF	J122
	65.0	130.2	SMDT 1200 MFS+SMDH 120L	J120
	67.0	132.2	SMDT 1200 MTL/MSL/MEL+SMDH 120-5D	J116
	67.0	132.2	SMDT 1200 MTL/MSL/MEL+SMDH 120-5DF	J114
	67.0	132.2	SMDT 1200 MTL/MSL/MEL+SMDH 120L	J112
	72.0	158.0	MDF 1200H5D	J35
	79.6	159.6	MDA 1200S12H05	J89
	80.2	160.2	MDE 1200S12H05	J23
	80.2	160.2	MDM 1200S12H05	J58
	80.2	160.2	MDW 1200HX5	J66
	80.5	160.5	MDW 1200HGS5	J46
	80.5	160.5	MDW 1200HY5	J71
	80.5	160.5	MDW 1200NHGS5	J95
	96.0	162.4	SMDT 1200 MFS+SMDH 120-8D	J124
	96.0	162.4	SMDT 1200 MFS+SMDH 120-8DF	J122
	98.0	164.4	SMDT 1200 MTL/MSL/MEL+SMDH 120-8D	J116
	98.0	164.4	SMDT 1200 MTL/MSL/MEL+SMDH 120-8DF	J114
	116.2	196.2	MDE 1200S12H08	J23
	116.2	196.2	MDW 1200HX8	J66
	116.5	196.5	MDW 1200HGS8	J46
	144.0	211.3	SMDT 1200 MFS+SMDH 120-12D	J124
	146.0	213.3	SMDT 1200 MTL/MSL/MEL+SMDH 120-12D	J116
	152.2	232.2	MDA 1200S12H10	J89
	152.5	232.5	MDW 1200NHGS10	J95
	164.2	244.2	MDW 1200XHGS10	J82

(Blue text: Flat head ■Indexable cutting edge type)

● Diameter ø12.0 to ø12.4mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
12.0	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	90.5	SMDT 1210 MTL/MSL/MEL+SMDH 120-1.5D	J116
	23.0	90.5	SMDT 1210 MTL/MSL/MEL+SMDH 120-1.5DF	J114
	31.1	102.2	MDE 1210S13E02	J15
	36.3	100.0	MDF 1210S2D	J29
	42.0	107.2	SMDT 1210 MTL/MSL/MEL+SMDH 120-3D	J116
	42.0	107.2	SMDT 1210 MTL/MSL/MEL+SMDH 120-3DF	J114
	42.0	107.2	SMDT 1210 MTL/MSL/MEL+SMDH 120M	J112
	46.6	130.2	MDE 1210S13H03	J23
	46.6	130.2	MDM 1210S13H03	J58
	46.9	130.5	MDW 1210HGS3	J46
	46.9	130.5	MDW 1210NHGS3	J95
	60.1	139.2	MDE 1210S13E04	J15
	67.0	132.2	SMDT 1210 MTL/MSL/MEL+SMDH 120-5D	J116
	67.0	132.2	SMDT 1210 MTL/MSL/MEL+SMDH 120-5DF	J114
	67.0	132.2	SMDT 1210 MTL/MSL/MEL+SMDH 120L	J112
	84.1	169.2	MDE 1210S13H05	J23
	84.1	169.2	MDM 1210S13H05	J58
	84.4	169.5	MDW 1210HGS5	J46
	84.4	169.5	MDW 1210NHGS5	J95
	98.0	164.4	SMDT 1210 MTL/MSL/MEL+SMDH 120-8D	J116
	98.0	164.4	SMDT 1210 MTL/MSL/MEL+SMDH 120-8DF	J114
	121.6	208.2	MDE 1210S13H08	J23
	146.0	213.3	SMDT 1210 MTL/MSL/MEL+SMDH 120-12D	J116
12.2	23.0	90.5	SMDT 1220 MTL/MSL/MEL+SMDH 120-1.5D	J116
	23.0	90.5	SMDT 1220 MTL/MSL/MEL+SMDH 120-1.5DF	J114
	30.9	102.2	MDE 1220S13E02	J15
	36.6	100.0	MDF 1220S2D	J29
	42.0	107.2	SMDT 1220 MTL/MSL/MEL+SMDH 120-3D	J116
	42.0	107.2	SMDT 1220 MTL/MSL/MEL+SMDH 120-3DF	J114
	42.0	107.2	SMDT 1220 MTL/MSL/MEL+SMDH 120M	J112
	46.4	130.2	MDE 1220S13H03	J23
	46.4	130.2	MDM 1220S13H03	J58
	46.7	130.5	MDW 1220HGS3	J46
	59.9	139.2	MDE 1220S13E04	J15
	67.0	132.2	SMDT 1220 MTL/MSL/MEL+SMDH 120-5D	J116
	67.0	132.2	SMDT 1220 MTL/MSL/MEL+SMDH 120-5DF	J114
	67.0	132.2	SMDT 1220 MTL/MSL/MEL+SMDH 120L	J112
	83.9	169.2	MDE 1220S13H05	J23
	83.9	169.2	MDM 1220S13H05	J58
	84.2	169.5	MDW 1220HGS5	J46
	98.0	164.4	SMDT 1220 MTL/MSL/MEL+SMDH 120-8D	J116
	98.0	164.4	SMDT 1220 MTL/MSL/MEL+SMDH 120-8DF	J114
	121.4	208.2	MDE 1220S13H08	J23
	146.0	213.3	SMDT 1220 MTL/MSL/MEL+SMDH 120-12D	J116
12.3	23.0	90.5	SMDT 1230 MTL/MSL/MEL+SMDH 120-1.5D	J116
	23.0	90.5	SMDT 1230 MTL/MSL/MEL+SMDH 120-1.5DF	J114
	30.8	102.2	MDE 1230S13E02	J15
	36.9	100.0	MDF 1230S2D	J29
	42.0	107.2	SMDT 1230 MTL/MSL/MEL+SMDH 120-3D	J116
	42.0	107.2	SMDT 1230 MTL/MSL/MEL+SMDH 120-3DF	J114
	42.0	107.2	SMDT 1230 MTL/MSL/MEL+SMDH 120M	J112
	46.3	130.2	MDE 1230S13H03	J23
	46.3	130.2	MDM 1230S13H03	J58
	46.6	130.5	MDW 1230HGS3	J47
	46.6	130.5	MDW 1230NHGS3	J95
	59.8	139.2	MDE 1230S13E04	J15
	67.0	132.2	SMDT 1230 MTL/MSL/MEL+SMDH 120-5D	J116
	67.0	132.2	SMDT 1230 MTL/MSL/MEL+SMDH 120-5DF	J114
	67.0	132.2	SMDT 1230 MTL/MSL/MEL+SMDH 120L	J112
	83.8	169.2	MDE 1230S13H05	J23
	83.8	169.2	MDM 1230S13H05	J58
	84.1	169.5	MDW 1230HGS5	J47
	84.1	169.5	MDW 1230NHGS5	J95
	98.0	164.4	SMDT 1230 MTL/MSL/MEL+SMDH 120-8D	J116
	98.0	164.4	SMDT 1230 MTL/MSL/MEL+SMDH 120-8DF	J114
	121.3	208.2	MDE 1230S13H08	J23
	146.0	213.3	SMDT 1230 MTL/MSL/MEL+SMDH 120-12D	J116
12.4	23.0	90.5	SMDT 1240 MTL/MSL/MEL+SMDH 120-1.5D	J116
	23.0	90.5	SMDT 1240 MTL/MSL/MEL+SMDH 120-1.5DF	J114
	30.7	102.3	MDE 1240S13E02	J15
	37.2	100.0	MDF 1240S2D	J29
	42.0	107.2	SMDT 1240 MTL/MSL/MEL+SMDH 120-3D	J116
	42.0	107.2	SMDT 1240 MTL/MSL/MEL+SMDH 120-3DF	J114
	42.0	107.2	SMDT 1240 MTL/MSL/MEL+SMDH 120M	J112
	46.2	130.3	MDE 1240S13H03	J23

(Blue text: Flat head ■Indexable cutting edge type)

● Diameter ø12.4 to ø12.6mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
12.4	46.2	130.3	MDM 1240S13H03	J58
	46.5	130.6	MDW 1240HGS3	J47
	59.7	139.3	MDE 1240S13E04	J15
	67.0	132.2	SMDT 1240 MTL/MSL/MEL+SMDH 120-5D	J116
	67.0	132.2	SMDT 1240 MTL/MSL/MEL+SMDH 120-5DF	J114
	67.0	132.2	SMDT 1240 MTL/MSL/MEL+SMDH 120L	J112
	83.7	169.3	MDE 1240S13H05	J23
	83.7	169.3	MDM 1240S13H05	J58
	84.0	169.6	MDW 1240HGS5	J47
	98.0	164.4	SMDT 1240 MTL/MSL/MEL+SMDH 120-8D	J116
	98.0	164.4	SMDT 1240 MTL/MSL/MEL+SMDH 120-8DF	J114
	121.2	208.3	MDE 1240S13H08	J23
	146.0	213.3	SMDT 1240 MTL/MSL/MEL+SMDH 120-12D	J116
12.5	22.0	88.8	SMDT 1250 MFS+SMDH 125-1.5D	J124
	22.0	88.8	SMDT 1250 MFS+SMDH 125-1.5DF	J122
	24.0	91.0	SMDT 1250 MTL/MSL/MEL+SMDH 125-1.5D	J116
	24.0	91.0	SMDT 1250 MTL/MSL/MEL+SMDH 125-1.5DF	J114
	30.6	102.3	MDE 1250S13E02	J15
	37.5	100.0	MDF 1250S2D	J29
	37.5	180.0	MDF 1250L2D	J32
	41.0	105.1	SMDT 1250 MFS+SMDH 125-3D	J124
	41.0	105.1	SMDT 1250 MFS+SMDH 125-3DF	J122
	41.0	105.1	SMDT 1250 MFS+SMDH 125M	J120
	44.0	107.3	SMDT 1250 MTL/MSL/MEL+SMDH 125-3D	J116
	44.0	107.3	SMDT 1250 MTL/MSL/MEL+SMDH 125-3DF	J114
	44.0	107.3	SMDT 1250 MTL/MSL/MEL+SMDH 125M	J112
	45.5	129.7	MDW 1250PHT	J82
	46.1	130.3	MDE 1250S13H03	J23
	46.1	130.3	MDM 1250S13H03	J58
	46.1	130.3	MDW 1250HX3	J66
	46.4	130.6	MDW 1250HGS3	J47
	46.4	130.6	MDW 1250HY3	J71
	46.4	130.6	MDW 1250NHGS3	J95
	50.0	128.0	MDF 1250H3D	J35
	59.6	139.3	MDE 1250S13E04	J15
	67.0	130.1	SMDT 1250 MFS+SMDH 125-5D	J124
	67.0	130.1	SMDT 1250 MFS+SMDH 125-5DF	J122
	67.0	130.1	SMDT 1250 MFS+SMDH 125L	J120
	69.0	132.3	SMDT 1250 MTL/MSL/MEL+SMDH 125-5D	J116
	69.0	132.3	SMDT 1250 MTL/MSL/MEL+SMDH 125-5DF	J114
	69.0	132.3	SMDT 1250 MTL/MSL/MEL+SMDH 125L	J112
	75.0	167.0	MDF 1250H5D	J35
	83.6	169.3	MDE 1250S13H05	J23
	83.6	169.3	MDM 1250S13H05	J58
	83.6	169.3	MDW 1250HX5	J66
	83.9	169.6	MDW 1250HGS5	J47
	83.9	169.6	MDW 1250HY5	J71
	83.9	169.6	MDW 1250NHGS5	J95
	100.0	167.9	SMDT 1250 MFS+SMDH 125-8D	J124
	100.0	167.9	SMDT 1250 MFS+SMDH 125-8DF	J122
	102.0	170.1	SMDT 1250 MTL/MSL/MEL+SMDH 125-8D	J116
	102.0	170.1	SMDT 1250 MTL/MSL/MEL+SMDH 125-8DF	J114
	121.1	208.3	MDE 1250S13H08	J23
	121.1	208.3	MDW 1250HX8	J66
	121.4	208.6	MDW 1250HGS8	J47
	121.4	208.6	MDW 1250HY8	J71
	150.0	217.3	SMDT 1250 MFS+SMDH 125-12D	J124
	152.0	219.5	SMDT 1250 MTL/MSL/MEL+SMDH 125-12D	J116
	158.9	247.6	MDW 1250NHGS10	J95
	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	J116
	24.0	91.0	SMDT 1260 MTL/MSL/MEL+SMDH 125-1.5DF	J114
	32.4	102.3	MDE 1260S13E02	J15
	37.8	100.0	MDF 1260S2D	J29
	44.0	107.3	SMDT 1260 MTL/MSL/MEL+SMDH 125-3D	J116
	44.0	107.3	SMDT 1260 MTL/MSL/MEL+SMDH 125-3DF	J114
	44.0	107.3	SMDT 1260 MTL/MSL/MEL+SMDH 125M	J112
	48.4	130.3	MDE 1260S13H03	J23
	48.4	130.3	MDM 1260S13H03	J58
	48.7	130.6	MDW 1260HGS3	J47
	61.4	139.3	MDE 1260S13E04	J15
	69.0	132.3	SMDT 1260 MTL/MSL/MEL+SMDH 125-5D	J116
	69.0	132.3	SMDT 1260 MTL/MSL/MEL+SMDH 125-5DF	J114
	69.0	132.3	SMDT 1260 MTL/MSL/MEL+SMDH 125L	J112
	87.4	169.3	MDE 1260S13H05	J23
	87.4	169.3	MDM 1260S13H05	J58

(Blue text: Flat head ■Indexable cutting edge type)

The 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 ø13.0mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
12.6	87.7	169.6	MDW 1260HGS5	J47
	102.0	170.1	SMDT 1260 MTL/MSL/MEL+SMDH 125-8D	J116
	102.0	170.1	SMDT 1260 MTL/MSL/MEL+SMDH 125-8DF	J114
	126.4	208.3	MDE 1260S13H08	J23
	152.0	219.5	SMDT 1260 MTL/MSL/MEL+SMDH 125-12D	J116
12.7	24.0	91.0	SMDT 1270 MTL/MSL/MEL+SMDH 125-1.5D	J116
	24.0	91.0	SMDT 1270 MTL/MSL/MEL+SMDH 125-1.5DF	J114
	32.3	102.3	MDE 1270S13E02	J15
	38.1	100.0	MDF 1270S2D	J29
	44.0	107.3	SMDT 1270 MTL/MSL/MEL+SMDH 125-3D	J116
	44.0	107.3	SMDT 1270 MTL/MSL/MEL+SMDH 125-3DF	J114
	44.0	107.3	SMDT 1270 MTL/MSL/MEL+SMDH 125M	J112
	48.3	130.3	MDE 1270S13H03	J23
	48.3	130.3	MDM 1270S13H03	J58
	48.6	130.6	MDW 1270HGS3	J47
	61.3	139.3	MDE 1270S13E04	J15
	69.0	132.3	SMDT 1270 MTL/MSL/MEL+SMDH 125-5D	J116
	69.0	132.3	SMDT 1270 MTL/MSL/MEL+SMDH 125-5DF	J114
	69.0	132.3	SMDT 1270 MTL/MSL/MEL+SMDH 125L	J112
	87.3	169.3	MDE 1270S13H05	J23
	87.3	169.3	MDM 1270S13H05	J58
	87.6	169.6	MDW 1270HGS5	J47
	102.0	170.1	SMDT 1270 MTL/MSL/MEL+SMDH 125-8D	J116
	102.0	170.1	SMDT 1270 MTL/MSL/MEL+SMDH 125-8DF	J114
	126.3	208.3	MDE 1270S13H08	J23
	152.0	219.5	SMDT 1270 MTL/MSL/MEL+SMDH 125-12D	J116
12.8	24.0	91.0	SMDT 1280 MTL/MSL/MEL+SMDH 125-1.5D	J116
	24.0	91.0	SMDT 1280 MTL/MSL/MEL+SMDH 125-1.5DF	J114
	32.1	102.3	MDE 1280S13E02	J15
	38.4	100.0	MDF 1280S2D	J29
	44.0	107.3	SMDT 1280 MTL/MSL/MEL+SMDH 125-3D	J116
	44.0	107.3	SMDT 1280 MTL/MSL/MEL+SMDH 125-3DF	J114
	44.0	107.3	SMDT 1280 MTL/MSL/MEL+SMDH 125M	J112
	48.1	130.3	MDE 1280S13H03	J23
	48.1	130.3	MDM 1280S13H03	J58
	48.4	130.6	MDW 1280HGS3	J47
	61.1	139.3	MDE 1280S13E04	J15
	69.0	132.3	SMDT 1280 MTL/MSL/MEL+SMDH 125-5D	J116
	69.0	132.3	SMDT 1280 MTL/MSL/MEL+SMDH 125-5DF	J114
	69.0	132.3	SMDT 1280 MTL/MSL/MEL+SMDH 125L	J112
	87.1	169.3	MDE 1280S13H05	J23
	87.1	169.3	MDM 1280S13H05	J58
	87.4	169.6	MDW 1280HGS5	J47
	102.0	170.1	SMDT 1280 MTL/MSL/MEL+SMDH 125-8D	J116
	102.0	170.1	SMDT 1280 MTL/MSL/MEL+SMDH 125-8DF	J114
	126.1	208.3	MDE 1280S13H08	J23
	152.0	219.5	SMDT 1280 MTL/MSL/MEL+SMDH 125-12D	J116
12.9	24.0	91.0	SMDT 1290 MTL/MSL/MEL+SMDH 125-1.5D	J116
	24.0	91.0	SMDT 1290 MTL/MSL/MEL+SMDH 125-1.5DF	J114
	32.0	102.3	MDE 1290S13E02	J15
	38.7	100.0	MDF 1290S2D	J29
	44.0	107.3	SMDT 1290 MTL/MSL/MEL+SMDH 125-3D	J116
	44.0	107.3	SMDT 1290 MTL/MSL/MEL+SMDH 125-3DF	J114
	44.0	107.3	SMDT 1290 MTL/MSL/MEL+SMDH 125M	J112
	48.0	130.3	MDE 1290S13H03	J23
	48.0	130.3	MDM 1290S13H03	J58
	48.4	130.7	MDW 1290HGS3	J47
	61.0	139.3	MDE 1290S13E04	J15
	69.0	132.3	SMDT 1290 MTL/MSL/MEL+SMDH 125-5D	J116
	69.0	132.3	SMDT 1290 MTL/MSL/MEL+SMDH 125-5DF	J114
	69.0	132.3	SMDT 1290 MTL/MSL/MEL+SMDH 125L	J112
	87.0	169.3	MDE 1290S13H05	J23
	87.0	169.3	MDM 1290S13H05	J58
	87.4	169.7	MDW 1290HGS5	J47
	102.0	170.1	SMDT 1290 MTL/MSL/MEL+SMDH 125-8D	J116
	102.0	170.1	SMDT 1290 MTL/MSL/MEL+SMDH 125-8DF	J114
	126.0	208.3	MDE 1290S13H08	J23
	152.0	219.5	SMDT 1290 MTL/MSL/MEL+SMDH 125-12D	J116
12.96	48.3	130.7	MDW 1296NHGS3	J95
	87.3	169.7	MDW 1296NHGS5	J95
13.0	23.0	90.0	SMDT 1300 MFS+SMDH 130-1.5D	J124
	23.0	90.0	SMDT 1300 MFS+SMDH 130-1.5DF	J122
	25.0	92.2	SMDT 1300 MTL/MSL/MEL+SMDH 130-1.5D	J116
	25.0	92.2	SMDT 1300 MTL/MSL/MEL+SMDH 130-1.5DF	J114
	31.9	102.4	MDE 1300S13E02	J15
	39.0	100.0	MDF 1300S2D	J29
	39.0	180.0	MDF 1300L2D	J32
	43.0	110.2	SMDT 1300 MFS+SMDH 130-3D	J124
	43.0	110.2	SMDT 1300 MFS+SMDH 130-3DF	J122
	43.0	110.2	SMDT 1300 MFS+SMDH 130M	J120

(Blue text: Flat head ■Indexable cutting edge type)

● Diameter ø13.0 to ø13.2mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
	45.0	112.4	SMDT 1300 MTL/MSL/MEL+SMDH 130-3D	J116
	45.0	112.4	SMDT 1300 MTL/MSL/MEL+SMDH 130-3DF	J114
	45.0	112.4	SMDT 1300 MTL/MSL/MEL+SMDH 130M	J112
	47.2	129.7	MDW 1300PHT	J82
	47.9	130.4	MDE 1300S13H03	J23
	47.9	130.4	MDM 1300S13H03	J58
	47.9	130.4	MDW 1300HX3	J66
	48.2	130.7	MDW 1300HGS3	J47
	48.2	130.7	MDW 1300HY3	J71
	48.2	130.7	MDW 1300NHGS3	J95
	52.0	128.0	MDF 1300H3D	J35
	60.9	139.4	MDE 1300S13E04	J15
	70.0	140.2	SMDT 1300 MFS+SMDH 130-5D	J124
	70.0	140.2	SMDT 1300 MFS+SMDH 130-5DF	J122
	70.0	140.2	SMDT 1300 MFS+SMDH 130L	J120
	72.0	142.4	SMDT 1300 MTL/MSL/MEL+SMDH 130-5D	J116
	72.0	142.4	SMDT 1300 MTL/MSL/MEL+SMDH 130-5DF	J114
	72.0	142.4	SMDT 1300 MTL/MSL/MEL+SMDH 130L	J112
	78.0	167.0	MDF 1300H5D	J35
13.0	86.9	169.4	MDE 1300S13H05	J23
	86.9	169.4	MDM 1300S13H05	J58
	86.9	169.4	MDW 1300HX5	J66
	87.2	169.7	MDW 1300HGS5	J47
	87.2	169.7	MDW 1300HY5	J71
	87.2	169.7	MDW 1300NHGS5	J95
	104.0	176.2	SMDT 1300 MFS+SMDH 130-8D	J124
	104.0	176.2	SMDT 1300 MFS+SMDH 130-8DF	J122
	106.0	178.4	SMDT 1300 MTL/MSL/MEL+SMDH 130-8D	J116
	106.0	178.4	SMDT 1300 MTL/MSL/MEL+SMDH 130-8DF	J114
	125.9	208.4	MDE 1300S13H08	J23
	125.9	208.4	MDW 1300HX8	J66
	126.2	208.7	MDW 1300HGS8	J47
	156.0	223.5	SMDT 1300 MFS+SMDH 130-12D	J124
	158.0	225.7	SMDT 1300 MTL/MSL/MEL+SMDH 130-12D	J116
	165.2	247.7	MDW 1300NHGS10	J95
	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	92.2	SMDT 1310 MTL/MSL/MEL+SMDH 130-1.5D	J116
	25.0	92.2	SMDT 1310 MTL/MSL/MEL+SMDH 130-1.5DF	J114
	32.8	107.4	MDE 1310S14E02	J16
	39.3	110.0	MDF 1310S2D	J29
	45.0	112.4	SMDT 1310 MTL/MSL/MEL+SMDH 130-3D	J116
	45.0	112.4	SMDT 1310 MTL/MSL/MEL+SMDH 130-3DF	J114
	45.0	112.4	SMDT 1310 MTL/MSL/MEL+SMDH 130M	J112
	50.3	136.4	MDE 1310S14H03	J23
	50.3	136.4	MDM 1310S14H03	J58
	50.6	136.7	MDW 1310HGS3	J47
	66.8	149.4	MDE 1310S14E04	J16
	72.0	142.4	SMDT 1310 MTL/MSL/MEL+SMDH 130-5D	J116
	72.0	142.4	SMDT 1310 MTL/MSL/MEL+SMDH 130-5DF	J114
	72.0	142.4	SMDT 1310 MTL/MSL/MEL+SMDH 130L	J112
	90.8	178.4	MDE 1310S14H05	J23
	90.8	178.4	MDM 1310S14H05	J58
	91.1	178.7	MDW 1310HGS5	J47
	106.0	178.4	SMDT 1310 MTL/MSL/MEL+SMDH 130-8D	J116
	106.0	178.4	SMDT 1310 MTL/MSL/MEL+SMDH 130-8DF	J114
	131.3	220.4	MDE 1310S14H08	J23
	158.0	225.7	SMDT 1310 MTL/MSL/MEL+SMDH 130-12D	J116
13.2	25.0	92.2	SMDT 1320 MTL/MSL/MEL+SMDH 130-1.5D	J116
	25.0	92.2	SMDT 1320 MTL/MSL/MEL+SMDH 130-1.5DF	J114
	32.6	107.4	MDE 1320S14E02	J16
	39.6	110.0	MDF 1320S2D	J29
	45.0	112.4	SMDT 1320 MTL/MSL/MEL+SMDH 130-3D	J116
	45.0	112.4	SMDT 1320 MTL/MSL/MEL+SMDH 130-3DF	J114
	45.0	112.4	SMDT 1320 MTL/MSL/MEL+SMDH 130M	J112
	50.1	136.4	MDE 1320S14H03	J23
	50.1	136.4	MDM 1320S14H03	J58
	50.4	136.7	MDW 1320HGS3	J47
	66.6	149.4	MDE 1320S14E04	J16
	72.0	142.4	SMDT 1320 MTL/MSL/MEL+SMDH 130-5D	J116
	72.0	142.4	SMDT 1320 MTL/MSL/MEL+SMDH 130-5DF	J114
	72.0	142.4	SMDT 1320 MTL/MSL/MEL+SMDH 130L	J112
	90.6	178.4	MDE 1320S14H05	J23
	90.6	178.4	MDM 1320S14H05	J58
	90.9	178.7	MDW 1320HGS5	J47
	106.0	178.4	SMDT 1320 MTL/MSL/MEL+SMDH 130-8D	J116
	106.0	178.4	SMDT 1320 MTL/MSL/MEL+SMDH 130-8DF	J114
	131.1	220.4	MDE 1320S14H08	J23

(Blue text: Flat head ■Indexable cutting edge type)

● Diameter ø13.2 to ø13.5mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
13.2	158.0	225.7	SMDT 1320 MTL/MSL/MEL+SMDH 130-12D	J116
	25.0	92.2	SMDT 1330 MTL/MSL/MEL+SMDH 130-1.5D	J116
	25.0	92.2	SMDT 1330 MTL/MSL/MEL+SMDH 130-1.5DF	J114
	32.5	107.4	MDE 1330S14E02	J16
	39.9	110.0	MDF 1330S2D	J29
	45.0	112.4	SMDT 1330 MTL/MSL/MEL+SMDH 130-3D	J116
	45.0	112.4	SMDT 1330 MTL/MSL/MEL+SMDH 130-3DF	J114
	45.0	112.4	SMDT 1330 MTL/MSL/MEL+SMDH 130M	J112
	50.0	136.4	MDE 1330S14H03	J23
	50.0	136.4	MDM 1330S14H03	J58
	50.4	136.8	MDW 1330HGS3	J47
13.3	66.5	149.4	MDE 1330S14E04	J16
	72.0	142.4	SMDT 1330 MTL/MSL/MEL+SMDH 130-5D	J116
	72.0	142.4	SMDT 1330 MTL/MSL/MEL+SMDH 130-5DF	J114
	72.0	142.4	SMDT 1330 MTL/MSL/MEL+SMDH 130L	J112
	90.5	178.4	MDE 1330S14H05	J23
	90.5	178.4	MDM 1330S14H05	J58
	90.9	178.8	MDW 1330HGS5	J47
	106.0	178.4	SMDT 1330 MTL/MSL/MEL+SMDH 130-8D	J116
	106.0	178.4	SMDT 1330 MTL/MSL/MEL+SMDH 130-8DF	J114
	131.0	220.4	MDE 1330S14H08	J23
	158.0	225.7	SMDT 1330 MTL/MSL/MEL+SMDH 130-12D	J116
13.4	25.0	92.2	SMDT 1340 MTL/MSL/MEL+SMDH 130-1.5D	J116
	25.0	92.2	SMDT 1340 MTL/MSL/MEL+SMDH 130-1.5DF	J114
	32.3	107.4	MDE 1340S14E02	J16
	40.2	110.0	MDF 1340S2D	J29
	45.0	112.4	SMDT 1340 MTL/MSL/MEL+SMDH 130-3D	J116
	45.0	112.4	SMDT 1340 MTL/MSL/MEL+SMDH 130-3DF	J114
	45.0	112.4	SMDT 1340 MTL/MSL/MEL+SMDH 130M	J112
	49.8	136.4	MDE 1340S14H03	J23
	49.8	136.4	MDM 1340S14H03	J58
	50.2	136.8	MDW 1340HGS3	J47
	66.3	149.4	MDE 1340S14E04	J16
	72.0	142.4	SMDT 1340 MTL/MSL/MEL+SMDH 130-5D	J116
	72.0	142.4	SMDT 1340 MTL/MSL/MEL+SMDH 130-5DF	J114
	72.0	142.4	SMDT 1340 MTL/MSL/MEL+SMDH 130L	J112
	90.3	178.4	MDE 1340S14H05	J23
	90.3	178.4	MDM 1340S14H05	J58
	90.7	178.8	MDW 1340HGS5	J47
	106.0	178.4	SMDT 1340 MTL/MSL/MEL+SMDH 130-8D	J116
	106.0	178.4	SMDT 1340 MTL/MSL/MEL+SMDH 130-8DF	J114
	130.8	220.4	MDE 1340S14H08	J23
	158.0	225.7	SMDT 1340 MTL/MSL/MEL+SMDH 130-12D	J116
13.5	26.0	93.9	SMDT 1350 MFS+SMDH 140-1.5D	J124
	26.0	93.9	SMDT 1350 MFS+SMDH 140-1.5DF	J122
	29.0	96.3	SMDT 1350 MTL/MSL/MEL+SMDH 140-1.5D	J116
	29.0	96.3	SMDT 1350 MTL/MSL/MEL+SMDH 140-1.5DF	J114
	32.3	107.5	MDE 1350S14E02	J16
	40.5	110.0	MDF 1350S2D	J29
	40.5	190.0	MDF 1350L2D	J32
	48.0	116.6	SMDT 1350 MFS+SMDH 140-3D	J124
	48.0	116.6	SMDT 1350 MFS+SMDH 140-3DF	J122
	48.0	116.6	SMDT 1350 MFS+SMDH 140M	J120
	49.1	135.8	MDW 1350PHT	J82
	49.8	136.5	MDE 1350S14H03	J23
	49.8	136.5	MDM 1350S14H03	J58
	49.8	136.5	MDW 1350HX3	J66
	50.1	136.8	MDW 1350HGS3	J47
	50.1	136.8	MDW 1350NHGS3	J96
	51.0	119.0	SMDT 1350 MTL/MSL/MEL+SMDH 140-3D	J116
	51.0	119.0	SMDT 1350 MTL/MSL/MEL+SMDH 140-3DF	J114
	51.0	119.0	SMDT 1350 MTL/MSL/MEL+SMDH 140M	J112
	54.0	134.0	MDF 1350H3D	J35
	66.3	149.5	MDE 1350S14E04	J16
	77.0	146.6	SMDT 1350 MFS+SMDH 140-5D	J124
	77.0	146.6	SMDT 1350 MFS+SMDH 140-5DF	J122
	77.0	146.6	SMDT 1350 MFS+SMDH 140L	J120
	80.0	149.0	SMDT 1350 MTL/MSL/MEL+SMDH 140-5D	J116
	80.0	149.0	SMDT 1350 MTL/MSL/MEL+SMDH 140-5DF	J114
	80.0	149.0	SMDT 1350 MTL/MSL/MEL+SMDH 140L	J112
	81.0	176.0	MDF 1350H5D	J35
	90.3	178.5	MDE 1350S14H05	J23
	90.3	178.5	MDM 1350S14H05	J58
	90.3	178.5	MDW 1350HX5	J66
	90.6	178.8	MDW 1350HGS5	J47
	90.6	178.8	MDW 1350NHGS5	J96
	121.0	191.6	SMDT 1350 MFS+SMDH 140-8D	J124
	121.0	191.6	SMDT 1350 MFS+SMDH 140-8DF	J122
	121.0	191.6	SMDT 1350 MFS+SMDH 140D	J120
	123.0	194.0	SMDT 1350 MTL/MSL/MEL+SMDH 140-8D	J116

(Blue text: Flat head ■Indexable cutting edge type)

The 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 ø13.5 to ø13.9mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
13.5	123.0	194.0	SMDT 1350 MTL/MSL/MEL+SMDH 140-8DF	J114
	123.0	194.0	SMDT 1350 MTL/MSL/MEL+SMDH 140D	J112
	130.8	220.5	MDE 1350S14H08	J23
	130.8	220.5	MDW 1350HX8	J66
	131.1	220.8	MDW 1350HGS8	J47
	168.0	236.1	SMDT 1350 MFS+SMDH 140-12D	J124
	170.0	238.5	SMDT 1350 MTL/MSL/MEL+SMDH 140-12D	J116
	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	96.3	SMDT 1360 MTL/MSL/MEL+SMDH 140-1.5D	J116
	29.0	96.3	SMDT 1360 MTL/MSL/MEL+SMDH 140-1.5DF	J114
	34.1	107.5	MDE 1360S14E02	J16
	40.8	110.0	MDF 1360S2D	J29
	51.0	119.0	SMDT 1360 MTL/MSL/MEL+SMDH 140-3D	J116
	51.0	119.0	SMDT 1360 MTL/MSL/MEL+SMDH 140-3DF	J114
	51.0	119.0	SMDT 1360 MTL/MSL/MEL+SMDH 140M	J112
	52.1	136.5	MDE 1360S14H03	J23
	52.1	136.5	MDM 1360S14H03	J58
	52.4	136.8	MDW 1360HGS3	J47
	68.1	149.5	MDE 1360S14E04	J16
	80.0	149.0	SMDT 1360 MTL/MSL/MEL+SMDH 140-5D	J116
	80.0	149.0	SMDT 1360 MTL/MSL/MEL+SMDH 140-5DF	J114
	80.0	149.0	SMDT 1360 MTL/MSL/MEL+SMDH 140L	J112
	94.1	178.5	MDE 1360S14H05	J23
	94.1	178.5	MDM 1360S14H05	J58
	94.4	178.8	MDW 1360HGS5	J47
	123.0	194.0	SMDT 1360 MTL/MSL/MEL+SMDH 140-8D	J116
	123.0	194.0	SMDT 1360 MTL/MSL/MEL+SMDH 140-8DF	J114
	123.0	194.0	SMDT 1360 MTL/MSL/MEL+SMDH 140D	J112
	136.1	220.5	MDE 1360S14H08	J23
	170.0	238.5	SMDT 1360 MTL/MSL/MEL+SMDH 140-12D	J116
13.7	29.0	96.3	SMDT 1370 MTL/MSL/MEL+SMDH 140-1.5D	J116
	29.0	96.3	SMDT 1370 MTL/MSL/MEL+SMDH 140-1.5DF	J114
	34.0	107.5	MDE 1370S14E02	J16
	41.1	110.0	MDF 1370S2D	J29
	51.0	119.0	SMDT 1370 MTL/MSL/MEL+SMDH 140-3D	J116
	51.0	119.0	SMDT 1370 MTL/MSL/MEL+SMDH 140-3DF	J114
	51.0	119.0	SMDT 1370 MTL/MSL/MEL+SMDH 140M	J112
	52.0	136.5	MDE 1370S14H03	J23
	52.0	136.5	MDM 1370S14H03	J58
	52.3	136.8	MDW 1370HGS3	J47
	68.0	149.5	MDE 1370S14E04	J16
	80.0	149.0	SMDT 1370 MTL/MSL/MEL+SMDH 140-5D	J116
	80.0	149.0	SMDT 1370 MTL/MSL/MEL+SMDH 140-5DF	J114
	80.0	149.0	SMDT 1370 MTL/MSL/MEL+SMDH 140L	J112
	94.0	178.5	MDE 1370S14H05	J23
	94.0	178.5	MDM 1370S14H05	J58
	94.3	178.8	MDW 1370HGS5	J47
	123.0	194.0	SMDT 1370 MTL/MSL/MEL+SMDH 140-8D	J116
	123.0	194.0	SMDT 1370 MTL/MSL/MEL+SMDH 140-8DF	J114
	123.0	194.0	SMDT 1370 MTL/MSL/MEL+SMDH 140D	J112
	136.0	220.5	MDE 1370S14H08	J23
	170.0	238.5	SMDT 1370 MTL/MSL/MEL+SMDH 140-12D	J116
13.8	29.0	96.3	SMDT 1380 MTL/MSL/MEL+SMDH 140-1.5D	J116
	29.0	96.3	SMDT 1380 MTL/MSL/MEL+SMDH 140-1.5DF	J114
	33.8	107.5	MDE 1380S14E02	J16
	41.4	110.0	MDF 1380S2D	J29
	51.0	119.0	SMDT 1380 MTL/MSL/MEL+SMDH 140-3D	J116
	51.0	119.0	SMDT 1380 MTL/MSL/MEL+SMDH 140-3DF	J114
	51.0	119.0	SMDT 1380 MTL/MSL/MEL+SMDH 140M	J112
	51.8	136.5	MDE 1380S14H03	J23
	51.8	136.5	MDM 1380S14H03	J58
	52.2	136.9	MDW 1380HGS3	J47
	67.8	149.5	MDE 1380S14E04	J16
	80.0	149.0	SMDT 1380 MTL/MSL/MEL+SMDH 140-5D	J116
	80.0	149.0	SMDT 1380 MTL/MSL/MEL+SMDH 140-5DF	J114
	80.0	149.0	SMDT 1380 MTL/MSL/MEL+SMDH 140L	J112
	93.8	178.5	MDE 1380S14H05	J23
	93.8	178.5	MDM 1380S14H05	J58
	94.2	178.9	MDW 1380HGS5	J47
	123.0	194.0	SMDT 1380 MTL/MSL/MEL+SMDH 140-8D	J116
	123.0	194.0	SMDT 1380 MTL/MSL/MEL+SMDH 140-8DF	J114
	123.0	194.0	SMDT 1380 MTL/MSL/MEL+SMDH 140D	J112
	135.8	220.5	MDE 1380S14H08	J23
	170.0	238.5	SMDT 1380 MTL/MSL/MEL+SMDH 140-12D	J116
13.85	33.7	107.5	MDE 1385S14E02H	J17
13.9	29.0	96.3	SMDT 1390 MTL/MSL/MEL+SMDH 140-1.5D	J116
	29.0	96.3	SMDT 1390 MTL/MSL/MEL+SMDH 140-1.5DF	J114

(Blue text: Flat head ■Indexable cutting edge type)

● Diameter ø13.9 to ø14.1mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
13.9	33.7	107.5	MDE 1390S14E02	J16
	41.7	110.0	MDF 1390S2D	J29
	51.0	119.0	SMDT 1390 MTL/MSL/MEL+SMDH 140-3D	J116
	51.0	119.0	SMDT 1390 MTL/MSL/MEL+SMDH 140-3DF	J114
	51.0	119.0	SMDT 1390 MTL/MSL/MEL+SMDH 140M	J112
	51.7	136.5	MDE 1390S14H03	J23
	51.7	136.5	MDM 1390S14H03	J58
	52.1	136.9	MDW 1390HGS3	J47
	67.7	149.5	MDE 1390S14E04	J16
	80.0	149.0	SMDT 1390 MTL/MSL/MEL+SMDH 140-5D	J116
	80.0	149.0	SMDT 1390 MTL/MSL/MEL+SMDH 140-5DF	J114
	80.0	149.0	SMDT 1390 MTL/MSL/MEL+SMDH 140L	J112
	93.7	178.5	MDE 1390S14H05	J23
	93.7	178.5	MDM 1390S14H05	J58
	94.1	178.9	MDW 1390HGS5	J47
	123.0	194.0	SMDT 1390 MTL/MSL/MEL+SMDH 140-8D	J116
	123.0	194.0	SMDT 1390 MTL/MSL/MEL+SMDH 140-8DF	J114
	123.0	194.0	SMDT 1390 MTL/MSL/MEL+SMDH 140D	J112
	135.7	220.5	MDE 1390S14H08	J23
	170.0	238.5	SMDT 1390 MTL/MSL/MEL+SMDH 140-12D	J116
13.92	33.5	107.5	MDE 1392S14E02H	J17
13.97	33.5	107.5	MDE 1397S14E02H	J17
14.0	26.0	93.9	SMDT 1400 MFS+SMDH 140-1.5D	J124
	26.0	93.9	SMDT 1400 MFS+SMDH 140-1.5DF	J122
	29.0	96.3	SMDT 1400 MTL/MSL/MEL+SMDH 140-1.5D	J116
	29.0	96.3	SMDT 1400 MTL/MSL/MEL+SMDH 140-1.5DF	J114
	33.5	107.5	MDE 1400S14E02	J16
	42.0	110.0	MDF 1400S2D	J29
	42.0	190.0	MDF 1400L2D	J32
	42.0	190.0	MDF 1400L2D-S12	J32
	48.0	116.6	SMDT 1400 MFS+SMDH 140-3D	J124
	48.0	116.6	SMDT 1400 MFS+SMDH 140-3DF	J122
	48.0	116.6	SMDT 1400 MFS+SMDH 140M	J120
	50.9	135.9	MDW 1400PHT	J82
	51.0	119.0	SMDT 1400 MTL/MSL/MEL+SMDH 140-3D	J116
	51.0	119.0	SMDT 1400 MTL/MSL/MEL+SMDH 140-3DF	J114
	51.0	119.0	SMDT 1400 MTL/MSL/MEL+SMDH 140M	J112
	51.5	136.5	MDE 1400S14H03	J23
	51.5	136.5	MDM 1400S14H03	J58
	51.5	136.5	MDW 1400HX3	J67
	51.9	136.9	MDW 1400HGS3	J47
	51.9	136.9	MDW 1400HY3	J71
	51.9	136.9	MDW 1400NHGS3	J96
	56.0	134.0	MDF 1400H3D	J35
	67.5	149.5	MDE 1400S14E04	J16
	77.0	146.6	SMDT 1400 MFS+SMDH 140-5D	J124
	77.0	146.6	SMDT 1400 MFS+SMDH 140-5DF	J122
	77.0	146.6	SMDT 1400 MFS+SMDH 140L	J120
	80.0	149.0	SMDT 1400 MTL/MSL/MEL+SMDH 140-5D	J116
	80.0	149.0	SMDT 1400 MTL/MSL/MEL+SMDH 140-5DF	J114
	80.0	149.0	SMDT 1400 MTL/MSL/MEL+SMDH 140L	J112
	84.0	176.0	MDF 1400H5D	J35
	93.5	178.5	MDE 1400S14H05	J23
	93.5	178.5	MDM 1400S14H05	J58
	93.5	178.5	MDW 1400HX5	J67
	93.9	178.9	MDW 1400HGS5	J47
	93.9	178.9	MDW 1400HY5	J71
	93.9	178.9	MDW 1400NHGS5	J96
	121.0	191.6	SMDT 1400 MFS+SMDH 140-8D	J124
	121.0	191.6	SMDT 1400 MFS+SMDH 140-8DF	J122
	121.0	191.6	SMDT 1400 MFS+SMDH 140D	J120
	123.0	194.0	SMDT 1400 MTL/MSL/MEL+SMDH 140-8D	J116
	123.0	194.0	SMDT 1400 MTL/MSL/MEL+SMDH 140-8DF	J114
	123.0	194.0	SMDT 1400 MTL/MSL/MEL+SMDH 140D	J112
	135.5	220.5	MDE 1400S14H08	J23
	135.9	220.9	MDW 1400HGS8	J47
	168.0	236.1	SMDT 1400 MFS+SMDH 140-12D	J124
	170.0	238.5	SMDT 1400 MTL/MSL/MEL+SMDH 140-12D	J116
	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	96.3	SMDT 1410 MTL/MSL/MEL+SMDH 140-1.5D	J116
	29.0	96.3	SMDT 1410 MTL/MSL/MEL+SMDH 140-1.5DF	J114
	33.5	110.6	MDE 1410S15E02	J16
	42.3	110.0	MDF 1410S2D	J29
	51.0	119.0	SMDT 1410 MTL/MSL/MEL+SMDH 140-3D	J116
	51.0	119.0	SMDT 1410 MTL/MSL/MEL+SMDH 140-3DF	J114
	51.0	119.0	SMDT 1410 MTL/MSL/MEL+SMDH 140M	J112
	54.0	142.6	MDE 1410S15H03	J23

(Blue text: Flat head ■Indexable cutting edge type)

● Diameter ø14.1 to ø14.4mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
14.1	54.0	142.6	MDM 1410S15H03	J58
	54.3	142.9	MDW 1410HGS3	J47
	54.3	142.9	MDW 1410NHGS3	J96
	70.5	155.6	MDE 1410S15E04	J16
	80.0	149.0	SMDT 1410 MTL/MSL/MEL+SMDH 140-5D	J116
	80.0	149.0	SMDT 1410 MTL/MSL/MEL+SMDH 140-5DF	J114
	80.0	149.0	SMDT 1410 MTL/MSL/MEL+SMDH 140L	J112
	97.5	187.6	MDE 1410S15H05	J23
	97.5	187.6	MDM 1410S15H05	J58
	97.8	187.9	MDW 1410HGS5	J47
	97.8	187.9	MDW 1410NHGS5	J96
	123.0	194.0	SMDT 1410 MTL/MSL/MEL+SMDH 140-8D	J116
	123.0	194.0	SMDT 1410 MTL/MSL/MEL+SMDH 140-8DF	J114
	123.0	194.0	SMDT 1410 MTL/MSL/MEL+SMDH 140D	J112
	141.0	232.6	MDE 1410S15H08	J23
	170.0	238.5	SMDT 1410 MTL/MSL/MEL+SMDH 140-12D	J116
14.2	29.0	96.3	SMDT 1420 MTL/MSL/MEL+SMDH 140-1.5D	J116
	29.0	96.3	SMDT 1420 MTL/MSL/MEL+SMDH 140-1.5DF	J114
	33.3	110.6	MDE 1420S15E02	J16
	42.6	110.0	MDF 1420S2D	J29
	51.0	119.0	SMDT 1420 MTL/MSL/MEL+SMDH 140-3D	J116
	51.0	119.0	SMDT 1420 MTL/MSL/MEL+SMDH 140-3DF	J114
	51.0	119.0	SMDT 1420 MTL/MSL/MEL+SMDH 140M	J112
	53.8	142.6	MDE 1420S15H03	J23
	53.8	142.6	MDM 1420S15H03	J58
	54.1	142.9	MDW 1420HGS3	J47
	70.3	155.6	MDE 1420S15E04	J16
	80.0	149.0	SMDT 1420 MTL/MSL/MEL+SMDH 140-5D	J116
	80.0	149.0	SMDT 1420 MTL/MSL/MEL+SMDH 140-5DF	J114
	80.0	149.0	SMDT 1420 MTL/MSL/MEL+SMDH 140L	J112
	97.3	187.6	MDE 1420S15H05	J23
	97.3	187.6	MDM 1420S15H05	J58
	97.6	187.9	MDW 1420HGS5	J47
	123.0	194.0	SMDT 1420 MTL/MSL/MEL+SMDH 140-8D	J116
	123.0	194.0	SMDT 1420 MTL/MSL/MEL+SMDH 140-8DF	J114
	123.0	194.0	SMDT 1420 MTL/MSL/MEL+SMDH 140D	J112
	140.8	232.6	MDE 1420S15H08	J23
	170.0	238.5	SMDT 1420 MTL/MSL/MEL+SMDH 140-12D	J116
14.3	29.0	96.3	SMDT 1430 MTL/MSL/MEL+SMDH 140-1.5D	J116
	29.0	96.3	SMDT 1430 MTL/MSL/MEL+SMDH 140-1.5DF	J114
	33.2	110.6	MDE 1430S15E02	J16
	42.9	110.0	MDF 1430S2D	J29
	51.0	119.0	SMDT 1430 MTL/MSL/MEL+SMDH 140-3D	J116
	51.0	119.0	SMDT 1430 MTL/MSL/MEL+SMDH 140-3DF	J114
	51.0	119.0	SMDT 1430 MTL/MSL/MEL+SMDH 140M	J112
	53.7	142.6	MDE 1430S15H03	J23
	53.7	142.6	MDM 1430S15H03	J58
	54.1	143.0	MDW 1430HGS3	J47
	70.2	155.6	MDE 1430S15E04	J16
	80.0	149.0	SMDT 1430 MTL/MSL/MEL+SMDH 140-5D	J116
	80.0	149.0	SMDT 1430 MTL/MSL/MEL+SMDH 140-5DF	J114
	80.0	149.0	SMDT 1430 MTL/MSL/MEL+SMDH 140L	J112
	97.2	187.6	MDE 1430S15H05	J23
	97.2	187.6	MDM 1430S15H05	J58
	97.6	188.0	MDW 1430HGS5	J47
	123.0	194.0	SMDT 1430 MTL/MSL/MEL+SMDH 140-8D	J116
	123.0	194.0	SMDT 1430 MTL/MSL/MEL+SMDH 140-8DF	J114
	123.0	194.0	SMDT 1430 MTL/MSL/MEL+SMDH 140D	J112
	140.7	232.6	MDE 1430S15H08	J23
	170.0	238.5	SMDT 1430 MTL/MSL/MEL+SMDH 140-12D	J116
14.4	29.0	96.3	SMDT 1440 MTL/MSL/MEL+SMDH 140-1.5D	J116
	29.0	96.3	SMDT 1440 MTL/MSL/MEL+SMDH 140-1.5DF	J114
	33.0	110.6	MDE 1440S15E02	J16
	43.2	110.0	MDF 1440S2D	J29
	51.0	119.0	SMDT 1440 MTL/MSL/MEL+SMDH 140-3D	J116
	51.0	119.0	SMDT 1440 MTL/MSL/MEL+SMDH 140-3DF	J114
	51.0	119.0	SMDT 1440 MTL/MSL/MEL+SMDH 140M	J112
	53.5	142.6	MDE 1440S15H03	J23
	53.5	142.6	MDM 1440S15H03	J58
	53.9	143.0	MDW 1440HGS3	J47
	70.0	155.6	MDE 1440S15E04	J16
	80.0	149.0	SMDT 1440 MTL/MSL/MEL+SMDH 140-5D	J116
	80.0	149.0	SMDT 1440 MTL/MSL/MEL+SMDH 140-5DF	J114
	80.0	149.0	SMDT 1440 MTL/MSL/MEL+SMDH 140L	J112
	97.0	187.6	MDE 1440S15H05	J23
	97.0	187.6	MDM 1440S15H05	J58
	97.4	188.0	MDW 1440HGS5	J47
	123.0	194.0	SMDT 1440 MTL/MSL/MEL+SMDH 140-8D	J116
	123.0	194.0	SMDT 1440 MTL/MSL/MEL+SMDH 140-8DF	J114
	123.0	194.0	SMDT 1440 MTL/MSL/MEL+SMDH 140D	J112

(Blue text: Flat head ■Indexable cutting edge type)

The 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 ø14.4 to ø14.7mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
14.4	140.5	232.6	MDE 1440S15H08	J23
	170.0	238.5	SMDT 1440 MTL/MSL/MEL+SMDH 140-12D	J116
14.5	26.0	93.9	SMDT 1450 MFS+SMDH 140-1.5D	J124
	26.0	93.9	SMDT 1450 MFS+SMDH 140-1.5DF	J122
	29.0	96.3	SMDT 1450 MTL/MSL/MEL+SMDH 140-1.5D	J116
	29.0	96.3	SMDT 1450 MTL/MSL/MEL+SMDH 140-1.5DF	J114
	32.9	110.6	MDE 1450S15E02	J16
	43.5	110.0	MDF 1450S2D	J29
	43.5	200.0	MDF 1450L2D	J32
	48.0	116.6	SMDT 1450 MFS+SMDH 140-3D	J124
	48.0	116.6	SMDT 1450 MFS+SMDH 140-3DF	J122
	48.0	116.6	SMDT 1450 MFS+SMDH 140M	J120
	51.0	119.0	SMDT 1450 MTL/MSL/MEL+SMDH 140-3D	J116
	51.0	119.0	SMDT 1450 MTL/MSL/MEL+SMDH 140-3DF	J114
	51.0	119.0	SMDT 1450 MTL/MSL/MEL+SMDH 140M	J112
	52.7	141.9	MDW 1450PHT	J82
	53.4	142.6	MDE 1450S15H03	J23
	53.4	142.6	MDM 1450S15H03	J58
	53.4	142.6	MDW 1450HX3	J67
	53.8	143.0	MDW 1450HGS3	J47
	53.8	143.0	MDW 1450NHGS3	J96
	58.0	140.0	MDF 1450H3D	J35
	69.9	155.6	MDE 1450S15E04	J16
	77.0	146.6	SMDT 1450 MFS+SMDH 140-5D	J124
	77.0	146.6	SMDT 1450 MFS+SMDH 140-5DF	J122
	77.0	146.6	SMDT 1450 MFS+SMDH 140L	J120
	80.0	149.0	SMDT 1450 MTL/MSL/MEL+SMDH 140-5D	J116
	80.0	149.0	SMDT 1450 MTL/MSL/MEL+SMDH 140-5DF	J114
	80.0	149.0	SMDT 1450 MTL/MSL/MEL+SMDH 140L	J112
	87.0	185.0	MDF 1450H5D	J35
	96.9	187.6	MDE 1450S15H05	J23
	96.9	187.6	MDM 1450S15H05	J58
	96.9	187.6	MDW 1450HX5	J67
	97.3	188.0	MDW 1450HGS5	J47
	97.3	188.0	MDW 1450NHGS5	J96
	121.0	191.6	SMDT 1450 MFS+SMDH 140-8D	J124
	121.0	191.6	SMDT 1450 MFS+SMDH 140-8DF	J122
	121.0	191.6	SMDT 1450 MFS+SMDH 140D	J120
	123.0	194.0	SMDT 1450 MTL/MSL/MEL+SMDH 140-8D	J116
	123.0	194.0	SMDT 1450 MTL/MSL/MEL+SMDH 140-8DF	J114
	123.0	194.0	SMDT 1450 MTL/MSL/MEL+SMDH 140D	J112
	140.4	232.6	MDE 1450S15H08	J23
	140.8	233.0	MDW 1450HGS8	J47
	168.0	236.1	SMDT 1450 MFS+SMDH 140-12D	J124
	170.0	238.5	SMDT 1450 MTL/MSL/MEL+SMDH 140-12D	J116
	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	J116
	31.0	100.0	SMDT 1460 MTL/MSL/MEL+SMDH 150-1.5DF	J114
	33.8	110.7	MDE 1460S15E02	J16
	43.8	110.0	MDF 1460S2D	J29
	54.0	129.2	SMDT 1460 MTL/MSL/MEL+SMDH 150-3D	J116
	54.0	129.2	SMDT 1460 MTL/MSL/MEL+SMDH 150-3DF	J114
	54.0	129.2	SMDT 1460 MTL/MSL/MEL+SMDH 150M	J112
	55.8	142.7	MDE 1460S15H03	J24
	55.8	142.7	MDM 1460S15H03	J58
	56.1	143.0	MDW 1460HGS3	J47
	71.8	155.7	MDE 1460S15E04	J16
	85.0	159.2	SMDT 1460 MTL/MSL/MEL+SMDH 150-5D	J116
	85.0	159.2	SMDT 1460 MTL/MSL/MEL+SMDH 150-5DF	J114
	85.0	159.2	SMDT 1460 MTL/MSL/MEL+SMDH 150L	J112
	100.8	187.7	MDE 1460S15H05	J24
	100.8	187.7	MDM 1460S15H05	J58
	101.1	188.0	MDW 1460HGS5	J47
	131.0	204.2	SMDT 1460 MTL/MSL/MEL+SMDH 150-8D	J116
	131.0	204.2	SMDT 1460 MTL/MSL/MEL+SMDH 150-8DF	J114
	131.0	204.2	SMDT 1460 MTL/MSL/MEL+SMDH 150D	J112
	145.8	232.7	MDE 1460S15H08	J24
	182.0	253.0	SMDT 1460 MTL/MSL/MEL+SMDH 150-12D	J116
14.7	31.0	100.0	SMDT 1470 MTL/MSL/MEL+SMDH 150-1.5D	J116
	31.0	100.0	SMDT 1470 MTL/MSL/MEL+SMDH 150-1.5DF	J114
	33.7	110.7	MDE 1470S15E02	J16
	44.1	110.0	MDF 1470S2D	J29
	54.0	129.2	SMDT 1470 MTL/MSL/MEL+SMDH 150-3D	J116
	54.0	129.2	SMDT 1470 MTL/MSL/MEL+SMDH 150-3DF	J114
	54.0	129.2	SMDT 1470 MTL/MSL/MEL+SMDH 150M	J112
	55.7	142.7	MDE 1470S15H03	J24
	55.7	142.7	MDM 1470S15H03	J58
	56.0	143.0	MDW 1470HGS3	J47

● Diameter ø14.7 to ø15.0mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
14.7	71.7	155.7	MDE 1470S15E04	J16
	85.0	159.2	SMDT 1470 MTL/MSL/MEL+SMDH 150-5D	J116
	85.0	159.2	SMDT 1470 MTL/MSL/MEL+SMDH 150-5DF	J114
	85.0	159.2	SMDT 1470 MTL/MSL/MEL+SMDH 150L	J112
	100.7	187.7	MDE 1470S15H05	J24
	100.7	187.7	MDM 1470S15H05	J58
	101.0	188.0	MDW 1470HGS5	J47
	131.0	204.2	SMDT 1470 MTL/MSL/MEL+SMDH 150-8D	J116
	131.0	204.2	SMDT 1470 MTL/MSL/MEL+SMDH 150-8DF	J114
	131.0	204.2	SMDT 1470 MTL/MSL/MEL+SMDH 150D	J112
	145.7	232.7	MDE 1470S15H08	J24
	182.0	253.0	SMDT 1470 MTL/MSL/MEL+SMDH 150-12D	J116
14.8	31.0	100.0	SMDT 1480 MTL/MSL/MEL+SMDH 150-1.5D	J116
	31.0	100.0	SMDT 1480 MTL/MSL/MEL+SMDH 150-1.5DF	J114
	33.5	110.7	MDE 1480S15E02	J16
	44.4	110.0	MDF 1480S2D	J29
	54.0	129.2	SMDT 1480 MTL/MSL/MEL+SMDH 150-3D	J116
	54.0	129.2	SMDT 1480 MTL/MSL/MEL+SMDH 150-3DF	J114
	54.0	129.2	SMDT 1480 MTL/MSL/MEL+SMDH 150M	J112
	55.5	142.7	MDE 1480S15H03	J24
	55.5	142.7	MDM 1480S15H03	J58
	55.9	143.1	MDW 1480HGS3	J47
	71.5	155.7	MDE 1480S15E04	J16
	85.0	159.2	SMDT 1480 MTL/MSL/MEL+SMDH 150-5D	J116
	85.0	159.2	SMDT 1480 MTL/MSL/MEL+SMDH 150-5DF	J114
	85.0	159.2	SMDT 1480 MTL/MSL/MEL+SMDH 150L	J112
	100.5	187.7	MDE 1480S15H05	J24
	100.5	187.7	MDM 1480S15H05	J58
	100.9	188.1	MDW 1480HGS5	J47
	131.0	204.2	SMDT 1480 MTL/MSL/MEL+SMDH 150-8D	J116
	131.0	204.2	SMDT 1480 MTL/MSL/MEL+SMDH 150-8DF	J114
	131.0	204.2	SMDT 1480 MTL/MSL/MEL+SMDH 150D	J112
	145.5	232.7	MDE 1480S15H08	J24
	182.0	253.0	SMDT 1480 MTL/MSL/MEL+SMDH 150-12D	J116
14.9	31.0	100.0	SMDT 1490 MTL/MSL/MEL+SMDH 150-1.5D	J116
	31.0	100.0	SMDT 1490 MTL/MSL/MEL+SMDH 150-1.5DF	J114
	33.4	110.7	MDE 1490S15E02	J16
	44.7	110.0	MDF 1490S2D	J29
	54.0	129.2	SMDT 1490 MTL/MSL/MEL+SMDH 150-3D	J116
	54.0	129.2	SMDT 1490 MTL/MSL/MEL+SMDH 150-3DF	J114
	54.0	129.2	SMDT 1490 MTL/MSL/MEL+SMDH 150M	J112
	55.4	142.7	MDE 1490S15H03	J24
	55.4	142.7	MDM 1490S15H03	J58
	55.8	143.1	MDW 1490HGS3	J47
	55.8	143.1	MDW 1490NHGS3	J96
	71.4	155.7	MDE 1490S15E04	J16
	85.0	159.2	SMDT 1490 MTL/MSL/MEL+SMDH 150-5D	J116
	85.0	159.2	SMDT 1490 MTL/MSL/MEL+SMDH 150-5DF	J114
	85.0	159.2	SMDT 1490 MTL/MSL/MEL+SMDH 150L	J112
	100.4	187.7	MDE 1490S15H05	J24
	100.4	187.7	MDM 1490S15H05	J58
	100.8	188.1	MDW 1490HGS5	J47
	100.8	188.1	MDW 1490NHGS5	J96
	131.0	204.2	SMDT 1490 MTL/MSL/MEL+SMDH 150-8D	J116
	131.0	204.2	SMDT 1490 MTL/MSL/MEL+SMDH 150-8DF	J114
	131.0	204.2	SMDT 1490 MTL/MSL/MEL+SMDH 150D	J112
	145.4	232.7	MDE 1490S15H08	J24
	182.0	253.0	SMDT 1490 MTL/MSL/MEL+SMDH 150-12D	J116
14.96	55.7	143.1	MDW 1496NHGS3	J96
	100.7	188.1	MDW 1496NHGS5	J96
15.0	28.0	97.3	SMDT 1500 MFS+SMDH 150-1.5D	J124
	28.0	97.3	SMDT 1500 MFS+SMDH 150-1.5DF	J122
	31.0	100.0	SMDT 1500 MTL/MSL/MEL+SMDH 150-1.5D	J116
	31.0	100.0	SMDT 1500 MTL/MSL/MEL+SMDH 150-1.5DF	J114
	33.2	110.7	MDE 1500S15E02	J16
	45.0	110.0	MDF 1500S2D	J29
	45.0	200.0	MDF 1500L2D	J32
	51.0	126.6	SMDT 1500 MFS+SMDH 150-3D	J124
	51.0	126.6	SMDT 1500 MFS+SMDH 150-3DF	J122
	51.0	126.6	SMDT 1500 MFS+SMDH 150M	J120
	54.0	129.2	SMDT 1500 MTL/MSL/MEL+SMDH 150-3D	J116
	54.0	129.2	SMDT 1500 MTL/MSL/MEL+SMDH 150-3DF	J114
	54.0	129.2	SMDT 1500 MTL/MSL/MEL+SMDH 150M	J112
	54.5	142.0	MDW 1500PHT	J82
	55.2	142.7	MDE 1500S15H03	J24
	55.2	142.7	MDM 1500S15H03	J59
	55.2	142.7	MDW 1500HX3	J67
	55.6	143.1	MDW 1500HGS3	J47
	55.6	143.1	MDW 1500NHGS3	J96
	60.0	140.0	MDF 1500H3D	J35

● Diameter ø15.0 to ø15.3mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
15.0	71.2	155.7	MDE 1500S15E04	J16
	82.0	156.6	SMDT 1500 MFS+SMDH 150-5D	J124
	82.0	156.6	SMDT 1500 MFS+SMDH 150-5DF	J122
	82.0	156.6	SMDT 1500 MFS+SMDH 150L	J120
	85.0	159.2	SMDT 1500 MTL/MSL/MEL+SMDH 150-5D	J116
	85.0	159.2	SMDT 1500 MTL/MSL/MEL+SMDH 150-5DF	J114
	85.0	159.2	SMDT 1500 MTL/MSL/MEL+SMDH 150L	J112
	90.0	185.0	MDF 1500H5D	J35
	100.2	187.7	MDE 1500S15H05	J24
	100.2	187.7	MDM 1500S15H05	J59
	100.2	187.7	MDW 1500HX5	J67
	100.6	188.1	MDW 1500HGS5	J47
	100.6	188.1	MDW 1500NHGS5	J96
15.0	129.0	201.6	SMDT 1500 MFS+SMDH 150-8D	J124
	129.0	201.6	SMDT 1500 MFS+SMDH 150-8DF	J122
	129.0	201.6	SMDT 1500 MFS+SMDH 150D	J120
	131.0	204.2	SMDT 1500 MTL/MSL/MEL+SMDH 150-8D	J116
	131.0	204.2	SMDT 1500 MTL/MSL/MEL+SMDH 150-8DF	J114
	131.0	204.2	SMDT 1500 MTL/MSL/MEL+SMDH 150D	J112
	145.2	232.7	MDE 1500S15H08	J24
	145.2	232.7	MDW 1500HX8	J67
	145.6	233.1	MDW 1500HGS8	J47
	180.0	250.4	SMDT 1500 MFS+SMDH 150-12D	J124
	182.0	253.0	SMDT 1500 MTL/MSL/MEL+SMDH 150-12D	J116
	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	J116
	31.0	100.0	SMDT 1510 MTL/MSL/MEL+SMDH 150-1.5DF	J114
	33.1	114.7	MDE 1510S16E02	J16
	45.3	115.0	MDF 1510S2D	J29
	54.0	129.2	SMDT 1510 MTL/MSL/MEL+SMDH 150-3D	J116
	54.0	129.2	SMDT 1510 MTL/MSL/MEL+SMDH 150-3DF	J114
	54.0	129.2	SMDT 1510 MTL/MSL/MEL+SMDH 150M	J112
	57.6	148.7	MDE 1510S16H03	J24
	57.6	148.7	MDM 1510S16H03	J59
	58.0	149.1	MDW 1510HGS3	J47
	74.1	162.7	MDE 1510S16E04	J16
	85.0	159.2	SMDT 1510 MTL/MSL/MEL+SMDH 150-5D	J116
	85.0	159.2	SMDT 1510 MTL/MSL/MEL+SMDH 150-5DF	J114
	85.0	159.2	SMDT 1510 MTL/MSL/MEL+SMDH 150L	J112
	104.1	196.7	MDE 1510S16H05	J24
	104.1	196.7	MDM 1510S16H05	J59
	104.5	197.1	MDW 1510HGS5	J47
	131.0	204.2	SMDT 1510 MTL/MSL/MEL+SMDH 150-8D	J116
	131.0	204.2	SMDT 1510 MTL/MSL/MEL+SMDH 150-8DF	J114
	131.0	204.2	SMDT 1510 MTL/MSL/MEL+SMDH 150D	J112
	150.6	244.7	MDE 1510S16H08	J24
	182.0	253.0	SMDT 1510 MTL/MSL/MEL+SMDH 150-12D	J116
15.2	31.0	100.0	SMDT 1520 MTL/MSL/MEL+SMDH 150-1.5D	J116
	31.0	100.0	SMDT 1520 MTL/MSL/MEL+SMDH 150-1.5DF	J114
	33.0	114.8	MDE 1520S16E02	J16
	45.6	115.0	MDF 1520S2D	J29
	54.0	129.2	SMDT 1520 MTL/MSL/MEL+SMDH 150-3D	J116
	54.0	129.2	SMDT 1520 MTL/MSL/MEL+SMDH 150-3DF	J114
	54.0	129.2	SMDT 1520 MTL/MSL/MEL+SMDH 150M	J112
	57.5	148.8	MDE 1520S16H03	J24
	57.5	148.8	MDM 1520S16H03	J59
	57.8	149.1	MDW 1520HGS3	J47
	74.0	162.8	MDE 1520S16E04	J16
	85.0	159.2	SMDT 1520 MTL/MSL/MEL+SMDH 150-5D	J116
	85.0	159.2	SMDT 1520 MTL/MSL/MEL+SMDH 150-5DF	J114
	85.0	159.2	SMDT 1520 MTL/MSL/MEL+SMDH 150L	J112
	104.0	196.8	MDE 1520S16H05	J24
	104.0	196.8	MDM 1520S16H05	J59
	104.3	197.1	MDW 1520HGS5	J47
	131.0	204.2	SMDT 1520 MTL/MSL/MEL+SMDH 150-8D	J116
	131.0	204.2	SMDT 1520 MTL/MSL/MEL+SMDH 150-8DF	J114
	131.0	204.2	SMDT 1520 MTL/MSL/MEL+SMDH 150D	J112
	150.5	244.8	MDE 1520S16H08	J24
	182.0	253.0	SMDT 1520 MTL/MSL/MEL+SMDH 150-12D	J116
15.3	31.0	100.0	SMDT 1530 MTL/MSL/MEL+SMDH 150-1.5D	J116
	31.0	100.0	SMDT 1530 MTL/MSL/MEL+SMDH 150-1.5DF	J114
	32.9	114.8	MDE 1530S16E02	J16
	45.9	115.0	MDF 1530S2D	J29
	54.0	129.2	SMDT 1530 MTL/MSL/MEL+SMDH 150-3D	J116
	54.0	129.2	SMDT 1530 MTL/MSL/MEL+SMDH 150-3DF	J114
	54.0	129.2	SMDT 1530 MTL/MSL/MEL+SMDH 150M	J112
	57.4	148.8	MDE 1530S16H03	J24
	57.4	148.8	MDM 1530S16H03	J59

(Blue text: Flat head ■Indexable cutting edge type)

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The 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 ø15.3 to ø15.5mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
15.3	57.8	149.2	MDW 1530HGS3	J47
	73.9	162.8	MDE 1530S16E04	J16
	85.0	159.2	SMDT 1530 MTL/MSL/MEL+SMDH 150-5D	J116
	85.0	159.2	SMDT 1530 MTL/MSL/MEL+SMDH 150-5DF	J114
	85.0	159.2	SMDT 1530 MTL/MSL/MEL+SMDH 150L	J112
	103.9	196.8	MDE 1530S16H05	J24
	103.9	196.8	MDM 1530S16H05	J59
	104.3	197.2	MDW 1530HGS5	J47
	131.0	204.2	SMDT 1530 MTL/MSL/MEL+SMDH 150-8D	J116
	131.0	204.2	SMDT 1530 MTL/MSL/MEL+SMDH 150-8DF	J114
	131.0	204.2	SMDT 1530 MTL/MSL/MEL+SMDH 150D	J112
	150.4	244.8	MDE 1530S16H08	J24
	182.0	253.0	SMDT 1530 MTL/MSL/MEL+SMDH 150-12D	J116
15.4	31.0	100.0	SMDT 1540 MTL/MSL/MEL+SMDH 150-1.5D	J116
	31.0	100.0	SMDT 1540 MTL/MSL/MEL+SMDH 150-1.5DF	J114
	32.7	114.8	MDE 1540S16E02	J16
	46.2	115.0	MDF 1540S2D	J29
	54.0	129.2	SMDT 1540 MTL/MSL/MEL+SMDH 150-3D	J116
	54.0	129.2	SMDT 1540 MTL/MSL/MEL+SMDH 150-3DF	J114
	54.0	129.2	SMDT 1540 MTL/MSL/MEL+SMDH 150M	J112
	57.2	148.8	MDE 1540S16H03	J24
	57.2	148.8	MDM 1540S16H03	J59
	57.6	149.2	MDW 1540HGS3	J47
	73.7	162.8	MDE 1540S16E04	J16
	85.0	159.2	SMDT 1540 MTL/MSL/MEL+SMDH 150-5D	J116
	85.0	159.2	SMDT 1540 MTL/MSL/MEL+SMDH 150-5DF	J114
	85.0	159.2	SMDT 1540 MTL/MSL/MEL+SMDH 150L	J112
	103.7	196.8	MDE 1540S16H05	J24
	103.7	196.8	MDM 1540S16H05	J59
	104.1	197.2	MDW 1540HGS5	J47
	131.0	204.2	SMDT 1540 MTL/MSL/MEL+SMDH 150-8D	J116
	131.0	204.2	SMDT 1540 MTL/MSL/MEL+SMDH 150-8DF	J114
	131.0	204.2	SMDT 1540 MTL/MSL/MEL+SMDH 150D	J112
	150.2	244.8	MDE 1540S16H08	J24
	182.0	253.0	SMDT 1540 MTL/MSL/MEL+SMDH 150-12D	J116
15.5	28.0	97.3	SMDT 1550 MFS+SMDH 150-1.5D	J124
	28.0	97.3	SMDT 1550 MFS+SMDH 150-1.5DF	J122
	31.0	100.0	SMDT 1550 MTL/MSL/MEL+SMDH 150-1.5D	J116
	31.0	100.0	SMDT 1550 MTL/MSL/MEL+SMDH 150-1.5DF	J114
	32.6	114.8	MDE 1550S16E02	J16
	46.5	115.0	MDF 1550S2D	J29
	46.5	210.0	MDF 1550L2D	J32
	51.0	126.6	SMDT 1550 MFS+SMDH 150-3D	J124
	51.0	126.6	SMDT 1550 MFS+SMDH 150-3DF	J122
	51.0	126.6	SMDT 1550 MFS+SMDH 150M	J120
	54.0	129.2	SMDT 1550 MTL/MSL/MEL+SMDH 150-3D	J116
	54.0	129.2	SMDT 1550 MTL/MSL/MEL+SMDH 150-3DF	J114
	54.0	129.2	SMDT 1550 MTL/MSL/MEL+SMDH 150M	J112
	56.4	148.1	MDW 1550PHT	J82
	57.1	148.8	MDE 1550S16H03	J24
	57.1	148.8	MDM 1550S16H03	J59
	57.1	148.8	MDW 1550HX3	J67
	57.5	149.2	MDW 1550HGS3	J47
	57.5	149.2	MDW 1550NHGS3	J96
	62.0	146.0	MDF 1550H3D	J35
	73.6	162.8	MDE 1550S16E04	J16
	82.0	156.6	SMDT 1550 MFS+SMDH 150-5D	J124
	82.0	156.6	SMDT 1550 MFS+SMDH 150-5DF	J122
	82.0	156.6	SMDT 1550 MFS+SMDH 150L	J120
	85.0	159.2	SMDT 1550 MTL/MSL/MEL+SMDH 150-5D	J116
	85.0	159.2	SMDT 1550 MTL/MSL/MEL+SMDH 150-5DF	J114
	85.0	159.2	SMDT 1550 MTL/MSL/MEL+SMDH 150L	J112
	93.0	194.0	MDF 1550H5D	J35
	103.6	196.8	MDE 1550S16H05	J24
	103.6	196.8	MDM 1550S16H05	J59
	103.6	196.8	MDW 1550HX5	J67
	104.0	197.2	MDW 1550HGS5	J47
	104.0	197.2	MDW 1550NHGS5	J96
	129.0	201.6	SMDT 1550 MFS+SMDH 150-8D	J124
	129.0	201.6	SMDT 1550 MFS+SMDH 150-8DF	J122
	129.0	201.6	SMDT 1550 MFS+SMDH 150D	J120
	131.0	204.2	SMDT 1550 MTL/MSL/MEL+SMDH 150-8D	J116
	131.0	204.2	SMDT 1550 MTL/MSL/MEL+SMDH 150-8DF	J114
	131.0	204.2	SMDT 1550 MTL/MSL/MEL+SMDH 150D	J112
	150.1	244.8	MDE 1550S16H08	J24
	150.5	245.2	MDW 1550HGS8	J47
	180.0	250.4	SMDT 1550 MFS+SMDH 150-12D	J124
	182.0	253.0	SMDT 1550 MTL/MSL/MEL+SMDH 150-12D	J116
	212.6	303.8	MDW 1550XHGS10	J82
	241.6	332.8	MDW 1550XHGS12	J82

(Blue text: Flat head ■Indexable cutting edge type)

● Diameter ø15.5 to ø15.9mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
15.5	287.6	378.8	MDW 1550XHGS15	J82
15.6	32.0	102.7	SMDT 1560 MTL/MSL/MEL+SMDH 160-1.5D	J116
	32.0	102.7	SMDT 1560 MTL/MSL/MEL+SMDH 160-1.5DF	J114
	34.4	114.8	MDE 1560S16E02	J16
	46.8	115.0	MDF 1560S2D	J29
	57.0	134.4	SMDT 1560 MTL/MSL/MEL+SMDH 160-3D	J116
	57.0	134.4	SMDT 1560 MTL/MSL/MEL+SMDH 160-3DF	J114
	57.0	134.4	SMDT 1560 MTL/MSL/MEL+SMDH 160M	J112
	59.4	148.8	MDE 1560S16H03	J24
	59.4	148.8	MDM 1560S16H03	J59
	59.8	149.2	MDW 1560HGS3	J47
	75.4	162.8	MDE 1560S16E04	J16
	90.0	169.4	SMDT 1560 MTL/MSL/MEL+SMDH 160-5D	J116
	90.0	169.4	SMDT 1560 MTL/MSL/MEL+SMDH 160-5DF	J114
	90.0	169.4	SMDT 1560 MTL/MSL/MEL+SMDH 160L	J112
	107.4	196.8	MDE 1560S16H05	J24
	107.4	196.8	MDM 1560S16H05	J59
	107.8	197.2	MDW 1560HGS5	J47
	140.0	214.4	SMDT 1560 MTL/MSL/MEL+SMDH 160-8D	J116
	140.0	214.4	SMDT 1560 MTL/MSL/MEL+SMDH 160-8DF	J114
	140.0	214.4	SMDT 1560 MTL/MSL/MEL+SMDH 160D	J112
	155.4	244.8	MDE 1560S16H08	J24
	194.0	265.5	SMDT 1560 MTL/MSL/MEL+SMDH 160-12D	J116
15.7	32.0	102.7	SMDT 1570 MTL/MSL/MEL+SMDH 160-1.5D	J116
	32.0	102.7	SMDT 1570 MTL/MSL/MEL+SMDH 160-1.5DF	J114
	34.4	114.9	MDE 1570S16E02	J16
	47.1	115.0	MDF 1570S2D	J29
	57.0	134.4	SMDT 1570 MTL/MSL/MEL+SMDH 160-3D	J116
	57.0	134.4	SMDT 1570 MTL/MSL/MEL+SMDH 160-3DF	J114
	57.0	134.4	SMDT 1570 MTL/MSL/MEL+SMDH 160M	J112
	59.4	148.9	MDE 1570S16H03	J24
	59.4	148.9	MDM 1570S16H03	J59
	59.7	149.2	MDW 1570HGS3	J47
	75.4	162.9	MDE 1570S16E04	J16
	90.0	169.4	SMDT 1570 MTL/MSL/MEL+SMDH 160-5D	J116
	90.0	169.4	SMDT 1570 MTL/MSL/MEL+SMDH 160-5DF	J114
	90.0	169.4	SMDT 1570 MTL/MSL/MEL+SMDH 160L	J112
	107.4	196.9	MDE 1570S16H05	J24
	107.4	196.9	MDM 1570S16H05	J59
	107.7	197.2	MDW 1570HGS5	J47
	140.0	214.4	SMDT 1570 MTL/MSL/MEL+SMDH 160-8D	J116
	140.0	214.4	SMDT 1570 MTL/MSL/MEL+SMDH 160-8DF	J114
	140.0	214.4	SMDT 1570 MTL/MSL/MEL+SMDH 160D	J112
	155.4	244.9	MDE 1570S16H08	J24
	194.0	265.5	SMDT 1570 MTL/MSL/MEL+SMDH 160-12D	J116
15.8	32.0	102.7	SMDT 1580 MTL/MSL/MEL+SMDH 160-1.5D	J116
	32.0	102.7	SMDT 1580 MTL/MSL/MEL+SMDH 160-1.5DF	J114
	34.2	114.9	MDE 1580S16E02	J16
	47.4	115.0	MDF 1580S2D	J29
	57.0	134.4	SMDT 1580 MTL/MSL/MEL+SMDH 160-3D	J116
	57.0	134.4	SMDT 1580 MTL/MSL/MEL+SMDH 160-3DF	J114
	57.0	134.4	SMDT 1580 MTL/MSL/MEL+SMDH 160M	J112
	59.2	148.9	MDE 1580S16H03	J24
	59.2	148.9	MDM 1580S16H03	J59
	59.6	149.3	MDW 1580HGS3	J47
	75.2	162.9	MDE 1580S16E04	J16
	90.0	169.4	SMDT 1580 MTL/MSL/MEL+SMDH 160-5D	J116
	90.0	169.4	SMDT 1580 MTL/MSL/MEL+SMDH 160-5DF	J114
	90.0	169.4	SMDT 1580 MTL/MSL/MEL+SMDH 160L	J112
	107.2	196.9	MDE 1580S16H05	J24
	107.2	196.9	MDM 1580S16H05	J59
	107.6	197.3	MDW 1580HGS5	J47
	140.0	214.4	SMDT 1580 MTL/MSL/MEL+SMDH 160-8D	J116
	140.0	214.4	SMDT 1580 MTL/MSL/MEL+SMDH 160-8DF	J114
	140.0	214.4	SMDT 1580 MTL/MSL/MEL+SMDH 160D	J112
	155.2	244.9	MDE 1580S16H08	J24
	194.0	265.5	SMDT 1580 MTL/MSL/MEL+SMDH 160-12D	J116
15.9	32.0	102.7	SMDT 1590 MTL/MSL/MEL+SMDH 160-1.5D	J116
	32.0	102.7	SMDT 1590 MTL/MSL/MEL+SMDH 160-1.5DF	J114
	34.1	114.9	MDE 1590S16E02	J16
	47.7	115.0	MDF 1590S2D	J29
	57.0	134.4	SMDT 1590 MTL/MSL/MEL+SMDH 160-3D	J116
	57.0	134.4	SMDT 1590 MTL/MSL/MEL+SMDH 160-3DF	J114
	57.0	134.4	SMDT 1590 MTL/MSL/MEL+SMDH 160M	J112
	59.1	148.9	MDE 1590S16H03	J24
	59.1	148.9	MDM 1590S16H03	J59
	59.5	149.3	MDW 1590HGS3	J48
	75.1	162.9	MDE 1590S16E04	J16
	90.0	169.4	SMDT 1590 MTL/MSL/MEL+SMDH 160-5D	J116
	90.0	169.4	SMDT 1590 MTL/MSL/MEL+SMDH 160-5DF	J114

(Blue text: Flat head ■Indexable cutting edge type)

● Diameter ø15.9 to ø16.2mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
15.9	90.0	169.4	SMDT 1590 MTL/MSL/MEL+SMDH 160L	J112
	107.1	196.9	MDE 1590S16H05	J24
	107.1	196.9	MDM 1590S16H05	J59
	107.5	197.3	MDW 1590HGS5	J48
	140.0	214.4	SMDT 1590 MTL/MSL/MEL+SMDH 160-8D	J116
	140.0	214.4	SMDT 1590 MTL/MSL/MEL+SMDH 160-8DF	J114
	140.0	214.4	SMDT 1590 MTL/MSL/MEL+SMDH 160D	J112
	155.1	244.9	MDE 1590S16H08	J24
	194.0	265.5	SMDT 1590 MTL/MSL/MEL+SMDH 160-12D	J116
16.0	29.0	99.9	SMDT 1600 MFS+SMDH 160-1.5D	J124
	29.0	99.9	SMDT 1600 MFS+SMDH 160-1.5DF	J122
	32.0	94.0	PDL 160D2S20	J144
	32.0	102.7	SMDT 1600 MTL/MSL/MEL+SMDH 160-1.5D	J116
	32.0	102.7	SMDT 1600 MTL/MSL/MEL+SMDH 160-1.5DF	J114
	33.9	114.9	MDE 1600S16E02	J16
	48.0	110.0	PDL 160D3S20	J144
	48.0	115.0	MDF 1600S2D	J29
	48.0	210.0	MDF 1600L2D	J32
	48.0	210.0	MDF 1600L2D-S14	J32
	54.0	131.6	SMDT 1600 MFS+SMDH 160-3D	J124
	54.0	131.6	SMDT 1600 MFS+SMDH 160-3DF	J122
	54.0	131.6	SMDT 1600 MFS+SMDH 160M	J120
	57.0	134.4	SMDT 1600 MTL/MSL/MEL+SMDH 160-3D	J116
	57.0	134.4	SMDT 1600 MTL/MSL/MEL+SMDH 160-3DF	J114
	57.0	134.4	SMDT 1600 MTL/MSL/MEL+SMDH 160M	J112
	58.1	148.1	MDW 1600PHT	J82
	58.9	148.9	MDE 1600S16H03	J24
	58.9	148.9	MDM 1600S16H03	J59
	58.9	148.9	MDW 1600HX3	J67
	59.3	149.3	MDW 1600HGS3	J48
	59.3	149.3	MDW 1600HY3	J71
	59.3	149.3	MDW 1600NHGS3	J96
	64.0	146.0	MDF 1600H3D	J35
	74.9	162.9	MDE 1600S16E04	J16
16.0	87.0	166.6	SMDT 1600 MFS+SMDH 160-5D	J124
	87.0	166.6	SMDT 1600 MFS+SMDH 160-5DF	J122
	87.0	166.6	SMDT 1600 MFS+SMDH 160L	J120
	90.0	169.4	SMDT 1600 MTL/MSL/MEL+SMDH 160-5D	J116
	90.0	169.4	SMDT 1600 MTL/MSL/MEL+SMDH 160-5DF	J114
	90.0	169.4	SMDT 1600 MTL/MSL/MEL+SMDH 160L	J112
	96.0	194.0	MDF 1600H5D	J35
	106.9	196.9	MDE 1600S16H05	J24
	106.9	196.9	MDM 1600S16H05	J59
	106.9	196.9	MDW 1600HX5	J67
	107.3	197.3	MDW 1600HGS5	J48
	107.3	197.3	MDW 1600HY5	J71
	107.3	197.3	MDW 1600NHGS5	J96
	137.0	211.6	SMDT 1600 MFS+SMDH 160-8D	J124
	137.0	211.6	SMDT 1600 MFS+SMDH 160-8DF	J122
	137.0	211.6	SMDT 1600 MFS+SMDH 160D	J120
	140.0	214.4	SMDT 1600 MTL/MSL/MEL+SMDH 160-8D	J116
	140.0	214.4	SMDT 1600 MTL/MSL/MEL+SMDH 160-8DF	J114
	140.0	214.4	SMDT 1600 MTL/MSL/MEL+SMDH 160D	J112
	154.9	244.9	MDE 1600S16H08	J24
	155.3	245.3	MDW 1600HGS8	J48
	192.0	262.7	SMDT 1600 MFS+SMDH 160-12D	J124
	194.0	265.5	SMDT 1600 MTL/MSL/MEL+SMDH 160-12D	J116
	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	102.7	SMDT 1610 MTL/MSL/MEL+SMDH 160-1.5D	J116
	32.0	102.7	SMDT 1610 MTL/MSL/MEL+SMDH 160-1.5DF	J114
	57.0	134.4	SMDT 1610 MTL/MSL/MEL+SMDH 160-3D	J116
	57.0	134.4	SMDT 1610 MTL/MSL/MEL+SMDH 160-3DF	J114
	57.0	134.4	SMDT 1610 MTL/MSL/MEL+SMDH 160M	J112
	90.0	169.4	SMDT 1610 MTL/MSL/MEL+SMDH 160-5D	J116
	90.0	169.4	SMDT 1610 MTL/MSL/MEL+SMDH 160-5DF	J114
	90.0	169.4	SMDT 1610 MTL/MSL/MEL+SMDH 160L	J112
	140.0	214.4	SMDT 1610 MTL/MSL/MEL+SMDH 160-8D	J116
	140.0	214.4	SMDT 1610 MTL/MSL/MEL+SMDH 160-8DF	J114
	140.0	214.4	SMDT 1610 MTL/MSL/MEL+SMDH 160D	J112
	194.0	265.5	SMDT 1610 MTL/MSL/MEL+SMDH 160-12D	J116
16.2	32.0	102.7	SMDT 1620 MTL/MSL/MEL+SMDH 160-1.5D	J116
	32.0	102.7	SMDT 1620 MTL/MSL/MEL+SMDH 160-1.5DF	J114
	57.0	134.4	SMDT 1620 MTL/MSL/MEL+SMDH 160-3D	J116
	57.0	134.4	SMDT 1620 MTL/MSL/MEL+SMDH 160-3DF	J114
	57.0	134.4	SMDT 1620 MTL/MSL/MEL+SMDH 160M	J112
	90.0	169.4	SMDT 1620 MTL/MSL/MEL+SMDH 160-5D	J116
	90.0	169.4	SMDT 1620 MTL/MSL/MEL+SMDH 160-5DF	J114
	140.0	214.4	SMDT 1620 MTL/MSL/MEL+SMDH 160-8D	J116

(Blue text: Flat head ■Indexable cutting edge type)

The 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 ø16.2 to ø16.7mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
16.2	140.0	214.4	SMDT 1620 MTL/MSL/MEL+SMDH 160-8DF	J114
	140.0	214.4	SMDT 1620 MTL/MSL/MEL+SMDH 160D	J112
	194.0	265.5	SMDT 1620 MTL/MSL/MEL+SMDH 160-12D	J116
16.3	32.0	102.7	SMDT 1630 MTL/MSL/MEL+SMDH 160-1.5D	J116
	32.0	102.7	SMDT 1630 MTL/MSL/MEL+SMDH 160-1.5DF	J114
	57.0	134.4	SMDT 1630 MTL/MSL/MEL+SMDH 160-3D	J116
	57.0	134.4	SMDT 1630 MTL/MSL/MEL+SMDH 160-3DF	J114
	57.0	134.4	SMDT 1630 MTL/MSL/MEL+SMDH 160M	J112
	90.0	169.4	SMDT 1630 MTL/MSL/MEL+SMDH 160-5D	J116
	90.0	169.4	SMDT 1630 MTL/MSL/MEL+SMDH 160-5DF	J114
	90.0	169.4	SMDT 1630 MTL/MSL/MEL+SMDH 160L	J112
	140.0	214.4	SMDT 1630 MTL/MSL/MEL+SMDH 160-8D	J116
	140.0	214.4	SMDT 1630 MTL/MSL/MEL+SMDH 160-8DF	J114
	140.0	214.4	SMDT 1630 MTL/MSL/MEL+SMDH 160D	J112
	194.0	265.5	SMDT 1630 MTL/MSL/MEL+SMDH 160-12D	J116
16.4	32.0	102.7	SMDT 1640 MTL/MSL/MEL+SMDH 160-1.5D	J116
	32.0	102.7	SMDT 1640 MTL/MSL/MEL+SMDH 160-1.5DF	J114
	57.0	134.4	SMDT 1640 MTL/MSL/MEL+SMDH 160-3D	J116
	57.0	134.4	SMDT 1640 MTL/MSL/MEL+SMDH 160-3DF	J114
	57.0	134.4	SMDT 1640 MTL/MSL/MEL+SMDH 160M	J112
	90.0	169.4	SMDT 1640 MTL/MSL/MEL+SMDH 160-5D	J116
	90.0	169.4	SMDT 1640 MTL/MSL/MEL+SMDH 160-5DF	J114
	90.0	169.4	SMDT 1640 MTL/MSL/MEL+SMDH 160L	J112
	140.0	214.4	SMDT 1640 MTL/MSL/MEL+SMDH 160-8D	J116
	140.0	214.4	SMDT 1640 MTL/MSL/MEL+SMDH 160-8DF	J114
	140.0	214.4	SMDT 1640 MTL/MSL/MEL+SMDH 160D	J112
	194.0	265.5	SMDT 1640 MTL/MSL/MEL+SMDH 160-12D	J116
16.5	29.0	99.9	SMDT 1650 MFS+SMDH 160-1.5D	J124
	29.0	99.9	SMDT 1650 MFS+SMDH 160-1.5DF	J122
	32.0	102.7	SMDT 1650 MTL/MSL/MEL+SMDH 160-1.5D	J116
	32.0	102.7	SMDT 1650 MTL/MSL/MEL+SMDH 160-1.5DF	J114
	34.3	119.0	MDE 1650S17E02	J16
	49.5	125.0	MDF 1650S2D	J29
	49.5	220.0	MDF 1650L2D	J32
	54.0	131.6	SMDT 1650 MFS+SMDH 160-3D	J124
	54.0	131.6	SMDT 1650 MFS+SMDH 160-3DF	J122
	54.0	131.6	SMDT 1650 MFS+SMDH 160M	J120
	57.0	134.4	SMDT 1650 MTL/MSL/MEL+SMDH 160-3D	J116
	57.0	134.4	SMDT 1650 MTL/MSL/MEL+SMDH 160-3DF	J114
	57.0	134.4	SMDT 1650 MTL/MSL/MEL+SMDH 160M	J112
	60.8	155.0	MDE 1650S17H03	J24
	60.8	155.0	MDW 1650HX3	J67
	61.2	155.4	MDW 1650HGS3	J48
	76.3	170.0	MDE 1650S17E04	J16
	87.0	166.6	SMDT 1650 MFS+SMDH 160-5D	J124
	87.0	166.6	SMDT 1650 MFS+SMDH 160-5DF	J122
	87.0	166.6	SMDT 1650 MFS+SMDH 160L	J120
	90.0	169.4	SMDT 1650 MTL/MSL/MEL+SMDH 160-5D	J116
	90.0	169.4	SMDT 1650 MTL/MSL/MEL+SMDH 160-5DF	J114
	90.0	169.4	SMDT 1650 MTL/MSL/MEL+SMDH 160L	J112
	110.3	206.0	MDE 1650S17H05	J24
	110.3	206.0	MDW 1650HX5	J67
	110.7	206.4	MDW 1650HGS5	J48
	137.0	211.6	SMDT 1650 MFS+SMDH 160-8D	J124
	137.0	211.6	SMDT 1650 MFS+SMDH 160-8DF	J122
	137.0	211.6	SMDT 1650 MFS+SMDH 160D	J120
	140.0	214.4	SMDT 1650 MTL/MSL/MEL+SMDH 160-8D	J116
	140.0	214.4	SMDT 1650 MTL/MSL/MEL+SMDH 160-8DF	J114
	140.0	214.4	SMDT 1650 MTL/MSL/MEL+SMDH 160D	J112
	192.0	262.7	SMDT 1650 MFS+SMDH 160-12D	J124
	194.0	265.5	SMDT 1650 MTL/MSL/MEL+SMDH 160-12D	J116
16.6	34.0	104.4	SMDT 1660 MTL/MSL/MEL+SMDH 170-1.5D	J116
	34.0	104.4	SMDT 1660 MTL/MSL/MEL+SMDH 170-1.5DF	J114
	60.0	139.6	SMDT 1660 MTL/MSL/MEL+SMDH 170-3D	J116
	60.0	139.6	SMDT 1660 MTL/MSL/MEL+SMDH 170-3DF	J114
	60.0	139.6	SMDT 1660 MTL/MSL/MEL+SMDH 170M	J112
	95.0	174.6	SMDT 1660 MTL/MSL/MEL+SMDH 170-5D	J116
	95.0	174.6	SMDT 1660 MTL/MSL/MEL+SMDH 170-5DF	J114
	95.0	174.6	SMDT 1660 MTL/MSL/MEL+SMDH 170L	J112
	148.0	224.6	SMDT 1660 MTL/MSL/MEL+SMDH 170-8D	J116
	148.0	224.6	SMDT 1660 MTL/MSL/MEL+SMDH 170-8DF	J114
	148.0	224.6	SMDT 1660 MTL/MSL/MEL+SMDH 170D	J112
	207.0	278.1	SMDT 1660 MTL/MSL/MEL+SMDH 170-12D	J116
16.7	34.0	104.4	SMDT 1670 MTL/MSL/MEL+SMDH 170-1.5D	J116
	34.0	104.4	SMDT 1670 MTL/MSL/MEL+SMDH 170-1.5DF	J114
	60.0	139.6	SMDT 1670 MTL/MSL/MEL+SMDH 170-3D	J116
	60.0	139.6	SMDT 1670 MTL/MSL/MEL+SMDH 170-3DF	J114
	60.0	139.6	SMDT 1670 MTL/MSL/MEL+SMDH 170M	J112
	95.0	174.6	SMDT 1670 MTL/MSL/MEL+SMDH 170-5D	J116
	95.0	174.6	SMDT 1670 MTL/MSL/MEL+SMDH 170-5DF	J114

● Diameter ø16.7 to ø17.2mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
	95.0	174.6	SMDT 1670 MTL/MSL/MEL+SMDH 170L	J112
	148.0	224.6	SMDT 1670 MTL/MSL/MEL+SMDH 170-8D	J116
16.7	148.0	224.6	SMDT 1670 MTL/MSL/MEL+SMDH 170-8DF	J114
	148.0	224.6	SMDT 1670 MTL/MSL/MEL+SMDH 170D	J112
	207.0	278.1	SMDT 1670 MTL/MSL/MEL+SMDH 170-12D	J116
	34.0	104.4	SMDT 1680 MTL/MSL/MEL+SMDH 170-1.5D	J116
	34.0	104.4	SMDT 1680 MTL/MSL/MEL+SMDH 170-1.5DF	J114
	60.0	139.6	SMDT 1680 MTL/MSL/MEL+SMDH 170-3D	J116
	60.0	139.6	SMDT 1680 MTL/MSL/MEL+SMDH 170-3DF	J114
	60.0	139.6	SMDT 1680 MTL/MSL/MEL+SMDH 170M	J112
	75.9	170.1	MDE 1680S17E04	J16
16.8	95.0	174.6	SMDT 1680 MTL/MSL/MEL+SMDH 170-5D	J116
	95.0	174.6	SMDT 1680 MTL/MSL/MEL+SMDH 170-5DF	J114
	95.0	174.6	SMDT 1680 MTL/MSL/MEL+SMDH 170L	J112
	148.0	224.6	SMDT 1680 MTL/MSL/MEL+SMDH 170-8D	J116
	148.0	224.6	SMDT 1680 MTL/MSL/MEL+SMDH 170-8DF	J114
	148.0	224.6	SMDT 1680 MTL/MSL/MEL+SMDH 170D	J112
	207.0	278.1	SMDT 1680 MTL/MSL/MEL+SMDH 170-12D	J116
	34.0	104.4	SMDT 1690 MTL/MSL/MEL+SMDH 170-1.5D	J116
	34.0	104.4	SMDT 1690 MTL/MSL/MEL+SMDH 170-1.5DF	J114
	60.0	139.6	SMDT 1690 MTL/MSL/MEL+SMDH 170-3D	J116
	60.0	139.6	SMDT 1690 MTL/MSL/MEL+SMDH 170-3DF	J114
	60.0	139.6	SMDT 1690 MTL/MSL/MEL+SMDH 170M	J112
16.9	95.0	174.6	SMDT 1690 MTL/MSL/MEL+SMDH 170-5D	J116
	95.0	174.6	SMDT 1690 MTL/MSL/MEL+SMDH 170-5DF	J114
	95.0	174.6	SMDT 1690 MTL/MSL/MEL+SMDH 170L	J112
	148.0	224.6	SMDT 1690 MTL/MSL/MEL+SMDH 170-8D	J116
	148.0	224.6	SMDT 1690 MTL/MSL/MEL+SMDH 170-8DF	J114
	148.0	224.6	SMDT 1690 MTL/MSL/MEL+SMDH 170D	J112
	207.0	278.1	SMDT 1690 MTL/MSL/MEL+SMDH 170-12D	J116
	31.0	101.4	SMDT 1700 MFS+SMDH 170-1.5D	J124
	31.0	101.4	SMDT 1700 MFS+SMDH 170-1.5DF	J122
	34.0	104.4	SMDT 1700 MTL/MSL/MEL+SMDH 170-1.5D	J116
	34.0	104.4	SMDT 1700 MTL/MSL/MEL+SMDH 170-1.5DF	J114
	34.6	119.1	MDE 1700S17E02	J16
	51.0	125.0	MDF 1700S2D	J29
	51.0	220.0	MDF 1700L2D	J32
	57.0	136.6	SMDT 1700 MFS+SMDH 170-3D	J124
	57.0	136.6	SMDT 1700 MFS+SMDH 170-3DF	J122
	57.0	136.6	SMDT 1700 MFS+SMDH 170M	J120
	60.0	139.6	SMDT 1700 MTL/MSL/MEL+SMDH 170-3D	J116
	60.0	139.6	SMDT 1700 MTL/MSL/MEL+SMDH 170-3DF	J114
	60.0	139.6	SMDT 1700 MTL/MSL/MEL+SMDH 170M	J112
	62.6	155.1	MDE 1700S17H03	J24
	62.6	155.1	MDW 1700HX3	J67
	63.0	155.5	MDW 1700HGS3	J48
17.0	75.7	170.2	MDE 1700S17E04	J16
	92.0	171.6	SMDT 1700 MFS+SMDH 170-5D	J124
	92.0	171.6	SMDT 1700 MFS+SMDH 170-5DF	J122
	92.0	171.6	SMDT 1700 MFS+SMDH 170L	J120
	95.0	174.6	SMDT 1700 MTL/MSL/MEL+SMDH 170-5D	J116
	95.0	174.6	SMDT 1700 MTL/MSL/MEL+SMDH 170-5DF	J114
	95.0	174.6	SMDT 1700 MTL/MSL/MEL+SMDH 170L	J112
	113.6	206.1	MDE 1700S17H05	J24
	113.6	206.1	MDW 1700HX5	J67
	114.0	206.5	MDW 1700HGS5	J48
	145.0	221.6	SMDT 1700 MFS+SMDH 170-8D	J124
	145.0	221.6	SMDT 1700 MFS+SMDH 170-8DF	J122
	145.0	221.6	SMDT 1700 MFS+SMDH 170D	J120
	148.0	224.6	SMDT 1700 MTL/MSL/MEL+SMDH 170-8D	J116
	148.0	224.6	SMDT 1700 MTL/MSL/MEL+SMDH 170-8DF	J114
	148.0	224.6	SMDT 1700 MTL/MSL/MEL+SMDH 170D	J112
	204.0	275.1	SMDT 1700 MFS+SMDH 170-12D	J124
	207.0	278.1	SMDT 1700 MTL/MSL/MEL+SMDH 170-12D	J116
	34.0	104.4	SMDT 1710 MTL/MSL/MEL+SMDH 170-1.5D	J116
	34.0	104.4	SMDT 1710 MTL/MSL/MEL+SMDH 170-1.5DF	J114
	60.0	139.6	SMDT 1710 MTL/MSL/MEL+SMDH 170-3D	J116
	60.0	139.6	SMDT 1710 MTL/MSL/MEL+SMDH 170-3DF	J114
	60.0	139.6	SMDT 1710 MTL/MSL/MEL+SMDH 170M	J112
	65.0	161.1	MDW 1710HX3	J67
	95.0	174.6	SMDT 1710 MTL/MSL/MEL+SMDH 170-5D	J116
17.1	95.0	174.6	SMDT 1710 MTL/MSL/MEL+SMDH 170-5DF	J114
	95.0	174.6	SMDT 1710 MTL/MSL/MEL+SMDH 170L	J112
	117.5	217.1	MDW 1710HX5	J67
	148.0	224.6	SMDT 1710 MTL/MSL/MEL+SMDH 170-8D	J116
	148.0	224.6	SMDT 1710 MTL/MSL/MEL+SMDH 170-8DF	J114
	148.0	224.6	SMDT 1710 MTL/MSL/MEL+SMDH 170D	J112
	170.0	269.1	MDW 1710HX8	J67
	207.0	278.1	SMDT 1710 MTL/MSL/MEL+SMDH 170-12D	J116
17.2	34.0	104.4	SMDT 1720 MTL/MSL/MEL+SMDH 170-1.5D	J116

● Diameter ø17.2 to ø17.6mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
	34.0	104.4	SMDT 1720 MTL/MSL/MEL+SMDH 170-1.5DF	J114
	60.0	139.6	SMDT 1720 MTL/MSL/MEL+SMDH 170-3D	J116
	60.0	139.6	SMDT 1720 MTL/MSL/MEL+SMDH 170-3DF	J114
	60.0	139.6	SMDT 1720 MTL/MSL/MEL+SMDH 170M	J112
	95.0	174.6	SMDT 1720 MTL/MSL/MEL+SMDH 170-5D	J116
17.2	95.0	174.6	SMDT 1720 MTL/MSL/MEL+SMDH 170-5DF	J114
	95.0	174.6	SMDT 1720 MTL/MSL/MEL+SMDH 170L	J112
	148.0	224.6	SMDT 1720 MTL/MSL/MEL+SMDH 170-8D	J116
	148.0	224.6	SMDT 1720 MTL/MSL/MEL+SMDH 170-8DF	J114
	148.0	224.6	SMDT 1720 MTL/MSL/MEL+SMDH 170D	J112
	207.0	278.1	SMDT 1720 MTL/MSL/MEL+SMDH 170-12D	J116
	34.0	104.4	SMDT 1730 MTL/MSL/MEL+SMDH 170-1.5D	J116
	34.0	104.4	SMDT 1730 MTL/MSL/MEL+SMDH 170-1.5DF	J114
	60.0	139.6	SMDT 1730 MTL/MSL/MEL+SMDH 170-3D	J116
	60.0	139.6	SMDT 1730 MTL/MSL/MEL+SMDH 170-3DF	J114
	60.0	139.6	SMDT 1730 MTL/MSL/MEL+SMDH 170M	J112
17.3	95.0	174.6	SMDT 1730 MTL/MSL/MEL+SMDH 170-5D	J116
	95.0	174.6	SMDT 1730 MTL/MSL/MEL+SMDH 170-5DF	J114
	95.0	174.6	SMDT 1730 MTL/MSL/MEL+SMDH 170L	J112
	148.0	224.6	SMDT 1730 MTL/MSL/MEL+SMDH 170-8D	J116
	148.0	224.6	SMDT 1730 MTL/MSL/MEL+SMDH 170-8DF	J114
	148.0	224.6	SMDT 1730 MTL/MSL/MEL+SMDH 170D	J112
	207.0	278.1	SMDT 1730 MTL/MSL/MEL+SMDH 170-12D	J116
	34.0	104.4	SMDT 1740 MTL/MSL/MEL+SMDH 170-1.5D	J116
	34.0	104.4	SMDT 1740 MTL/MSL/MEL+SMDH 170-1.5DF	J114
	60.0	139.6	SMDT 1740 MTL/MSL/MEL+SMDH 170-3D	J116
	60.0	139.6	SMDT 1740 MTL/MSL/MEL+SMDH 170-3DF	J114
	60.0	139.6	SMDT 1740 MTL/MSL/MEL+SMDH 170M	J112
	95.0	174.6	SMDT 1740 MTL/MSL/MEL+SMDH 170-5D	J116
17.4	95.0	174.6	SMDT 1740 MTL/MSL/MEL+SMDH 170-5DF	J114
	95.0	174.6	SMDT 1740 MTL/MSL/MEL+SMDH 170L	J112
	148.0	224.6	SMDT 1740 MTL/MSL/MEL+SMDH 170-8D	J116
	148.0	224.6	SMDT 1740 MTL/MSL/MEL+SMDH 170-8DF	J114
	148.0	224.6	SMDT 1740 MTL/MSL/MEL+SMDH 170D	J112
	207.0	278.1	SMDT 1740 MTL/MSL/MEL+SMDH 170-12D	J116
	31.0	101.4	SMDT 1750 MFS+SMDH 170-1.5D	J124
	31.0	101.4	SMDT 1750 MFS+SMDH 170-1.5DF	J122
	34.0	104.4	SMDT 1750 MTL/MSL/MEL+SMDH 170-1.5D	J116
	34.0	104.4	SMDT 1750 MTL/MSL/MEL+SMDH 170-1.5DF	J114
	35.0	123.2	MDE 1750S18E02	J16
	52.5	130.0	MDF 1750S2D	J29
	52.5	230.0	MDF 1750L2D	J32
	57.0	136.6	SMDT 1750 MFS+SMDH 170-3D	J124
	57.0	136.6	SMDT 1750 MFS+SMDH 170-3DF	J122
	57.0	136.6	SMDT 1750 MFS+SMDH 170M	J120
	60.0	139.6	SMDT 1750 MTL/MSL/MEL+SMDH 170-3D	J116
	60.0	139.6	SMDT 1750 MTL/MSL/MEL+SMDH 170-3DF	J114
	60.0	139.6	SMDT 1750 MTL/MSL/MEL+SMDH 170M	J112
	64.5	161.2	MDE 1750S18H03	J24
	64.5	161.2	MDW 1750HX3	J68
	64.9	161.6	MDW 1750HGS3	J48
17.5	77.0	170.2	MDE 1750S18E04	J16
	92.0	171.6	SMDT 1750 MFS+SMDH 170-5D	J124
	92.0	171.6	SMDT 1750 MFS+SMDH 170-5DF	J122
	92.0	171.6	SMDT 1750 MFS+SMDH 170L	J120
	95.0	174.6	SMDT 1750 MTL/MSL/MEL+SMDH 170-5D	J116
	95.0	174.6	SMDT 1750 MTL/MSL/MEL+SMDH 170-5DF	J114
	95.0	174.6	SMDT 1750 MTL/MSL/MEL+SMDH 170L	J112
	116.9	217.3	MDE 1750S18H05	J24
	117.0	217.2	MDW 1750HX5	J68
	117.4	217.6	MDW 1750HGS5	J48
	145.0	221.6	SMDT 1750 MFS+SMDH 170-8D	J124
	145.0	221.6	SMDT 1750 MFS+SMDH 170-8DF	J122
	145.0	221.6	SMDT 1750 MFS+SMDH 170D	J120
	148.0	224.6	SMDT 1750 MTL/MSL/MEL+SMDH 170-8D	J116
	148.0	224.6	SMDT 1750 MTL/MSL/MEL+SMDH 170-8DF	J114
	148.0	224.6	SMDT 1750 MTL/MSL/MEL+SMDH 170D	J112
	204.0	275.1	SMDT 1750 MFS+SMDH 170-12D	J124
	207.0	278.1	SMDT 1750 MTL/MSL/MEL+SMDH 170-12D	J116
	36.0	107.1	SMDT 1760 MTL/MSL/MEL+SMDH 180-1.5D	J116
	36.0	107.1	SMDT 1760 MTL/MSL/MEL+SMDH 180-1.5DF	J114
	63.0	144.8	SMDT 1760 MTL/MSL/MEL+SMDH 180-3D	J116
	63.0	144.8	SMDT 1760 MTL/MSL/MEL+SMDH 180-3DF	J114
	63.0	144.8	SMDT 1760 MTL/MSL/MEL+SMDH 180M	J112
17.6	100.0	179.8	SMDT 1760 MTL/MSL/MEL+SMDH 180-5D	J116
	100.0	179.8	SMDT 1760 MTL/MSL/MEL+SMDH 180-5DF	J114
	100.0	179.8	SMDT 1760 MTL/MSL/MEL+SMDH 180L	J112
	156.0	229.8	SMDT 1760 MTL/MSL/MEL+SMDH 180-8D	J116
	156.0	229.8	SMDT 1760 MTL/MSL/MEL+SMDH 180-8DF	J114
	156.0	229.8	SMDT 1760 MTL/MSL/MEL+SMDH 180D	J112

(Blue text: Flat head ■Indexable cutting edge type)

(Blue text: Flat head ■Indexable cutting edge type)

(Blue text: Flat head ■Indexable cutting edge type)

The 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 ø17.6 to ø18.1mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
17.6	219.0	290.5	SMDT 1760 MTL/MSL/MEL+SMDH 180-12D	J116
17.7	36.0	107.1	SMDT 1770 MTL/MSL/MEL+SMDH 180-1.5D	J116
	36.0	107.1	SMDT 1770 MTL/MSL/MEL+SMDH 180-1.5DF	J114
	63.0	144.8	SMDT 1770 MTL/MSL/MEL+SMDH 180-3D	J116
	63.0	144.8	SMDT 1770 MTL/MSL/MEL+SMDH 180-3DF	J114
	63.0	144.8	SMDT 1770 MTL/MSL/MEL+SMDH 180M	J112
	100.0	179.8	SMDT 1770 MTL/MSL/MEL+SMDH 180-5D	J116
	100.0	179.8	SMDT 1770 MTL/MSL/MEL+SMDH 180-5DF	J114
	100.0	179.8	SMDT 1770 MTL/MSL/MEL+SMDH 180L	J112
	156.0	229.8	SMDT 1770 MTL/MSL/MEL+SMDH 180-8D	J116
	156.0	229.8	SMDT 1770 MTL/MSL/MEL+SMDH 180-8DF	J114
	156.0	229.8	SMDT 1770 MTL/MSL/MEL+SMDH 180D	J112
	219.0	290.5	SMDT 1770 MTL/MSL/MEL+SMDH 180-12D	J116
17.8	36.0	107.1	SMDT 1780 MTL/MSL/MEL+SMDH 180-1.5D	J116
	36.0	107.1	SMDT 1780 MTL/MSL/MEL+SMDH 180-1.5DF	J114
	63.0	144.8	SMDT 1780 MTL/MSL/MEL+SMDH 180-3D	J116
	63.0	144.8	SMDT 1780 MTL/MSL/MEL+SMDH 180-3DF	J114
	63.0	144.8	SMDT 1780 MTL/MSL/MEL+SMDH 180M	J112
	100.0	179.8	SMDT 1780 MTL/MSL/MEL+SMDH 180-5D	J116
	100.0	179.8	SMDT 1780 MTL/MSL/MEL+SMDH 180-5DF	J114
	100.0	179.8	SMDT 1780 MTL/MSL/MEL+SMDH 180L	J112
	156.0	229.8	SMDT 1780 MTL/MSL/MEL+SMDH 180-8D	J116
	156.0	229.8	SMDT 1780 MTL/MSL/MEL+SMDH 180-8DF	J114
	156.0	229.8	SMDT 1780 MTL/MSL/MEL+SMDH 180D	J112
	219.0	290.5	SMDT 1780 MTL/MSL/MEL+SMDH 180-12D	J116
17.9	36.0	107.1	SMDT 1790 MTL/MSL/MEL+SMDH 180-1.5D	J116
	36.0	107.1	SMDT 1790 MTL/MSL/MEL+SMDH 180-1.5DF	J114
	63.0	144.8	SMDT 1790 MTL/MSL/MEL+SMDH 180-3D	J116
	63.0	144.8	SMDT 1790 MTL/MSL/MEL+SMDH 180-3DF	J114
	63.0	144.8	SMDT 1790 MTL/MSL/MEL+SMDH 180M	J112
	100.0	179.8	SMDT 1790 MTL/MSL/MEL+SMDH 180-5D	J116
	100.0	179.8	SMDT 1790 MTL/MSL/MEL+SMDH 180-5DF	J114
	100.0	179.8	SMDT 1790 MTL/MSL/MEL+SMDH 180L	J112
	156.0	229.8	SMDT 1790 MTL/MSL/MEL+SMDH 180-8D	J116
	156.0	229.8	SMDT 1790 MTL/MSL/MEL+SMDH 180-8DF	J114
	156.0	229.8	SMDT 1790 MTL/MSL/MEL+SMDH 180D	J112
	219.0	290.5	SMDT 1790 MTL/MSL/MEL+SMDH 180-12D	J116
18.0	32.0	104.0	SMDT 1800 MFS+SMDH 180-1.5D	J124
	32.0	104.0	SMDT 1800 MFS+SMDH 180-1.5DF	J122
	35.3	123.3	MDE 1800S18E02	J16
	36.0	107.1	SMDT 1800 MTL/MSL/MEL+SMDH 180-1.5D	J116
	36.0	107.1	SMDT 1800 MTL/MSL/MEL+SMDH 180-1.5DF	J114
	54.0	130.0	MDF 1800S2D	J29
	54.0	230.0	MDF 1800L2D	J32
	54.0	230.0	MDF 1800L2D-S16	J32
	60.0	141.7	SMDT 1800 MFS+SMDH 180-3D	J124
	60.0	141.7	SMDT 1800 MFS+SMDH 180-3DF	J122
	60.0	141.7	SMDT 1800 MFS+SMDH 180M	J120
	63.0	144.8	SMDT 1800 MTL/MSL/MEL+SMDH 180-3D	J116
	63.0	144.8	SMDT 1800 MTL/MSL/MEL+SMDH 180-3DF	J114
	63.0	144.8	SMDT 1800 MTL/MSL/MEL+SMDH 180M	J112
	66.3	161.3	MDE 1800S18H03	J24
	66.3	161.3	MDW 1800HX3	J68
	66.7	161.7	MDW 1800HGS3	J48
	78.3	170.3	MDE 1800S18E04	J16
	97.0	176.7	SMDT 1800 MFS+SMDH 180-5D	J124
	97.0	176.7	SMDT 1800 MFS+SMDH 180-5DF	J122
	97.0	176.7	SMDT 1800 MFS+SMDH 180L	J120
	100.0	179.8	SMDT 1800 MTL/MSL/MEL+SMDH 180-5D	J116
	100.0	179.8	SMDT 1800 MTL/MSL/MEL+SMDH 180-5DF	J114
	100.0	179.8	SMDT 1800 MTL/MSL/MEL+SMDH 180L	J112
	120.3	217.3	MDE 1800S18H05	J24
	120.3	217.3	MDW 1800HX5	J68
	120.7	217.7	MDW 1800HGS5	J48
	153.0	226.7	SMDT 1800 MFS+SMDH 180-8D	J124
	153.0	226.7	SMDT 1800 MFS+SMDH 180-8DF	J122
	153.0	226.7	SMDT 1800 MFS+SMDH 180D	J120
	156.0	229.8	SMDT 1800 MTL/MSL/MEL+SMDH 180-8D	J116
	156.0	229.8	SMDT 1800 MTL/MSL/MEL+SMDH 180-8DF	J114
	156.0	229.8	SMDT 1800 MTL/MSL/MEL+SMDH 180D	J112
	216.0	287.4	SMDT 1800 MFS+SMDH 180-12D	J124
	219.0	290.5	SMDT 1800 MTL/MSL/MEL+SMDH 180-12D	J116
18.1	36.0	107.1	SMDT 1810 MTL/MSL/MEL+SMDH 180-1.5D	J116
	36.0	107.1	SMDT 1810 MTL/MSL/MEL+SMDH 180-1.5DF	J114
	63.0	144.8	SMDT 1810 MTL/MSL/MEL+SMDH 180-3D	J116
	63.0	144.8	SMDT 1810 MTL/MSL/MEL+SMDH 180-3DF	J114
	63.0	144.8	SMDT 1810 MTL/MSL/MEL+SMDH 180M	J112
	100.0	179.8	SMDT 1810 MTL/MSL/MEL+SMDH 180-5D	J116
	100.0	179.8	SMDT 1810 MTL/MSL/MEL+SMDH 180-5DF	J114
	100.0	179.8	SMDT 1810 MTL/MSL/MEL+SMDH 180L	J112

● Diameter ø18.1 to ø18.6mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
18.1	156.0	229.8	SMDT 1810 MTL/MSL/MEL+SMDH 180-8D	J116
	156.0	229.8	SMDT 1810 MTL/MSL/MEL+SMDH 180-8DF	J114
	156.0	229.8	SMDT 1810 MTL/MSL/MEL+SMDH 180D	J112
	219.0	290.5	SMDT 1810 MTL/MSL/MEL+SMDH 180-12D	J116
18.2	36.0	107.1	SMDT 1820 MTL/MSL/MEL+SMDH 180-1.5D	J116
	36.0	107.1	SMDT 1820 MTL/MSL/MEL+SMDH 180-1.5DF	J114
	63.0	144.8	SMDT 1820 MTL/MSL/MEL+SMDH 180-3D	J116
	63.0	144.8	SMDT 1820 MTL/MSL/MEL+SMDH 180-3DF	J114
	63.0	144.8	SMDT 1820 MTL/MSL/MEL+SMDH 180M	J112
	100.0	179.8	SMDT 1820 MTL/MSL/MEL+SMDH 180-5D	J116
	100.0	179.8	SMDT 1820 MTL/MSL/MEL+SMDH 180-5DF	J114
	100.0	179.8	SMDT 1820 MTL/MSL/MEL+SMDH 180L	J112
	156.0	229.8	SMDT 1820 MTL/MSL/MEL+SMDH 180-8D	J116
	156.0	229.8	SMDT 1820 MTL/MSL/MEL+SMDH 180-8DF	J114
	156.0	229.8	SMDT 1820 MTL/MSL/MEL+SMDH 180D	J112
	219.0	290.5	SMDT 1820 MTL/MSL/MEL+SMDH 180-12D	J116
18.3	36.0	107.1	SMDT 1830 MTL/MSL/MEL+SMDH 180-1.5D	J116
	36.0	107.1	SMDT 1830 MTL/MSL/MEL+SMDH 180-1.5DF	J114
	63.0	144.8	SMDT 1830 MTL/MSL/MEL+SMDH 180-3D	J116
	63.0	144.8	SMDT 1830 MTL/MSL/MEL+SMDH 180-3DF	J114
	63.0	144.8	SMDT 1830 MTL/MSL/MEL+SMDH 180M	J112
	100.0	179.8	SMDT 1830 MTL/MSL/MEL+SMDH 180-5D	J116
	100.0	179.8	SMDT 1830 MTL/MSL/MEL+SMDH 180-5DF	J114
	100.0	179.8	SMDT 1830 MTL/MSL/MEL+SMDH 180L	J112
	156.0	229.8	SMDT 1830 MTL/MSL/MEL+SMDH 180-8D	J116
	156.0	229.8	SMDT 1830 MTL/MSL/MEL+SMDH 180-8DF	J114
	156.0	229.8	SMDT 1830 MTL/MSL/MEL+SMDH 180D	J112
	219.0	290.5	SMDT 1830 MTL/MSL/MEL+SMDH 180-12D	J116
18.4	36.0	107.1	SMDT 1840 MTL/MSL/MEL+SMDH 180-1.5D	J116
	36.0	107.1	SMDT 1840 MTL/MSL/MEL+SMDH 180-1.5DF	J114
	63.0	144.8	SMDT 1840 MTL/MSL/MEL+SMDH 180-3D	J116
	63.0	144.8	SMDT 1840 MTL/MSL/MEL+SMDH 180-3DF	J114
	63.0	144.8	SMDT 1840 MTL/MSL/MEL+SMDH 180M	J112
	100.0	179.8	SMDT 1840 MTL/MSL/MEL+SMDH 180-5D	J116
	100.0	179.8	SMDT 1840 MTL/MSL/MEL+SMDH 180-5DF	J114
	100.0	179.8	SMDT 1840 MTL/MSL/MEL+SMDH 180L	J112
	156.0	229.8	SMDT 1840 MTL/MSL/MEL+SMDH 180-8D	J116
	156.0	229.8	SMDT 1840 MTL/MSL/MEL+SMDH 180-8DF	J114
	156.0	229.8	SMDT 1840 MTL/MSL/MEL+SMDH 180D	J112
	219.0	290.5	SMDT 1840 MTL/MSL/MEL+SMDH 180-12D	J116
18.5	32.0	104.0	SMDT 1850 MFS+SMDH 180-1.5D	J124
	32.0	104.0	SMDT 1850 MFS+SMDH 180-1.5DF	J122
	34.7	126.4	MDE 1850S19E02	J16
	36.0	107.1	SMDT 1850 MTL/MSL/MEL+SMDH 180-1.5D	J116
	36.0	107.1	SMDT 1850 MTL/MSL/MEL+SMDH 180-1.5DF	J114
	55.5	140.0	MDF 1850S2D	J29
	55.5	240.0	MDF 1850L2D	J32
	60.0	141.7	SMDT 1850 MFS+SMDH 180-3D	J124
	60.0	141.7	SMDT 1850 MFS+SMDH 180-3DF	J122
	60.0	141.7	SMDT 1850 MFS+SMDH 180M	J120
	63.0	144.8	SMDT 1850 MTL/MSL/MEL+SMDH 180-3D	J116
	63.0	144.8	SMDT 1850 MTL/MSL/MEL+SMDH 180-3DF	J114
	63.0	144.8	SMDT 1850 MTL/MSL/MEL+SMDH 180M	J112
	68.2	167.4	MDE 1850S19H03	J24
	68.2	167.4	MDW 1850HX3	J68
	68.6	167.8	MDW 1850HGS3	J48
	79.7	182.4	MDE 1850S19E04	J16
	97.0	176.7	SMDT 1850 MFS+SMDH 180-5D	J124
	97.0	176.7	SMDT 1850 MFS+SMDH 180-5DF	J122
	97.0	176.7	SMDT 1850 MFS+SMDH 180L	J120
	100.0	179.8	SMDT 1850 MTL/MSL/MEL+SMDH 180-5D	J116
	100.0	179.8	SMDT 1850 MTL/MSL/MEL+SMDH 180-5DF	J114
	100.0	179.8	SMDT 1850 MTL/MSL/MEL+SMDH 180L	J112
	123.6	224.4	MDE 1850S19H05	J24
	123.7	224.4	MDW 1850HX5	J68
	124.1	224.8	MDW 1850HGS5	J48
	153.0	226.7	SMDT 1850 MFS+SMDH 180-8D	J124
	153.0	226.7	SMDT 1850 MFS+SMDH 180-8DF	J122
	153.0	226.7	SMDT 1850 MFS+SMDH 180D	J120
	156.0	229.8	SMDT 1850 MTL/MSL/MEL+SMDH 180-8D	J116
	156.0	229.8	SMDT 1850 MTL/MSL/MEL+SMDH 180-8DF	J114
	156.0	229.8	SMDT 1850 MTL/MSL/MEL+SMDH 180D	J112
	216.0	287.4	SMDT 1850 MFS+SMDH 180-12D	J124
	219.0	290.5	SMDT 1850 MTL/MSL/MEL+SMDH 180-12D	J116
18.6	37.0	114.8	SMDT 1860 MTL/MSL/MEL+SMDH 190-1.5D	J116
	37.0	114.8	SMDT 1860 MTL/MSL/MEL+SMDH 190-1.5DF	J114
	67.0	160.0	SMDT 1860 MTL/MSL/MEL+SMDH 190-3D	J116
	67.0	160.0	SMDT 1860 MTL/MSL/MEL+SMDH 190-3DF	J114
	67.0	160.0	SMDT 1860 MTL/MSL/MEL+SMDH 190M	J112
	106.0	195.0	SMDT 1860 MTL/MSL/MEL+SMDH 190-5D	J116
	106.0	195.0	SMDT 1860 MTL/MSL/MEL+SMDH 190-5DF	J114
	106.0	195.0	SMDT 1860 MTL/MSL/MEL+SMDH 190L	J112
	164.0	255.0	SMDT 1860 MTL/MSL/MEL+SMDH 190-8D	J116
	164.0	255.0	SMDT 1860 MTL/MSL/MEL+SMDH 190-8DF	J114
	164.0	255.0	SMDT 1860 MTL/MSL/MEL+SMDH 190D	J112
	231.0	309.1	SMDT 1860 MTL/MSL/MEL+SMDH 190-12D	J116

● Diameter ø18.6 to ø19.1mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
18.6	106.0	195.0	SMDT 1860 MTL/MSL/MEL+SMDH 190-5DF	J114
	106.0	195.0	SMDT 1860 MTL/MSL/MEL+SMDH 190L	J112
	164.0	255.0	SMDT 1860 MTL/MSL/MEL+SMDH 190-8D	J116
	164.0	255.0	SMDT 1860 MTL/MSL/MEL+SMDH 190-8DF	J114
	164.0	255.0	SMDT 1860 MTL/MSL/MEL+SMDH 190D	J112
	231.0	309.1	SMDT 1860 MTL/MSL/MEL+SMDH 190-12D	J116
18.7	37.0	114.8	SMDT 1870 MTL/MSL/MEL+SMDH 190-1.5D	J116
	37.0	114.8	SMDT 1870 MTL/MSL/MEL+SMDH 190-1.5DF	J114
	67.0	160.0	SMDT 1870 MTL/MSL/MEL+SMDH 190-3D	J116
	67.0	160.0	SMDT 1870 MTL/MSL/MEL+SMDH 190-3DF	J114
	67.0	160.0	SMDT 1870 MTL/MSL/MEL+SMDH 190M	J112
	106.0	195.0	SMDT 1870 MTL/MSL/MEL+SMDH 190-5D	J116
	106.0	195.0	SMDT 1870 MTL/MSL/MEL+SMDH 190-5DF	J114
	106.0	195.0	SMDT 1870 MTL/MSL/MEL+SMDH 190L	J112
	164.0	255.0	SMDT 1870 MTL/MSL/MEL+SMDH 190-8D	J116
	164.0	255.0	SMDT 1870 MTL/MSL/MEL+SMDH 190-8DF	J114
	164.0	255.0	SMDT 1870 MTL/MSL/MEL+SMDH 190D	J112
	231.0	309.1	SMDT 1870 MTL/MSL/MEL+SMDH 190-12D	J116
18.8	37.0	114.8	SMDT 1880 MTL/MSL/MEL+SMDH 190-1.5D	J116
	37.0	114.8	SMDT 1880 MTL/MSL/MEL+SMDH 190-1.5DF	J114
	67.0	160.0	SMDT 1880 MTL/MSL/MEL+SMDH 190-3D	J116
	67.0	160.0	SMDT 1880 MTL/MSL/MEL+SMDH 190-3DF	J114
	67.0	160.0	SMDT 1880 MTL/MSL/MEL+SMDH 190M	J112
	106.0	195.0	SMDT 1880 MTL/MSL/MEL+SMDH 190-5D	J116
	106.0	195.0	SMDT 1880 MTL/MSL/MEL+SMDH 190-5DF	J114
	106.0	195.0	SMDT 1880 MTL/MSL/MEL+SMDH 190L	J112
	164.0	255.0	SMDT 1880 MTL/MSL/MEL+SMDH 190-8D	J116
	164.0	255.0	SMDT 1880 MTL/MSL/MEL+SMDH 190-8DF	J114
	164.0	255.0	SMDT 1880 MTL/MSL/MEL+SMDH 190D	J112
	231.0	309.1	SMDT 1880 MTL/MSL/MEL+SMDH 190-12D	J116
18.9	37.0	114.8	SMDT 1890 MTL/MSL/MEL+SMDH 190-1.5D	J116
	37.0	114.8	SMDT 1890 MTL/MSL/MEL+SMDH 190-1.5DF	J114
	67.0	160.0	SMDT 1890 MTL/MSL/MEL+SMDH 190-3D	J116
	67.0	160.0	SMDT 1890 MTL/MSL/MEL+SMDH 190-3DF	J114
	67.0	160.0	SMDT 1890 MTL/MSL/MEL+SMDH 190M	J112
	106.0	195.0	SMDT 1890 MTL/MSL/MEL+SMDH 190-5D	J116
	106.0	195.0	SMDT 1890 MTL/MSL/MEL+SMDH 190-5DF	J114
	106.0	195.0	SMDT 1890 MTL/MSL/MEL+SMDH 190L	J112
	164.0	255.0	SMDT 1890 MTL/MSL/MEL+SMDH 190-8D	J116
	164.0	255.0	SMDT 1890 MTL/MSL/MEL+SMDH 190-8DF	J114
	164.0	255.0	SMDT 1890 MTL/MSL/MEL+SMDH 190D	J112
	231.0	309.1	SMDT 1890 MTL/MSL/MEL+SMDH 190-12D	J116
19.0	34.0	111.4	SMDT 1900 MFS+SMDH 190-1.5D	J124
	34.0	111.4	SMDT 1900 MFS+SMDH 190-1.5DF	J122
	35.0	126.5	MDE 1900S19E02	J16
	37.0	114.8	SMDT 1900 MTL/MSL/MEL+SMDH 190-1.5D	J116
	37.0	114.8	SMDT 1900 MTL/MSL/MEL+SMDH 190-1.5DF	J114
	57.0	140.0	MDF 1900S2D	J29
	57.0	240.0	MDF 1900L2D	J32
	63.0	156.6	SMDT 1900 MFS+SMDH 190-3D	J124
	63.0	156.6	SMDT 1900 MFS+SMDH 190-3DF	J122
	63.0	156.6	SMDT 1900 MFS+SMDH 190M	J120
	67.0	160.0	SMDT 1900 MTL/MSL/MEL+SMDH 190-3D	J116
	67.0	160.0	SMDT 1900 MTL/MSL/MEL+SMDH 190-3DF	J114
	67.0	160.0	SMDT 1900 MTL/MSL/MEL+SMDH 190M	J112
	70.0	167.5	MDE 1900S19H03	J24
	70.0	167.5	MDW 1900HX3	J68
	70.4	167.9	MDW 1900HGS3	J48
	80.9	182.4	MDE 1900S19E04	J16
	102.0	191.6	SMDT 1900 MFS+SMDH 190-5D	J124
	102.0	191.6	SMDT 1900 MFS+SMDH 190-5DF	J122
	102.0	191.6	SMDT 1900 MFS+SMDH 190L	J120
	106.0	195.0	SMDT 1900 MTL/MSL/MEL+SMDH 190-5D	J116
	106.0	195.0	SMDT 1900 MTL/MSL/MEL+SMDH 190-5DF	J114
	106.0	195.0	SMDT 1900 MTL/MSL/MEL+SMDH 190L	J112
	127.0	224.5	MDE 1900S19H05	J24
	127.0	224.5	MDW 1900HX5	J68
	127.4	224.9	MDW 1900HGS5	J48
	161.0	251.6	SMDT 1900 MFS+SMDH 190-8D	J124
	161.0	251.6	SMDT 1900 MFS+SMDH 190-8DF	J122
	161.0	251.6	SMDT 1900 MFS+SMDH 190D	J120
	164.0	255.0	SMDT 1900 MTL/MSL/MEL+SMDH 190-8D	J116
	164.0	255.0	SMDT 1900 MTL/MSL/MEL+SMDH 190-8DF	J114
	164.0	255.0	SMDT 1900 MTL/MSL/MEL+SMDH 190D	J112
	228.0	305.7	SMDT 1900 MFS+SMDH 190-12D	J124
	231.0	309.1	SMDT 1900 MTL/MSL/MEL+SMDH 190-12D	J116
19.1	37.0	114.8	SMDT 1910 MTL/MSL/MEL+SMDH 190-1.5D	J116
	37.0	114.8	SMDT 1910 MTL/MSL/MEL+SMDH 190-1.5DF	J114
	67.0	160.0	SMDT 1910 MTL/MSL/MEL+SMDH 190-3D	J116
	67.0	160.0	SMDT 1910 MTL/MSL/MEL+SMDH 190-3DF	J114

(Blue text: Flat head ■Indexable cutting edge type)

(Blue text: Flat head ■Indexable cutting edge type)

(Blue text: Flat head ■Indexable cutting edge type)

The 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 ø19.1 to ø19.6mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
19.1	67.0	160.0	SMDT 1910 MTL/MSL/MEL+SMDH 190M	J112
	106.0	195.0	SMDT 1910 MTL/MSL/MEL+SMDH 190-5D	J116
	106.0	195.0	SMDT 1910 MTL/MSL/MEL+SMDH 190-5DF	J114
	106.0	195.0	SMDT 1910 MTL/MSL/MEL+SMDH 190L	J112
	164.0	255.0	SMDT 1910 MTL/MSL/MEL+SMDH 190-8D	J116
	164.0	255.0	SMDT 1910 MTL/MSL/MEL+SMDH 190-8DF	J114
	164.0	255.0	SMDT 1910 MTL/MSL/MEL+SMDH 190D	J112
	231.0	309.1	SMDT 1910 MTL/MSL/MEL+SMDH 190-12D	J116
19.2	37.0	114.8	SMDT 1920 MTL/MSL/MEL+SMDH 190-1.5D	J116
	37.0	114.8	SMDT 1920 MTL/MSL/MEL+SMDH 190-1.5DF	J114
	67.0	160.0	SMDT 1920 MTL/MSL/MEL+SMDH 190-3D	J116
	67.0	160.0	SMDT 1920 MTL/MSL/MEL+SMDH 190-3DF	J114
	67.0	160.0	SMDT 1920 MTL/MSL/MEL+SMDH 190M	J112
	106.0	195.0	SMDT 1920 MTL/MSL/MEL+SMDH 190-5D	J116
	106.0	195.0	SMDT 1920 MTL/MSL/MEL+SMDH 190-5DF	J114
	106.0	195.0	SMDT 1920 MTL/MSL/MEL+SMDH 190L	J112
	164.0	255.0	SMDT 1920 MTL/MSL/MEL+SMDH 190-8D	J116
	164.0	255.0	SMDT 1920 MTL/MSL/MEL+SMDH 190-8DF	J114
	164.0	255.0	SMDT 1920 MTL/MSL/MEL+SMDH 190D	J112
	231.0	309.1	SMDT 1920 MTL/MSL/MEL+SMDH 190-12D	J116
19.3	37.0	114.8	SMDT 1930 MTL/MSL/MEL+SMDH 190-1.5D	J116
	37.0	114.8	SMDT 1930 MTL/MSL/MEL+SMDH 190-1.5DF	J114
	67.0	160.0	SMDT 1930 MTL/MSL/MEL+SMDH 190-3D	J116
	67.0	160.0	SMDT 1930 MTL/MSL/MEL+SMDH 190-3DF	J114
	67.0	160.0	SMDT 1930 MTL/MSL/MEL+SMDH 190M	J112
	106.0	195.0	SMDT 1930 MTL/MSL/MEL+SMDH 190-5D	J116
	106.0	195.0	SMDT 1930 MTL/MSL/MEL+SMDH 190-5DF	J114
	106.0	195.0	SMDT 1930 MTL/MSL/MEL+SMDH 190L	J112
	164.0	255.0	SMDT 1930 MTL/MSL/MEL+SMDH 190-8D	J116
	164.0	255.0	SMDT 1930 MTL/MSL/MEL+SMDH 190-8DF	J114
	164.0	255.0	SMDT 1930 MTL/MSL/MEL+SMDH 190D	J112
	231.0	309.1	SMDT 1930 MTL/MSL/MEL+SMDH 190-12D	J116
19.4	37.0	114.8	SMDT 1940 MTL/MSL/MEL+SMDH 190-1.5D	J116
	37.0	114.8	SMDT 1940 MTL/MSL/MEL+SMDH 190-1.5DF	J114
	67.0	160.0	SMDT 1940 MTL/MSL/MEL+SMDH 190-3D	J116
	67.0	160.0	SMDT 1940 MTL/MSL/MEL+SMDH 190-3DF	J114
	67.0	160.0	SMDT 1940 MTL/MSL/MEL+SMDH 190M	J112
	106.0	195.0	SMDT 1940 MTL/MSL/MEL+SMDH 190-5D	J116
	106.0	195.0	SMDT 1940 MTL/MSL/MEL+SMDH 190-5DF	J114
	106.0	195.0	SMDT 1940 MTL/MSL/MEL+SMDH 190L	J112
	164.0	255.0	SMDT 1940 MTL/MSL/MEL+SMDH 190-8D	J116
	164.0	255.0	SMDT 1940 MTL/MSL/MEL+SMDH 190-8DF	J114
	164.0	255.0	SMDT 1940 MTL/MSL/MEL+SMDH 190D	J112
	231.0	309.1	SMDT 1940 MTL/MSL/MEL+SMDH 190-12D	J116
19.5	34.0	111.4	SMDT 1950 MFS+SMDH 190-1.5D	J124
	34.0	111.4	SMDT 1950 MFS+SMDH 190-1.5DF	J122
	35.3	130.5	MDE 1950S20E02	J16
	37.0	114.8	SMDT 1950 MTL/MSL/MEL+SMDH 190-1.5D	J116
	37.0	114.8	SMDT 1950 MTL/MSL/MEL+SMDH 190-1.5DF	J114
	58.5	140.0	MDF 1950S2D	J29
	58.5	250.0	MDF 1950L2D	J32
	63.0	156.6	SMDT 1950 MFS+SMDH 190-3D	J124
	63.0	156.6	SMDT 1950 MFS+SMDH 190-3DF	J122
	63.0	156.6	SMDT 1950 MFS+SMDH 190M	J120
	67.0	160.0	SMDT 1950 MTL/MSL/MEL+SMDH 190-3D	J116
	67.0	160.0	SMDT 1950 MTL/MSL/MEL+SMDH 190-3DF	J114
	67.0	160.0	SMDT 1950 MTL/MSL/MEL+SMDH 190M	J112
	71.8	173.5	MDE 1950S20H03	J24
	71.8	173.5	MDW 1950HX3	J68
	72.3	174.0	MDW 1950HGS3	J48
	84.3	182.5	MDE 1950S20E04	J16
	102.0	191.6	SMDT 1950 MFS+SMDH 190-5D	J124
	102.0	191.6	SMDT 1950 MFS+SMDH 190-5DF	J122
	102.0	191.6	SMDT 1950 MFS+SMDH 190L	J120
	106.0	195.0	SMDT 1950 MTL/MSL/MEL+SMDH 190-5D	J116
	106.0	195.0	SMDT 1950 MTL/MSL/MEL+SMDH 190-5DF	J114
	106.0	195.0	SMDT 1950 MTL/MSL/MEL+SMDH 190L	J112
	130.3	233.5	MDE 1950S20H05	J24
	130.3	233.5	MDW 1950HX5	J68
	130.8	234.0	MDW 1950HGS5	J48
	161.0	251.6	SMDT 1950 MFS+SMDH 190-8D	J124
	161.0	251.6	SMDT 1950 MFS+SMDH 190-8DF	J122
	161.0	251.6	SMDT 1950 MFS+SMDH 190D	J120
	164.0	255.0	SMDT 1950 MTL/MSL/MEL+SMDH 190-8D	J116
	164.0	255.0	SMDT 1950 MTL/MSL/MEL+SMDH 190-8DF	J114
	164.0	255.0	SMDT 1950 MTL/MSL/MEL+SMDH 190D	J112
	228.0	305.7	SMDT 1950 MFS+SMDH 190-12D	J124
	231.0	309.1	SMDT 1950 MTL/MSL/MEL+SMDH 190-12D	J116
19.6	39.0	117.4	SMDT 1960 MTL/MSL/MEL+SMDH 200-1.5D	J116
	39.0	117.4	SMDT 1960 MTL/MSL/MEL+SMDH 200-1.5DF	J114

(Blue text: Flat head ■Indexable cutting edge type)

● Diameter ø19.6 to ø20.0mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
19.6	70.0	160.1	SMDT 1960 MTL/MSL/MEL+SMDH 200-3D	J116
	70.0	160.1	SMDT 1960 MTL/MSL/MEL+SMDH 200-3DF	J114
	70.0	160.1	SMDT 1960 MTL/MSL/MEL+SMDH 200M	J112
	111.0	200.1	SMDT 1960 MTL/MSL/MEL+SMDH 200-5D	J116
	111.0	200.1	SMDT 1960 MTL/MSL/MEL+SMDH 200-5DF	J114
	111.0	200.1	SMDT 1960 MTL/MSL/MEL+SMDH 200L	J112
	172.0	265.1	SMDT 1960 MTL/MSL/MEL+SMDH 200-8D	J116
	172.0	265.1	SMDT 1960 MTL/MSL/MEL+SMDH 200-8DF	J114
	172.0	265.1	SMDT 1960 MTL/MSL/MEL+SMDH 200D	J112
	243.0	321.4	SMDT 1960 MTL/MSL/MEL+SMDH 200-12D	J116
19.7	39.0	117.4	SMDT 1970 MTL/MSL/MEL+SMDH 200-1.5D	J116
	39.0	117.4	SMDT 1970 MTL/MSL/MEL+SMDH 200-1.5DF	J114
	70.0	160.1	SMDT 1970 MTL/MSL/MEL+SMDH 200-3D	J116
	70.0	160.1	SMDT 1970 MTL/MSL/MEL+SMDH 200-3DF	J114
	70.0	160.1	SMDT 1970 MTL/MSL/MEL+SMDH 200M	J112
	88.1	182.6	MDE 1970S20E04	J16
	111.0	200.1	SMDT 1970 MTL/MSL/MEL+SMDH 200-5D	J116
	111.0	200.1	SMDT 1970 MTL/MSL/MEL+SMDH 200-5DF	J114
	111.0	200.1	SMDT 1970 MTL/MSL/MEL+SMDH 200L	J112
	172.0	265.1	SMDT 1970 MTL/MSL/MEL+SMDH 200-8D	J116
	172.0	265.1	SMDT 1970 MTL/MSL/MEL+SMDH 200-8DF	J114
	172.0	265.1	SMDT 1970 MTL/MSL/MEL+SMDH 200D	J112
	243.0	321.4	SMDT 1970 MTL/MSL/MEL+SMDH 200-12D	J116
19.8	39.0	117.4	SMDT 1980 MTL/MSL/MEL+SMDH 200-1.5D	J116
	39.0	117.4	SMDT 1980 MTL/MSL/MEL+SMDH 200-1.5DF	J114
	70.0	160.1	SMDT 1980 MTL/MSL/MEL+SMDH 200-3D	J116
	70.0	160.1	SMDT 1980 MTL/MSL/MEL+SMDH 200-3DF	J114
	70.0	160.1	SMDT 1980 MTL/MSL/MEL+SMDH 200M	J112
	111.0	200.1	SMDT 1980 MTL/MSL/MEL+SMDH 200-5D	J116
	111.0	200.1	SMDT 1980 MTL/MSL/MEL+SMDH 200-5DF	J114
	111.0	200.1	SMDT 1980 MTL/MSL/MEL+SMDH 200L	J112
	172.0	265.1	SMDT 1980 MTL/MSL/MEL+SMDH 200-8D	J116
	172.0	265.1	SMDT 1980 MTL/MSL/MEL+SMDH 200-8DF	J114
	172.0	265.1	SMDT 1980 MTL/MSL/MEL+SMDH 200D	J112
	243.0	321.4	SMDT 1980 MTL/MSL/MEL+SMDH 200-12D	J116
19.9	39.0	117.4	SMDT 1990 MTL/MSL/MEL+SMDH 200-1.5D	J116
	39.0	117.4	SMDT 1990 MTL/MSL/MEL+SMDH 200-1.5DF	J114
	70.0	160.1	SMDT 1990 MTL/MSL/MEL+SMDH 200-3D	J116
	70.0	160.1	SMDT 1990 MTL/MSL/MEL+SMDH 200-3DF	J114
	70.0	160.1	SMDT 1990 MTL/MSL/MEL+SMDH 200M	J112
	111.0	200.1	SMDT 1990 MTL/MSL/MEL+SMDH 200-5D	J116
	111.0	200.1	SMDT 1990 MTL/MSL/MEL+SMDH 200-5DF	J114
	111.0	200.1	SMDT 1990 MTL/MSL/MEL+SMDH 200L	J112
	172.0	265.1	SMDT 1990 MTL/MSL/MEL+SMDH 200-8D	J116
	172.0	265.1	SMDT 1990 MTL/MSL/MEL+SMDH 200-8DF	J114
	172.0	265.1	SMDT 1990 MTL/MSL/MEL+SMDH 200D	J112
	243.0	321.4	SMDT 1990 MTL/MSL/MEL+SMDH 200-12D	J116
20.0	35.0	114.0	SMDT 2000 MFS+SMDH 200-1.5D	J124
	35.0	114.0	SMDT 2000 MFS+SMDH 200-1.5DF	J122
	35.6	130.6	MDE 2000S20E02	J16
	39.0	117.4	SMDT 2000 MTL/MSL/MEL+SMDH 200-1.5D	J116
	39.0	117.4	SMDT 2000 MTL/MSL/MEL+SMDH 200-1.5DF	J114
	40.0	114.0	PDL 200D2S25	J144
	60.0	134.0	PDL 200D3S25	J144
	60.0	140.0	MDF 2000S2D	J29
	60.0	250.0	MDF 2000L2D	J32
	60.0	250.0	MDF 2000L2D-S18	J32
	66.0	156.7	SMDT 2000 MFS+SMDH 200-3D	J124
	66.0	156.7	SMDT 2000 MFS+SMDH 200-3DF	J122
	66.0	156.7	SMDT 2000 MFS+SMDH 200M	J120
	70.0	160.1	SMDT 2000 MTL/MSL/MEL+SMDH 200-3D	J116
	70.0	160.1	SMDT 2000 MTL/MSL/MEL+SMDH 200-3DF	J114
	70.0	160.1	SMDT 2000 MTL/MSL/MEL+SMDH 200M	J112
	73.6	173.6	MDE 2000S20H03	J24
	73.6	173.6	MDW 2000HX3	J68
	74.1	174.1	MDW 2000HGS3	J48
	87.6	182.6	MDE 2000S20E04	J16
	107.0	196.7	SMDT 2000 MFS+SMDH 200-5D	J124
	107.0	196.7	SMDT 2000 MFS+SMDH 200-5DF	J122
	107.0	196.7	SMDT 2000 MFS+SMDH 200L	J120
	111.0	200.1	SMDT 2000 MTL/MSL/MEL+SMDH 200-5D	J116
	111.0	200.1	SMDT 2000 MTL/MSL/MEL+SMDH 200-5DF	J114
	111.0	200.1	SMDT 2000 MTL/MSL/MEL+SMDH 200L	J112
	133.6	233.6	MDE 2000S20H05	J24
	133.6	233.6	MDW 2000HX5	J68
	134.1	234.1	MDW 2000HGS5	J48
	169.0	261.7	SMDT 2000 MFS+SMDH 200-8D	J124
	169.0	261.7	SMDT 2000 MFS+SMDH 200-8DF	J122
	169.0	261.7	SMDT 2000 MFS+SMDH 200D	J120
	172.0	265.1	SMDT 2000 MTL/MSL/MEL+SMDH 200-8D	J116

(Blue text: Flat head ■Indexable cutting edge type)

● Diameter ø20.0 to ø20.6mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
20.0	172.0	265.1	SMDT 2000 MTL/MSL/MEL+SMDH 200-8DF	J114
	172.0	265.1	SMDT 2000 MTL/MSL/MEL+SMDH 200D	J112
	240.0	318.0	SMDT 2000 MFS+SMDH 200-12D	J124
	243.0	321.4	SMDT 2000 MTL/MSL/MEL+SMDH 200-12D	J116
20.1	39.0	117.4	SMDT 2010 MTL/MSL/MEL+SMDH 200-1.5D	J116
	39.0	117.4	SMDT 2010 MTL/MSL/MEL+SMDH 200-1.5DF	J114
	70.0	160.1	SMDT 2010 MTL/MSL/MEL+SMDH 200-3D	J116
	70.0	160.1	SMDT 2010 MTL/MSL/MEL+SMDH 200-3DF	J114
	70.0	160.1	SMDT 2010 MTL/MSL/MEL+SMDH 200M	J112
	111.0	200.1	SMDT 2010 MTL/MSL/MEL+SMDH 200-5D	J116
	111.0	200.1	SMDT 2010 MTL/MSL/MEL+SMDH 200-5DF	J114
	111.0	200.1	SMDT 2010 MTL/MSL/MEL+SMDH 200L	J112
	172.0	265.1	SMDT 2010 MTL/MSL/MEL+SMDH 200-8D	J116
	172.0	265.1	SMDT 2010 MTL/MSL/MEL+SMDH 200-8DF	J114
	172.0	265.1	SMDT 2010 MTL/MSL/MEL+SMDH 200D	J112
	243.0	321.4	SMDT 2010 MTL/MSL/MEL+SMDH 200-12D	J116
20.2	39.0	117.4	SMDT 2020 MTL/MSL/MEL+SMDH 200-1.5D	J116
	39.0	117.4	SMDT 2020 MTL/MSL/MEL+SMDH 200-1.5DF	J114
	70.0	160.1	SMDT 2020 MTL/MSL/MEL+SMDH 200-3D	J116
	70.0	160.1	SMDT 2020 MTL/MSL/MEL+SMDH 200-3DF	J114
	70.0	160.1	SMDT 2020 MTL/MSL/MEL+SMDH 200M	J112
	111.0	200.1	SMDT 2020 MTL/MSL/MEL+SMDH 200-5D	J116
	111.0	200.1	SMDT 2020 MTL/MSL/MEL+SMDH 200-5DF	J114
	111.0	200.1	SMDT 2020 MTL/MSL/MEL+SMDH 200L	J112
	172.0	265.1	SMDT 2020 MTL/MSL/MEL+SMDH 200-8D	J116
	172.0	265.1	SMDT 2020 MTL/MSL/MEL+SMDH 200-8DF	J114
	172.0	265.1	SMDT 2020 MTL/MSL/MEL+SMDH 200D	J112
	243.0	321.4	SMDT 2020 MTL/MSL/MEL+SMDH 200-12D	J116
20.3	39.0	117.4	SMDT 2030 MTL/MSL/MEL+SMDH 200-1.5D	J116
	39.0	117.4	SMDT 2030 MTL/MSL/MEL+SMDH 200-1.5DF	J114
	70.0	160.1	SMDT 2030 MTL/MSL/MEL+SMDH 200-3D	J116
	70.0	160.1	SMDT 2030 MTL/MSL/MEL+SMDH 200-3DF	J114
	70.0	160.1	SMDT 2030 MTL/MSL/MEL+SMDH 200M	J112
	111.0	200.1	SMDT 2030 MTL/MSL/MEL+SMDH 200-5D	J116
	111.0	200.1	SMDT 2030 MTL/MSL/MEL+SMDH 200-5DF	J114
	111.0	200.1	SMDT 2030 MTL/MSL/MEL+SMDH 200L	J112
	172.0	265.1	SMDT 2030 MTL/MSL/MEL+SMDH 200-8D	J116
	172.0	265.1	SMDT 2030 MTL/MSL/MEL+SMDH 200-8DF	J114
	172.0	265.1	SMDT 2030 MTL/MSL/MEL+SMDH 200D	J112
	243.0	321.4	SMDT 2030 MTL/MSL/MEL+SMDH 200-12D	J116
20.4	39.0	117.4	SMDT 2040 MTL/MSL/MEL+SMDH 200-1.5D	J116
	39.0	117.4	SMDT 2040 MTL/MSL/MEL+SMDH 200-1.5DF	J114
	70.0	160.1	SMDT 2040 MTL/MSL/MEL+SMDH 200-3D	J116
	70.0	160.1	SMDT 2040 MTL/MSL/MEL+SMDH 200-3DF	J114
	70.0	160.1	SMDT 2040 MTL/MSL/MEL+SMDH 200M	J112
	111.0	200.1	SMDT 2040 MTL/MSL/MEL+SMDH 200-5D	J116
	111.0	200.1	SMDT 2040 MTL/MSL/MEL+SMDH 200-5DF	J114
	111.0	200.1	SMDT 2040 MTL/MSL/MEL+SMDH 200L	J112
	172.0	265.1	SMDT 2040 MTL/MSL/MEL+SMDH 200-8D	J116
	172.0	265.1	SMDT 2040 MTL/MSL/MEL+SMDH 200-8DF	J114
	172.0	265.1	SMDT 2040 MTL/MSL/MEL+SMDH 200D	J112
	243.0	321.4	SMDT 2040 MTL/MSL/MEL+SMDH 200-12D	J116
20.5	35.0	114.0	SMDT 2050 MFS+SMDH 200-1.5D	J124
	35.0	114.0	SMDT 2050 MFS+SMDH 200-1.5DF	J122
	39.0	117.4	SMDT 2050 MTL/MSL/MEL+SMDH 200-1.5D	J116
	39.0	117.4	SMDT 2050 MTL/MSL/MEL+SMDH 200-1.5DF	J114
	66.0	156.7	SMDT 2050 MFS+SMDH 200-3D	J124
	66.0	156.7	SMDT 2050 MFS+SMDH 200-3DF	J122
	66.0	156.7	SMDT 2050 MFS+SMDH 200M	J120
	70.0	160.1	SMDT 2050 MTL/MSL/MEL+SMDH 200-3D	J116
	70.0	160.1	SMDT 2050 MTL/MSL/MEL+SMDH 200-3DF	J114
	70.0	160.1	SMDT 2050 MTL/MSL/MEL+SMDH 200M	J112
	107.0	196.7	SMDT 2050 MFS+SMDH 200-5D	J124
	107.0	196.7	SMDT 2050 MFS+SMDH 200-5DF	J122
	107.0	196.7	SMDT 2050 MFS+SMDH 200L	J120
	111.0	200.1	SMDT 2050 MTL/MSL/MEL+SMDH 200-5D	J116
	111.0	200.1	SMDT 2050 MTL/MSL/MEL+SMDH 200-5DF	J114
	111.0	200.1	SMDT 2050 MTL/MSL/MEL+SMDH 200L	J112
	169.0	261.7	SMDT 2050 MFS+SMDH 200-8D	J124
	169.0	261.7	SMDT 2050 MFS+SMDH 200-8DF	J122
	169.0	261.7	SMDT 2050 MFS+SMDH 200D	J120
	172.0	265.1	SMDT 2050 MTL/MSL/MEL+SMDH 200-8D	J116
	172.0	265.1	SMDT 2050 MTL/MSL/MEL+SMDH 200-8DF	J114
	172.0	265.1	SMDT 2050 MTL/MSL/MEL+SMDH 200D	J112
	240.0	318.0	SMDT 2050 MFS+SMDH 200-12D	J124
	243.0	321.4	SMDT 2050 MTL/MSL/MEL+SMDH 200-12D	J116
20.6	41.0	119.1	SMDT 2060 MTL/MSL/MEL+SMDH 210-1.5D	J116
	41.0	119.1	SMDT 2060 MTL/MSL/MEL+SMDH 210-1.5DF	J114
	73.0	160.3	SMDT 2060 MTL/MSL/MEL+SMDH 210-3D	J116
	73.0	160.3	SMDT 2060 MTL/MSL/MEL+SMDH 210-3DF	J114

(Blue text: Flat head ■Indexable cutting edge type)

The 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 ø20.6 to ø21.1mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
20.6	73.0	160.3	SMDT 2060 MTL/MSL/MEL+SMDH 210M	J112
	116.0	200.3	SMDT 2060 MTL/MSL/MEL+SMDH 210-5D	J116
	116.0	200.3	SMDT 2060 MTL/MSL/MEL+SMDH 210-5DF	J114
	116.0	200.3	SMDT 2060 MTL/MSL/MEL+SMDH 210L	J112
	180.0	270.3	SMDT 2060 MTL/MSL/MEL+SMDH 210-8D	J116
	180.0	270.3	SMDT 2060 MTL/MSL/MEL+SMDH 210-8DF	J114
	180.0	270.3	SMDT 2060 MTL/MSL/MEL+SMDH 210D	J112
	255.0	333.9	SMDT 2060 MTL/MSL/MEL+SMDH 210-12D	J116
20.7	41.0	119.1	SMDT 2070 MTL/MSL/MEL+SMDH 210-1.5D	J116
	41.0	119.1	SMDT 2070 MTL/MSL/MEL+SMDH 210-1.5DF	J114
	73.0	160.3	SMDT 2070 MTL/MSL/MEL+SMDH 210-3D	J116
	73.0	160.3	SMDT 2070 MTL/MSL/MEL+SMDH 210-3DF	J114
	73.0	160.3	SMDT 2070 MTL/MSL/MEL+SMDH 210M	J112
	116.0	200.3	SMDT 2070 MTL/MSL/MEL+SMDH 210-5D	J116
	116.0	200.3	SMDT 2070 MTL/MSL/MEL+SMDH 210-5DF	J114
	116.0	200.3	SMDT 2070 MTL/MSL/MEL+SMDH 210L	J112
	180.0	270.3	SMDT 2070 MTL/MSL/MEL+SMDH 210-8D	J116
	180.0	270.3	SMDT 2070 MTL/MSL/MEL+SMDH 210-8DF	J114
	180.0	270.3	SMDT 2070 MTL/MSL/MEL+SMDH 210D	J112
	255.0	333.9	SMDT 2070 MTL/MSL/MEL+SMDH 210-12D	J116
20.8	41.0	119.1	SMDT 2080 MTL/MSL/MEL+SMDH 210-1.5D	J116
	41.0	119.1	SMDT 2080 MTL/MSL/MEL+SMDH 210-1.5DF	J114
	73.0	160.3	SMDT 2080 MTL/MSL/MEL+SMDH 210-3D	J116
	73.0	160.3	SMDT 2080 MTL/MSL/MEL+SMDH 210-3DF	J114
	73.0	160.3	SMDT 2080 MTL/MSL/MEL+SMDH 210M	J112
	116.0	200.3	SMDT 2080 MTL/MSL/MEL+SMDH 210-5D	J116
	116.0	200.3	SMDT 2080 MTL/MSL/MEL+SMDH 210-5DF	J114
	116.0	200.3	SMDT 2080 MTL/MSL/MEL+SMDH 210L	J112
	180.0	270.3	SMDT 2080 MTL/MSL/MEL+SMDH 210-8D	J116
	180.0	270.3	SMDT 2080 MTL/MSL/MEL+SMDH 210-8DF	J114
	180.0	270.3	SMDT 2080 MTL/MSL/MEL+SMDH 210D	J112
	255.0	333.9	SMDT 2080 MTL/MSL/MEL+SMDH 210-12D	J116
20.9	41.0	119.1	SMDT 2090 MTL/MSL/MEL+SMDH 210-1.5D	J116
	41.0	119.1	SMDT 2090 MTL/MSL/MEL+SMDH 210-1.5DF	J114
	73.0	160.3	SMDT 2090 MTL/MSL/MEL+SMDH 210-3D	J116
	73.0	160.3	SMDT 2090 MTL/MSL/MEL+SMDH 210-3DF	J114
	73.0	160.3	SMDT 2090 MTL/MSL/MEL+SMDH 210M	J112
	116.0	200.3	SMDT 2090 MTL/MSL/MEL+SMDH 210-5D	J116
	116.0	200.3	SMDT 2090 MTL/MSL/MEL+SMDH 210-5DF	J114
	116.0	200.3	SMDT 2090 MTL/MSL/MEL+SMDH 210L	J112
	180.0	270.3	SMDT 2090 MTL/MSL/MEL+SMDH 210-8D	J116
	180.0	270.3	SMDT 2090 MTL/MSL/MEL+SMDH 210-8DF	J114
	180.0	270.3	SMDT 2090 MTL/MSL/MEL+SMDH 210D	J112
	255.0	333.9	SMDT 2090 MTL/MSL/MEL+SMDH 210-12D	J116
21.0	37.0	115.5	SMDT 2100 MFS+SMDH 210-1.5D	J124
	37.0	115.5	SMDT 2100 MFS+SMDH 210-1.5DF	J122
	41.0	119.1	SMDT 2100 MTL/MSL/MEL+SMDH 210-1.5D	J116
	41.0	119.1	SMDT 2100 MTL/MSL/MEL+SMDH 210-1.5DF	J114
	69.0	156.7	SMDT 2100 MFS+SMDH 210-3D	J124
	69.0	156.7	SMDT 2100 MFS+SMDH 210-3DF	J122
	69.0	156.7	SMDT 2100 MFS+SMDH 210M	J120
	73.0	160.3	SMDT 2100 MTL/MSL/MEL+SMDH 210-3D	J116
	73.0	160.3	SMDT 2100 MTL/MSL/MEL+SMDH 210-3DF	J114
	73.0	160.3	SMDT 2100 MTL/MSL/MEL+SMDH 210M	J112
	112.0	196.7	SMDT 2100 MFS+SMDH 210-5D	J124
	112.0	196.7	SMDT 2100 MFS+SMDH 210-5DF	J122
	112.0	196.7	SMDT 2100 MFS+SMDH 210L	J120
	116.0	200.3	SMDT 2100 MTL/MSL/MEL+SMDH 210-5D	J116
	116.0	200.3	SMDT 2100 MTL/MSL/MEL+SMDH 210-5DF	J114
	116.0	200.3	SMDT 2100 MTL/MSL/MEL+SMDH 210L	J112
	177.0	266.7	SMDT 2100 MFS+SMDH 210-8D	J124
	177.0	266.7	SMDT 2100 MFS+SMDH 210-8DF	J122
	177.0	266.7	SMDT 2100 MFS+SMDH 210D	J120
	180.0	270.3	SMDT 2100 MTL/MSL/MEL+SMDH 210-8D	J116
	180.0	270.3	SMDT 2100 MTL/MSL/MEL+SMDH 210-8DF	J114
	180.0	270.3	SMDT 2100 MTL/MSL/MEL+SMDH 210D	J112
	252.0	330.3	SMDT 2100 MFS+SMDH 210-12D	J124
	255.0	333.9	SMDT 2100 MTL/MSL/MEL+SMDH 210-12D	J116
21.1	41.0	119.1	SMDT 2110 MTL/MSL/MEL+SMDH 210-1.5D	J116
	41.0	119.1	SMDT 2110 MTL/MSL/MEL+SMDH 210-1.5DF	J114
	73.0	160.3	SMDT 2110 MTL/MSL/MEL+SMDH 210-3D	J116
	73.0	160.3	SMDT 2110 MTL/MSL/MEL+SMDH 210-3DF	J114
	73.0	160.3	SMDT 2110 MTL/MSL/MEL+SMDH 210M	J112
	116.0	200.3	SMDT 2110 MTL/MSL/MEL+SMDH 210-5D	J116
	116.0	200.3	SMDT 2110 MTL/MSL/MEL+SMDH 210-5DF	J114
	116.0	200.3	SMDT 2110 MTL/MSL/MEL+SMDH 210L	J112
	180.0	270.3	SMDT 2110 MTL/MSL/MEL+SMDH 210-8D	J116
	180.0	270.3	SMDT 2110 MTL/MSL/MEL+SMDH 210-8DF	J114
	180.0	270.3	SMDT 2110 MTL/MSL/MEL+SMDH 210D	J112
	255.0	333.9	SMDT 2110 MTL/MSL/MEL+SMDH 210-12D	J116

(Blue text: Flat head ■Indexable cutting edge type)

● Diameter ø21.2 to ø21.7mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
21.2	41.0	119.1	SMDT 2120 MTL/MSL/MEL+SMDH 210-1.5D	J116
	41.0	119.1	SMDT 2120 MTL/MSL/MEL+SMDH 210-1.5DF	J114
	73.0	160.3	SMDT 2120 MTL/MSL/MEL+SMDH 210-3D	J116
	73.0	160.3	SMDT 2120 MTL/MSL/MEL+SMDH 210-3DF	J114
	73.0	160.3	SMDT 2120 MTL/MSL/MEL+SMDH 210M	J112
	116.0	200.3	SMDT 2120 MTL/MSL/MEL+SMDH 210-5D	J116
	116.0	200.3	SMDT 2120 MTL/MSL/MEL+SMDH 210-5DF	J114
	116.0	200.3	SMDT 2120 MTL/MSL/MEL+SMDH 210L	J112
	180.0	270.3	SMDT 2120 MTL/MSL/MEL+SMDH 210-8D	J116
	180.0	270.3	SMDT 2120 MTL/MSL/MEL+SMDH 210-8DF	J114
	180.0	270.3	SMDT 2120 MTL/MSL/MEL+SMDH 210D	J112
	255.0	333.9	SMDT 2120 MTL/MSL/MEL+SMDH 210-12D	J116
21.3	41.0	119.1	SMDT 2130 MTL/MSL/MEL+SMDH 210-1.5D	J116
	41.0	119.1	SMDT 2130 MTL/MSL/MEL+SMDH 210-1.5DF	J114
	73.0	160.3	SMDT 2130 MTL/MSL/MEL+SMDH 210-3D	J116
	73.0	160.3	SMDT 2130 MTL/MSL/MEL+SMDH 210-3DF	J114
	73.0	160.3	SMDT 2130 MTL/MSL/MEL+SMDH 210M	J112
	116.0	200.3	SMDT 2130 MTL/MSL/MEL+SMDH 210-5D	J116
	116.0	200.3	SMDT 2130 MTL/MSL/MEL+SMDH 210-5DF	J114
	116.0	200.3	SMDT 2130 MTL/MSL/MEL+SMDH 210L	J112
	180.0	270.3	SMDT 2130 MTL/MSL/MEL+SMDH 210-8D	J116
	180.0	270.3	SMDT 2130 MTL/MSL/MEL+SMDH 210-8DF	J114
	180.0	270.3	SMDT 2130 MTL/MSL/MEL+SMDH 210D	J112
	255.0	333.9	SMDT 2130 MTL/MSL/MEL+SMDH 210-12D	J116
21.4	41.0	119.1	SMDT 2140 MTL/MSL/MEL+SMDH 210-1.5D	J116
	41.0	119.1	SMDT 2140 MTL/MSL/MEL+SMDH 210-1.5DF	J114
	73.0	160.3	SMDT 2140 MTL/MSL/MEL+SMDH 210-3D	J116
	73.0	160.3	SMDT 2140 MTL/MSL/MEL+SMDH 210-3DF	J114
	73.0	160.3	SMDT 2140 MTL/MSL/MEL+SMDH 210M	J112
	116.0	200.3	SMDT 2140 MTL/MSL/MEL+SMDH 210-5D	J116
	116.0	200.3	SMDT 2140 MTL/MSL/MEL+SMDH 210-5DF	J114
	116.0	200.3	SMDT 2140 MTL/MSL/MEL+SMDH 210L	J112
	180.0	270.3	SMDT 2140 MTL/MSL/MEL+SMDH 210-8D	J116
	180.0	270.3	SMDT 2140 MTL/MSL/MEL+SMDH 210-8DF	J114
	180.0	270.3	SMDT 2140 MTL/MSL/MEL+SMDH 210D	J112
	255.0	333.9	SMDT 2140 MTL/MSL/MEL+SMDH 210-12D	J116
21.5	37.0	115.5	SMDT 2150 MFS+SMDH 210-1.5D	J124
	37.0	115.5	SMDT 2150 MFS+SMDH 210-1.5DF	J122
	41.0	119.1	SMDT 2150 MTL/MSL/MEL+SMDH 210-1.5D	J116
	41.0	119.1	SMDT 2150 MTL/MSL/MEL+SMDH 210-1.5DF	J114
	69.0	156.7	SMDT 2150 MFS+SMDH 210-3D	J124
	69.0	156.7	SMDT 2150 MFS+SMDH 210-3DF	J122
	69.0	156.7	SMDT 2150 MFS+SMDH 210M	J120
	73.0	160.3	SMDT 2150 MTL/MSL/MEL+SMDH 210-3D	J116
	73.0	160.3	SMDT 2150 MTL/MSL/MEL+SMDH 210-3DF	J114
	73.0	160.3	SMDT 2150 MTL/MSL/MEL+SMDH 210M	J112
	112.0	196.7	SMDT 2150 MFS+SMDH 210-5D	J124
	112.0	196.7	SMDT 2150 MFS+SMDH 210-5DF	J122
	112.0	196.7	SMDT 2150 MFS+SMDH 210L	J120
	116.0	200.3	SMDT 2150 MTL/MSL/MEL+SMDH 210-5D	J116
	116.0	200.3	SMDT 2150 MTL/MSL/MEL+SMDH 210-5DF	J114
	116.0	200.3	SMDT 2150 MTL/MSL/MEL+SMDH 210L	J112
	177.0	266.7	SMDT 2150 MFS+SMDH 210-8D	J124
	177.0	266.7	SMDT 2150 MFS+SMDH 210-8DF	J122
	177.0	266.7	SMDT 2150 MFS+SMDH 210D	J120
	180.0	270.3	SMDT 2150 MTL/MSL/MEL+SMDH 210-8D	J116
	180.0	270.3	SMDT 2150 MTL/MSL/MEL+SMDH 210-8DF	J114
	180.0	270.3	SMDT 2150 MTL/MSL/MEL+SMDH 210D	J112
	252.0	330.3	SMDT 2150 MFS+SMDH 210-12D	J124
	255.0	333.9	SMDT 2150 MTL/MSL/MEL+SMDH 210-12D	J116
21.6	43.0	120.9	SMDT 2160 MTL/MSL/MEL+SMDH 220-1.5D	J117
	43.0	120.9	SMDT 2160 MTL/MSL/MEL+SMDH 220-1.5DF	J114
	77.0	165.1	SMDT 2160 MTL/MSL/MEL+SMDH 220-3D	J117
	77.0	165.1	SMDT 2160 MTL/MSL/MEL+SMDH 220-3DF	J114
	77.0	165.1	SMDT 2160 MTL/MSL/MEL+SMDH 220M	J112
	123.0	205.1	SMDT 2160 MTL/MSL/MEL+SMDH 220-5D	J117
	123.0	205.1	SMDT 2160 MTL/MSL/MEL+SMDH 220-5DF	J114
	123.0	205.1	SMDT 2160 MTL/MSL/MEL+SMDH 220L	J112
	191.0	275.1	SMDT 2160 MTL/MSL/MEL+SMDH 220-8D	J117
	191.0	275.1	SMDT 2160 MTL/MSL/MEL+SMDH 220-8DF	J114
	191.0	275.1	SMDT 2160 MTL/MSL/MEL+SMDH 220D	J112
	268.0	347.0	SMDT 2160 MTL/MSL/MEL+SMDH 220-12D	J117
21.7	43.0	120.9	SMDT 2170 MTL/MSL/MEL+SMDH 220-1.5D	J117
	43.0	120.9	SMDT 2170 MTL/MSL/MEL+SMDH 220-1.5DF	J114
	77.0	165.1	SMDT 2170 MTL/MSL/MEL+SMDH 220-3D	J117
	77.0	165.1	SMDT 2170 MTL/MSL/MEL+SMDH 220-3DF	J114
	77.0	165.1	SMDT 2170 MTL/MSL/MEL+SMDH 220M	J112
	123.0	205.1	SMDT 2170 MTL/MSL/MEL+SMDH 220-5D	J117
	123.0	205.1	SMDT 2170 MTL/MSL/MEL+SMDH 220-5DF	J114
	123.0	205.1	SMDT 2170 MTL/MSL/MEL+SMDH 220L	J112
	191.0	275.1	SMDT 2170 MTL/MSL/MEL+SMDH 220-8D	J117
	191.0	275.1	SMDT 2170 MTL/MSL/MEL+SMDH 220-8DF	J114
	191.0	275.1	SMDT 2170 MTL/MSL/MEL+SMDH 220D	J112
	268.0	347.0	SMDT 2170 MTL/MSL/MEL+SMDH 220-12D	J117

(Blue text: Flat head ■Indexable cutting edge type)

● Diameter ø21.7 to ø22.3mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
21.7	191.0	275.1	SMDT 2170 MTL/MSL/MEL+SMDH 220-8D	J117
	191.0	275.1	SMDT 2170 MTL/MSL/MEL+SMDH 220-8DF	J114
	191.0	275.1	SMDT 2170 MTL/MSL/MEL+SMDH 220D	J112
	268.0	347.0	SMDT 2170 MTL/MSL/MEL+SMDH 220-12D	J117
21.8	43.0	120.9	SMDT 2180 MTL/MSL/MEL+SMDH 220-1.5D	J117
	43.0	120.9	SMDT 2180 MTL/MSL/MEL+SMDH 220-1.5DF	J114
	77.0	165.1	SMDT 2180 MTL/MSL/MEL+SMDH 220-3D	J117
	77.0	165.1	SMDT 2180 MTL/MSL/MEL+SMDH 220-3DF	J114
	77.0	165.1	SMDT 2180 MTL/MSL/MEL+SMDH 220M	J112
	123.0	205.1	SMDT 2180 MTL/MSL/MEL+SMDH 220-5D	J117
	123.0	205.1	SMDT 2180 MTL/MSL/MEL+SMDH 220-5DF	J114
	123.0	205.1	SMDT 2180 MTL/MSL/MEL+SMDH 220L	J112
	191.0	275.1	SMDT 2180 MTL/MSL/MEL+SMDH 220-8D	J117
	191.0	275.1	SMDT 2180 MTL/MSL/MEL+SMDH 220-8DF	J114
	191.0	275.1	SMDT 2180 MTL/MSL/MEL+SMDH 220D	J112
	268.0	347.0	SMDT 2180 MTL/MSL/MEL+SMDH 220-12D	J117
21.9	43.0	120.9	SMDT 2190 MTL/MSL/MEL+SMDH 220-1.5D	J117
	43.0	120.9	SMDT 2190 MTL/MSL/MEL+SMDH 220-1.5DF	J114
	77.0	165.1	SMDT 2190 MTL/MSL/MEL+SMDH 220-3D	J117
	77.0	165.1	SMDT 2190 MTL/MSL/MEL+SMDH 220-3DF	J114
	77.0	165.1	SMDT 2190 MTL/MSL/MEL+SMDH 220M	J112
	123.0	205.1	SMDT 2190 MTL/MSL/MEL+SMDH 220-5D	J117
	123.0	205.1	SMDT 2190 MTL/MSL/MEL+SMDH 220-5DF	J114
	123.0	205.1	SMDT 2190 MTL/MSL/MEL+SMDH 220L	J112
	191.0	275.1	SMDT 2190 MTL/MSL/MEL+SMDH 220-8D	J117
	191.0	275.1	SMDT 2190 MTL/MSL/MEL+SMDH 220-8DF	J114
	191.0	275.1	SMDT 2190 MTL/MSL/MEL+SMDH 220D	J112
	268.0	347.0	SMDT 2190 MTL/MSL/MEL+SMDH 220-12D	J117
22.0	39.0	117.1	SMDT 2200 MFS+SMDH 220-1.5D	J125
	39.0	117.1	SMDT 2200 MFS+SMDH 220-1.5DF	J122
	43.0	120.9	SMDT 2200 MTL/MSL/MEL+SMDH 220-1.5D	J117
	43.0	120.9	SMDT 2200 MTL/MSL/MEL+SMDH 220-1.5DF	J114
	73.0	161.3	SMDT 2200 MFS+SMDH 220-3D	J125
	73.0	161.3	SMDT 2200 MFS+SMDH 220-3DF	J122
	73.0	161.3	SMDT 2200 MFS+SMDH 220M	J120
	77.0	165.1	SMDT 2200 MTL/MSL/MEL+SMDH 220-3D	J117
	77.0	165.1	SMDT 2200 MTL/MSL/MEL+SMDH 220-3DF	J114
	77.0	165.1	SMDT 2200 MTL/MSL/MEL+SMDH 220M	J112
	119.0	201.3	SMDT 2200 MFS+SMDH 220-5D	J125
	119.0	201.3	SMDT 2200 MFS+SMDH 220-5DF	J122
	119.0	201.3	SMDT 2200 MFS+SMDH 220L	J120
	123.0	205.1	SMDT 2200 MTL/MSL/MEL+SMDH 220-5D	J117
	123.0	205.1	SMDT 2200 MTL/MSL/MEL+SMDH 220-5DF	J114
	123.0	205.1	SMDT 2200 MTL/MSL/MEL+SMDH 220L	J112
	187.0	271.3	SMDT 2200 MFS+SMDH 220-8D	J125
	187.0	271.3	SMDT 2200 MFS+SMDH 220-8DF	J122
	187.0	271.3	SMDT 2200 MFS+SMDH 220D	J120
	191.0	275.1	SMDT 2200 MTL/MSL/MEL+SMDH 220-8D	J117
	191.0	275.1	SMDT 2200 MTL/MSL/MEL+SMDH 220-8DF	J114
	191.0	275.1	SMDT 2200 MTL/MSL/MEL+SMDH 220D	J112
	264.0	343.2	SMDT 2200 MFS+SMDH 220-12D	J125
	268.0	347.0	SMDT 2200 MTL/MSL/MEL+SMDH 220-12D	J117
22.1	43.0	120.9	SMDT 2210 MTL/MSL/MEL+SMDH 220-1.5D	J117
	43.0	120.9	SMDT 2210 MTL/MSL/MEL+SMDH 220-1.5DF	J114
	77.0	165.1	SMDT 2210 MTL/MSL/MEL+SMDH 220-3D	J117
	77.0	165.1	SMDT 2210 MTL/MSL/MEL+SMDH 220-3DF	J114
	77.0	165.1	SMDT 2210 MTL/MSL/MEL+SMDH 220M	J112
	123.0	205.1	SMDT 2210 MTL/MSL/MEL+SMDH 220-5D	J117
	123.0	205.1	SMDT 2210 MTL/MSL/MEL+SMDH 220-5DF	J114
	123.0	205.1	SMDT 2210 MTL/MSL/MEL+SMDH 220L	J112
	191.0	275.1	SMDT 2210 MTL/MSL/MEL+SMDH 220-8D	J117
	191.0	275.1	SMDT 2210 MTL/MSL/MEL+SMDH 220-8DF	J114
	191.0	275.1	SMDT 2210 MTL/MSL/MEL+SMDH 220D	J112
	268.0	347.0	SMDT 2210 MTL/MSL/MEL+SMDH 220-12D	J117
22.2	43.0	120.9	SMDT 2220 MTL/MSL/MEL+SMDH 220-1.5D	J117
	43.0	120.9	SMDT 2220 MTL/MSL/MEL+SMDH 220-1.5DF	J114
	77.0	165.1	SMDT 2220 MTL/MSL/MEL+SMDH 220-3D	J117
	77.0	165.1	SMDT 2220 MTL/MSL/MEL+SMDH 220-3DF	J114
	77.0	165.1	SMDT 2220 MTL/MSL/MEL+SMDH 220M	J112
	123.0	205.1	SMDT 2220 MTL/MSL/MEL+SMDH 220-5D	J117
	123.0	205.1	SMDT 2220 MTL/MSL/MEL+SMDH 220-5DF	J114
	123.0	205.1	SMDT 2220 MTL/MSL/MEL+SMDH 220L	J112
	191.0	275.1	SMDT 2220 MTL/MSL/MEL+SMDH 220-8D	J117
	191.0	275.1	SMDT 2220 MTL/MSL/MEL+SMDH 220-8DF	J114
	191.0	275.1	SMDT 2220 MTL/MSL/MEL+SMDH 220D	J112
	268.0	347.0	SMDT 2220 MTL/MSL/MEL+SMDH 220-12D	J117
22.3	43.0	120.9	SMDT 2230 MTL/MSL/MEL+SMDH 220-1.5D	J117
	43.0	120.9	SMDT 2230 MTL/MSL/MEL+SMDH 220-1.5DF	J114
	77.0	165.1	SMDT 2230 MTL/MSL/MEL+SMDH 220-3D	J117
	77.0	165.1	SMDT 2230 MTL/MSL/MEL+SMDH 220-3DF	J114

(Blue text: Flat head ■Indexable cutting edge type)

The 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 ø22.3 to ø22.8mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
22.3	77.0	165.1	SMDT 2230 MTL/MSL/MEL+SMDH 220M	J112
	123.0	205.1	SMDT 2230 MTL/MSL/MEL+SMDH 220-5D	J117
	123.0	205.1	SMDT 2230 MTL/MSL/MEL+SMDH 220-5DF	J114
	123.0	205.1	SMDT 2230 MTL/MSL/MEL+SMDH 220L	J112
	191.0	275.1	SMDT 2230 MTL/MSL/MEL+SMDH 220-8D	J117
	191.0	275.1	SMDT 2230 MTL/MSL/MEL+SMDH 220-8DF	J114
	191.0	275.1	SMDT 2230 MTL/MSL/MEL+SMDH 220D	J112
	268.0	347.0	SMDT 2230 MTL/MSL/MEL+SMDH 220-12D	J117
22.4	43.0	120.9	SMDT 2240 MTL/MSL/MEL+SMDH 220-1.5D	J117
	43.0	120.9	SMDT 2240 MTL/MSL/MEL+SMDH 220-1.5DF	J114
	77.0	165.1	SMDT 2240 MTL/MSL/MEL+SMDH 220-3D	J117
	77.0	165.1	SMDT 2240 MTL/MSL/MEL+SMDH 220-3DF	J114
	77.0	165.1	SMDT 2240 MTL/MSL/MEL+SMDH 220M	J112
	123.0	205.1	SMDT 2240 MTL/MSL/MEL+SMDH 220-5D	J117
	123.0	205.1	SMDT 2240 MTL/MSL/MEL+SMDH 220-5DF	J114
	123.0	205.1	SMDT 2240 MTL/MSL/MEL+SMDH 220L	J112
	191.0	275.1	SMDT 2240 MTL/MSL/MEL+SMDH 220-8D	J117
	191.0	275.1	SMDT 2240 MTL/MSL/MEL+SMDH 220-8DF	J114
	191.0	275.1	SMDT 2240 MTL/MSL/MEL+SMDH 220D	J112
	268.0	347.0	SMDT 2240 MTL/MSL/MEL+SMDH 220-12D	J117
22.5	39.0	117.1	SMDT 2250 MFS+SMDH 220-1.5D	J125
	39.0	117.1	SMDT 2250 MFS+SMDH 220-1.5DF	J122
	43.0	120.9	SMDT 2250 MTL/MSL/MEL+SMDH 220-1.5D	J117
	43.0	120.9	SMDT 2250 MTL/MSL/MEL+SMDH 220-1.5DF	J114
	73.0	161.3	SMDT 2250 MFS+SMDH 220-3D	J125
	73.0	161.3	SMDT 2250 MFS+SMDH 220-3DF	J122
	73.0	161.3	SMDT 2250 MFS+SMDH 220M	J120
	77.0	165.1	SMDT 2250 MTL/MSL/MEL+SMDH 220-3D	J117
	77.0	165.1	SMDT 2250 MTL/MSL/MEL+SMDH 220-3DF	J114
	77.0	165.1	SMDT 2250 MTL/MSL/MEL+SMDH 220M	J112
	119.0	201.3	SMDT 2250 MFS+SMDH 220-5D	J125
	119.0	201.3	SMDT 2250 MFS+SMDH 220-5DF	J122
	119.0	201.3	SMDT 2250 MFS+SMDH 220L	J120
	123.0	205.1	SMDT 2250 MTL/MSL/MEL+SMDH 220-5D	J117
	123.0	205.1	SMDT 2250 MTL/MSL/MEL+SMDH 220-5DF	J114
	123.0	205.1	SMDT 2250 MTL/MSL/MEL+SMDH 220L	J112
	187.0	271.3	SMDT 2250 MFS+SMDH 220-8D	J125
	187.0	271.3	SMDT 2250 MFS+SMDH 220-8DF	J122
	187.0	271.3	SMDT 2250 MFS+SMDH 220D	J120
	191.0	275.1	SMDT 2250 MTL/MSL/MEL+SMDH 220-8D	J117
	191.0	275.1	SMDT 2250 MTL/MSL/MEL+SMDH 220-8DF	J114
	191.0	275.1	SMDT 2250 MTL/MSL/MEL+SMDH 220D	J112
	264.0	343.2	SMDT 2250 MFS+SMDH 220-12D	J125
	268.0	347.0	SMDT 2250 MTL/MSL/MEL+SMDH 220-12D	J117
22.6	43.0	120.9	SMDT 2260 MTL/MSL/MEL+SMDH 220-1.5D	J117
	43.0	120.9	SMDT 2260 MTL/MSL/MEL+SMDH 220-1.5DF	J114
	77.0	165.1	SMDT 2260 MTL/MSL/MEL+SMDH 220-3D	J117
	77.0	165.1	SMDT 2260 MTL/MSL/MEL+SMDH 220-3DF	J114
	77.0	165.1	SMDT 2260 MTL/MSL/MEL+SMDH 220M	J112
	123.0	205.1	SMDT 2260 MTL/MSL/MEL+SMDH 220-5D	J117
	123.0	205.1	SMDT 2260 MTL/MSL/MEL+SMDH 220-5DF	J114
	123.0	205.1	SMDT 2260 MTL/MSL/MEL+SMDH 220L	J112
	191.0	275.1	SMDT 2260 MTL/MSL/MEL+SMDH 220-8D	J117
	191.0	275.1	SMDT 2260 MTL/MSL/MEL+SMDH 220-8DF	J114
	191.0	275.1	SMDT 2260 MTL/MSL/MEL+SMDH 220D	J112
	268.0	347.0	SMDT 2260 MTL/MSL/MEL+SMDH 220-12D	J117
22.7	43.0	120.9	SMDT 2270 MTL/MSL/MEL+SMDH 220-1.5D	J117
	43.0	120.9	SMDT 2270 MTL/MSL/MEL+SMDH 220-1.5DF	J114
	77.0	165.1	SMDT 2270 MTL/MSL/MEL+SMDH 220-3D	J117
	77.0	165.1	SMDT 2270 MTL/MSL/MEL+SMDH 220-3DF	J114
	77.0	165.1	SMDT 2270 MTL/MSL/MEL+SMDH 220M	J112
	123.0	205.1	SMDT 2270 MTL/MSL/MEL+SMDH 220-5D	J117
	123.0	205.1	SMDT 2270 MTL/MSL/MEL+SMDH 220-5DF	J114
	123.0	205.1	SMDT 2270 MTL/MSL/MEL+SMDH 220L	J112
	191.0	275.1	SMDT 2270 MTL/MSL/MEL+SMDH 220-8D	J117
	191.0	275.1	SMDT 2270 MTL/MSL/MEL+SMDH 220-8DF	J114
	191.0	275.1	SMDT 2270 MTL/MSL/MEL+SMDH 220D	J112
	268.0	347.0	SMDT 2270 MTL/MSL/MEL+SMDH 220-12D	J117
22.8	43.0	120.9	SMDT 2280 MTL/MSL/MEL+SMDH 220-1.5D	J117
	43.0	120.9	SMDT 2280 MTL/MSL/MEL+SMDH 220-1.5DF	J114
	77.0	165.1	SMDT 2280 MTL/MSL/MEL+SMDH 220-3D	J117
	77.0	165.1	SMDT 2280 MTL/MSL/MEL+SMDH 220-3DF	J114
	77.0	165.1	SMDT 2280 MTL/MSL/MEL+SMDH 220M	J112
	123.0	205.1	SMDT 2280 MTL/MSL/MEL+SMDH 220-5D	J117
	123.0	205.1	SMDT 2280 MTL/MSL/MEL+SMDH 220-5DF	J114
	123.0	205.1	SMDT 2280 MTL/MSL/MEL+SMDH 220L	J112
	191.0	275.1	SMDT 2280 MTL/MSL/MEL+SMDH 220-8D	J117
	191.0	275.1	SMDT 2280 MTL/MSL/MEL+SMDH 220-8DF	J114
	191.0	275.1	SMDT 2280 MTL/MSL/MEL+SMDH 220D	J112
	268.0	347.0	SMDT 2280 MTL/MSL/MEL+SMDH 220-12D	J117

(Blue text: Flat head ■Indexable cutting edge type)

● Diameter ø22.9 to ø23.4mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
22.9	45.0	122.0	SMDT 2290 MTL/MSL/MEL+SMDH 230-1.5D	J117
	45.0	122.0	SMDT 2290 MTL/MSL/MEL+SMDH 230-1.5DF	J114
	80.0	164.7	SMDT 2290 MTL/MSL/MEL+SMDH 230-3D	J117
	80.0	164.7	SMDT 2290 MTL/MSL/MEL+SMDH 230-3DF	J114
	80.0	164.7	SMDT 2290 MTL/MSL/MEL+SMDH 230M	J112
	128.0	214.7	SMDT 2290 MTL/MSL/MEL+SMDH 230-5D	J117
	128.0	214.7	SMDT 2290 MTL/MSL/MEL+SMDH 230-5DF	J114
	128.0	214.7	SMDT 2290 MTL/MSL/MEL+SMDH 230L	J112
	199.0	284.7	SMDT 2290 MTL/MSL/MEL+SMDH 230-8D	J117
	199.0	284.7	SMDT 2290 MTL/MSL/MEL+SMDH 230-8DF	J114
	199.0	284.7	SMDT 2290 MTL/MSL/MEL+SMDH 230D	J112
	280.0	359.0	SMDT 2290 MTL/MSL/MEL+SMDH 230-12D	J117
23.0	40.0	118.0	SMDT 2300 MFS+SMDH 230-1.5D	J125
	40.0	118.0	SMDT 2300 MFS+SMDH 230-1.5DF	J122
	45.0	122.0	SMDT 2300 MTL/MSL/MEL+SMDH 230-1.5D	J117
	45.0	122.0	SMDT 2300 MTL/MSL/MEL+SMDH 230-1.5DF	J114
	76.0	160.7	SMDT 2300 MFS+SMDH 230-3D	J125
	76.0	160.7	SMDT 2300 MFS+SMDH 230-3DF	J122
	76.0	160.7	SMDT 2300 MFS+SMDH 230M	J120
	80.0	164.7	SMDT 2300 MTL/MSL/MEL+SMDH 230-3D	J117
	80.0	164.7	SMDT 2300 MTL/MSL/MEL+SMDH 230-3DF	J114
	80.0	164.7	SMDT 2300 MTL/MSL/MEL+SMDH 230M	J112
	124.0	210.7	SMDT 2300 MFS+SMDH 230-5D	J125
	124.0	210.7	SMDT 2300 MFS+SMDH 230-5DF	J122
	124.0	210.7	SMDT 2300 MFS+SMDH 230L	J120
	128.0	214.7	SMDT 2300 MTL/MSL/MEL+SMDH 230-5D	J117
	128.0	214.7	SMDT 2300 MTL/MSL/MEL+SMDH 230-5DF	J114
	128.0	214.7	SMDT 2300 MTL/MSL/MEL+SMDH 230L	J112
	195.0	280.7	SMDT 2300 MFS+SMDH 230-8D	J125
	195.0	280.7	SMDT 2300 MFS+SMDH 230-8DF	J122
	195.0	280.7	SMDT 2300 MFS+SMDH 230D	J120
	199.0	284.7	SMDT 2300 MTL/MSL/MEL+SMDH 230-8D	J117
	199.0	284.7	SMDT 2300 MTL/MSL/MEL+SMDH 230-8DF	J114
	199.0	284.7	SMDT 2300 MTL/MSL/MEL+SMDH 230D	J112
	276.0	355.0	SMDT 2300 MFS+SMDH 230-12D	J125
	280.0	359.0	SMDT 2300 MTL/MSL/MEL+SMDH 230-12D	J117
23.1	45.0	122.0	SMDT 2310 MTL/MSL/MEL+SMDH 230-1.5D	J117
	45.0	122.0	SMDT 2310 MTL/MSL/MEL+SMDH 230-1.5DF	J114
	80.0	164.7	SMDT 2310 MTL/MSL/MEL+SMDH 230-3D	J117
	80.0	164.7	SMDT 2310 MTL/MSL/MEL+SMDH 230-3DF	J114
	80.0	164.7	SMDT 2310 MTL/MSL/MEL+SMDH 230M	J112
	128.0	214.7	SMDT 2310 MTL/MSL/MEL+SMDH 230-5D	J117
	128.0	214.7	SMDT 2310 MTL/MSL/MEL+SMDH 230-5DF	J114
	128.0	214.7	SMDT 2310 MTL/MSL/MEL+SMDH 230L	J112
	199.0	284.7	SMDT 2310 MTL/MSL/MEL+SMDH 230-8D	J117
	199.0	284.7	SMDT 2310 MTL/MSL/MEL+SMDH 230-8DF	J114
	199.0	284.7	SMDT 2310 MTL/MSL/MEL+SMDH 230D	J112
	280.0	359.0	SMDT 2310 MTL/MSL/MEL+SMDH 230-12D	J117
23.2	45.0	122.0	SMDT 2320 MTL/MSL/MEL+SMDH 230-1.5D	J117
	45.0	122.0	SMDT 2320 MTL/MSL/MEL+SMDH 230-1.5DF	J114
	80.0	164.7	SMDT 2320 MTL/MSL/MEL+SMDH 230-3D	J117
	80.0	164.7	SMDT 2320 MTL/MSL/MEL+SMDH 230-3DF	J114
	80.0	164.7	SMDT 2320 MTL/MSL/MEL+SMDH 230M	J112
	128.0	214.7	SMDT 2320 MTL/MSL/MEL+SMDH 230-5D	J117
	128.0	214.7	SMDT 2320 MTL/MSL/MEL+SMDH 230-5DF	J114
	128.0	214.7	SMDT 2320 MTL/MSL/MEL+SMDH 230L	J112
	199.0	284.7	SMDT 2320 MTL/MSL/MEL+SMDH 230-8D	J117
	199.0	284.7	SMDT 2320 MTL/MSL/MEL+SMDH 230-8DF	J114
	199.0	284.7	SMDT 2320 MTL/MSL/MEL+SMDH 230D	J112
	280.0	359.0	SMDT 2320 MTL/MSL/MEL+SMDH 230-12D	J117
23.3	45.0	122.0	SMDT 2330 MTL/MSL/MEL+SMDH 230-1.5D	J117
	45.0	122.0	SMDT 2330 MTL/MSL/MEL+SMDH 230-1.5DF	J114
	80.0	164.7	SMDT 2330 MTL/MSL/MEL+SMDH 230-3D	J117
	80.0	164.7	SMDT 2330 MTL/MSL/MEL+SMDH 230-3DF	J114
	80.0	164.7	SMDT 2330 MTL/MSL/MEL+SMDH 230M	J112
	128.0	214.7	SMDT 2330 MTL/MSL/MEL+SMDH 230-5D	J117
	128.0	214.7	SMDT 2330 MTL/MSL/MEL+SMDH 230-5DF	J114
	128.0	214.7	SMDT 2330 MTL/MSL/MEL+SMDH 230L	J112
	199.0	284.7	SMDT 2330 MTL/MSL/MEL+SMDH 230-8D	J117
	199.0	284.7	SMDT 2330 MTL/MSL/MEL+SMDH 230-8DF	J114
	199.0	284.7	SMDT 2330 MTL/MSL/MEL+SMDH 230D	J112
	280.0	359.0	SMDT 2330 MTL/MSL/MEL+SMDH 230-12D	J117
23.4	45.0	122.0	SMDT 2340 MTL/MSL/MEL+SMDH 230-1.5D	J117
	45.0	122.0	SMDT 2340 MTL/MSL/MEL+SMDH 230-1.5DF	J114
	80.0	164.7	SMDT 2340 MTL/MSL/MEL+SMDH 230-3D	J117
	80.0	164.7	SMDT 2340 MTL/MSL/MEL+SMDH 230-3DF	J114
	80.0	164.7	SMDT 2340 MTL/MSL/MEL+SMDH 230M	J112
	128.0	214.7	SMDT 2340 MTL/MSL/MEL+SMDH 230-5D	J117
	128.0	214.7	SMDT 2340 MTL/MSL/MEL+SMDH 230-5DF	J114
	128.0	214.7	SMDT 2340 MTL/MSL/MEL+SMDH 230L	J112

(Blue text: Flat head ■Indexable cutting edge type)

● Diameter ø23.4 to ø24.0mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
23.4	199.0	284.7	SMDT 2340 MTL/MSL/MEL+SMDH 230-8D	J117
	199.0	284.7	SMDT 2340 MTL/MSL/MEL+SMDH 230-8DF	J114
	199.0	284.7	SMDT 2340 MTL/MSL/MEL+SMDH 230D	J112
	280.0	359.0	SMDT 2340 MTL/MSL/MEL+SMDH 230-12D	J117
23.5	40.0	118.0	SMDT 2350 MFS+SMDH 230-1.5D	J125
	40.0	118.0	SMDT 2350 MFS+SMDH 230-1.5DF	J122
	45.0	122.0	SMDT 2350 MTL/MSL/MEL+SMDH 230-1.5D	J117
	45.0	122.0	SMDT 2350 MTL/MSL/MEL+SMDH 230-1.5DF	J114
	76.0	160.7	SMDT 2350 MFS+SMDH 230-3D	J125
	76.0	160.7	SMDT 2350 MFS+SMDH 230-3DF	J122
	76.0	160.7	SMDT 2350 MFS+SMDH 230M	J120
	80.0	164.7	SMDT 2350 MTL/MSL/MEL+SMDH 230-3D	J117
	80.0	164.7	SMDT 2350 MTL/MSL/MEL+SMDH 230-3DF	J114
	80.0	164.7	SMDT 2350 MTL/MSL/MEL+SMDH 230M	J112
	124.0	210.7	SMDT 2350 MFS+SMDH 230-5D	J125
	124.0	210.7	SMDT 2350 MFS+SMDH 230-5DF	J122
	124.0	210.7	SMDT 2350 MFS+SMDH 230L	J120
	128.0	214.7	SMDT 2350 MTL/MSL/MEL+SMDH 230-5D	J117
	128.0	214.7	SMDT 2350 MTL/MSL/MEL+SMDH 230-5DF	J114
	128.0	214.7	SMDT 2350 MTL/MSL/MEL+SMDH 230L	J112
	195.0	280.7	SMDT 2350 MFS+SMDH 230-8D	J125
	195.0	280.7	SMDT 2350 MFS+SMDH 230-8DF	J122
	195.0	280.7	SMDT 2350 MFS+SMDH 230D	J120
	199.0	284.7	SMDT 2350 MTL/MSL/MEL+SMDH 230-8D	J117
	199.0	284.7	SMDT 2350 MTL/MSL/MEL+SMDH 230-8DF	J114
	199.0	284.7	SMDT 2350 MTL/MSL/MEL+SMDH 230D	J112
	276.0	355.0	SMDT 2350 MFS+SMDH 230-12D	J125
	280.0	359.0	SMDT 2350 MTL/MSL/MEL+SMDH 230-12D	J117
23.6	45.0	122.0	SMDT 2360 MTL/MSL/MEL+SMDH 230-1.5D	J117
	45.0	122.0	SMDT 2360 MTL/MSL/MEL+SMDH 230-1.5DF	J114
	80.0	164.7	SMDT 2360 MTL/MSL/MEL+SMDH 230-3D	J117
	80.0	164.7	SMDT 2360 MTL/MSL/MEL+SMDH 230-3DF	J114
	80.0	164.7	SMDT 2360 MTL/MSL/MEL+SMDH 230M	J112
	128.0	214.7	SMDT 2360 MTL/MSL/MEL+SMDH 230-5D	J117
	128.0	214.7	SMDT 2360 MTL/MSL/MEL+SMDH 230-5DF	J114
	128.0	214.7	SMDT 2360 MTL/MSL/MEL+SMDH 230L	J112
	199.0	284.7	SMDT 2360 MTL/MSL/MEL+SMDH 230-8D	J117
	199.0	284.7	SMDT 2360 MTL/MSL/MEL+SMDH 230-8DF	J114
	199.0	284.7	SMDT 2360 MTL/MSL/MEL+SMDH 230D	J112
	280.0	359.0	SMDT 2360 MTL/MSL/MEL+SMDH 230-12D	J117
23.7	45.0	122.0	SMDT 2370 MTL/MSL/MEL+SMDH 230-1.5D	J117
	45.0	122.0	SMDT 2370 MTL/MSL/MEL+SMDH 230-1.5DF	J114
	80.0	164.7	SMDT 2370 MTL/MSL/MEL+SMDH 230-3D	J117
	80.0	164.7	SMDT 2370 MTL/MSL/MEL+SMDH 230-3DF	J114
	80.0	164.7	SMDT 2370 MTL/MSL/MEL+SMDH 230M	J112
	128.0	214.7	SMDT 2370 MTL/MSL/MEL+SMDH 230-5D	J117
	128.0	214.7	SMDT 2370 MTL/MSL/MEL+SMDH 230-5DF	J114
	128.0	214.7	SMDT 2370 MTL/MSL/MEL+SMDH 230L	J112
	199.0	284.7	SMDT 2370 MTL/MSL/MEL+SMDH 230-8D	J117
	199.0	284.7	SMDT 2370 MTL/MSL/MEL+SMDH 230-8DF	J114
	199.0	284.7	SMDT 2370 MTL/MSL/MEL+SMDH 230D	J112
	280.0	359.0	SMDT 2370 MTL/MSL/MEL+SMDH 230-12D	J117
23.8	45.0	122.0	SMDT 2380 MTL/MSL/MEL+SMDH 230-1.5D	J117
	45.0	122.0	SMDT 2380 MTL/MSL/MEL+SMDH 230-1.5DF	J114
	80.0	164.7	SMDT 2380 MTL/MSL/MEL+SMDH 230-3D	J117
	80.0	164.7	SMDT 2380 MTL/MSL/MEL+SMDH 230-3DF	J114
	80.0	164.7	SMDT 2380 MTL/MSL/MEL+SMDH 230M	J112
	128.0	214.7	SMDT 2380 MTL/MSL/MEL+SMDH 230-5D	J117
	128.0	214.7	SMDT 2380 MTL/MSL/MEL+SMDH 230-5DF	J114
	128.0	214.7	SMDT 2380 MTL/MSL/MEL+SMDH 230L	J112
	199.0	284.7	SMDT 2380 MTL/MSL/MEL+SMDH 230-8D	J117
	199.0	284.7	SMDT 2380 MTL/MSL/MEL+SMDH 230-8DF	J114
	199.0	284.7	SMDT 2380 MTL/MSL/MEL+SMDH 230D	J112
	280.0	359.0	SMDT 2380 MTL/MSL/MEL+SMDH 230-12D	J117
23.9	46.0	128.4	SMDT 2390 MTL/MSL/MEL+SMDH 240-1.5D	J117
	46.0	128.4	SMDT 2390 MTL/MSL/MEL+SMDH 240-1.5DF	J114
	83.0	174.6	SMDT 2390 MTL/MSL/MEL+SMDH 240-3D	J117
	83.0	174.6	SMDT 2390 MTL/MSL/MEL+SMDH 240-3DF	J114
	83.0	174.6	SMDT 2390 MTL/MSL/MEL+SMDH 240M	J112
	133.0	224.6	SMDT 2390 MTL/MSL/MEL+SMDH 240-5D	J117
	133.0	224.6	SMDT 2390 MTL/MSL/MEL+SMDH 240-5DF	J114
	133.0	224.6	SMDT 2390 MTL/MSL/MEL+SMDH 240L	J112
	207.0	299.6	SMDT 2390 MTL/MSL/MEL+SMDH 240-8D	J117
	207.0	299.6	SMDT 2390 MTL/MSL/MEL+SMDH 240-8DF	J114
	207.0	299.6	SMDT 2390 MTL/MSL/MEL+SMDH 240D	J112
	292.0	376.1	SMDT 2390 MTL/MSL/MEL+SMDH 240-12D	J117
24.0	42.0	124.3	SMDT 2400 MFS+SMDH 240-1.5D	J125
	42.0	124.3	SMDT 2400 MFS+SMDH 240-1.5DF	J122
	46.0	128.4	SMDT 2400 MTL/MSL/MEL+SMDH 240-1.5D	J117
	46.0	128.4	SMDT 2400 MTL/MSL/MEL+SMDH 240-1.5DF	J114

(Blue text: Flat head ■Indexable cutting edge type)

The 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	79.0	170.5	SMDT 2400 MFS+SMDH 240-3D	J125
	79.0	170.5	SMDT 2400 MFS+SMDH 240-3DF	J122
	79.0	170.5	SMDT 2400 MFS+SMDH 240M	J120
	83.0	174.6	SMDT 2400 MTL/MSL/MEL+SMDH 240-3D	J117
	83.0	174.6	SMDT 2400 MTL/MSL/MEL+SMDH 240-3DF	J114
	83.0	174.6	SMDT 2400 MTL/MSL/MEL+SMDH 240M	J112
	129.0	220.5	SMDT 2400 MFS+SMDH 240-5D	J125
	129.0	220.5	SMDT 2400 MFS+SMDH 240-5DF	J122
	129.0	220.5	SMDT 2400 MFS+SMDH 240L	J120
	133.0	224.6	SMDT 2400 MTL/MSL/MEL+SMDH 240-5D	J117
	133.0	224.6	SMDT 2400 MTL/MSL/MEL+SMDH 240-5DF	J114
	133.0	224.6	SMDT 2400 MTL/MSL/MEL+SMDH 240L	J112
	203.0	295.5	SMDT 2400 MFS+SMDH 240-8D	J125
	203.0	295.5	SMDT 2400 MFS+SMDH 240-8DF	J122
	203.0	295.5	SMDT 2400 MFS+SMDH 240D	J120
	207.0	299.6	SMDT 2400 MTL/MSL/MEL+SMDH 240-8D	J117
	207.0	299.6	SMDT 2400 MTL/MSL/MEL+SMDH 240-8DF	J114
	207.0	299.6	SMDT 2400 MTL/MSL/MEL+SMDH 240D	J112
	288.0	372.0	SMDT 2400 MFS+SMDH 240-12D	J125
	292.0	376.1	SMDT 2400 MTL/MSL/MEL+SMDH 240-12D	J117
24.1	46.0	128.4	SMDT 2410 MTL/MSL/MEL+SMDH 240-1.5D	J117
	46.0	128.4	SMDT 2410 MTL/MSL/MEL+SMDH 240-1.5DF	J114
	83.0	174.6	SMDT 2410 MTL/MSL/MEL+SMDH 240-3D	J117
	83.0	174.6	SMDT 2410 MTL/MSL/MEL+SMDH 240-3DF	J114
	83.0	174.6	SMDT 2410 MTL/MSL/MEL+SMDH 240M	J112
	133.0	224.6	SMDT 2410 MTL/MSL/MEL+SMDH 240-5D	J117
	133.0	224.6	SMDT 2410 MTL/MSL/MEL+SMDH 240-5DF	J114
	133.0	224.6	SMDT 2410 MTL/MSL/MEL+SMDH 240L	J112
	207.0	299.6	SMDT 2410 MTL/MSL/MEL+SMDH 240-8D	J117
	207.0	299.6	SMDT 2410 MTL/MSL/MEL+SMDH 240-8DF	J114
	207.0	299.6	SMDT 2410 MTL/MSL/MEL+SMDH 240D	J112
	292.0	376.1	SMDT 2410 MTL/MSL/MEL+SMDH 240-12D	J117
24.2	46.0	128.4	SMDT 2420 MTL/MSL/MEL+SMDH 240-1.5D	J117
	46.0	128.4	SMDT 2420 MTL/MSL/MEL+SMDH 240-1.5DF	J114
	83.0	174.6	SMDT 2420 MTL/MSL/MEL+SMDH 240-3D	J117
	83.0	174.6	SMDT 2420 MTL/MSL/MEL+SMDH 240-3DF	J114
	83.0	174.6	SMDT 2420 MTL/MSL/MEL+SMDH 240M	J112
	133.0	224.6	SMDT 2420 MTL/MSL/MEL+SMDH 240-5D	J117
	133.0	224.6	SMDT 2420 MTL/MSL/MEL+SMDH 240-5DF	J114
	133.0	224.6	SMDT 2420 MTL/MSL/MEL+SMDH 240L	J112
	207.0	299.6	SMDT 2420 MTL/MSL/MEL+SMDH 240-8D	J117
	207.0	299.6	SMDT 2420 MTL/MSL/MEL+SMDH 240-8DF	J114
	207.0	299.6	SMDT 2420 MTL/MSL/MEL+SMDH 240D	J112
	292.0	376.1	SMDT 2420 MTL/MSL/MEL+SMDH 240-12D	J117
24.3	46.0	128.4	SMDT 2430 MTL/MSL/MEL+SMDH 240-1.5D	J117
	46.0	128.4	SMDT 2430 MTL/MSL/MEL+SMDH 240-1.5DF	J114
	83.0	174.6	SMDT 2430 MTL/MSL/MEL+SMDH 240-3D	J117
	83.0	174.6	SMDT 2430 MTL/MSL/MEL+SMDH 240-3DF	J114
	83.0	174.6	SMDT 2430 MTL/MSL/MEL+SMDH 240M	J112
	133.0	224.6	SMDT 2430 MTL/MSL/MEL+SMDH 240-5D	J117
	133.0	224.6	SMDT 2430 MTL/MSL/MEL+SMDH 240-5DF	J114
	133.0	224.6	SMDT 2430 MTL/MSL/MEL+SMDH 240L	J112
	207.0	299.6	SMDT 2430 MTL/MSL/MEL+SMDH 240-8D	J117
	207.0	299.6	SMDT 2430 MTL/MSL/MEL+SMDH 240-8DF	J114
	207.0	299.6	SMDT 2430 MTL/MSL/MEL+SMDH 240D	J112
	292.0	376.1	SMDT 2430 MTL/MSL/MEL+SMDH 240-12D	J117
24.4	46.0	128.4	SMDT 2440 MTL/MSL/MEL+SMDH 240-1.5D	J117
	46.0	128.4	SMDT 2440 MTL/MSL/MEL+SMDH 240-1.5DF	J114
	83.0	174.6	SMDT 2440 MTL/MSL/MEL+SMDH 240-3D	J117
	83.0	174.6	SMDT 2440 MTL/MSL/MEL+SMDH 240-3DF	J114
	83.0	174.6	SMDT 2440 MTL/MSL/MEL+SMDH 240M	J112
	133.0	224.6	SMDT 2440 MTL/MSL/MEL+SMDH 240-5D	J117
	133.0	224.6	SMDT 2440 MTL/MSL/MEL+SMDH 240-5DF	J114
	133.0	224.6	SMDT 2440 MTL/MSL/MEL+SMDH 240L	J112
	207.0	299.6	SMDT 2440 MTL/MSL/MEL+SMDH 240-8D	J117
	207.0	299.6	SMDT 2440 MTL/MSL/MEL+SMDH 240-8DF	J114
	207.0	299.6	SMDT 2440 MTL/MSL/MEL+SMDH 240D	J112
	292.0	376.1	SMDT 2440 MTL/MSL/MEL+SMDH 240-12D	J117
24.5	42.0	124.3	SMDT 2450 MFS+SMDH 240-1.5D	J125
	42.0	124.3	SMDT 2450 MFS+SMDH 240-1.5DF	J122
	46.0	128.4	SMDT 2450 MTL/MSL/MEL+SMDH 240-1.5D	J117
	46.0	128.4	SMDT 2450 MTL/MSL/MEL+SMDH 240-1.5DF	J114
	79.0	170.5	SMDT 2450 MFS+SMDH 240-3D	J125
	79.0	170.5	SMDT 2450 MFS+SMDH 240-3DF	J122
	79.0	170.5	SMDT 2450 MFS+SMDH 240M	J120
	83.0	174.6	SMDT 2450 MTL/MSL/MEL+SMDH 240-3D	J117
	83.0	174.6	SMDT 2450 MTL/MSL/MEL+SMDH 240-3DF	J114
	83.0	174.6	SMDT 2450 MTL/MSL/MEL+SMDH 240M	J112
	90.3	173.3	SMDT 2450 MB+SMDH 240B3	J127
	129.0	220.5	SMDT 2450 MFS+SMDH 240-5D	J125

● Diameter ø24.5 to ø25.0mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
24.5	129.0	220.5	SMDT 2450 MFS+SMDH 240-5DF	J122
	129.0	220.5	SMDT 2450 MFS+SMDH 240L	J120
	133.0	224.6	SMDT 2450 MTL/MSL/MEL+SMDH 240-5D	J117
	133.0	224.6	SMDT 2450 MTL/MSL/MEL+SMDH 240-5DF	J114
	133.0	224.6	SMDT 2450 MTL/MSL/MEL+SMDH 240L	J112
	203.0	295.5	SMDT 2450 MFS+SMDH 240-8D	J125
	203.0	295.5	SMDT 2450 MFS+SMDH 240-8DF	J122
	203.0	295.5	SMDT 2450 MFS+SMDH 240D	J120
	207.0	299.6	SMDT 2450 MTL/MSL/MEL+SMDH 240-8D	J117
	207.0	299.6	SMDT 2450 MTL/MSL/MEL+SMDH 240-8DF	J114
	207.0	299.6	SMDT 2450 MTL/MSL/MEL+SMDH 240D	J112
	288.0	372.0	SMDT 2450 MFS+SMDH 240-12D	J125
	292.0	376.1	SMDT 2450 MTL/MSL/MEL+SMDH 240-12D	J117
24.6	46.0	128.4	SMDT 2460 MTL/MSL/MEL+SMDH 240-1.5D	J117
	46.0	128.4	SMDT 2460 MTL/MSL/MEL+SMDH 240-1.5DF	J114
	83.0	174.6	SMDT 2460 MTL/MSL/MEL+SMDH 240-3D	J117
	83.0	174.6	SMDT 2460 MTL/MSL/MEL+SMDH 240-3DF	J114
	83.0	174.6	SMDT 2460 MTL/MSL/MEL+SMDH 240M	J112
	133.0	224.6	SMDT 2460 MTL/MSL/MEL+SMDH 240-5D	J117
	133.0	224.6	SMDT 2460 MTL/MSL/MEL+SMDH 240-5DF	J114
	133.0	224.6	SMDT 2460 MTL/MSL/MEL+SMDH 240L	J112
	207.0	299.6	SMDT 2460 MTL/MSL/MEL+SMDH 240-8D	J117
	207.0	299.6	SMDT 2460 MTL/MSL/MEL+SMDH 240-8DF	J114
	207.0	299.6	SMDT 2460 MTL/MSL/MEL+SMDH 240D	J112
	292.0	376.1	SMDT 2460 MTL/MSL/MEL+SMDH 240-12D	J117
24.7	46.0	128.4	SMDT 2470 MTL/MSL/MEL+SMDH 240-1.5D	J117
	46.0	128.4	SMDT 2470 MTL/MSL/MEL+SMDH 240-1.5DF	J114
	83.0	174.6	SMDT 2470 MTL/MSL/MEL+SMDH 240-3D	J117
	83.0	174.6	SMDT 2470 MTL/MSL/MEL+SMDH 240-3DF	J114
	83.0	174.6	SMDT 2470 MTL/MSL/MEL+SMDH 240M	J112
	90.3	173.3	SMDT 2470 MB+SMDH 240B3	J127
	133.0	224.6	SMDT 2470 MTL/MSL/MEL+SMDH 240-5D	J117
	133.0	224.6	SMDT 2470 MTL/MSL/MEL+SMDH 240-5DF	J114
	133.0	224.6	SMDT 2470 MTL/MSL/MEL+SMDH 240L	J112
	207.0	299.6	SMDT 2470 MTL/MSL/MEL+SMDH 240-8D	J117
	207.0	299.6	SMDT 2470 MTL/MSL/MEL+SMDH 240-8DF	J114
	207.0	299.6	SMDT 2470 MTL/MSL/MEL+SMDH 240D	J112
	292.0	376.1	SMDT 2470 MTL/MSL/MEL+SMDH 240-12D	J117
24.8	46.0	128.4	SMDT 2480 MTL/MSL/MEL+SMDH 240-1.5D	J117
	46.0	128.4	SMDT 2480 MTL/MSL/MEL+SMDH 240-1.5DF	J114
	83.0	174.6	SMDT 2480 MTL/MSL/MEL+SMDH 240-3D	J117
	83.0	174.6	SMDT 2480 MTL/MSL/MEL+SMDH 240-3DF	J114
	83.0	174.6	SMDT 2480 MTL/MSL/MEL+SMDH 240M	J112
	133.0	224.6	SMDT 2480 MTL/MSL/MEL+SMDH 240-5D	J117
	133.0	224.6	SMDT 2480 MTL/MSL/MEL+SMDH 240-5DF	J114
	133.0	224.6	SMDT 2480 MTL/MSL/MEL+SMDH 240L	J112
	207.0	299.6	SMDT 2480 MTL/MSL/MEL+SMDH 240-8D	J117
	207.0	299.6	SMDT 2480 MTL/MSL/MEL+SMDH 240-8DF	J114
	207.0	299.6	SMDT 2480 MTL/MSL/MEL+SMDH 240D	J112
	292.0	376.1	SMDT 2480 MTL/MSL/MEL+SMDH 240-12D	J117
24.9	48.0	128.8	SMDT 2490 MTL/MSL/MEL+SMDH 250-1.5D	J117
	48.0	128.8	SMDT 2490 MTL/MSL/MEL+SMDH 250-1.5DF	J115
	87.0	174.5	SMDT 2490 MTL/MSL/MEL+SMDH 250-3D	J117
	87.0	174.5	SMDT 2490 MTL/MSL/MEL+SMDH 250-3DF	J115
	87.0	174.5	SMDT 2490 MTL/MSL/MEL+SMDH 250M	J112
	138.0	229.5	SMDT 2490 MTL/MSL/MEL+SMDH 250-5D	J117
	138.0	229.5	SMDT 2490 MTL/MSL/MEL+SMDH 250-5DF	J115
	138.0	229.5	SMDT 2490 MTL/MSL/MEL+SMDH 250L	J112
	216.0	304.5	SMDT 2490 MTL/MSL/MEL+SMDH 250-8D	J117
	216.0	304.5	SMDT 2490 MTL/MSL/MEL+SMDH 250-8DF	J115
	216.0	304.5	SMDT 2490 MTL/MSL/MEL+SMDH 250D	J112
	304.0	388.3	SMDT 2490 MTL/MSL/MEL+SMDH 250-12D	J117
25.0	43.0	124.7	SMDT 2500 MFS+SMDH 250-1.5D	J125
	43.0	124.7	SMDT 2500 MFS+SMDH 250-1.5DF	J123
	48.0	128.8	SMDT 2500 MTL/MSL/MEL+SMDH 250-1.5D	J117
	48.0	128.8	SMDT 2500 MTL/MSL/MEL+SMDH 250-1.5DF	J115
	50.0	127.0	PDL 250D2S25	J144
	75.0	152.0	PDL 250D3S25	J144
	82.0	170.4	SMDT 2500 MFS+SMDH 250-3D	J125
	82.0	170.4	SMDT 2500 MFS+SMDH 250-3DF	J123
	82.0	170.4	SMDT 2500 MFS+SMDH 250M	J120
	87.0	174.5	SMDT 2500 MTL/MSL/MEL+SMDH 250-3D	J117
	87.0	174.5	SMDT 2500 MTL/MSL/MEL+SMDH 250-3DF	J115
	87.0	174.5	SMDT 2500 MTL/MSL/MEL+SMDH 250M	J112
	134.0	225.4	SMDT 2500 MFS+SMDH 250-5D	J125
	134.0	225.4	SMDT 2500 MFS+SMDH 250-5DF	J123
	134.0	225.4	SMDT 2500 MFS+SMDH 250L	J120
	138.0	229.5	SMDT 2500 MTL/MSL/MEL+SMDH 250-5D	J117
	138.0	229.5	SMDT 2500 MTL/MSL/MEL+SMDH 250-5DF	J115
	138.0	229.5	SMDT 2500 MTL/MSL/MEL+SMDH 250L	J112

● Diameter ø25.0 to ø25.5mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
25.0	211.0	300.4	SMDT 2500 MFS+SMDH 250-8D	J125
	211.0	300.4	SMDT 2500 MFS+SMDH 250-8DF	J123
	211.0	300.4	SMDT 2500 MFS+SMDH 250D	J120
	216.0	304.5	SMDT 2500 MTL/MSL/MEL+SMDH 250-8D	J117
	216.0	304.5	SMDT 2500 MTL/MSL/MEL+SMDH 250-8DF	J115
	216.0	304.5	SMDT 2500 MTL/MSL/MEL+SMDH 250D	J112
	300.0	384.2	SMDT 2500 MFS+SMDH 250-12D	J125
	304.0	388.3	SMDT 2500 MTL/MSL/MEL+SMDH 250-12D	J117
25.1	48.0	128.8	SMDT 2510 MTL/MSL/MEL+SMDH 250-1.5D	J117
	48.0	128.8	SMDT 2510 MTL/MSL/MEL+SMDH 250-1.5DF	J115
	87.0	174.5	SMDT 2510 MTL/MSL/MEL+SMDH 250-3D	J117
	87.0	174.5	SMDT 2510 MTL/MSL/MEL+SMDH 250-3DF	J115
	87.0	174.5	SMDT 2510 MTL/MSL/MEL+SMDH 250M	J112
	138.0	229.5	SMDT 2510 MTL/MSL/MEL+SMDH 250-5D	J117
	138.0	229.5	SMDT 2510 MTL/MSL/MEL+SMDH 250-5DF	J115
	138.0	229.5	SMDT 2510 MTL/MSL/MEL+SMDH 250L	J112
	216.0	304.5	SMDT 2510 MTL/MSL/MEL+SMDH 250-8D	J117
	216.0	304.5	SMDT 2510 MTL/MSL/MEL+SMDH 250-8DF	J115
	216.0	304.5	SMDT 2510 MTL/MSL/MEL+SMDH 250D	J112
	304.0	388.3	SMDT 2510 MTL/MSL/MEL+SMDH 250-12D	J117
25.2	48.0	128.8	SMDT 2520 MTL/MSL/MEL+SMDH 250-1.5D	J117
	48.0	128.8	SMDT 2520 MTL/MSL/MEL+SMDH 250-1.5DF	J115
	87.0	174.5	SMDT 2520 MTL/MSL/MEL+SMDH 250-3D	J117
	87.0	174.5	SMDT 2520 MTL/MSL/MEL+SMDH 250-3DF	J115
	87.0	174.5	SMDT 2520 MTL/MSL/MEL+SMDH 250M	J112
	138.0	229.5	SMDT 2520 MTL/MSL/MEL+SMDH 250-5D	J117
	138.0	229.5	SMDT 2520 MTL/MSL/MEL+SMDH 250-5DF	J115
	138.0	229.5	SMDT 2520 MTL/MSL/MEL+SMDH 250L	J112
	216.0	304.5	SMDT 2520 MTL/MSL/MEL+SMDH 250-8D	J117
	216.0	304.5	SMDT 2520 MTL/MSL/MEL+SMDH 250-8DF	J115
	216.0	304.5	SMDT 2520 MTL/MSL/MEL+SMDH 250D	J112
	304.0	388.3	SMDT 2520 MTL/MSL/MEL+SMDH 250-12D	J117
25.3	48.0	128.8	SMDT 2530 MTL/MSL/MEL+SMDH 250-1.5D	J117
	48.0	128.8	SMDT 2530 MTL/MSL/MEL+SMDH 250-1.5DF	J115
	87.0	174.5	SMDT 2530 MTL/MSL/MEL+SMDH 250-3D	J117
	87.0	174.5	SMDT 2530 MTL/MSL/MEL+SMDH 250-3DF	J115
	87.0	174.5	SMDT 2530 MTL/MSL/MEL+SMDH 250M	J112
	138.0	229.5	SMDT 2530 MTL/MSL/MEL+SMDH 250-5D	J117
	138.0	229.5	SMDT 2530 MTL/MSL/MEL+SMDH 250-5DF	J115
	138.0	229.5	SMDT 2530 MTL/MSL/MEL+SMDH 250L	J112
	216.0	304.5	SMDT 2530 MTL/MSL/MEL+SMDH 250-8D	J117
	216.0	304.5	SMDT 2530 MTL/MSL/MEL+SMDH 250-8DF	J115
	216.0	304.5	SMDT 2530 MTL/MSL/MEL+SMDH 250D	J112
	304.0	388.3	SMDT 2530 MTL/MSL/MEL+SMDH 250-12D	J117
25.4	48.0	128.8	SMDT 2540 MTL/MSL/MEL+SMDH 250-1.5D	J117
	48.0	128.8	SMDT 2540 MTL/MSL/MEL+SMDH 250-1.5DF	J115
	87.0	174.5	SMDT 2540 MTL/MSL/MEL+SMDH 250-3D	J117
	87.0	174.5	SMDT 2540 MTL/MSL/MEL+SMDH 250-3DF	J115
	87.0	174.5	SMDT 2540 MTL/MSL/MEL+SMDH 250M	J112
	138.0	229.5	SMDT 2540 MTL/MSL/MEL+SMDH 250-5D	J117
	138.0	229.5	SMDT 2540 MTL/MSL/MEL+SMDH 250-5DF	J115
	138.0	229.5	SMDT 2540 MTL/MSL/MEL+SMDH 250L	J112
	216.0	304.5	SMDT 2540 MTL/MSL/MEL+SMDH 250-8D	J117
	216.0	304.5	SMDT 2540 MTL/MSL/MEL+SMDH 250-8DF	J115
	216.0	304.5	SMDT 2540 MTL/MSL/MEL+SMDH 250D	J112
	304.0	388.3	SMDT 2540 MTL/MSL/MEL+SMDH 250-12D	J117
25.5	43.0	124.7	SMDT 2550 MFS+SMDH 250-1.5D	J125
	43.0	124.7	SMDT 2550 MFS+SMDH 250-1.5DF	J123
	48.0	128.8	SMDT 2550 MTL/MSL/MEL+SMDH 250-1.5D	J117
	48.0	128.8	SMDT 2550 MTL/MSL/MEL+SMDH 250-1.5DF	J115
	82.0	170.4	SMDT 2550 MFS+SMDH 250-3D	J125
	82.0	170.4	SMDT 2550 MFS+SMDH 250-3DF	J123
	82.0	170.4	SMDT 2550 MFS+SMDH 250M	J120
	87.0	174.5	SMDT 2550 MTL/MSL/MEL+SMDH 250-3D	J117
	87.0	174.5	SMDT 2550 MTL/MSL/MEL+SMDH 250-3DF	J115
	87.0	174.5	SMDT 2550 MTL/MSL/MEL+SMDH 250M	J112
	134.0	225.4	SMDT 2550 MFS+SMDH 250-5D	J125
	134.0	225.4	SMDT 2550 MFS+SMDH 250-5DF	J123
	134.0	225.4	SMDT 2550 MFS+SMDH 250L	J120
	138.0	229.5	SMDT 2550 MTL/MSL/MEL+SMDH 250-5D	J117
	138.0	229.5	SMDT 2550 MTL/MSL/MEL+SMDH 250-5DF	J115
	138.0	229.5	SMDT 2550 MTL/MSL/MEL+SMDH 250L	J112
	211.0	300.4	SMDT 2550 MFS+SMDH 250-8D	J125
	211.0	300.4	SMDT 2550 MFS+SMDH 250-8DF	J123
	211.0	300.4	SMDT 2550 MFS+SMDH 250D	J120
	216.0	304.5	SMDT 2550 MTL/MSL/MEL+SMDH 250-8D	J117
	216.0	304.5	SMDT 2550 MTL/MSL/MEL+SMDH 250-8DF	J115
	216.0	304.5	SMDT 2550 MTL/MSL/MEL+SMDH 250D	J112
	300.0	384.2	SMDT 2550 MFS+SMDH 250-12D	J125
	304.0	388.3	SMDT 2550 MTL/MSL/MEL+SMDH 250-12D	J117

(Blue text: Flat head ■Indexable cutting edge type)

(Blue text: Flat head ■Indexable cutting edge type)

(Blue text: Flat head ■Indexable cutting edge type)

The 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 ø25.6 to ø26.1mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
25.6	48.0	128.8	SMDT 2560 MTL/MSL/MEL+SMDH 250-1.5D	J117
	48.0	128.8	SMDT 2560 MTL/MSL/MEL+SMDH 250-1.5DF	J115
	87.0	174.5	SMDT 2560 MTL/MSL/MEL+SMDH 250-3D	J117
	87.0	174.5	SMDT 2560 MTL/MSL/MEL+SMDH 250-3DF	J115
	87.0	174.5	SMDT 2560 MTL/MSL/MEL+SMDH 250M	J112
	138.0	229.5	SMDT 2560 MTL/MSL/MEL+SMDH 250-5D	J117
	138.0	229.5	SMDT 2560 MTL/MSL/MEL+SMDH 250-5DF	J115
	138.0	229.5	SMDT 2560 MTL/MSL/MEL+SMDH 250L	J112
	216.0	304.5	SMDT 2560 MTL/MSL/MEL+SMDH 250-8D	J117
	216.0	304.5	SMDT 2560 MTL/MSL/MEL+SMDH 250-8DF	J115
	216.0	304.5	SMDT 2560 MTL/MSL/MEL+SMDH 250D	J112
	304.0	388.3	SMDT 2560 MTL/MSL/MEL+SMDH 250-12D	J117
25.7	48.0	128.8	SMDT 2570 MTL/MSL/MEL+SMDH 250-1.5D	J117
	48.0	128.8	SMDT 2570 MTL/MSL/MEL+SMDH 250-1.5DF	J115
	87.0	174.5	SMDT 2570 MTL/MSL/MEL+SMDH 250-3D	J117
	87.0	174.5	SMDT 2570 MTL/MSL/MEL+SMDH 250-3DF	J115
	87.0	174.5	SMDT 2570 MTL/MSL/MEL+SMDH 250M	J112
	138.0	229.5	SMDT 2570 MTL/MSL/MEL+SMDH 250-5D	J117
	138.0	229.5	SMDT 2570 MTL/MSL/MEL+SMDH 250-5DF	J115
	138.0	229.5	SMDT 2570 MTL/MSL/MEL+SMDH 250L	J112
	216.0	304.5	SMDT 2570 MTL/MSL/MEL+SMDH 250-8D	J117
	216.0	304.5	SMDT 2570 MTL/MSL/MEL+SMDH 250-8DF	J115
	216.0	304.5	SMDT 2570 MTL/MSL/MEL+SMDH 250D	J112
	304.0	388.3	SMDT 2570 MTL/MSL/MEL+SMDH 250-12D	J117
25.8	48.0	128.8	SMDT 2580 MTL/MSL/MEL+SMDH 250-1.5D	J117
	48.0	128.8	SMDT 2580 MTL/MSL/MEL+SMDH 250-1.5DF	J115
	87.0	174.5	SMDT 2580 MTL/MSL/MEL+SMDH 250-3D	J117
	87.0	174.5	SMDT 2580 MTL/MSL/MEL+SMDH 250-3DF	J115
	87.0	174.5	SMDT 2580 MTL/MSL/MEL+SMDH 250M	J112
	138.0	229.5	SMDT 2580 MTL/MSL/MEL+SMDH 250-5D	J117
	138.0	229.5	SMDT 2580 MTL/MSL/MEL+SMDH 250-5DF	J115
	138.0	229.5	SMDT 2580 MTL/MSL/MEL+SMDH 250L	J112
	216.0	304.5	SMDT 2580 MTL/MSL/MEL+SMDH 250-8D	J117
	216.0	304.5	SMDT 2580 MTL/MSL/MEL+SMDH 250-8DF	J115
	216.0	304.5	SMDT 2580 MTL/MSL/MEL+SMDH 250D	J112
	304.0	388.3	SMDT 2580 MTL/MSL/MEL+SMDH 250-12D	J117
25.9	50.0	131.5	SMDT 2590 MTL/MSL/MEL+SMDH 260-1.5D	J117
	50.0	131.5	SMDT 2590 MTL/MSL/MEL+SMDH 260-1.5DF	J115
	90.0	179.7	SMDT 2590 MTL/MSL/MEL+SMDH 260-3D	J117
	90.0	179.7	SMDT 2590 MTL/MSL/MEL+SMDH 260-3DF	J115
	90.0	179.7	SMDT 2590 MTL/MSL/MEL+SMDH 260M	J112
	143.0	234.7	SMDT 2590 MTL/MSL/MEL+SMDH 260-5D	J117
	143.0	234.7	SMDT 2590 MTL/MSL/MEL+SMDH 260-5DF	J115
	143.0	234.7	SMDT 2590 MTL/MSL/MEL+SMDH 260L	J112
	224.0	314.7	SMDT 2590 MTL/MSL/MEL+SMDH 260-8D	J117
	224.0	314.7	SMDT 2590 MTL/MSL/MEL+SMDH 260-8DF	J115
	224.0	314.7	SMDT 2590 MTL/MSL/MEL+SMDH 260D	J112
	316.0	400.8	SMDT 2590 MTL/MSL/MEL+SMDH 260-12D	J117
26.0	45.0	127.3	SMDT 2600 MFS+SMDH 260-1.5D	J125
	45.0	127.3	SMDT 2600 MFS+SMDH 260-1.5DF	J123
	50.0	131.5	SMDT 2600 MTL/MSL/MEL+SMDH 260-1.5D	J117
	50.0	131.5	SMDT 2600 MTL/MSL/MEL+SMDH 260-1.5DF	J115
	85.0	175.5	SMDT 2600 MFS+SMDH 260-3D	J125
	85.0	175.5	SMDT 2600 MFS+SMDH 260-3DF	J123
	85.0	175.5	SMDT 2600 MFS+SMDH 260M	J120
	90.0	179.7	SMDT 2600 MTL/MSL/MEL+SMDH 260-3D	J117
	90.0	179.7	SMDT 2600 MTL/MSL/MEL+SMDH 260-3DF	J115
	90.0	179.7	SMDT 2600 MTL/MSL/MEL+SMDH 260M	J112
	139.0	230.5	SMDT 2600 MFS+SMDH 260-5D	J125
	139.0	230.5	SMDT 2600 MFS+SMDH 260-5DF	J123
	139.0	230.5	SMDT 2600 MFS+SMDH 260L	J120
	143.0	234.7	SMDT 2600 MTL/MSL/MEL+SMDH 260-5D	J117
	143.0	234.7	SMDT 2600 MTL/MSL/MEL+SMDH 260-5DF	J115
	143.0	234.7	SMDT 2600 MTL/MSL/MEL+SMDH 260L	J112
	219.0	310.5	SMDT 2600 MFS+SMDH 260-8D	J125
	219.0	310.5	SMDT 2600 MFS+SMDH 260-8DF	J123
	219.0	310.5	SMDT 2600 MFS+SMDH 260D	J120
	224.0	314.7	SMDT 2600 MTL/MSL/MEL+SMDH 260-8D	J117
	224.0	314.7	SMDT 2600 MTL/MSL/MEL+SMDH 260-8DF	J115
	224.0	314.7	SMDT 2600 MTL/MSL/MEL+SMDH 260D	J112
	312.0	396.6	SMDT 2600 MFS+SMDH 260-12D	J125
	316.0	400.8	SMDT 2600 MTL/MSL/MEL+SMDH 260-12D	J117
26.1	50.0	131.5	SMDT 2610 MTL/MSL/MEL+SMDH 260-1.5D	J117
	50.0	131.5	SMDT 2610 MTL/MSL/MEL+SMDH 260-1.5DF	J115
	90.0	179.7	SMDT 2610 MTL/MSL/MEL+SMDH 260-3D	J117
	90.0	179.7	SMDT 2610 MTL/MSL/MEL+SMDH 260-3DF	J115
	90.0	179.7	SMDT 2610 MTL/MSL/MEL+SMDH 260M	J112
	143.0	234.7	SMDT 2610 MTL/MSL/MEL+SMDH 260-5D	J117
	143.0	234.7	SMDT 2610 MTL/MSL/MEL+SMDH 260-5DF	J115
	143.0	234.7	SMDT 2610 MTL/MSL/MEL+SMDH 260L	J112

● Diameter ø26.1 to ø26.7mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
26.1	224.0	314.7	SMDT 2610 MTL/MSL/MEL+SMDH 260-8D	J117
	224.0	314.7	SMDT 2610 MTL/MSL/MEL+SMDH 260-8DF	J115
	224.0	314.7	SMDT 2610 MTL/MSL/MEL+SMDH 260D	J112
	316.0	400.8	SMDT 2610 MTL/MSL/MEL+SMDH 260-12D	J117
26.2	50.0	131.5	SMDT 2620 MTL/MSL/MEL+SMDH 260-1.5D	J117
	50.0	131.5	SMDT 2620 MTL/MSL/MEL+SMDH 260-1.5DF	J115
	90.0	179.7	SMDT 2620 MTL/MSL/MEL+SMDH 260-3D	J117
	90.0	179.7	SMDT 2620 MTL/MSL/MEL+SMDH 260-3DF	J115
	90.0	179.7	SMDT 2620 MTL/MSL/MEL+SMDH 260M	J112
	143.0	234.7	SMDT 2620 MTL/MSL/MEL+SMDH 260-5D	J117
	143.0	234.7	SMDT 2620 MTL/MSL/MEL+SMDH 260-5DF	J115
	143.0	234.7	SMDT 2620 MTL/MSL/MEL+SMDH 260L	J112
	224.0	314.7	SMDT 2620 MTL/MSL/MEL+SMDH 260-8D	J117
	224.0	314.7	SMDT 2620 MTL/MSL/MEL+SMDH 260-8DF	J115
	224.0	314.7	SMDT 2620 MTL/MSL/MEL+SMDH 260D	J112
	316.0	400.8	SMDT 2620 MTL/MSL/MEL+SMDH 260-12D	J117
26.3	50.0	131.5	SMDT 2630 MTL/MSL/MEL+SMDH 260-1.5D	J117
	50.0	131.5	SMDT 2630 MTL/MSL/MEL+SMDH 260-1.5DF	J115
	90.0	179.7	SMDT 2630 MTL/MSL/MEL+SMDH 260-3D	J117
	90.0	179.7	SMDT 2630 MTL/MSL/MEL+SMDH 260-3DF	J115
	90.0	179.7	SMDT 2630 MTL/MSL/MEL+SMDH 260M	J112
	143.0	234.7	SMDT 2630 MTL/MSL/MEL+SMDH 260-5D	J117
	143.0	234.7	SMDT 2630 MTL/MSL/MEL+SMDH 260-5DF	J115
	143.0	234.7	SMDT 2630 MTL/MSL/MEL+SMDH 260L	J112
	224.0	314.7	SMDT 2630 MTL/MSL/MEL+SMDH 260-8D	J117
	224.0	314.7	SMDT 2630 MTL/MSL/MEL+SMDH 260-8DF	J115
	224.0	314.7	SMDT 2630 MTL/MSL/MEL+SMDH 260D	J112
	316.0	400.8	SMDT 2630 MTL/MSL/MEL+SMDH 260-12D	J117
26.4	50.0	131.5	SMDT 2640 MTL/MSL/MEL+SMDH 260-1.5D	J117
	50.0	131.5	SMDT 2640 MTL/MSL/MEL+SMDH 260-1.5DF	J115
	90.0	179.7	SMDT 2640 MTL/MSL/MEL+SMDH 260-3D	J117
	90.0	179.7	SMDT 2640 MTL/MSL/MEL+SMDH 260-3DF	J115
	90.0	179.7	SMDT 2640 MTL/MSL/MEL+SMDH 260M	J112
	143.0	234.7	SMDT 2640 MTL/MSL/MEL+SMDH 260-5D	J117
	143.0	234.7	SMDT 2640 MTL/MSL/MEL+SMDH 260-5DF	J115
	143.0	234.7	SMDT 2640 MTL/MSL/MEL+SMDH 260L	J112
	224.0	314.7	SMDT 2640 MTL/MSL/MEL+SMDH 260-8D	J117
	224.0	314.7	SMDT 2640 MTL/MSL/MEL+SMDH 260-8DF	J115
	224.0	314.7	SMDT 2640 MTL/MSL/MEL+SMDH 260D	J112
	316.0	400.8	SMDT 2640 MTL/MSL/MEL+SMDH 260-12D	J117
26.5	45.0	127.3	SMDT 2650 MFS+SMDH 260-1.5D	J125
	45.0	127.3	SMDT 2650 MFS+SMDH 260-1.5DF	J123
	50.0	131.5	SMDT 2650 MTL/MSL/MEL+SMDH 260-1.5D	J117
	50.0	131.5	SMDT 2650 MTL/MSL/MEL+SMDH 260-1.5DF	J115
	85.0	175.5	SMDT 2650 MFS+SMDH 260-3D	J125
	85.0	175.5	SMDT 2650 MFS+SMDH 260-3DF	J123
	85.0	175.5	SMDT 2650 MFS+SMDH 260M	J120
	90.0	179.7	SMDT 2650 MTL/MSL/MEL+SMDH 260-3D	J117
	90.0	179.7	SMDT 2650 MTL/MSL/MEL+SMDH 260-3DF	J115
	90.0	179.7	SMDT 2650 MTL/MSL/MEL+SMDH 260M	J112
	95.6	178.6	SMDT 2650 MB+SMDH 260B3	J127
	139.0	230.5	SMDT 2650 MFS+SMDH 260-5D	J125
	139.0	230.5	SMDT 2650 MFS+SMDH 260-5DF	J123
	139.0	230.5	SMDT 2650 MFS+SMDH 260L	J120
	143.0	234.7	SMDT 2650 MTL/MSL/MEL+SMDH 260-5D	J117
	143.0	234.7	SMDT 2650 MTL/MSL/MEL+SMDH 260-5DF	J115
	143.0	234.7	SMDT 2650 MTL/MSL/MEL+SMDH 260L	J112
	219.0	310.5	SMDT 2650 MFS+SMDH 260-8D	J125
	219.0	310.5	SMDT 2650 MFS+SMDH 260-8DF	J123
	219.0	310.5	SMDT 2650 MFS+SMDH 260D	J120
	224.0	314.7	SMDT 2650 MTL/MSL/MEL+SMDH 260-8D	J117
	224.0	314.7	SMDT 2650 MTL/MSL/MEL+SMDH 260-8DF	J115
	224.0	314.7	SMDT 2650 MTL/MSL/MEL+SMDH 260D	J112
	312.0	396.6	SMDT 2650 MFS+SMDH 260-12D	J125
	316.0	400.8	SMDT 2650 MTL/MSL/MEL+SMDH 260-12D	J117
26.6	50.0	131.5	SMDT 2660 MTL/MSL/MEL+SMDH 260-1.5D	J117
	50.0	131.5	SMDT 2660 MTL/MSL/MEL+SMDH 260-1.5DF	J115
	90.0	179.7	SMDT 2660 MTL/MSL/MEL+SMDH 260-3D	J117
	90.0	179.7	SMDT 2660 MTL/MSL/MEL+SMDH 260-3DF	J115
	90.0	179.7	SMDT 2660 MTL/MSL/MEL+SMDH 260M	J112
	143.0	234.7	SMDT 2660 MTL/MSL/MEL+SMDH 260-5D	J117
	143.0	234.7	SMDT 2660 MTL/MSL/MEL+SMDH 260-5DF	J115
	143.0	234.7	SMDT 2660 MTL/MSL/MEL+SMDH 260L	J112
	224.0	314.7	SMDT 2660 MTL/MSL/MEL+SMDH 260-8D	J117
	224.0	314.7	SMDT 2660 MTL/MSL/MEL+SMDH 260-8DF	J115
	224.0	314.7	SMDT 2660 MTL/MSL/MEL+SMDH 260D	J112
	316.0	400.8	SMDT 2660 MTL/MSL/MEL+SMDH 260-12D	J117
26.7	50.0	131.5	SMDT 2670 MTL/MSL/MEL+SMDH 260-1.5D	J117
	50.0	131.5	SMDT 2670 MTL/MSL/MEL+SMDH 260-1.5DF	J115
	90.0	179.7	SMDT 2670 MTL/MSL/MEL+SMDH 260-3D	J117

● Diameter ø26.7 to ø27.2mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
26.7	90.0	179.7	SMDT 2670 MTL/MSL/MEL+SMDH 260-3DF	J115
	90.0	179.7	SMDT 2670 MTL/MSL/MEL+SMDH 260M	J112
	95.6	178.6	SMDT 2670 MB+SMDH 260B3	J127
	143.0	234.7	SMDT 2670 MTL/MSL/MEL+SMDH 260-5D	J117
	143.0	234.7	SMDT 2670 MTL/MSL/MEL+SMDH 260-5DF	J115
	143.0	234.7	SMDT 2670 MTL/MSL/MEL+SMDH 260L	J112
	224.0	314.7	SMDT 2670 MTL/MSL/MEL+SMDH 260-8D	J117
	224.0	314.7	SMDT 2670 MTL/MSL/MEL+SMDH 260-8DF	J115
	224.0	314.7	SMDT 2670 MTL/MSL/MEL+SMDH 260D	J112
	316.0	400.8	SMDT 2670 MTL/MSL/MEL+SMDH 260-12D	J117
26.8	50.0	131.5	SMDT 2680 MTL/MSL/MEL+SMDH 260-1.5D	J117
	50.0	131.5	SMDT 2680 MTL/MSL/MEL+SMDH 260-1.5DF	J115
	90.0	179.7	SMDT 2680 MTL/MSL/MEL+SMDH 260-3D	J117
	90.0	179.7	SMDT 2680 MTL/MSL/MEL+SMDH 260-3DF	J115
	90.0	179.7	SMDT 2680 MTL/MSL/MEL+SMDH 260M	J112
	143.0	234.7	SMDT 2680 MTL/MSL/MEL+SMDH 260-5D	J117
	143.0	234.7	SMDT 2680 MTL/MSL/MEL+SMDH 260-5DF	J115
	143.0	234.7	SMDT 2680 MTL/MSL/MEL+SMDH 260L	J112
	224.0	314.7	SMDT 2680 MTL/MSL/MEL+SMDH 260-8D	J117
	224.0	314.7	SMDT 2680 MTL/MSL/MEL+SMDH 260-8DF	J115
	224.0	314.7	SMDT 2680 MTL/MSL/MEL+SMDH 260D	J112
	316.0	400.8	SMDT 2680 MTL/MSL/MEL+SMDH 260-12D	J117
26.9	51.0	132.2	SMDT 2690 MTL/MSL/MEL+SMDH 270-1.5D	J117
	51.0	132.2	SMDT 2690 MTL/MSL/MEL+SMDH 270-1.5DF	J115
	93.0	179.9	SMDT 2690 MTL/MSL/MEL+SMDH 270-3D	J117
	93.0	179.9	SMDT 2690 MTL/MSL/MEL+SMDH 270-3DF	J115
	93.0	179.9	SMDT 2690 MTL/MSL/MEL+SMDH 270M	J112
	149.0	239.9	SMDT 2690 MTL/MSL/MEL+SMDH 270-5D	J117
	149.0	239.9	SMDT 2690 MTL/MSL/MEL+SMDH 270-5DF	J115
	149.0	239.9	SMDT 2690 MTL/MSL/MEL+SMDH 270L	J112
	232.0	324.9	SMDT 2690 MTL/MSL/MEL+SMDH 270-8D	J117
	232.0	324.9	SMDT 2690 MTL/MSL/MEL+SMDH 270-8DF	J115
	232.0	324.9	SMDT 2690 MTL/MSL/MEL+SMDH 270D	J112
	328.0	413.3	SMDT 2690 MTL/MSL/MEL+SMDH 270-12D	J117
27.0	46.0	127.8	SMDT 2700 MFS+SMDH 270-1.5D	J125
	46.0	127.8	SMDT 2700 MFS+SMDH 270-1.5DF	J123
	51.0	132.2	SMDT 2700 MTL/MSL/MEL+SMDH 270-1.5D	J117
	51.0	132.2	SMDT 2700 MTL/MSL/MEL+SMDH 270-1.5DF	J115
	88.0	175.5	SMDT 2700 MFS+SMDH 270-3D	J125
	88.0	175.5	SMDT 2700 MFS+SMDH 270-3DF	J123
	88.0	175.5	SMDT 2700 MFS+SMDH 270M	J120
	93.0	179.9	SMDT 2700 MTL/MSL/MEL+SMDH 270-3D	J117
	93.0	179.9	SMDT 2700 MTL/MSL/MEL+SMDH 270-3DF	J115
	93.0	179.9	SMDT 2700 MTL/MSL/MEL+SMDH 270M	J112
	144.0	235.5	SMDT 2700 MFS+SMDH 270-5D	J125
	144.0	235.5	SMDT 2700 MFS+SMDH 270-5DF	J123
	144.0	235.5	SMDT 2700 MFS+SMDH 270L	J120
	149.0	239.9	SMDT 2700 MTL/MSL/MEL+SMDH 270-5D	J117
	149.0	239.9	SMDT 2700 MTL/MSL/MEL+SMDH 270-5DF	J115
	149.0	239.9	SMDT 2700 MTL/MSL/MEL+SMDH 270L	J112
	227.0	320.5	SMDT 2700 MFS+SMDH 270-8D	J125
	227.0	320.5	SMDT 2700 MFS+SMDH 270-8DF	J123
	227.0	320.5	SMDT 2700 MFS+SMDH 270D	J120
	232.0	324.9	SMDT 2700 MTL/MSL/MEL+SMDH 270-8D	J117
	232.0	324.9	SMDT 2700 MTL/MSL/MEL+SMDH 270-8DF	J115
	232.0	324.9	SMDT 2700 MTL/MSL/MEL+SMDH 270D	J112
	324.0	408.9	SMDT 2700 MFS+SMDH 270-12D	J125
	328.0	413.3	SMDT 2700 MTL/MSL/MEL+SMDH 270-12D	J117
27.1	51.0	132.2	SMDT 2710 MTL/MSL/MEL+SMDH 270-1.5D	J117
	51.0	132.2	SMDT 2710 MTL/MSL/MEL+SMDH 270-1.5DF	J115
	93.0	179.9	SMDT 2710 MTL/MSL/MEL+SMDH 270-3D	J117
	93.0	179.9	SMDT 2710 MTL/MSL/MEL+SMDH 270-3DF	J115
	93.0	179.9	SMDT 2710 MTL/MSL/MEL+SMDH 270M	J112
	149.0	239.9	SMDT 2710 MTL/MSL/MEL+SMDH 270-5D	J117
	149.0	239.9	SMDT 2710 MTL/MSL/MEL+SMDH 270-5DF	J115
	149.0	239.9	SMDT 2710 MTL/MSL/MEL+SMDH 270L	J112
	232.0	324.9	SMDT 2710 MTL/MSL/MEL+SMDH 270-8D	J117
	232.0	324.9	SMDT 2710 MTL/MSL/MEL+SMDH 270-8DF	J115
	232.0	324.9	SMDT 2710 MTL/MSL/MEL+SMDH 270D	J112
	328.0	413.3	SMDT 2710 MTL/MSL/MEL+SMDH 270-12D	J117
27.2	51.0	132.2	SMDT 2720 MTL/MSL/MEL+SMDH 270-1.5D	J117
	51.0	132.2	SMDT 2720 MTL/MSL/MEL+SMDH 270-1.5DF	J115
	93.0	179.9	SMDT 2720 MTL/MSL/MEL+SMDH 270-3D	J117
	93.0	179.9	SMDT 2720 MTL/MSL/MEL+SMDH 270-3DF	J115
	93.0	179.9	SMDT 2720 MTL/MSL/MEL+SMDH 270M	J112
	149.0	239.9	SMDT 2720 MTL/MSL/MEL+SMDH 270-5D	J117
	149.0	239.9	SMDT 2720 MTL/MSL/MEL+SMDH 270-5DF	J115
	149.0	239.9	SMDT 2720 MTL/MSL/MEL+SMDH 270L	J112
	232.0	324.9	SMDT 2720 MTL/MSL/MEL+SMDH 270-8D	J117
	232.0	324.9	SMDT 2720 MTL/MSL/MEL+SMDH 270-8DF	J115

(Blue text: Flat head ■Indexable cutting edge type)

(Blue text: Flat head ■Indexable cutting edge type)

(Blue text: Flat head ■Indexable cutting edge type)

The 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 ø27.2 to ø27.8mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
27.2	232.0	324.9	SMDT 2720 MTL/MSL/MEL+SMDH 270D	J112
	328.0	413.3	SMDT 2720 MTL/MSL/MEL+SMDH 270-12D	J117
27.3	51.0	132.2	SMDT 2730 MTL/MSL/MEL+SMDH 270-1.5D	J117
	51.0	132.2	SMDT 2730 MTL/MSL/MEL+SMDH 270-1.5DF	J115
	93.0	179.9	SMDT 2730 MTL/MSL/MEL+SMDH 270-3D	J117
	93.0	179.9	SMDT 2730 MTL/MSL/MEL+SMDH 270-3DF	J115
	93.0	179.9	SMDT 2730 MTL/MSL/MEL+SMDH 270M	J112
	149.0	239.9	SMDT 2730 MTL/MSL/MEL+SMDH 270-5D	J117
	149.0	239.9	SMDT 2730 MTL/MSL/MEL+SMDH 270-5DF	J115
	149.0	239.9	SMDT 2730 MTL/MSL/MEL+SMDH 270L	J112
	232.0	324.9	SMDT 2730 MTL/MSL/MEL+SMDH 270-8D	J117
	232.0	324.9	SMDT 2730 MTL/MSL/MEL+SMDH 270-8DF	J115
	232.0	324.9	SMDT 2730 MTL/MSL/MEL+SMDH 270D	J112
	328.0	413.3	SMDT 2730 MTL/MSL/MEL+SMDH 270-12D	J117
27.4	51.0	132.2	SMDT 2740 MTL/MSL/MEL+SMDH 270-1.5D	J117
	51.0	132.2	SMDT 2740 MTL/MSL/MEL+SMDH 270-1.5DF	J115
	93.0	179.9	SMDT 2740 MTL/MSL/MEL+SMDH 270-3D	J117
	93.0	179.9	SMDT 2740 MTL/MSL/MEL+SMDH 270-3DF	J115
	93.0	179.9	SMDT 2740 MTL/MSL/MEL+SMDH 270M	J112
	149.0	239.9	SMDT 2740 MTL/MSL/MEL+SMDH 270-5D	J117
	149.0	239.9	SMDT 2740 MTL/MSL/MEL+SMDH 270-5DF	J115
	149.0	239.9	SMDT 2740 MTL/MSL/MEL+SMDH 270L	J112
	232.0	324.9	SMDT 2740 MTL/MSL/MEL+SMDH 270-8D	J117
	232.0	324.9	SMDT 2740 MTL/MSL/MEL+SMDH 270-8DF	J115
	232.0	324.9	SMDT 2740 MTL/MSL/MEL+SMDH 270D	J112
	328.0	413.3	SMDT 2740 MTL/MSL/MEL+SMDH 270-12D	J117
27.5	46.0	127.8	SMDT 2750 MFS+SMDH 270-1.5D	J125
	46.0	127.8	SMDT 2750 MFS+SMDH 270-1.5DF	J123
	51.0	132.2	SMDT 2750 MTL/MSL/MEL+SMDH 270-1.5D	J117
	51.0	132.2	SMDT 2750 MTL/MSL/MEL+SMDH 270-1.5DF	J115
	88.0	175.5	SMDT 2750 MFS+SMDH 270-3D	J125
	88.0	175.5	SMDT 2750 MFS+SMDH 270-3DF	J123
	88.0	175.5	SMDT 2750 MFS+SMDH 270M	J120
	93.0	179.9	SMDT 2750 MTL/MSL/MEL+SMDH 270-3D	J117
	93.0	179.9	SMDT 2750 MTL/MSL/MEL+SMDH 270-3DF	J115
	93.0	179.9	SMDT 2750 MTL/MSL/MEL+SMDH 270M	J112
	144.0	235.5	SMDT 2750 MFS+SMDH 270-5D	J125
	144.0	235.5	SMDT 2750 MFS+SMDH 270-5DF	J123
	144.0	235.5	SMDT 2750 MFS+SMDH 270L	J120
	149.0	239.9	SMDT 2750 MTL/MSL/MEL+SMDH 270-5D	J117
	149.0	239.9	SMDT 2750 MTL/MSL/MEL+SMDH 270-5DF	J115
	149.0	239.9	SMDT 2750 MTL/MSL/MEL+SMDH 270L	J112
	227.0	320.5	SMDT 2750 MFS+SMDH 270-8D	J125
	227.0	320.5	SMDT 2750 MFS+SMDH 270-8DF	J123
	227.0	320.5	SMDT 2750 MFS+SMDH 270D	J120
	232.0	324.9	SMDT 2750 MTL/MSL/MEL+SMDH 270-8D	J117
	232.0	324.9	SMDT 2750 MTL/MSL/MEL+SMDH 270-8DF	J115
	232.0	324.9	SMDT 2750 MTL/MSL/MEL+SMDH 270D	J112
	324.0	408.9	SMDT 2750 MFS+SMDH 270-12D	J125
	328.0	413.3	SMDT 2750 MTL/MSL/MEL+SMDH 270-12D	J117
27.6	51.0	132.2	SMDT 2760 MTL/MSL/MEL+SMDH 270-1.5D	J117
	51.0	132.2	SMDT 2760 MTL/MSL/MEL+SMDH 270-1.5DF	J115
	93.0	179.9	SMDT 2760 MTL/MSL/MEL+SMDH 270-3D	J117
	93.0	179.9	SMDT 2760 MTL/MSL/MEL+SMDH 270-3DF	J115
	93.0	179.9	SMDT 2760 MTL/MSL/MEL+SMDH 270M	J112
	149.0	239.9	SMDT 2760 MTL/MSL/MEL+SMDH 270-5D	J117
	149.0	239.9	SMDT 2760 MTL/MSL/MEL+SMDH 270-5DF	J115
	149.0	239.9	SMDT 2760 MTL/MSL/MEL+SMDH 270L	J112
	232.0	324.9	SMDT 2760 MTL/MSL/MEL+SMDH 270-8D	J117
	232.0	324.9	SMDT 2760 MTL/MSL/MEL+SMDH 270-8DF	J115
	232.0	324.9	SMDT 2760 MTL/MSL/MEL+SMDH 270D	J112
	328.0	413.3	SMDT 2760 MTL/MSL/MEL+SMDH 270-12D	J117
27.7	51.0	132.2	SMDT 2770 MTL/MSL/MEL+SMDH 270-1.5D	J117
	51.0	132.2	SMDT 2770 MTL/MSL/MEL+SMDH 270-1.5DF	J115
	93.0	179.9	SMDT 2770 MTL/MSL/MEL+SMDH 270-3D	J117
	93.0	179.9	SMDT 2770 MTL/MSL/MEL+SMDH 270-3DF	J115
	93.0	179.9	SMDT 2770 MTL/MSL/MEL+SMDH 270M	J112
	149.0	239.9	SMDT 2770 MTL/MSL/MEL+SMDH 270-5D	J117
	149.0	239.9	SMDT 2770 MTL/MSL/MEL+SMDH 270-5DF	J115
	149.0	239.9	SMDT 2770 MTL/MSL/MEL+SMDH 270L	J112
	232.0	324.9	SMDT 2770 MTL/MSL/MEL+SMDH 270-8D	J117
	232.0	324.9	SMDT 2770 MTL/MSL/MEL+SMDH 270-8DF	J115
	232.0	324.9	SMDT 2770 MTL/MSL/MEL+SMDH 270D	J112
	328.0	413.3	SMDT 2770 MTL/MSL/MEL+SMDH 270-12D	J117
27.8	51.0	132.2	SMDT 2780 MTL/MSL/MEL+SMDH 270-1.5D	J117
	51.0	132.2	SMDT 2780 MTL/MSL/MEL+SMDH 270-1.5DF	J115
	93.0	179.9	SMDT 2780 MTL/MSL/MEL+SMDH 270-3D	J117
	93.0	179.9	SMDT 2780 MTL/MSL/MEL+SMDH 270-3DF	J115
	93.0	179.9	SMDT 2780 MTL/MSL/MEL+SMDH 270M	J112
	149.0	239.9	SMDT 2780 MTL/MSL/MEL+SMDH 270-5D	J117

(Blue text: Flat head ■Indexable cutting edge type)

● Diameter ø27.8 to ø28.4mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
27.8	149.0	239.9	SMDT 2780 MTL/MSL/MEL+SMDH 270-5DF	J115
	149.0	239.9	SMDT 2780 MTL/MSL/MEL+SMDH 270L	J112
	232.0	324.9	SMDT 2780 MTL/MSL/MEL+SMDH 270-8D	J117
	232.0	324.9	SMDT 2780 MTL/MSL/MEL+SMDH 270-8DF	J115
	232.0	324.9	SMDT 2780 MTL/MSL/MEL+SMDH 270D	J112
	328.0	413.3	SMDT 2780 MTL/MSL/MEL+SMDH 270-12D	J117
27.9	53.0	133.9	SMDT 2790 MTL/MSL/MEL+SMDH 280-1.5D	J117
	53.0	133.9	SMDT 2790 MTL/MSL/MEL+SMDH 280-1.5DF	J115
	96.0	185.1	SMDT 2790 MTL/MSL/MEL+SMDH 280-3D	J117
	96.0	185.1	SMDT 2790 MTL/MSL/MEL+SMDH 280-3DF	J115
	96.0	185.1	SMDT 2790 MTL/MSL/MEL+SMDH 280M	J112
	154.0	245.1	SMDT 2790 MTL/MSL/MEL+SMDH 280-5D	J117
	154.0	245.1	SMDT 2790 MTL/MSL/MEL+SMDH 280-5DF	J115
	154.0	245.1	SMDT 2790 MTL/MSL/MEL+SMDH 280L	J112
	240.0	330.1	SMDT 2790 MTL/MSL/MEL+SMDH 280-8D	J117
	240.0	330.1	SMDT 2790 MTL/MSL/MEL+SMDH 280-8DF	J115
	240.0	330.1	SMDT 2790 MTL/MSL/MEL+SMDH 280D	J112
	341.0	425.8	SMDT 2790 MTL/MSL/MEL+SMDH 280-12D	J117
28.0	48.0	129.4	SMDT 2800 MFS+SMDH 280-1.5D	J125
	48.0	129.4	SMDT 2800 MFS+SMDH 280-1.5DF	J123
	53.0	133.9	SMDT 2800 MTL/MSL/MEL+SMDH 280-1.5D	J117
	53.0	133.9	SMDT 2800 MTL/MSL/MEL+SMDH 280-1.5DF	J115
	91.0	180.6	SMDT 2800 MFS+SMDH 280-3D	J125
	91.0	180.6	SMDT 2800 MFS+SMDH 280-3DF	J123
	91.0	180.6	SMDT 2800 MFS+SMDH 280M	J120
	96.0	185.1	SMDT 2800 MTL/MSL/MEL+SMDH 280-3D	J117
	96.0	185.1	SMDT 2800 MTL/MSL/MEL+SMDH 280-3DF	J115
	96.0	185.1	SMDT 2800 MTL/MSL/MEL+SMDH 280M	J112
	149.0	240.6	SMDT 2800 MFS+SMDH 280-5D	J125
	149.0	240.6	SMDT 2800 MFS+SMDH 280-5DF	J123
	149.0	240.6	SMDT 2800 MFS+SMDH 280L	J120
	154.0	245.1	SMDT 2800 MTL/MSL/MEL+SMDH 280-5D	J117
	154.0	245.1	SMDT 2800 MTL/MSL/MEL+SMDH 280-5DF	J115
	154.0	245.1	SMDT 2800 MTL/MSL/MEL+SMDH 280L	J112
	235.0	325.6	SMDT 2800 MFS+SMDH 280-8D	J125
	235.0	325.6	SMDT 2800 MFS+SMDH 280-8DF	J123
	235.0	325.6	SMDT 2800 MFS+SMDH 280D	J120
	240.0	330.1	SMDT 2800 MTL/MSL/MEL+SMDH 280-8D	J117
	240.0	330.1	SMDT 2800 MTL/MSL/MEL+SMDH 280-8DF	J115
	240.0	330.1	SMDT 2800 MTL/MSL/MEL+SMDH 280D	J112
	336.0	421.3	SMDT 2800 MFS+SMDH 280-12D	J125
	341.0	425.8	SMDT 2800 MTL/MSL/MEL+SMDH 280-12D	J117
28.1	53.0	133.9	SMDT 2810 MTL/MSL/MEL+SMDH 280-1.5D	J117
	53.0	133.9	SMDT 2810 MTL/MSL/MEL+SMDH 280-1.5DF	J115
	96.0	185.1	SMDT 2810 MTL/MSL/MEL+SMDH 280-3D	J117
	96.0	185.1	SMDT 2810 MTL/MSL/MEL+SMDH 280-3DF	J115
	96.0	185.1	SMDT 2810 MTL/MSL/MEL+SMDH 280M	J112
	154.0	245.1	SMDT 2810 MTL/MSL/MEL+SMDH 280-5D	J117
	154.0	245.1	SMDT 2810 MTL/MSL/MEL+SMDH 280-5DF	J115
	154.0	245.1	SMDT 2810 MTL/MSL/MEL+SMDH 280L	J112
	240.0	330.1	SMDT 2810 MTL/MSL/MEL+SMDH 280-8D	J117
	240.0	330.1	SMDT 2810 MTL/MSL/MEL+SMDH 280-8DF	J115
	240.0	330.1	SMDT 2810 MTL/MSL/MEL+SMDH 280D	J112
	341.0	425.8	SMDT 2810 MTL/MSL/MEL+SMDH 280-12D	J117
28.2	53.0	133.9	SMDT 2820 MTL/MSL/MEL+SMDH 280-1.5D	J117
	53.0	133.9	SMDT 2820 MTL/MSL/MEL+SMDH 280-1.5DF	J115
	96.0	185.1	SMDT 2820 MTL/MSL/MEL+SMDH 280-3D	J117
	96.0	185.1	SMDT 2820 MTL/MSL/MEL+SMDH 280-3DF	J115
	96.0	185.1	SMDT 2820 MTL/MSL/MEL+SMDH 280M	J112
	154.0	245.1	SMDT 2820 MTL/MSL/MEL+SMDH 280-5D	J117
	154.0	245.1	SMDT 2820 MTL/MSL/MEL+SMDH 280-5DF	J115
	154.0	245.1	SMDT 2820 MTL/MSL/MEL+SMDH 280L	J112
	240.0	330.1	SMDT 2820 MTL/MSL/MEL+SMDH 280-8D	J117
	240.0	330.1	SMDT 2820 MTL/MSL/MEL+SMDH 280-8DF	J115
	240.0	330.1	SMDT 2820 MTL/MSL/MEL+SMDH 280D	J112
	341.0	425.8	SMDT 2820 MTL/MSL/MEL+SMDH 280-12D	J117
28.3	53.0	133.9	SMDT 2830 MTL/MSL/MEL+SMDH 280-1.5D	J117
	53.0	133.9	SMDT 2830 MTL/MSL/MEL+SMDH 280-1.5DF	J115
	96.0	185.1	SMDT 2830 MTL/MSL/MEL+SMDH 280-3D	J117
	96.0	185.1	SMDT 2830 MTL/MSL/MEL+SMDH 280-3DF	J115
	96.0	185.1	SMDT 2830 MTL/MSL/MEL+SMDH 280M	J112
	154.0	245.1	SMDT 2830 MTL/MSL/MEL+SMDH 280-5D	J117
	154.0	245.1	SMDT 2830 MTL/MSL/MEL+SMDH 280-5DF	J115
	154.0	245.1	SMDT 2830 MTL/MSL/MEL+SMDH 280L	J112
	240.0	330.1	SMDT 2830 MTL/MSL/MEL+SMDH 280-8D	J117
	240.0	330.1	SMDT 2830 MTL/MSL/MEL+SMDH 280-8DF	J115
	240.0	330.1	SMDT 2830 MTL/MSL/MEL+SMDH 280D	J112
	341.0	425.8	SMDT 2830 MTL/MSL/MEL+SMDH 280-12D	J117
28.4	53.0	133.9	SMDT 2840 MTL/MSL/MEL+SMDH 280-1.5D	J117
	53.0	133.9	SMDT 2840 MTL/MSL/MEL+SMDH 280-1.5DF	J115

(Blue text: Flat head ■Indexable cutting edge type)

● Diameter ø28.4 to ø28.9mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
28.4	96.0	185.1	SMDT 2840 MTL/MSL/MEL+SMDH 280-3D	J117
	96.0	185.1	SMDT 2840 MTL/MSL/MEL+SMDH 280-3DF	J115
	96.0	185.1	SMDT 2840 MTL/MSL/MEL+SMDH 280M	J112
	154.0	245.1	SMDT 2840 MTL/MSL/MEL+SMDH 280-5D	J117
	154.0	245.1	SMDT 2840 MTL/MSL/MEL+SMDH 280-5DF	J115
	154.0	245.1	SMDT 2840 MTL/MSL/MEL+SMDH 280L	J112
	240.0	330.1	SMDT 2840 MTL/MSL/MEL+SMDH 280-8D	J117
	240.0	330.1	SMDT 2840 MTL/MSL/MEL+SMDH 280-8DF	J115
	240.0	330.1	SMDT 2840 MTL/MSL/MEL+SMDH 280D	J112
	341.0	425.8	SMDT 2840 MTL/MSL/MEL+SMDH 280-12D	J117
28.5	48.0	129.4	SMDT 2850 MFS+SMDH 280-1.5D	J125
	48.0	129.4	SMDT 2850 MFS+SMDH 280-1.5DF	J123
	53.0	133.9	SMDT 2850 MTL/MSL/MEL+SMDH 280-1.5D	J117
	53.0	133.9	SMDT 2850 MTL/MSL/MEL+SMDH 280-1.5DF	J115
	91.0	180.6	SMDT 2850 MFS+SMDH 280-3D	J125
	91.0	180.6	SMDT 2850 MFS+SMDH 280-3DF	J123
	91.0	180.6	SMDT 2850 MFS+SMDH 280M	J120
	96.0	185.1	SMDT 2850 MTL/MSL/MEL+SMDH 280-3D	J117
	96.0	185.1	SMDT 2850 MTL/MSL/MEL+SMDH 280-3DF	J115
	96.0	185.1	SMDT 2850 MTL/MSL/MEL+SMDH 280M	J112
	149.0	240.6	SMDT 2850 MFS+SMDH 280-5D	J125
	149.0	240.6	SMDT 2850 MFS+SMDH 280-5DF	J123
	149.0	240.6	SMDT 2850 MFS+SMDH 280L	J120
	154.0	245.1	SMDT 2850 MTL/MSL/MEL+SMDH 280-5D	J117
	154.0	245.1	SMDT 2850 MTL/MSL/MEL+SMDH 280-5DF	J115
	154.0	245.1	SMDT 2850 MTL/MSL/MEL+SMDH 280L	J112
	235.0	325.6	SMDT 2850 MFS+SMDH 280-8D	J125
	235.0	325.6	SMDT 2850 MFS+SMDH 280-8DF	J123
	235.0	325.6	SMDT 2850 MFS+SMDH 280D	J120
	240.0	330.1	SMDT 2850 MTL/MSL/MEL+SMDH 280-8D	J117
	240.0	330.1	SMDT 2850 MTL/MSL/MEL+SMDH 280-8DF	J115
	240.0	330.1	SMDT 2850 MTL/MSL/MEL+SMDH 280D	J112
	336.0	421.3	SMDT 2850 MFS+SMDH 280-12D	J125
	341.0	425.8	SMDT 2850 MTL/MSL/MEL+SMDH 280-12D	J117
28.6	53.0	133.9	SMDT 2860 MTL/MSL/MEL+SMDH 280-1.5D	J117
	53.0	133.9	SMDT 2860 MTL/MSL/MEL+SMDH 280-1.5DF	J115
	96.0	185.1	SMDT 2860 MTL/MSL/MEL+SMDH 280-3D	J117
	96.0	185.1	SMDT 2860 MTL/MSL/MEL+SMDH 280-3DF	J115
	96.0	185.1	SMDT 2860 MTL/MSL/MEL+SMDH 280M	J112
	154.0	245.1	SMDT 2860 MTL/MSL/MEL+SMDH 280-5D	J117
	154.0	245.1	SMDT 2860 MTL/MSL/MEL+SMDH 280-5DF	J115
	154.0	245.1	SMDT 2860 MTL/MSL/MEL+SMDH 280L	J112
	240.0	330.1	SMDT 2860 MTL/MSL/MEL+SMDH 280-8D	J117
	240.0	330.1	SMDT 2860 MTL/MSL/MEL+SMDH 280-8DF	J115
	240.0	330.1	SMDT 2860 MTL/MSL/MEL+SMDH 280D	J112
	341.0	425.8	SMDT 2860 MTL/MSL/MEL+SMDH 280-12D	J117
28.7	53.0	133.9	SMDT 2870 MTL/MSL/MEL+SMDH 280-1.5D	J117
	53.0	133.9	SMDT 2870 MTL/MSL/MEL+SMDH 280-1.5DF	J115
	96.0	185.1	SMDT 2870 MTL/MSL/MEL+SMDH 280-3D	J117
	96.0	185.1	SMDT 2870 MTL/MSL/MEL+SMDH 280-3DF	J115
	96.0	185.1	SMDT 2870 MTL/MSL/MEL+SMDH 280M	J112
	154.0	245.1	SMDT 2870 MTL/MSL/MEL+SMDH 280-5D	J117
	154.0	245.1	SMDT 2870 MTL/MSL/MEL+SMDH 280-5DF	J115
	154.0	245.1	SMDT 2870 MTL/MSL/MEL+SMDH 280L	J112
	240.0	330.1	SMDT 2870 MTL/MSL/MEL+SMDH 280-8D	J117
	240.0	330.1	SMDT 2870 MTL/MSL/MEL+SMDH 280-8DF	J115
	240.0	330.1	SMDT 2870 MTL/MSL/MEL+SMDH 280D	J112
	341.0	425.8	SMDT 2870 MTL/MSL/MEL+SMDH 280-12D	J117
28.8	53.0	133.9	SMDT 2880 MTL/MSL/MEL+SMDH 280-1.5D	J117
	53.0	133.9	SMDT 2880 MTL/MSL/MEL+SMDH 280-1.5DF	J115
	96.0	185.1	SMDT 2880 MTL/MSL/MEL+SMDH 280-3D	J117
	96.0	185.1	SMDT 2880 MTL/MSL/MEL+SMDH 280-3DF	J115
	96.0	185.1	SMDT 2880 MTL/MSL/MEL+SMDH 280M	J112
	154.0	245.1	SMDT 2880 MTL/MSL/MEL+SMDH 280-5D	J117
	154.0	245.1	SMDT 2880 MTL/MSL/MEL+SMDH 280-5DF	J115
	154.0	245.1	SMDT 2880 MTL/MSL/MEL+SMDH 280L	J112
	240.0	330.1	SMDT 2880 MTL/MSL/MEL+SMDH 280-8D	J117
	240.0	330.1	SMDT 2880 MTL/MSL/MEL+SMDH 280-8DF	J115
	240.0	330.1	SMDT 2880 MTL/MSL/MEL+SMDH 280D	J112
	341.0	425.8	SMDT 2880 MTL/MSL/MEL+SMDH 280-12D	J117
28.9	55.0	135.6	SMDT 2890 MTL/MSL/MEL+SMDH 290-1.5D	J117
	55.0	135.6	SMDT 2890 MTL/MSL/MEL+SMDH 290-1.5DF	J115
	99.0	190.3	SMDT 2890 MTL/MSL/MEL+SMDH 290-3D	J117
	99.0	190.3	SMDT 2890 MTL/MSL/MEL+SMDH 290-3DF	J115
	99.0	190.3	SMDT 2890 MTL/MSL/MEL+SMDH 290M	J112
	159.0	250.3	SMDT 2890 MTL/MSL/MEL+SMDH 290-5D	J117
	159.0	250.3	SMDT 2890 MTL/MSL/MEL+SMDH 290-5DF	J115
	159.0	250.3	SMDT 2890 MTL/MSL/MEL+SMDH 290L	J112
	248.0	340.3	SMDT 2890 MTL/MSL/MEL+SMDH 290-8D	J117
	248.0	340.3	SMDT 2890 MTL/MSL/MEL+SMDH 290-8DF	J115

(Blue text: Flat head ■Indexable cutting edge type)

The 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 ø28.9 to ø29.5mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
28.9	248.0	340.3	SMDT 2890 MTL/MSL/MEL+SMDH 290D	J112
	353.0	438.4	SMDT 2890 MTL/MSL/MEL+SMDH 290-12D	J117
29.0	49.0	130.8	SMDT 2900 MFS+SMDH 290-1.5D	J125
	49.0	130.8	SMDT 2900 MFS+SMDH 290-1.5DF	J123
	55.0	135.6	SMDT 2900 MTL/MSL/MEL+SMDH 290-1.5D	J117
	55.0	135.6	SMDT 2900 MTL/MSL/MEL+SMDH 290-1.5DF	J115
	94.0	185.4	SMDT 2900 MFS+SMDH 290-3D	J125
	94.0	185.4	SMDT 2900 MFS+SMDH 290-3DF	J123
	94.0	185.4	SMDT 2900 MFS+SMDH 290M	J120
	99.0	190.3	SMDT 2900 MTL/MSL/MEL+SMDH 290-3D	J117
	99.0	190.3	SMDT 2900 MTL/MSL/MEL+SMDH 290-3DF	J115
	99.0	190.3	SMDT 2900 MTL/MSL/MEL+SMDH 290M	J112
	154.0	245.4	SMDT 2900 MFS+SMDH 290-5D	J125
	154.0	245.4	SMDT 2900 MFS+SMDH 290-5DF	J123
	154.0	245.4	SMDT 2900 MFS+SMDH 290L	J120
	159.0	250.3	SMDT 2900 MTL/MSL/MEL+SMDH 290-5D	J117
	159.0	250.3	SMDT 2900 MTL/MSL/MEL+SMDH 290-5DF	J115
	159.0	250.3	SMDT 2900 MTL/MSL/MEL+SMDH 290L	J112
	243.0	335.4	SMDT 2900 MFS+SMDH 290-8D	J125
	243.0	335.4	SMDT 2900 MFS+SMDH 290-8DF	J123
	243.0	335.4	SMDT 2900 MFS+SMDH 290D	J120
	248.0	340.3	SMDT 2900 MTL/MSL/MEL+SMDH 290-8D	J117
	248.0	340.3	SMDT 2900 MTL/MSL/MEL+SMDH 290-8DF	J115
	248.0	340.3	SMDT 2900 MTL/MSL/MEL+SMDH 290D	J112
	348.0	433.5	SMDT 2900 MFS+SMDH 290-12D	J125
	353.0	438.4	SMDT 2900 MTL/MSL/MEL+SMDH 290-12D	J117
29.1	55.0	135.6	SMDT 2910 MTL/MSL/MEL+SMDH 290-1.5D	J117
	55.0	135.6	SMDT 2910 MTL/MSL/MEL+SMDH 290-1.5DF	J115
	99.0	190.3	SMDT 2910 MTL/MSL/MEL+SMDH 290-3D	J117
	99.0	190.3	SMDT 2910 MTL/MSL/MEL+SMDH 290-3DF	J115
	99.0	190.3	SMDT 2910 MTL/MSL/MEL+SMDH 290M	J112
	159.0	250.3	SMDT 2910 MTL/MSL/MEL+SMDH 290-5D	J117
	159.0	250.3	SMDT 2910 MTL/MSL/MEL+SMDH 290-5DF	J115
	159.0	250.3	SMDT 2910 MTL/MSL/MEL+SMDH 290L	J112
	248.0	340.3	SMDT 2910 MTL/MSL/MEL+SMDH 290-8D	J117
	248.0	340.3	SMDT 2910 MTL/MSL/MEL+SMDH 290-8DF	J115
	248.0	340.3	SMDT 2910 MTL/MSL/MEL+SMDH 290D	J112
	353.0	438.4	SMDT 2910 MTL/MSL/MEL+SMDH 290-12D	J117
29.2	55.0	135.6	SMDT 2920 MTL/MSL/MEL+SMDH 290-1.5D	J117
	55.0	135.6	SMDT 2920 MTL/MSL/MEL+SMDH 290-1.5DF	J115
	99.0	190.3	SMDT 2920 MTL/MSL/MEL+SMDH 290-3D	J117
	99.0	190.3	SMDT 2920 MTL/MSL/MEL+SMDH 290-3DF	J115
	99.0	190.3	SMDT 2920 MTL/MSL/MEL+SMDH 290M	J112
	159.0	250.3	SMDT 2920 MTL/MSL/MEL+SMDH 290-5D	J117
	159.0	250.3	SMDT 2920 MTL/MSL/MEL+SMDH 290-5DF	J115
	159.0	250.3	SMDT 2920 MTL/MSL/MEL+SMDH 290L	J112
	248.0	340.3	SMDT 2920 MTL/MSL/MEL+SMDH 290-8D	J117
	248.0	340.3	SMDT 2920 MTL/MSL/MEL+SMDH 290-8DF	J115
	248.0	340.3	SMDT 2920 MTL/MSL/MEL+SMDH 290D	J112
	353.0	438.4	SMDT 2920 MTL/MSL/MEL+SMDH 290-12D	J117
29.3	55.0	135.6	SMDT 2930 MTL/MSL/MEL+SMDH 290-1.5D	J117
	55.0	135.6	SMDT 2930 MTL/MSL/MEL+SMDH 290-1.5DF	J115
	99.0	190.3	SMDT 2930 MTL/MSL/MEL+SMDH 290-3D	J117
	99.0	190.3	SMDT 2930 MTL/MSL/MEL+SMDH 290-3DF	J115
	99.0	190.3	SMDT 2930 MTL/MSL/MEL+SMDH 290M	J112
	159.0	250.3	SMDT 2930 MTL/MSL/MEL+SMDH 290-5D	J117
	159.0	250.3	SMDT 2930 MTL/MSL/MEL+SMDH 290-5DF	J115
	159.0	250.3	SMDT 2930 MTL/MSL/MEL+SMDH 290L	J112
	248.0	340.3	SMDT 2930 MTL/MSL/MEL+SMDH 290-8D	J117
	248.0	340.3	SMDT 2930 MTL/MSL/MEL+SMDH 290-8DF	J115
	248.0	340.3	SMDT 2930 MTL/MSL/MEL+SMDH 290D	J112
	353.0	438.4	SMDT 2930 MTL/MSL/MEL+SMDH 290-12D	J117
29.4	55.0	135.6	SMDT 2940 MTL/MSL/MEL+SMDH 290-1.5D	J117
	55.0	135.6	SMDT 2940 MTL/MSL/MEL+SMDH 290-1.5DF	J115
	99.0	190.3	SMDT 2940 MTL/MSL/MEL+SMDH 290-3D	J117
	99.0	190.3	SMDT 2940 MTL/MSL/MEL+SMDH 290-3DF	J115
	99.0	190.3	SMDT 2940 MTL/MSL/MEL+SMDH 290M	J112
	159.0	250.3	SMDT 2940 MTL/MSL/MEL+SMDH 290-5D	J117
	159.0	250.3	SMDT 2940 MTL/MSL/MEL+SMDH 290-5DF	J115
	159.0	250.3	SMDT 2940 MTL/MSL/MEL+SMDH 290L	J112
	248.0	340.3	SMDT 2940 MTL/MSL/MEL+SMDH 290-8D	J117
	248.0	340.3	SMDT 2940 MTL/MSL/MEL+SMDH 290-8DF	J115
	248.0	340.3	SMDT 2940 MTL/MSL/MEL+SMDH 290D	J112
	353.0	438.4	SMDT 2940 MTL/MSL/MEL+SMDH 290-12D	J117
29.5	49.0	130.8	SMDT 2950 MFS+SMDH 290-1.5D	J125
	49.0	130.8	SMDT 2950 MFS+SMDH 290-1.5DF	J123
	55.0	135.6	SMDT 2950 MTL/MSL/MEL+SMDH 290-1.5D	J117
	55.0	135.6	SMDT 2950 MTL/MSL/MEL+SMDH 290-1.5DF	J115
	94.0	185.4	SMDT 2950 MFS+SMDH 290-3D	J125
	94.0	185.4	SMDT 2950 MFS+SMDH 290-3DF	J123

(Blue text: Flat head ■Indexable cutting edge type)

● Diameter ø29.5 to ø30.0mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
29.5	94.0	185.4	SMDT 2950 MFS+SMDH 290M	J120
	99.0	190.3	SMDT 2950 MTL/MSL/MEL+SMDH 290-3D	J117
	99.0	190.3	SMDT 2950 MTL/MSL/MEL+SMDH 290-3DF	J115
	99.0	190.3	SMDT 2950 MTL/MSL/MEL+SMDH 290M	J112
	154.0	245.4	SMDT 2950 MFS+SMDH 290-5D	J125
	154.0	245.4	SMDT 2950 MFS+SMDH 290-5DF	J123
	154.0	245.4	SMDT 2950 MFS+SMDH 290L	J120
	159.0	250.3	SMDT 2950 MTL/MSL/MEL+SMDH 290-5D	J117
	159.0	250.3	SMDT 2950 MTL/MSL/MEL+SMDH 290-5DF	J115
	159.0	250.3	SMDT 2950 MTL/MSL/MEL+SMDH 290L	J112
	243.0	335.4	SMDT 2950 MFS+SMDH 290-8D	J125
	243.0	335.4	SMDT 2950 MFS+SMDH 290-8DF	J123
	243.0	335.4	SMDT 2950 MFS+SMDH 290D	J120
	248.0	340.3	SMDT 2950 MTL/MSL/MEL+SMDH 290-8D	J117
	248.0	340.3	SMDT 2950 MTL/MSL/MEL+SMDH 290-8DF	J115
	248.0	340.3	SMDT 2950 MTL/MSL/MEL+SMDH 290D	J112
	348.0	433.5	SMDT 2950 MFS+SMDH 290-12D	J125
	353.0	438.4	SMDT 2950 MTL/MSL/MEL+SMDH 290-12D	J117
29.6	55.0	135.6	SMDT 2960 MTL/MSL/MEL+SMDH 290-1.5D	J117
	55.0	135.6	SMDT 2960 MTL/MSL/MEL+SMDH 290-1.5DF	J115
	99.0	190.3	SMDT 2960 MTL/MSL/MEL+SMDH 290-3D	J117
	99.0	190.3	SMDT 2960 MTL/MSL/MEL+SMDH 290-3DF	J115
	99.0	190.3	SMDT 2960 MTL/MSL/MEL+SMDH 290M	J112
	159.0	250.3	SMDT 2960 MTL/MSL/MEL+SMDH 290-5D	J117
	159.0	250.3	SMDT 2960 MTL/MSL/MEL+SMDH 290-5DF	J115
	159.0	250.3	SMDT 2960 MTL/MSL/MEL+SMDH 290L	J112
	248.0	340.3	SMDT 2960 MTL/MSL/MEL+SMDH 290-8D	J117
	248.0	340.3	SMDT 2960 MTL/MSL/MEL+SMDH 290-8DF	J115
	248.0	340.3	SMDT 2960 MTL/MSL/MEL+SMDH 290D	J112
	353.0	438.4	SMDT 2960 MTL/MSL/MEL+SMDH 290-12D	J117
29.7	55.0	135.6	SMDT 2970 MTL/MSL/MEL+SMDH 290-1.5D	J117
	55.0	135.6	SMDT 2970 MTL/MSL/MEL+SMDH 290-1.5DF	J115
	99.0	190.3	SMDT 2970 MTL/MSL/MEL+SMDH 290-3D	J117
	99.0	190.3	SMDT 2970 MTL/MSL/MEL+SMDH 290-3DF	J115
	99.0	190.3	SMDT 2970 MTL/MSL/MEL+SMDH 290M	J112
	159.0	250.3	SMDT 2970 MTL/MSL/MEL+SMDH 290-5D	J117
	159.0	250.3	SMDT 2970 MTL/MSL/MEL+SMDH 290-5DF	J115
	159.0	250.3	SMDT 2970 MTL/MSL/MEL+SMDH 290L	J112
	248.0	340.3	SMDT 2970 MTL/MSL/MEL+SMDH 290-8D	J117
	248.0	340.3	SMDT 2970 MTL/MSL/MEL+SMDH 290-8DF	J115
	248.0	340.3	SMDT 2970 MTL/MSL/MEL+SMDH 290D	J112
	353.0	438.4	SMDT 2970 MTL/MSL/MEL+SMDH 290-12D	J117
29.8	55.0	135.6	SMDT 2980 MTL/MSL/MEL+SMDH 290-1.5D	J117
	55.0	135.6	SMDT 2980 MTL/MSL/MEL+SMDH 290-1.5DF	J115
	99.0	190.3	SMDT 2980 MTL/MSL/MEL+SMDH 290-3D	J117
	99.0	190.3	SMDT 2980 MTL/MSL/MEL+SMDH 290-3DF	J115
	99.0	190.3	SMDT 2980 MTL/MSL/MEL+SMDH 290M	J112
	159.0	250.3	SMDT 2980 MTL/MSL/MEL+SMDH 290-5D	J117
	159.0	250.3	SMDT 2980 MTL/MSL/MEL+SMDH 290-5DF	J115
	159.0	250.3	SMDT 2980 MTL/MSL/MEL+SMDH 290L	J112
	248.0	340.3	SMDT 2980 MTL/MSL/MEL+SMDH 290-8D	J117
	248.0	340.3	SMDT 2980 MTL/MSL/MEL+SMDH 290-8DF	J115
	248.0	340.3	SMDT 2980 MTL/MSL/MEL+SMDH 290D	J112
	353.0	438.4	SMDT 2980 MTL/MSL/MEL+SMDH 290-12D	J117
29.9	56.0	138.3	SMDT 2990 MTL/MSL/MEL+SMDH 300-1.5D	J117
	56.0	138.3	SMDT 2990 MTL/MSL/MEL+SMDH 300-1.5DF	J115
	103.0	190.5	SMDT 2990 MTL/MSL/MEL+SMDH 300-3D	J117
	103.0	190.5	SMDT 2990 MTL/MSL/MEL+SMDH 300-3DF	J115
	103.0	190.5	SMDT 2990 MTL/MSL/MEL+SMDH 300M	J113
	164.0	260.5	SMDT 2990 MTL/MSL/MEL+SMDH 300-5D	J117
	164.0	260.5	SMDT 2990 MTL/MSL/MEL+SMDH 300-5DF	J115
	164.0	260.5	SMDT 2990 MTL/MSL/MEL+SMDH 300L	J113
	257.0	350.5	SMDT 2990 MTL/MSL/MEL+SMDH 300-8D	J117
	257.0	350.5	SMDT 2990 MTL/MSL/MEL+SMDH 300-8DF	J115
	257.0	350.5	SMDT 2990 MTL/MSL/MEL+SMDH 300D	J113
	365.0	450.8	SMDT 2990 MTL/MSL/MEL+SMDH 300-12D	J117
30.0	51.0	133.4	SMDT 3000 MFS+SMDH 300-1.5D	J125
	51.0	133.4	SMDT 3000 MFS+SMDH 300-1.5DF	J123
	56.0	138.3	SMDT 3000 MEL+SMDH 300-1.5D	J117
	56.0	138.3	SMDT 3000 MEL+SMDH 300-1.5DF	J115
	56.0	138.3	SMDT 3000 MSL+SMDH 300-1.5D	J117
	56.0	138.3	SMDT 3000 MSL+SMDH 300-1.5DF	J115
	56.0	138.3	SMDT 3000 MTL+SMDH 300-1.5D	J117
	56.0	138.3	SMDT 3000 MTL+SMDH 300-1.5DF	J115
	97.0	185.6	SMDT 3000 MFS+SMDH 300-3D	J125
	97.0	185.6	SMDT 3000 MFS+SMDH 300-3DF	J123
	97.0	185.6	SMDT 3000 MFS+SMDH 300M	J121
	103.0	190.5	SMDT 3000 MEL+SMDH 300-3D	J117
	103.0	190.5	SMDT 3000 MEL+SMDH 300-3DF	J115
	103.0	190.5	SMDT 3000 MEL+SMDH 300M	J113

(Blue text: Flat head ■Indexable cutting edge type)

● Diameter ø30.0 to ø30.2mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
30.0	103.0	190.5	SMDT 3000 MSL+SMDH 300-3D	J117
	103.0	190.5	SMDT 3000 MSL+SMDH 300-3DF	J115
	103.0	190.5	SMDT 3000 MSL+SMDH 300M	J113
	103.0	190.5	SMDT 3000 MTL+SMDH 300-3D	J117
	103.0	190.5	SMDT 3000 MTL+SMDH 300-3DF	J115
	103.0	190.5	SMDT 3000 MTL+SMDH 300M	J113
	159.0	255.6	SMDT 3000 MFS+SMDH 300-5D	J125
	159.0	255.6	SMDT 3000 MFS+SMDH 300-5DF	J123
	159.0	255.6	SMDT 3000 MFS+SMDH 300L	J121
	164.0	260.5	SMDT 3000 MEL+SMDH 300-5D	J117
	164.0	260.5	SMDT 3000 MEL+SMDH 300-5DF	J115
	164.0	260.5	SMDT 3000 MEL+SMDH 300L	J113
	164.0	260.5	SMDT 3000 MSL+SMDH 300-5D	J117
	164.0	260.5	SMDT 3000 MSL+SMDH 300-5DF	J115
	164.0	260.5	SMDT 3000 MSL+SMDH 300L	J113
	164.0	260.5	SMDT 3000 MTL+SMDH 300-5D	J117
	164.0	260.5	SMDT 3000 MTL+SMDH 300-5DF	J115
	164.0	260.5	SMDT 3000 MTL+SMDH 300L	J113
	251.0	345.6	SMDT 3000 MFS+SMDH 300-8D	J125
	251.0	345.6	SMDT 3000 MFS+SMDH 300-8DF	J123
	251.0	345.6	SMDT 3000 MFS+SMDH 300D	J121
	257.0	350.5	SMDT 3000 MEL+SMDH 300-8D	J117
	257.0	350.5	SMDT 3000 MEL+SMDH 300-8DF	J115
	257.0	350.5	SMDT 3000 MEL+SMDH 300D	J113
	257.0	350.5	SMDT 3000 MSL+SMDH 300-8D	J117
	257.0	350.5	SMDT 3000 MSL+SMDH 300-8DF	J115
	257.0	350.5	SMDT 3000 MSL+SMDH 300D	J113
	257.0	350.5	SMDT 3000 MTL+SMDH 300-8D	J117
	257.0	350.5	SMDT 3000 MTL+SMDH 300-8DF	J115
	257.0	350.5	SMDT 3000 MTL+SMDH 300D	J113
	360.0	445.9	SMDT 3000 MFS+SMDH 300-12D	J125
	365.0	450.8	SMDT 3000 MEL+SMDH 300-12D	J117
	365.0	450.8	SMDT 3000 MSL+SMDH 300-12D	J117
	365.0	450.8	SMDT 3000 MTL+SMDH 300-12D	J117
30.1	56.0	138.3	SMDT 3010 MEL+SMDH 300-1.5D	J117
	56.0	138.3	SMDT 3010 MEL+SMDH 300-1.5DF	J115
	56.0	138.3	SMDT 3010 MSL+SMDH 300-1.5D	J117
	56.0	138.3	SMDT 3010 MSL+SMDH 300-1.5DF	J115
	56.0	138.3	SMDT 3010 MTL+SMDH 300-1.5D	J117
	56.0	138.3	SMDT 3010 MTL+SMDH 300-1.5DF	J115
	103.0	190.5	SMDT 3010 MEL+SMDH 300-3D	J117
	103.0	190.5	SMDT 3010 MEL+SMDH 300-3DF	J115
	103.0	190.5	SMDT 3010 MEL+SMDH 300M	J113
	103.0	190.5	SMDT 3010 MSL+SMDH 300-3D	J117
	103.0	190.5	SMDT 3010 MSL+SMDH 300-3DF	J115
	103.0	190.5	SMDT 3010 MSL+SMDH 300M	J113
	103.0	190.5	SMDT 3010 MTL+SMDH 300-3D	J117
	103.0	190.5	SMDT 3010 MTL+SMDH 300-3DF	J115
	103.0	190.5	SMDT 3010 MTL+SMDH 300M	J113
	164.0	260.5	SMDT 3010 MEL+SMDH 300-5D	J117
	164.0	260.5	SMDT 3010 MEL+SMDH 300-5DF	J115
	164.0	260.5	SMDT 3010 MEL+SMDH 300L	J113
	164.0	260.5	SMDT 3010 MSL+SMDH 300-5D	J117
	164.0	260.5	SMDT 3010 MSL+SMDH 300-5DF	J115
	164.0	260.5	SMDT 3010 MSL+SMDH 300L	J113
	164.0	260.5	SMDT 3010 MTL+SMDH 300-5D	J117
	164.0	260.5	SMDT 3010 MTL+SMDH 300-5DF	J115
	164.0	260.5	SMDT 3010 MTL+SMDH 300L	J113
	257.0	350.5	SMDT 3010 MEL+SMDH 300-8D	J117
	257.0	350.5	SMDT 3010 MEL+SMDH 300-8DF	J115
	257.0	350.5	SMDT 3010 MEL+SMDH 300D	J113
	257.0	350.5	SMDT 3010 MSL+SMDH 300-8D	J117
	257.0	350.5	SMDT 3010 MSL+SMDH 300-8DF	J115
	257.0	350.5	SMDT 3010 MSL+SMDH 300D	J113
	257.0	350.5	SMDT 3010 MTL+SMDH 300-8D	J117
	257.0	350.5	SMDT 3010 MTL+SMDH 300-8DF	J115
	257.0	350.5	SMDT 3010 MTL+SMDH 300D	J113
	365.0	450.8	SMDT 3010 MEL+SMDH 300-12D	J117
	365.0	450.8	SMDT 3010 MSL+SMDH 300-12D	J117
	365.0	450.8	SMDT 3010 MTL+SMDH 300-12D	J117
30.2	56.0	138.3	SMDT 3020 MEL+SMDH 300-1.5D	J117
	56.0	138.3	SMDT 3020 MEL+SMDH 300-1.5DF	J115
	56.0	138.3	SMDT 3020 MSL+SMDH 300-1.5D	J117
	56.0	138.3	SMDT 3020 MSL+SMDH 300-1.5DF	J115
	56.0	138.3	SMDT 3020 MTL+SMDH 300-1.5D	J117
	56.0	138.3	SMDT 3020 MTL+SMDH 300-1.5DF	J115
	103.0	190.5	SMDT 3020 MEL+SMDH 300-3D	J117
	103.0	190.5	SMDT 3020 MEL+SMDH 300-3DF	J115
	103.0	190.5	SMDT 3020 MEL+SMDH 300M	J113
	103.0	190.5	SMDT 3020 MSL+SMDH 300-3D	J117

(Blue text: Flat head ■Indexable cutting edge type)

The 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 ø30.2 to ø30.4mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
30.2	103.0	190.5	SMDT 3020 MSL+SMDH 300-3DF	J115
	103.0	190.5	SMDT 3020 MSL+SMDH 300M	J113
	103.0	190.5	SMDT 3020 MTL+SMDH 300-3D	J117
	103.0	190.5	SMDT 3020 MTL+SMDH 300-3DF	J115
	103.0	190.5	SMDT 3020 MTL+SMDH 300M	J113
	164.0	260.5	SMDT 3020 MEL+SMDH 300-5D	J117
	164.0	260.5	SMDT 3020 MEL+SMDH 300-5DF	J115
	164.0	260.5	SMDT 3020 MEL+SMDH 300L	J113
	164.0	260.5	SMDT 3020 MSL+SMDH 300-5D	J117
	164.0	260.5	SMDT 3020 MSL+SMDH 300-5DF	J115
	164.0	260.5	SMDT 3020 MSL+SMDH 300L	J113
	164.0	260.5	SMDT 3020 MTL+SMDH 300-5D	J117
	164.0	260.5	SMDT 3020 MTL+SMDH 300-5DF	J115
	164.0	260.5	SMDT 3020 MTL+SMDH 300L	J113
	257.0	350.5	SMDT 3020 MEL+SMDH 300-8D	J117
	257.0	350.5	SMDT 3020 MEL+SMDH 300-8DF	J115
	257.0	350.5	SMDT 3020 MEL+SMDH 300D	J113
	257.0	350.5	SMDT 3020 MSL+SMDH 300-8D	J117
	257.0	350.5	SMDT 3020 MSL+SMDH 300-8DF	J115
	257.0	350.5	SMDT 3020 MSL+SMDH 300D	J113
	257.0	350.5	SMDT 3020 MTL+SMDH 300-8D	J117
	257.0	350.5	SMDT 3020 MTL+SMDH 300-8DF	J115
	257.0	350.5	SMDT 3020 MTL+SMDH 300D	J113
	365.0	450.8	SMDT 3020 MEL+SMDH 300-12D	J117
	365.0	450.8	SMDT 3020 MSL+SMDH 300-12D	J117
	365.0	450.8	SMDT 3020 MTL+SMDH 300-12D	J117
30.3	56.0	138.3	SMDT 3030 MEL+SMDH 300-1.5D	J117
	56.0	138.3	SMDT 3030 MEL+SMDH 300-1.5DF	J115
	56.0	138.3	SMDT 3030 MSL+SMDH 300-1.5D	J117
	56.0	138.3	SMDT 3030 MSL+SMDH 300-1.5DF	J115
	56.0	138.3	SMDT 3030 MTL+SMDH 300-1.5D	J117
	56.0	138.3	SMDT 3030 MTL+SMDH 300-1.5DF	J115
	103.0	190.5	SMDT 3030 MEL+SMDH 300-3D	J117
	103.0	190.5	SMDT 3030 MEL+SMDH 300-3DF	J115
	103.0	190.5	SMDT 3030 MEL+SMDH 300M	J113
	103.0	190.5	SMDT 3030 MSL+SMDH 300-3D	J117
	103.0	190.5	SMDT 3030 MSL+SMDH 300-3DF	J115
	103.0	190.5	SMDT 3030 MSL+SMDH 300M	J113
	103.0	190.5	SMDT 3030 MTL+SMDH 300-3D	J117
	103.0	190.5	SMDT 3030 MTL+SMDH 300-3DF	J115
	103.0	190.5	SMDT 3030 MTL+SMDH 300M	J113
	164.0	260.5	SMDT 3030 MEL+SMDH 300-5D	J117
	164.0	260.5	SMDT 3030 MEL+SMDH 300-5DF	J115
	164.0	260.5	SMDT 3030 MEL+SMDH 300L	J113
	164.0	260.5	SMDT 3030 MSL+SMDH 300-5D	J117
	164.0	260.5	SMDT 3030 MSL+SMDH 300-5DF	J115
	164.0	260.5	SMDT 3030 MSL+SMDH 300L	J113
	164.0	260.5	SMDT 3030 MTL+SMDH 300-5D	J117
	164.0	260.5	SMDT 3030 MTL+SMDH 300-5DF	J115
	164.0	260.5	SMDT 3030 MTL+SMDH 300L	J113
	257.0	350.5	SMDT 3030 MEL+SMDH 300-8D	J117
	257.0	350.5	SMDT 3030 MEL+SMDH 300-8DF	J115
	257.0	350.5	SMDT 3030 MEL+SMDH 300D	J113
	257.0	350.5	SMDT 3030 MSL+SMDH 300-8D	J117
	257.0	350.5	SMDT 3030 MSL+SMDH 300-8DF	J115
	257.0	350.5	SMDT 3030 MSL+SMDH 300D	J113
	257.0	350.5	SMDT 3030 MTL+SMDH 300-8D	J117
	257.0	350.5	SMDT 3030 MTL+SMDH 300-8DF	J115
	257.0	350.5	SMDT 3030 MTL+SMDH 300D	J113
	365.0	450.8	SMDT 3030 MEL+SMDH 300-12D	J117
	365.0	450.8	SMDT 3030 MSL+SMDH 300-12D	J117
	365.0	450.8	SMDT 3030 MTL+SMDH 300-12D	J117
30.4	56.0	138.3	SMDT 3040 MEL+SMDH 300-1.5D	J117
	56.0	138.3	SMDT 3040 MEL+SMDH 300-1.5DF	J115
	56.0	138.3	SMDT 3040 MSL+SMDH 300-1.5D	J117
	56.0	138.3	SMDT 3040 MSL+SMDH 300-1.5DF	J115
	56.0	138.3	SMDT 3040 MTL+SMDH 300-1.5D	J117
	56.0	138.3	SMDT 3040 MTL+SMDH 300-1.5DF	J115
	103.0	190.5	SMDT 3040 MEL+SMDH 300-3D	J117
	103.0	190.5	SMDT 3040 MEL+SMDH 300-3DF	J115
	103.0	190.5	SMDT 3040 MEL+SMDH 300M	J113
	103.0	190.5	SMDT 3040 MSL+SMDH 300-3D	J117
	103.0	190.5	SMDT 3040 MSL+SMDH 300-3DF	J115
	103.0	190.5	SMDT 3040 MSL+SMDH 300M	J113
	103.0	190.5	SMDT 3040 MTL+SMDH 300-3D	J117
	103.0	190.5	SMDT 3040 MTL+SMDH 300-3DF	J115
	103.0	190.5	SMDT 3040 MTL+SMDH 300M	J113
	164.0	260.5	SMDT 3040 MEL+SMDH 300-5D	J117
	164.0	260.5	SMDT 3040 MEL+SMDH 300-5DF	J115
	164.0	260.5	SMDT 3040 MEL+SMDH 300L	J113

(Blue text: Flat head ■Indexable cutting edge type)

● Diameter ø30.4 to ø30.6mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
30.4	164.0	260.5	SMDT 3040 MSL+SMDH 300-5D	J117
	164.0	260.5	SMDT 3040 MSL+SMDH 300-5DF	J115
	164.0	260.5	SMDT 3040 MSL+SMDH 300L	J113
	164.0	260.5	SMDT 3040 MTL+SMDH 300-5D	J117
	164.0	260.5	SMDT 3040 MTL+SMDH 300-5DF	J115
	164.0	260.5	SMDT 3040 MTL+SMDH 300L	J113
	257.0	350.5	SMDT 3040 MEL+SMDH 300-8D	J117
	257.0	350.5	SMDT 3040 MEL+SMDH 300-8DF	J115
	257.0	350.5	SMDT 3040 MEL+SMDH 300D	J113
	257.0	350.5	SMDT 3040 MSL+SMDH 300-8D	J117
	257.0	350.5	SMDT 3040 MSL+SMDH 300-8DF	J115
	257.0	350.5	SMDT 3040 MSL+SMDH 300D	J113
	257.0	350.5	SMDT 3040 MTL+SMDH 300-8D	J117
	257.0	350.5	SMDT 3040 MTL+SMDH 300-8DF	J115
	257.0	350.5	SMDT 3040 MTL+SMDH 300D	J113
	365.0	450.8	SMDT 3040 MEL+SMDH 300-12D	J117
	365.0	450.8	SMDT 3040 MSL+SMDH 300-12D	J117
	365.0	450.8	SMDT 3040 MTL+SMDH 300-12D	J117
30.5	56.0	138.3	SMDT 3050 MEL+SMDH 300-1.5D	J117
	56.0	138.3	SMDT 3050 MEL+SMDH 300-1.5DF	J115
	56.0	138.3	SMDT 3050 MSL+SMDH 300-1.5D	J117
	56.0	138.3	SMDT 3050 MSL+SMDH 300-1.5DF	J115
	56.0	138.3	SMDT 3050 MTL+SMDH 300-1.5D	J117
	56.0	138.3	SMDT 3050 MTL+SMDH 300-1.5DF	J115
	103.0	190.5	SMDT 3050 MEL+SMDH 300-3D	J117
	103.0	190.5	SMDT 3050 MEL+SMDH 300-3DF	J115
	103.0	190.5	SMDT 3050 MEL+SMDH 300M	J113
	103.0	190.5	SMDT 3050 MSL+SMDH 300-3D	J117
	103.0	190.5	SMDT 3050 MSL+SMDH 300-3DF	J115
	103.0	190.5	SMDT 3050 MSL+SMDH 300M	J113
	103.0	190.5	SMDT 3050 MTL+SMDH 300-3D	J117
	103.0	190.5	SMDT 3050 MTL+SMDH 300-3DF	J115
	103.0	190.5	SMDT 3050 MTL+SMDH 300M	J113
	164.0	260.5	SMDT 3050 MEL+SMDH 300-5D	J117
	164.0	260.5	SMDT 3050 MEL+SMDH 300-5DF	J115
	164.0	260.5	SMDT 3050 MEL+SMDH 300L	J113
	164.0	260.5	SMDT 3050 MSL+SMDH 300-5D	J117
	164.0	260.5	SMDT 3050 MSL+SMDH 300-5DF	J115
	164.0	260.5	SMDT 3050 MSL+SMDH 300L	J113
	164.0	260.5	SMDT 3050 MTL+SMDH 300-5D	J117
	164.0	260.5	SMDT 3050 MTL+SMDH 300-5DF	J115
	164.0	260.5	SMDT 3050 MTL+SMDH 300L	J113
	257.0	350.5	SMDT 3050 MEL+SMDH 300-8D	J117
	257.0	350.5	SMDT 3050 MEL+SMDH 300-8DF	J115
	257.0	350.5	SMDT 3050 MEL+SMDH 300D	J113
	257.0	350.5	SMDT 3050 MSL+SMDH 300-8D	J117
	257.0	350.5	SMDT 3050 MSL+SMDH 300-8DF	J115
	257.0	350.5	SMDT 3050 MSL+SMDH 300D	J113
	257.0	350.5	SMDT 3050 MTL+SMDH 300-8D	J117
	257.0	350.5	SMDT 3050 MTL+SMDH 300-8DF	J115
	257.0	350.5	SMDT 3050 MTL+SMDH 300D	J113
	365.0	450.8	SMDT 3050 MEL+SMDH 300-12D	J117
	365.0	450.8	SMDT 3050 MSL+SMDH 300-12D	J117
	365.0	450.8	SMDT 3050 MTL+SMDH 300-12D	J117
30.6	56.0	138.3	SMDT 3060 MEL+SMDH 300-1.5D	J117
	56.0	138.3	SMDT 3060 MEL+SMDH 300-1.5DF	J115
	56.0	138.3	SMDT 3060 MSL+SMDH 300-1.5D	J117
	56.0	138.3	SMDT 3060 MSL+SMDH 300-1.5DF	J115
	56.0	138.3	SMDT 3060 MTL+SMDH 300-1.5D	J117
	56.0	138.3	SMDT 3060 MTL+SMDH 300-1.5DF	J115
	103.0	190.5	SMDT 3060 MEL+SMDH 300-3D	J117
	103.0	190.5	SMDT 3060 MEL+SMDH 300-3DF	J115
	103.0	190.5	SMDT 3060 MEL+SMDH 300M	J113
	103.0	190.5	SMDT 3060 MSL+SMDH 300-3D	J117
	103.0	190.5	SMDT 3060 MSL+SMDH 300-3DF	J115
	103.0	190.5	SMDT 3060 MSL+SMDH 300M	J113
	103.0	190.5	SMDT 3060 MTL+SMDH 300-3D	J117
	103.0	190.5	SMDT 3060 MTL+SMDH 300-3DF	J115
	103.0	190.5	SMDT 3060 MTL+SMDH 300M	J113
	164.0	260.5	SMDT 3060 MEL+SMDH 300-5D	J117
	164.0	260.5	SMDT 3060 MEL+SMDH 300-5DF	J115
	164.0	260.5	SMDT 3060 MEL+SMDH 300L	J113
	164.0	260.5	SMDT 3060 MSL+SMDH 300-5D	J117
	164.0	260.5	SMDT 3060 MSL+SMDH 300-5DF	J115
	164.0	260.5	SMDT 3060 MSL+SMDH 300L	J113
	164.0	260.5	SMDT 3060 MTL+SMDH 300-5D	J117
	164.0	260.5	SMDT 3060 MTL+SMDH 300-5DF	J115
	164.0	260.5	SMDT 3060 MTL+SMDH 300L	J113
	257.0	350.5	SMDT 3060 MEL+SMDH 300-8D	J117
	257.0	350.5	SMDT 3060 MEL+SMDH 300-8DF	J115

(Blue text: Flat head ■Indexable cutting edge type)

● Diameter ø30.6 to ø30.8mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
30.6	257.0	350.5	SMDT 3060 MEL+SMDH 300D	J113
	257.0	350.5	SMDT 3060 MSL+SMDH 300-8D	J117
	257.0	350.5	SMDT 3060 MSL+SMDH 300-8DF	J115
	257.0	350.5	SMDT 3060 MSL+SMDH 300D	J113
	257.0	350.5	SMDT 3060 MTL+SMDH 300-8D	J117
	257.0	350.5	SMDT 3060 MTL+SMDH 300-8DF	J115
	257.0	350.5	SMDT 3060 MTL+SMDH 300D	J113
	365.0	450.8	SMDT 3060 MEL+SMDH 300-12D	J117
	365.0	450.8	SMDT 3060 MSL+SMDH 300-12D	J117
	365.0	450.8	SMDT 3060 MTL+SMDH 300-12D	J117
30.7	56.0	138.3	SMDT 3070 MEL+SMDH 300-1.5D	J117
	56.0	138.3	SMDT 3070 MEL+SMDH 300-1.5DF	J115
	56.0	138.3	SMDT 3070 MSL+SMDH 300-1.5D	J117
	56.0	138.3	SMDT 3070 MSL+SMDH 300-1.5DF	J115
	56.0	138.3	SMDT 3070 MTL+SMDH 300-1.5D	J117
	56.0	138.3	SMDT 3070 MTL+SMDH 300-1.5DF	J115
	103.0	190.5	SMDT 3070 MEL+SMDH 300-3D	J117
	103.0	190.5	SMDT 3070 MEL+SMDH 300-3DF	J115
	103.0	190.5	SMDT 3070 MEL+SMDH 300M	J113
	103.0	190.5	SMDT 3070 MSL+SMDH 300-3D	J117
	103.0	190.5	SMDT 3070 MSL+SMDH 300-3DF	J115
	103.0	190.5	SMDT 3070 MSL+SMDH 300M	J113
	103.0	190.5	SMDT 3070 MTL+SMDH 300-3D	J117
	103.0	190.5	SMDT 3070 MTL+SMDH 300-3DF	J115
	103.0	190.5	SMDT 3070 MTL+SMDH 300M	J113
	164.0	260.5	SMDT 3070 MEL+SMDH 300-5D	J117
	164.0	260.5	SMDT 3070 MEL+SMDH 300-5DF	J115
	164.0	260.5	SMDT 3070 MEL+SMDH 300L	J113
	164.0	260.5	SMDT 3070 MSL+SMDH 300-5D	J117
	164.0	260.5	SMDT 3070 MSL+SMDH 300-5DF	J115
	164.0	260.5	SMDT 3070 MSL+SMDH 300L	J113
	164.0	260.5	SMDT 3070 MTL+SMDH 300-5D	J117
	164.0	260.5	SMDT 3070 MTL+SMDH 300-5DF	J115
	164.0	260.5	SMDT 3070 MTL+SMDH 300L	J113
	257.0	350.5	SMDT 3070 MEL+SMDH 300-8D	J117
	257.0	350.5	SMDT 3070 MEL+SMDH 300-8DF	J115
	257.0	350.5	SMDT 3070 MEL+SMDH 300D	J113
	257.0	350.5	SMDT 3070 MSL+SMDH 300-8D	J117
	257.0	350.5	SMDT 3070 MSL+SMDH 300-8DF	J115
	257.0	350.5	SMDT 3070 MSL+SMDH 300D	J113
	257.0	350.5	SMDT 3070 MTL+SMDH 300-8D	J117
	257.0	350.5	SMDT 3070 MTL+SMDH 300-8DF	J115
	257.0	350.5	SMDT 3070 MTL+SMDH 300D	J113
	365.0	450.8	SMDT 3070 MEL+SMDH 300-12D	J117
	365.0	450.8	SMDT 3070 MSL+SMDH 300-12D	J117
	365.0	450.8	SMDT 3070 MTL+SMDH 300-12D	J117
30.8	56.0	138.3	SMDT 3080 MEL+SMDH 300-1.5D	J117
	56.0	138.3	SMDT 3080 MEL+SMDH 300-1.5DF	J115
	56.0	138.3	SMDT 3080 MSL+SMDH 300-1.5D	J117
	56.0	138.3	SMDT 3080 MSL+SMDH 300-1.5DF	J115
	56.0	138.3	SMDT 3080 MTL+SMDH 300-1.5D	J117
	56.0	138.3	SMDT 3080 MTL+SMDH 300-1.5DF	J115
	103.0	190.5	SMDT 3080 MEL+SMDH 300-3D	J117
	103.0	190.5	SMDT 3080 MEL+SMDH 300-3DF	J115
	103.0	190.5	SMDT 3080 MEL+SMDH 300M	J113
	103.0	190.5	SMDT 3080 MSL+SMDH 300-3D	J117
	103.0	190.5	SMDT 3080 MSL+SMDH 300-3DF	J115
	103.0	190.5	SMDT 3080 MSL+SMDH 300M	J113
	103.0	190.5	SMDT 3080 MTL+SMDH 300-3D	J117
	103.0	190.5	SMDT 3080 MTL+SMDH 300-3DF	J115
	103.0	190.5	SMDT 3080 MTL+SMDH 300M	J113
	164.0	260.5	SMDT 3080 MEL+SMDH 300-5D	J117
	164.0	260.5	SMDT 3080 MEL+SMDH 300-5DF	J115
	164.0	260.5	SMDT 3080 MEL+SMDH 300L	J113
	164.0	260.5	SMDT 3080 MSL+SMDH 300-5D	J117
	164.0	260.5	SMDT 3080 MSL+SMDH 300-5DF	J115
	164.0	260.5	SMDT 3080 MSL+SMDH 300L	J113
	164.0	260.5	SMDT 3080 MTL+SMDH 300-5D	J117
	164.0	260.5	SMDT 3080 MTL+SMDH 300-5DF	J115
	164.0	260.5	SMDT 3080 MTL+SMDH 300L	J113
	257.0	350.5	SMDT 3080 MEL+SMDH 300-8D	J117
	257.0	350.5	SMDT 3080 MEL+SMDH 300-8DF	J115
	257.0	350.5	SMDT 3080 MEL+SMDH 300D	J113
	257.0	350.5	SMDT 3080 MSL+SMDH 300-8D	J117
	257.0	350.5	SMDT 3080 MSL+SMDH 300-8DF	J115
	257.0	350.5	SMDT 3080 MSL+SMDH 300D	J113
	257.0	350.5	SMDT 3080 MTL+SMDH 300-8D	J117
	257.0	350.5	SMDT 3080 MTL+SMDH 300-8DF	J115
	257.0	350.5	SMDT 3080 MTL+SMDH 300D	J113
	365.0	450.8	SMDT 3080 MEL+SMDH 300-12D	J117

(Blue text: Flat head ■Indexable cutting edge type)

The 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 ø30.8 to ø42.0mm

Dia. DC	Effective Length LU	Overall Length OAL	Cat. No.	Page
30.8	365.0	450.8	SMDT 3080 MSL+SMDH 300-12D	J117
	365.0	450.8	SMDT 3080 MTL+SMDH 300-12D	J117
31.0	106.0	200.7	SMDT 3100 MTL+SMDH 320M	J113
	170.0	265.8	SMDT 3100 MTL+SMDH 320L	J113
	266.0	360.8	SMDT 3100 MTL+SMDH 320D	J113
32.0	64.0	162.0	PDL 320D2S40	J144
	96.0	194.0	PDL 320D3S40	J144
	106.0	200.7	SMDT 3200 MTL+SMDH 320M	J113
	170.0	265.8	SMDT 3200 MTL+SMDH 320L	J113
	266.0	360.8	SMDT 3200 MTL+SMDH 320D	J113
33.0	111.0	205.9	SMDT 3300 MTL+SMDH 335M	J113
	178.0	274.1	SMDT 3300 MTL+SMDH 335L	J113
	279.0	376.1	SMDT 3300 MTL+SMDH 335D	J113
34.0	116.0	221.2	SMDT 3400 MTL+SMDH 350M	J113
	186.0	296.4	SMDT 3400 MTL+SMDH 350L	J113
	291.0	401.4	SMDT 3400 MTL+SMDH 350D	J113
35.0	116.0	221.2	SMDT 3500 MTL+SMDH 350M	J113
	186.0	296.4	SMDT 3500 MTL+SMDH 350L	J113
	291.0	401.4	SMDT 3500 MTL+SMDH 350D	J113
36.0	121.0	226.4	SMDT 3600 MTL+SMDH 365M	J113
	194.0	301.6	SMDT 3600 MTL+SMDH 365L	J113
	303.0	411.6	SMDT 3600 MTL+SMDH 365D	J113
37.0	125.0	231.7	SMDT 3700 MTL+SMDH 380M	J113
	201.0	311.9	SMDT 3700 MTL+SMDH 380L	J113
	315.0	426.9	SMDT 3700 MTL+SMDH 380D	J113
37.5	125.0	231.7	SMDT 3750 MTL+SMDH 380M	J113
	201.0	311.9	SMDT 3750 MTL+SMDH 380L	J113
	315.0	426.9	SMDT 3750 MTL+SMDH 380D	J113
38.0	125.0	231.7	SMDT 3800 MTL+SMDH 380M	J113
	201.0	311.9	SMDT 3800 MTL+SMDH 380L	J113
	315.0	426.9	SMDT 3800 MTL+SMDH 380D	J113
39.0	130.0	237.0	SMDT 3900 MTL+SMDH 395M	J113
	209.0	322.2	SMDT 3900 MTL+SMDH 395L	J113
	328.0	437.2	SMDT 3900 MTL+SMDH 395D	J113
40.0	80.0	185.0	PDL 400D2S40	J144
	120.0	225.0	PDL 400D3S40	J144
	135.0	252.2	SMDT 4000 MTL+SMDH 410M	J113
	217.0	332.5	SMDT 4000 MTL+SMDH 410L	J113
	340.0	457.5	SMDT 4000 MTL+SMDH 410D	J113
40.5	135.0	252.2	SMDT 4050 MTL+SMDH 410M	J113
	217.0	332.5	SMDT 4050 MTL+SMDH 410L	J113
	340.0	457.5	SMDT 4050 MTL+SMDH 410D	J113
41.0	135.0	252.2	SMDT 4100 MTL+SMDH 410M	J113
	217.0	332.5	SMDT 4100 MTL+SMDH 410L	J113
	340.0	457.5	SMDT 4100 MTL+SMDH 410D	J113
42.0	140.0	257.5	SMDT 4200 MTL+SMDH 425M	J113
	225.0	342.7	SMDT 4200 MTL+SMDH 425L	J113
	352.0	467.7	SMDT 4200 MTL+SMDH 425D	J113

(Blue text: Flat head ■Indexable cutting edge type)

The 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.

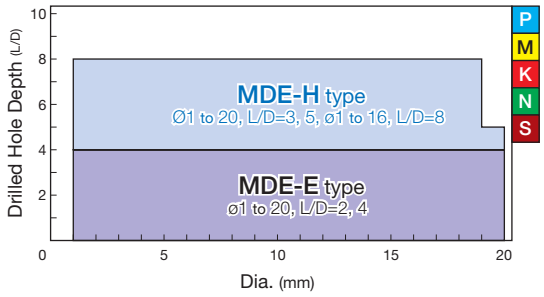
MEMO

Application Range of Major Drills

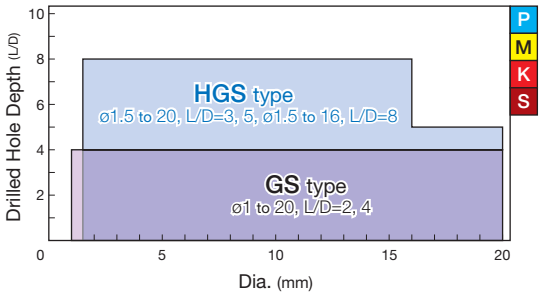
Coolant: **External supply** / Internal supply

■ Solid Carbide Drills

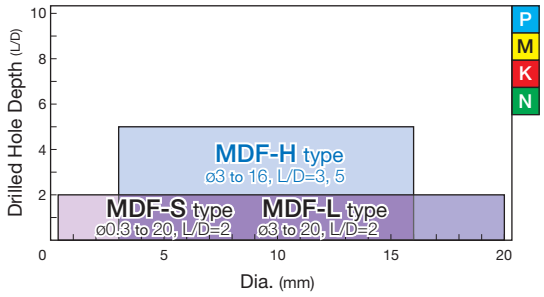
General-purpose MULTIDRILL NeXEO MDE series J8



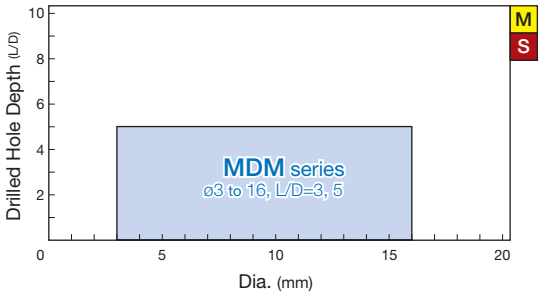
GS/HGS type for General-purpose High-efficiency Drilling J38



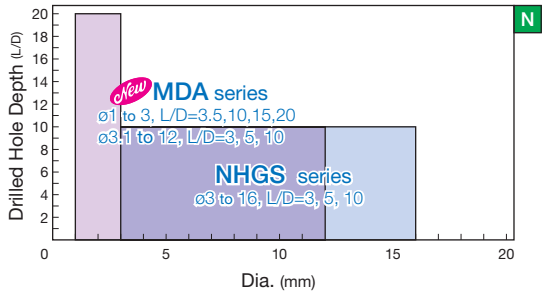
Flat MULTIDRILL MDF series J26



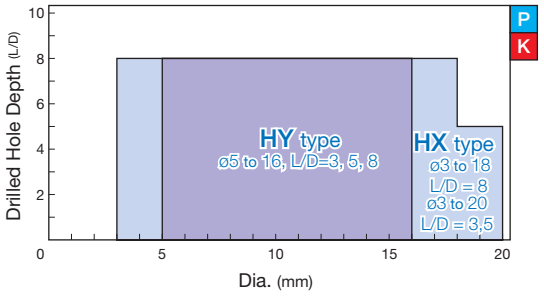
MDM series for Stainless Steel and Exotic Alloy Drilling J52



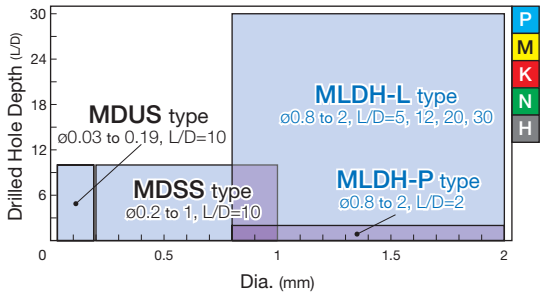
MDA series for Non-Ferrous Metal Drilling J84
NHGS series for High-efficiency Drilling of Aluminum Alloy J92



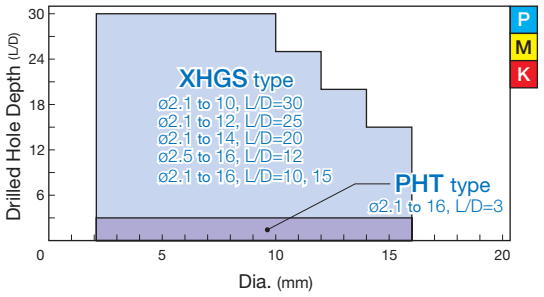
For Steel / Cast Iron: HX type J62
For High-efficiency Drilling: HY type J70



Small Diameter Long Drill MLDH-L type / MLDH-P type J99
MDUS type / MDSS type Very Small Diameter Drills J102

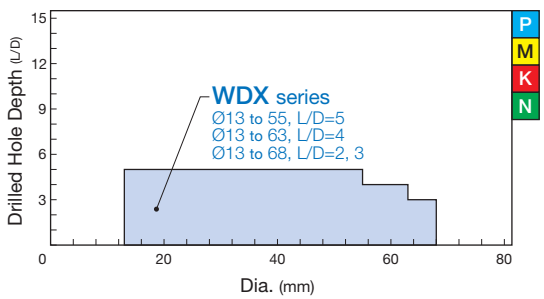


XHGS/PHT type for High-efficiency Deep Hole Drilling J76



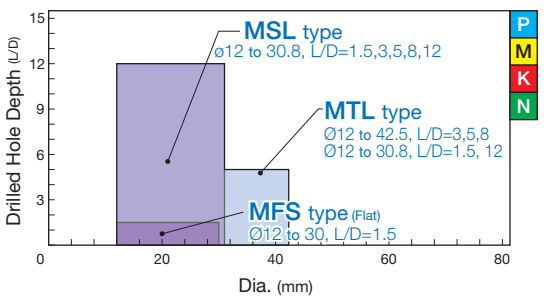
■ Indexable Insert type Drills

SumiDrill WDX series J128



■ Indexable Head Drills

SEC-MULTIDRILL SMD series
MTL type Head / MSL type Head / MFS type Head J104



MEMO

Drill Coating

General-purpose grade

ACT100
ACT70

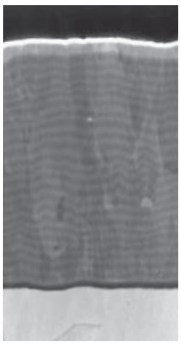
MULTIDRILL NeXEO
- Next for Everyone -

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

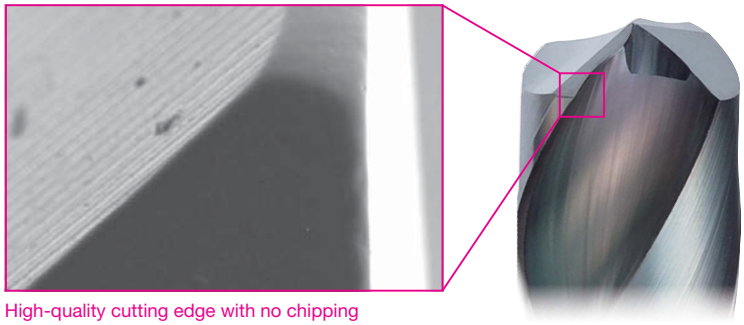


■ Features

● High-quality, high-hardness, high-strength coating based on ABSOTECH™ technology achieves excellent wear and thermal resistance.

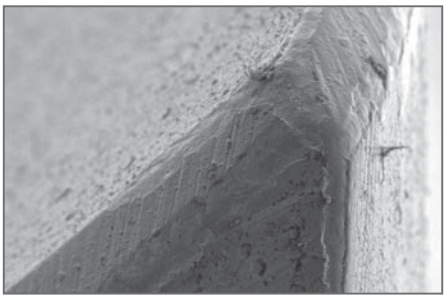
● Resistant to shoulder chipping ● High-quality edge provides stable tool life

MULTIDRILL NeXEO MDE series



High-quality cutting edge with no chipping

Competitor's Product A



Chipping in edge coating

DEX Coat

■ General Features

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

■ Features

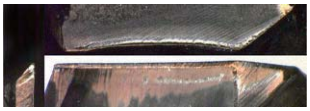
● Coating Structure
World's first compound super multi-layered coating made from alternate layers of two super multi-layered substrates.

Cross section SEM image

● Silicon and chrome improve wear, thermal and adhesion resistance.

● Super multi-layered structure offers improved chipping resistance

■ DEX Coat Application Examples

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

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

Drill Coating

AURORA Coat X DLX1700

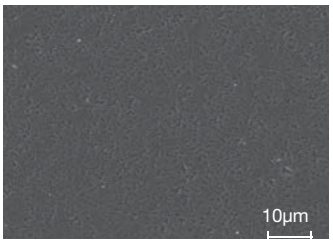
■ General Features

AURORA Coat X, which has ultra-enhanced smoothness through our proprietary new coating technology, low coefficient of friction and high-hardness thin DLC (Diamond Like Carbon) layer, improves wear and adhesion resistance, to realise long and stable tool life in drilling of aluminum alloys and non-ferrous metals.

■ Features

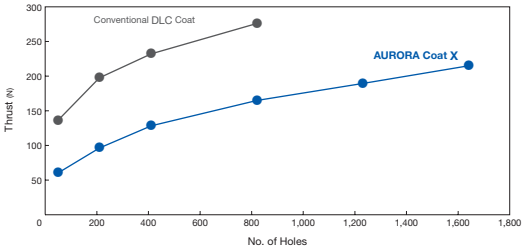
- Thin, ultra-smooth DLC coating
  Significantly improved adhesion resistance in drilling of aluminum alloy and non-ferrous metals
  Significantly reduced cutting force, contributing to stable long tool life

● Coating Surface Properties



(SEM image)

● Cutting Force



Work Material: ADC12 Machine: Vertical Machining Centre BT30 Tool: MDA0600S06H05 (ø6mm × 5D)
Cutting Conditions: vc = 180m/min f = 0.2mm/rev Internal Coolant Supply (Water-soluble)

AURORA Coat DL1300 DL1500

■ General Features

High-hardness, low-friction coefficient AURORA Coat has excellent adhesion resistance in drilling of aluminum alloy and non-ferrous metals, and works in combination with special cutting edge shapes to achieve stable tool life.

■ Features

- Thin, smooth DLC coating with a low coefficient of friction
  Suppresses adhesion to the cutting edge and reduces cutting force during drilling of aluminum alloy and non-ferrous metals
- High adhesion strength withstands violent cutting conditions
  The world's first coating applicable to cutting tools, with our proprietary coating technique improving adhesion strength

■ AURORA Coat Application Examples

AURORA Coat Super MULTIDRILL NHGS series (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 : vc = 200m/min, f = 1.0mm/rev, H = 32mm, Internal Coolant Supply

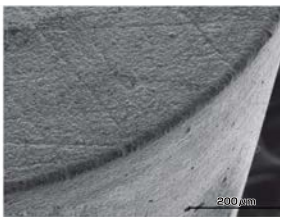
SUMIDIA Coat

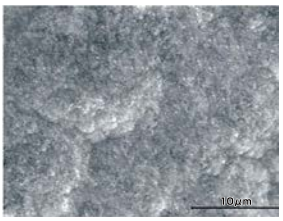
■ General Features

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

■ Features

- Creating a fine-grained 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 : vc = 130m/min, f = 0.075mm/rev, H = 15mm, through hole Dry

NeXEO MDE series

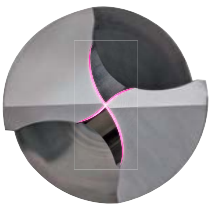
■ General Features

- 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 Coat made with ABSOTECH™ technology for excellent wear resistance and thermal resistance.
- Low resistance chip breaking.

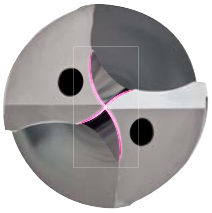
■ Features and Applications

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

RX THINNING + Arc Shaped Cutting Lip

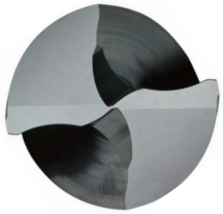


External Coolant Supply

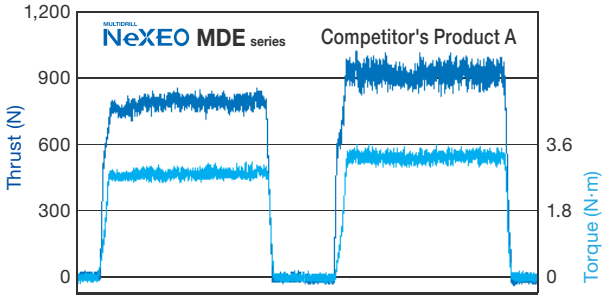


Internal Coolant Supply

Overlap Thinning



For Hub Drilling

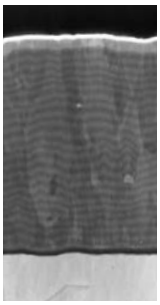


Work Material : S50C
Diameter : ø8mm
Hole Depth : 5D
Cutting Conditions : vc = 80m/min, f = 0.15mm/rev, H = 38mm (through), Internal Coolant Supply (water soluble)

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

General-purpose grade

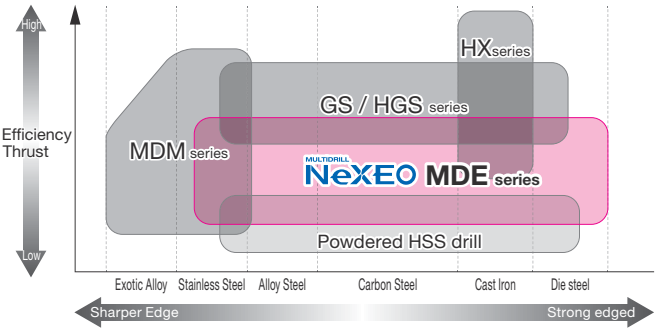
ACT100



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

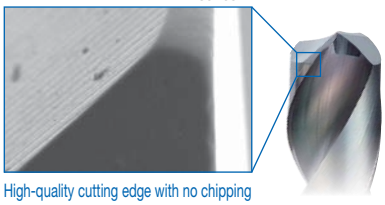
Highly Adhesive Layer

- **Micro-grained carbide substrate**
  Achieves both wear and fracture resistance
- **NX Coat**
  ABSOTECH™ technology for high quality, high hardness, high strength and excellent wear resistance and thermal resistance.



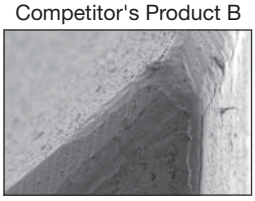
- **High-quality edge provides stable tool life**

MULTIDRILL NeXEO MDE series



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

MULTIDRILL NeXEO MDE series

Chips are broken into small pieces

Competitor's Product C

Elongated chips

Work Material : S50C
Diameter : ø9mm
Hole Depth : 5D
Cutting Conditions : vc = 80m/min, f = 0.15mm/rev, Internal Coolant Supply (water soluble)

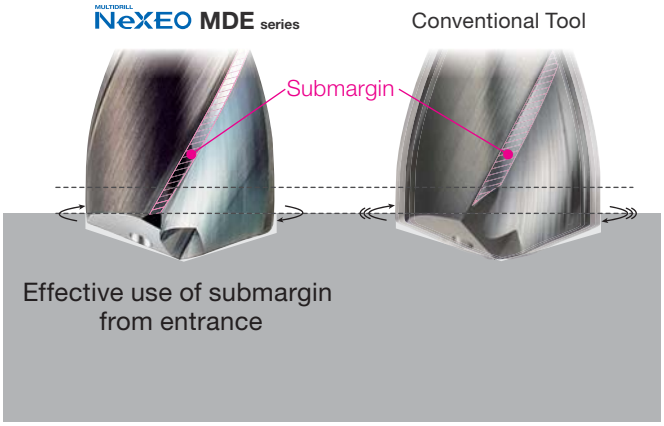
NeXEO MDE series

● Drills holes with good precision and high quality

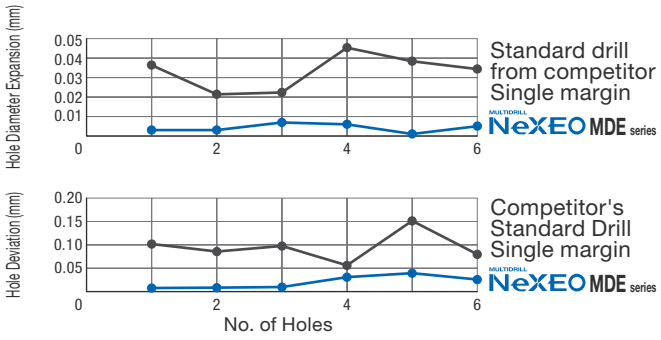
Internal Coolant Supply: Double margin

External Coolant Supply: Single margin

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

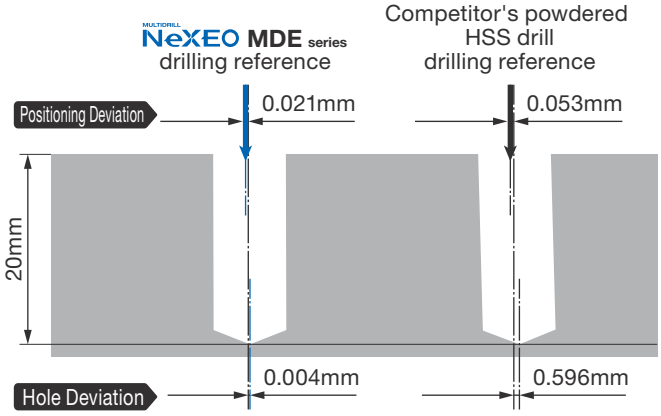


● Comparison of hole precision (die steel drilling)



Work Material : DH31S (49HRC)
Tool : MDE 0800S08H05 (ø8mmx5D)
Cutting Conditions : vc = 17m/min, f = 0.07mm/rev, Internal Coolant Supply (water soluble)

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



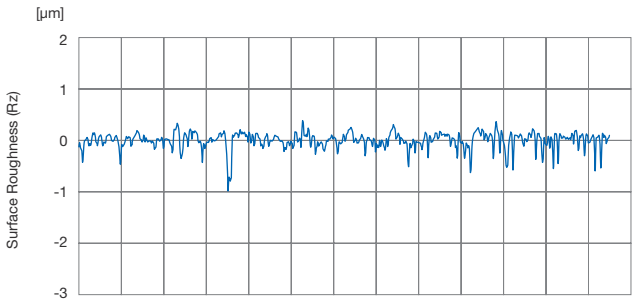
Good hole position accuracy
Minimal hole deviation

Work Material : NAK55
Tool : MDE 0680S07E04 (ø6.8mmx4D)
Cutting Conditions : vc = 50m/min, f = 0.1mm/rev, H = 20mm, External Coolant Supply (water soluble)

● Comparison of hole wall

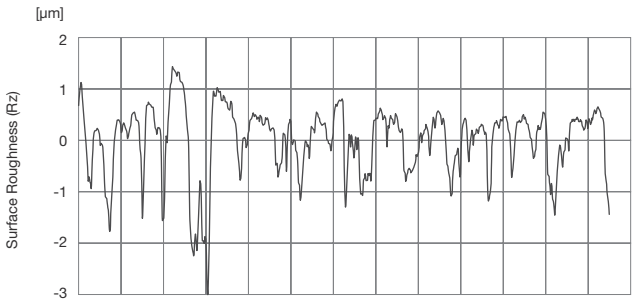
NeXEO MDE series

Shiny and good



Competitor's powdered HSS drill

Cloudiness due to blemishes

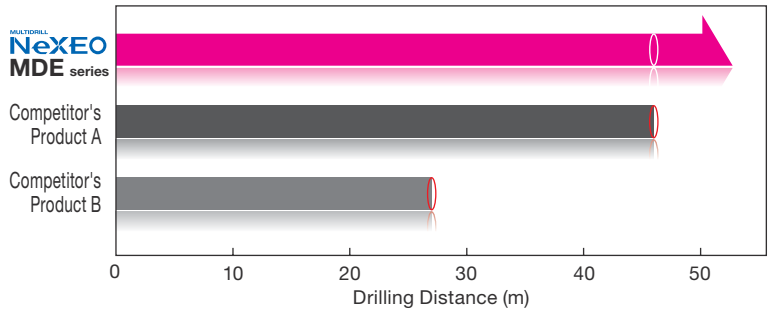


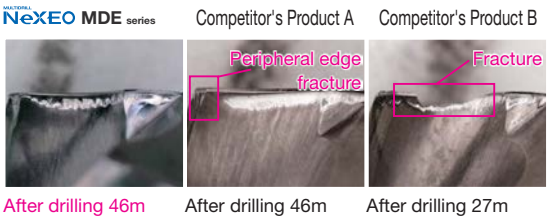
NeXEO MDE series

■ Application Examples

High Carbon Steel

ACT100 grade achieves high wear resistance and peripheral edge fracture resistance





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

Work Material: S50C, Machine: BT30 Vertical Machining Centre, Tool: MDE 0800S08H05 (ø8mmx5D)
Cutting Conditions: vc = 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

NeXEO MDE series

Chips are broken into small pieces

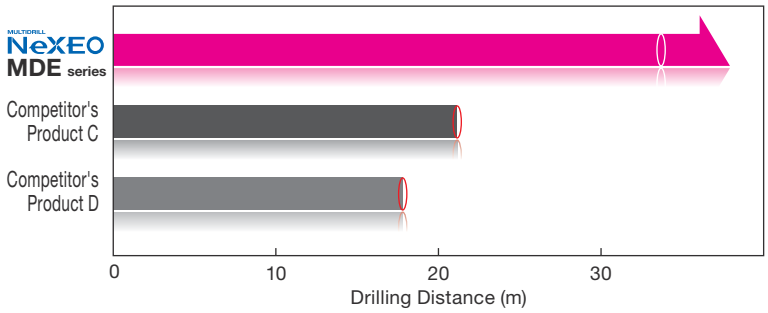
Conventional Tool A

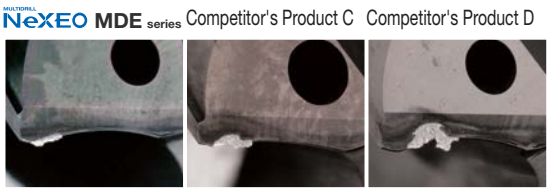
Elongated chips

Work Material: SM material (machine tool frame), Machine: Large double column machining centre, Tool: MDE 1150S12H05 (ø11.5mmx5D)
Cutting Conditions: vc = 100m/min, f = 0.25mm/rev, Internal Coolant Supply (water soluble), Drilling Distance: approx. 20m per 30 min

Ultra-hard Alloy Steel

ACT100 grade and new edge design prevent workpiece adhesion fracture





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

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

Stainless Steel

Stable drilling of stainless steel on a lathe

NeXEO MDE series

Conventional Tool B

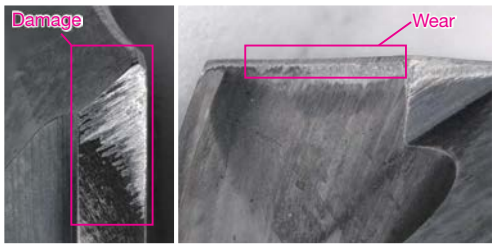
Work Material: SUS310, Machine: NC lathe (workpiece rotates), Tool: MDE 0350S04H05 (ø3.5mmx5D)
Cutting Conditions: vc = 40m/min, f = 0.05mm/rev, H = 14mm, Internal Coolant Supply (non-water-soluble), No. of Workpieces: 5,000

Ductile Cast Iron

NX Coat reduces margin damage and rake face wear

NeXEO MDE series

Competitor's Product E



Work Material: FCD450, Machine: HSK63 machining centre, Tool: MDE 079S08H05 (ø7.9mmx5D), with hole
Cutting Conditions: vc = 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 series No. of Workpieces: 12,000 holes

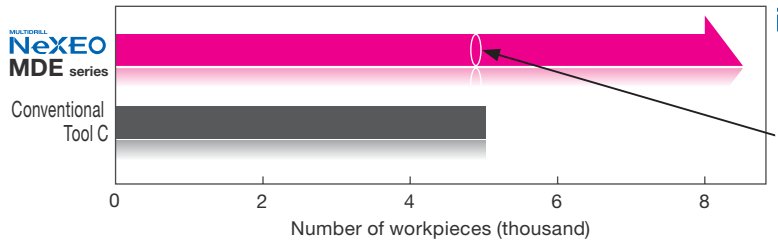
Competitor's Product F: Powdered HSS drill No. of Workpieces: 1,200 holes

Work Material: S15C (automotive parts), Machine: BT30 small machining centre
Tool: MDE 0680S07E04 (ø6.8mm x 4D)
Cutting Conditions: vc = 60m/min, f = 0.15mm/rev External Coolant Supply (non-water-soluble)

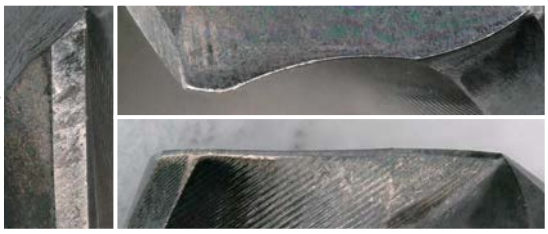
Tool: Competitor's Product F Powdered HSS drill (ø6.8mm x 4D)
Cutting Conditions: vc = 40m/min, f = 0.15mm/rev External Coolant Supply (non-water-soluble)

Stainless Steel, Small Lathe

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



NeXEO MDE series

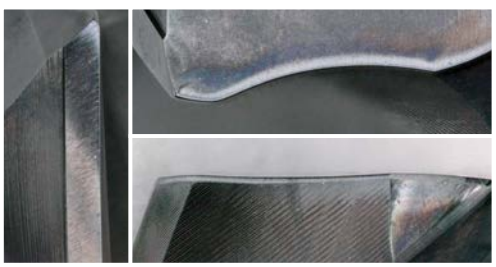


Work Material: SUS316L (95 to 100HRB) (plugs), Machine: Automatic CNC lathe (workpiece rotates), Tool: MDE 0680S07E2 (ø6.8mmx2D)
Cutting Conditions: vc = 50m/min, f = 0.09mm/rev, External Coolant Supply (non-water-soluble)

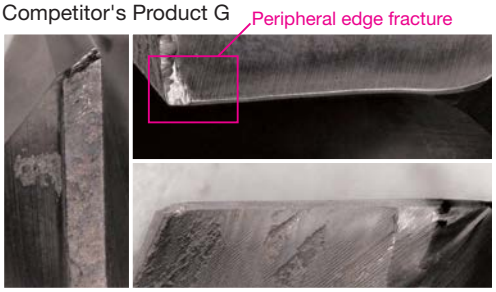
High Carbon Steel, Small Machining Centre

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

NeXEO MDE series



Competitor's Product G



Work Material: S48C, Machine: BT30 small machining centre, Tool: MDE 0830S07E4 (ø8.3mmx4D)
Cutting Conditions: vc = 30m/min, f = 0.08mm/rev, External Coolant Supply (non-water soluble), No. of Workpieces: 150

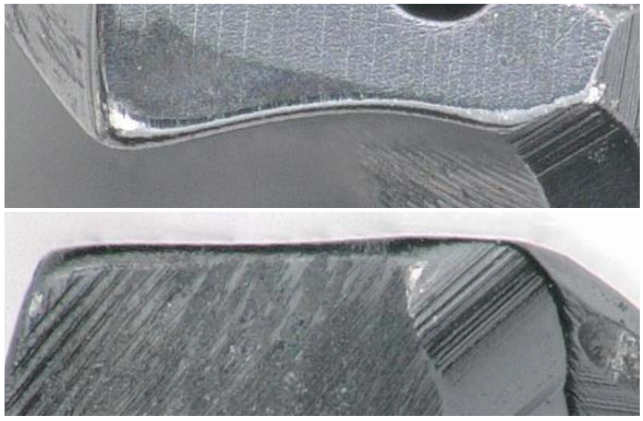
NeXEO MDE series

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

■ Application Examples

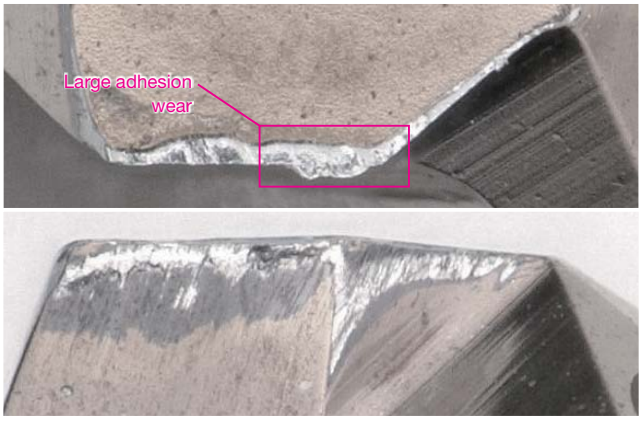
Low Carbon Steel

NeXEO MDE series



After drilling 900 holes

Competitor's Product H

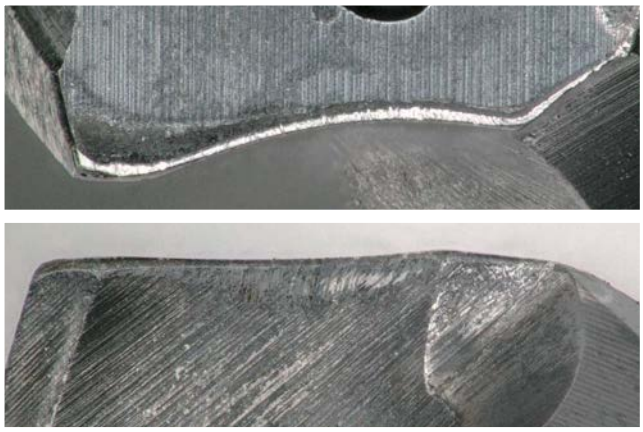


After drilling 900 holes

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

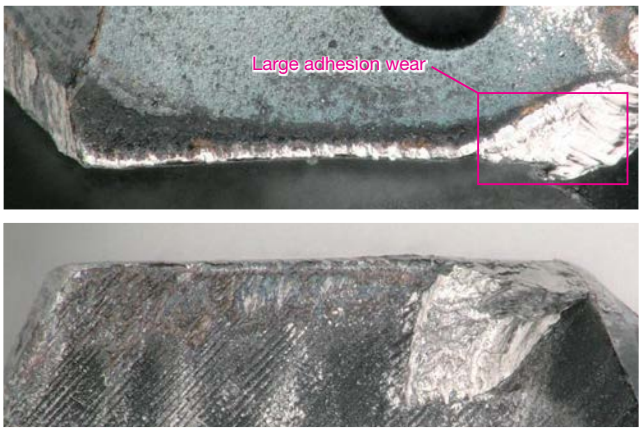
Stainless Steel

NeXEO MDE series



After drilling 3,840 holes

Conventional Tool D



After drilling 3,840 holes

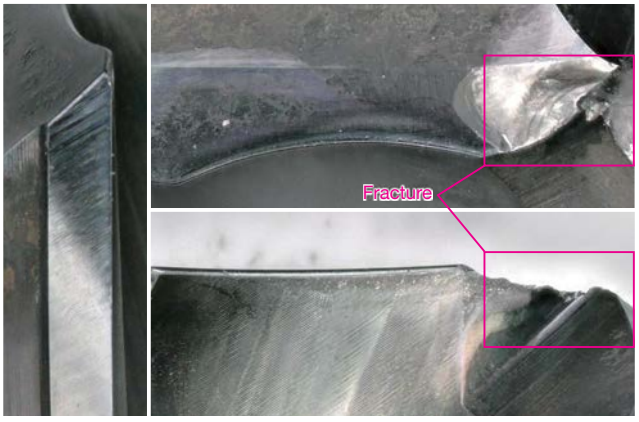
Work Material: SUS304, Machine: BT30 vertical machining centre, Tool: MDE 0200S03H05 (ø2.0mmx5D), with hole
Cutting Conditions: vc = 40m/min, f = 0.04mm/rev, H = 10mm (through), Internal Coolant Supply (water soluble)

Hole for Press-fitting Bolt in Inner Shaft of Hub

NeXEO MDE series

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

Conventional Tool 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: vc = 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 N36 for the tolerance of h6 and h8

Fig 1 (single margin)

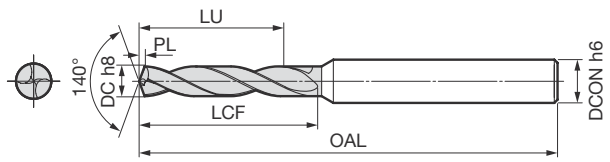
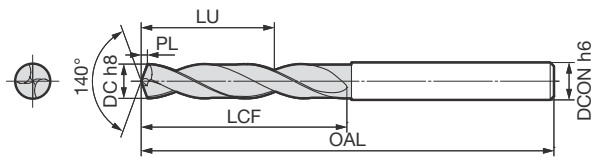


Fig 2 (single margin)



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	0.2	3.0	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	0.2	3.0	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	0.2	3.0	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	0.2	3.0	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	0.3	3.0	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	0.3	3.0	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	0.3	3.0	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	0.3	3.0	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	0.3	3.0	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	0.3	3.0	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	0.4	3.0	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	0.4	3.0	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	0.4	3.0	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	0.4	3.0	1
2.4	2	●	MDE 0240S03E02	10.8	14.4	45.4	0.4	3.0	2
	4	●	0240S03E04	14.8	18.4	49.4	0.4	3.0	2
2.5	2	●	MDE 0250S03E02	10.8	14.5	45.5	0.5	3.0	2
	4	●	0250S03E04	14.8	18.5	49.5	0.5	3.0	2
2.6	2	●	MDE 0260S03E02	11.6	15.5	45.5	0.5	3.0	2
	4	●	0260S03E04	15.6	19.5	49.5	0.5	3.0	2
2.7	2	●	MDE 0270S03E02	11.5	15.5	45.5	0.5	3.0	2
	4	●	0270S03E04	15.5	19.5	49.5	0.5	3.0	2
2.76	2	●	MDE 0276S03E02	11.3	15.5	45.5	0.5	3.0	2
2.78	2	●	0278S03E02	11.3	15.5	45.5	0.5	3.0	2
2.8	2	●	MDE 0280S03E02	11.3	15.5	45.5	0.5	3.0	2
	4	●	0280S03E04	15.3	19.5	49.5	0.5	3.0	2
2.9	2	●	MDE 0290S03E02	11.2	15.5	45.5	0.5	3.0	2
	4	●	0290S03E04	15.2	19.5	49.5	0.5	3.0	2
3.0	2	●	MDE 0300S03E02	9.0	13.5	45.5	0.5	3.0	2
	4	●	0300S03E04	15.0	19.5	49.5	0.5	3.0	2

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	2
	4	●	0310S04E04	20.0	24.6	60.6	0.6	4.0	2
3.2	2	●	MDE 0320S04E02	14.8	19.6	54.6	0.6	4.0	2
	4	●	0320S04E04	19.8	24.6	60.6	0.6	4.0	2
3.3	2	●	MDE 0330S04E02	14.7	19.6	54.6	0.6	4.0	2
	4	●	0330S04E04	19.7	24.6	60.6	0.6	4.0	2
3.4	2	●	MDE 0340S04E02	14.5	19.6	54.6	0.6	4.0	2
	4	●	0340S04E04	19.5	24.6	60.6	0.6	4.0	2
3.5	2	●	MDE 0350S04E02	14.4	19.6	54.6	0.6	4.0	2
	4	●	0350S04E04	19.4	24.6	60.6	0.6	4.0	2
3.6	2	●	MDE 0360S04E02	16.3	21.7	54.7	0.7	4.0	2
	4	●	0360S04E04	22.3	27.7	60.7	0.7	4.0	2
3.66	2	●	MDE 0366S04E02	16.2	21.7	54.7	0.7	4.0	2
3.68	2	●	0368S04E02	16.2	21.7	54.7	0.7	4.0	2
3.7	2	●	MDE 0370S04E02	16.2	21.7	54.7	0.7	4.0	2
	4	●	0370S04E04	22.2	27.7	60.7	0.7	4.0	2
3.8	2	●	MDE 0380S04E02	16.0	21.7	54.7	0.7	4.0	2
	4	●	0380S04E04	22.0	27.7	60.7	0.7	4.0	2
3.9	2	●	MDE 0390S04E02	15.9	21.7	54.7	0.7	4.0	2
	4	●	0390S04E04	21.9	27.7	60.7	0.7	4.0	2
4.0	2	●	MDE 0400S04E02	15.7	21.7	54.7	0.7	4.0	2
	4	●	0400S04E04	21.7	27.7	60.7	0.7	4.0	2
4.1	2	●	MDE 0410S05E02	17.6	23.7	61.7	0.7	5.0	2
	4	●	0410S05E04	25.6	31.7	76.7	0.7	5.0	2
4.2	2	●	MDE 0420S05E02	17.5	23.8	61.8	0.8	5.0	2
	4	●	0420S05E04	25.5	31.8	76.8	0.8	5.0	2
4.3	2	●	MDE 0430S05E02	17.4	23.8	61.8	0.8	5.0	2
	4	●	0430S05E04	25.4	31.8	76.8	0.8	5.0	2
4.4	2	●	MDE 0440S05E02	17.2	23.8	61.8	0.8	5.0	2
	4	●	0440S05E04	25.2	31.8	76.8	0.8	5.0	2
4.5	2	●	MDE 0450S05E02	17.1	23.8	61.8	0.8	5.0	2
	4	●	0450S05E04	25.1	31.8	76.8	0.8	5.0	2
4.6	2	●	MDE 0460S05E02	18.9	25.8	61.8	0.8	5.0	2
	4	●	0460S05E04	31.9	38.8	76.8	0.8	5.0	2
4.62	2	●	MDE 0462S05E02	18.9	25.8	61.8	0.8	5.0	2
4.64	2	●	0464S05E02	18.9	25.8	61.8	0.8	5.0	2
4.7	2	●	MDE 0470S05E02	18.9	25.9	61.9	0.9	5.0	2
	4	●	0470S05E04	31.9	38.9	76.9	0.9	5.0	2
4.8	2	●	MDE 0480S05E02	18.7	25.9	61.9	0.9	5.0	2
	4	●	0480S05E04	31.7	38.9	76.9	0.9	5.0	2
4.9	2	●	MDE 0490S05E02	18.6	25.9	61.9	0.9	5.0	2
	4	●	0490S05E04	31.6	38.9	76.9	0.9	5.0	2
5.0	2	●	MDE 0500S05E02	18.4	25.9	61.9	0.9	5.0	2
	4	●	0500S05E04	31.4	38.9	76.9	0.9	5.0	2

Grade: ACT100

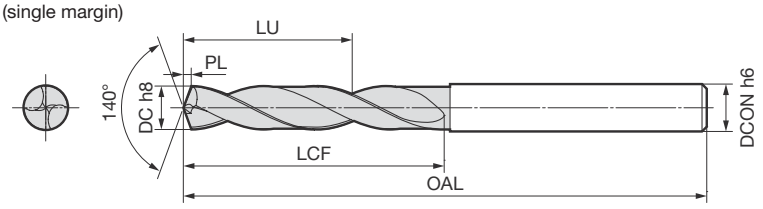
NeXEO MDE-E type (External Coolant Supply)

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 N36 for the tolerance of h6 and h8

Fig 2 (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	2
	4	●	0510S06E04	32.3	39.9	81.9	0.9	6.0	2
5.2	2	●	MDE 0520S06E02	18.1	25.9	65.9	0.9	6.0	2
	4	●	0520S06E04	32.1	39.9	81.9	0.9	6.0	2
5.3	2	●	MDE 0530S06E02	18.1	26.0	66.0	1.0	6.0	2
	4	●	0530S06E04	32.1	40.0	82.0	1.0	6.0	2
5.4	2	●	MDE 0540S06E02	17.9	26.0	66.0	1.0	6.0	2
	4	●	0540S06E04	31.9	40.0	82.0	1.0	6.0	2
5.5	2	●	MDE 0550S06E02	17.8	26.0	66.0	1.0	6.0	2
	4	●	0550S06E04	31.8	40.0	82.0	1.0	6.0	2
5.52	2	●	MDE 0552S06E02	19.6	28.0	66.0	1.0	6.0	2
5.54	2	●	0554S06E02	19.6	28.0	66.0	1.0	6.0	2
5.6	2	●	MDE 0560S06E02	19.6	28.0	66.0	1.0	6.0	2
	4	●	0560S06E04	33.6	42.0	82.0	1.0	6.0	2
5.7	2	●	MDE 0570S06E02	19.5	28.0	66.0	1.0	6.0	2
	4	●	0570S06E04	33.5	42.0	82.0	1.0	6.0	2
5.8	2	●	MDE 0580S06E02	19.4	28.1	66.1	1.1	6.0	2
	4	●	0580S06E04	33.4	42.1	82.1	1.1	6.0	2
5.9	2	●	MDE 0590S06E02	19.3	28.1	66.1	1.1	6.0	2
	4	●	0590S06E04	33.3	42.1	82.1	1.1	6.0	2
6.0	2	●	MDE 0600S06E02	19.1	28.1	66.1	1.1	6.0	2
	4	●	0600S06E04	33.1	42.1	82.1	1.1	6.0	2
6.1	2	●	MDE 0610S07E02	23.0	32.1	74.1	1.1	7.0	2
	4	●	0610S07E04	34.0	43.1	84.1	1.1	7.0	2
6.2	2	●	MDE 0620S07E02	22.8	32.1	74.1	1.1	7.0	2
	4	●	0620S07E04	33.8	43.1	84.1	1.1	7.0	2
6.3	2	●	MDE 0630S07E02	22.7	32.1	74.1	1.1	7.0	2
	4	●	0630S07E04	33.7	43.1	84.1	1.1	7.0	2
6.4	2	●	MDE 0640S07E02	22.6	32.2	74.2	1.2	7.0	2
	4	●	0640S07E04	33.6	43.2	84.2	1.2	7.0	2
6.5	2	●	MDE 0650S07E02	22.5	32.2	74.2	1.2	7.0	2
	4	●	0650S07E04	33.5	43.2	84.2	1.2	7.0	2
6.6	2	●	MDE 0660S07E02	24.3	34.2	74.2	1.2	7.0	2
	4	●	0660S07E04	34.3	44.2	84.2	1.2	7.0	2
6.7	2	●	MDE 0670S07E02	24.2	34.2	74.2	1.2	7.0	2
	4	●	0670S07E04	34.2	44.2	84.2	1.2	7.0	2
6.8	2	●	MDE 0680S07E02	24.0	34.2	74.2	1.2	7.0	2
	4	●	0680S07E04	34.0	44.2	84.2	1.2	7.0	2
6.9	2	●	MDE 0690S07E02	24.0	34.3	74.3	1.3	7.0	2
	4	●	0690S07E04	34.0	44.3	84.3	1.3	7.0	2
7.0	2	●	MDE 0700S07E02	23.8	34.3	74.3	1.3	7.0	2
	4	●	0700S07E04	33.8	44.3	84.3	1.3	7.0	2
7.1	2	●	MDE 0710S08E02	23.7	34.3	79.3	1.3	8.0	2
	4	●	0710S08E04	35.7	46.3	91.3	1.3	8.0	2

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	2
	4	●	0720S08E04	35.5	46.3	91.3	1.3	8.0	2
7.3	2	●	MDE 0730S08E02	23.4	34.3	79.3	1.3	8.0	2
	4	●	0730S08E04	35.4	46.3	91.3	1.3	8.0	2
7.36	2	●	MDE 0736S08E02	23.2	34.3	79.3	1.3	8.0	2
7.38	2	●	0738S08E02	23.2	34.3	79.3	1.3	8.0	2
7.4	2	●	MDE 0740S08E02	23.2	34.3	79.3	1.3	8.0	2
	4	●	0740S08E04	35.2	46.3	91.3	1.3	8.0	2
7.5	2	●	MDE 0750S08E02	23.2	34.4	79.4	1.4	8.0	2
	4	●	0750S08E04	35.2	46.4	91.4	1.4	8.0	2
7.52	2	●	MDE 0752S08E02	26.0	37.4	79.4	1.4	8.0	2
7.54	2	●	0754S08E02	26.0	37.4	79.4	1.4	8.0	2
7.6	2	●	MDE 0760S08E02	26.0	37.4	79.4	1.4	8.0	2
	4	●	0760S08E04	38.0	49.4	91.4	1.4	8.0	2
7.7	2	●	MDE 0770S08E02	25.9	37.4	79.4	1.4	8.0	2
	4	●	0770S08E04	37.9	49.4	91.4	1.4	8.0	2
7.8	2	●	MDE 0780S08E02	25.7	37.4	79.4	1.4	8.0	2
	4	●	0780S08E04	37.7	49.4	91.4	1.4	8.0	2
7.9	2	●	MDE 0790S08E02	25.6	37.4	79.4	1.4	8.0	2
	4	●	0790S08E04	37.6	49.4	91.4	1.4	8.0	2
8.0	2	●	MDE 0800S08E02	25.5	37.5	79.5	1.5	8.0	2
	4	●	0800S08E04	37.5	49.5	91.5	1.5	8.0	2
8.1	2	●	MDE 0810S09E02	25.4	37.5	83.5	1.5	9.0	2
	4	●	0810S09E04	42.4	54.5	99.5	1.5	9.0	2
8.2	2	●	MDE 0820S09E02	25.2	37.5	83.5	1.5	9.0	2
	4	●	0820S09E04	42.2	54.5	99.5	1.5	9.0	2
8.3	2	●	MDE 0830S09E02	25.1	37.5	83.5	1.5	9.0	2
	4	●	0830S09E04	42.1	54.5	99.5	1.5	9.0	2
8.4	2	●	MDE 0840S09E02	24.9	37.5	83.5	1.5	9.0	2
	4	●	0840S09E04	41.9	54.5	99.5	1.5	9.0	2
8.5	2	●	MDE 0850S09E02	24.8	37.5	83.5	1.5	9.0	2
	4	●	0850S09E04	41.8	54.5	99.5	1.5	9.0	2
8.6	2	●	MDE 0860S09E02	26.7	39.6	83.6	1.6	9.0	2
	4	●	0860S09E04	43.7	56.6	99.6	1.6	9.0	2
8.7	2	●	MDE 0870S09E02	26.6	39.6	83.6	1.6	9.0	2
	4	●	0870S09E04	43.6	56.6	99.6	1.6	9.0	2
8.8	2	●	MDE 0880S09E02	26.4	39.6	83.6	1.6	9.0	2
	4	●	0880S09E04	43.4	56.6	99.6	1.6	9.0	2
8.9	2	●	MDE 0890S09E02	26.3	39.6	83.6	1.6	9.0	2
	4	●	0890S09E04	43.3	56.6	99.6	1.6	9.0	2
9.0	2	●	MDE 0900S09E02	26.1	39.6	83.6	1.6	9.0	2
	4	●	0900S09E04	43.1	56.6	99.6	1.6	9.0	2
9.1	2	●	MDE 0910S10E02	26.1	39.7	88.7	1.7	10.0	2
	4	●	0910S10E04	46.1	59.7	106.7	1.7	10.0	2

Grade: ACT100

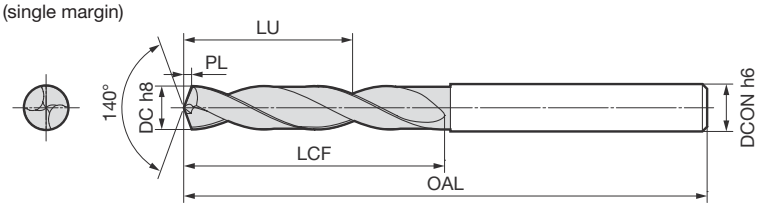
NeXEO MDE-E type (External Coolant Supply)

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 N36 for the tolerance of h6 and h8

Fig 2 (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	2
	4	●	0920S10E04	45.9	59.7	106.7	1.7	10.0	2
9.24	2	●	MDE 0924S10E02	25.8	39.7	88.7	1.7	10.0	2
9.26	2	●	0926S10E02	25.8	39.7	88.7	1.7	10.0	2
9.3	2	●	MDE 0930S10E02	25.8	39.7	88.7	1.7	10.0	2
	4	●	0930S10E04	45.8	59.7	106.7	1.7	10.0	2
9.36	2	●	MDE 0936S10E02	25.6	39.7	88.7	1.7	10.0	2
9.38	2	●	0938S10E02	25.6	39.7	88.7	1.7	10.0	2
9.4	2	●	MDE 0940S10E02	25.6	39.7	88.7	1.7	10.0	2
	4	●	0940S10E04	45.6	59.7	106.7	1.7	10.0	2
9.5	2	●	MDE 0950S10E02	25.5	39.7	88.7	1.7	10.0	2
	4	●	0950S10E04	45.5	59.7	106.7	1.7	10.0	2
9.52	2	●	MDE 0952S10E02	28.3	42.7	88.7	1.7	10.0	2
9.54	2	●	0954S10E02	28.3	42.7	88.7	1.7	10.0	2
9.6	2	●	MDE 0960S10E02	28.3	42.7	88.7	1.7	10.0	2
	4	●	0960S10E04	47.3	61.7	106.7	1.7	10.0	2
9.7	2	●	MDE 0970S10E02	28.3	42.8	88.8	1.8	10.0	2
	4	●	0970S10E04	47.3	61.8	106.8	1.8	10.0	2
9.8	2	●	MDE 0980S10E02	28.1	42.8	88.8	1.8	10.0	2
	4	●	0980S10E04	47.1	61.8	106.8	1.8	10.0	2
9.9	2	●	MDE 0990S10E02	28.0	42.8	88.8	1.8	10.0	2
	4	●	0990S10E04	47.0	61.8	106.8	1.8	10.0	2
10.0	2	●	MDE 1000S10E02	27.8	42.8	88.8	1.8	10.0	2
	4	●	1000S10E04	46.8	61.8	106.8	1.8	10.0	2
10.1	2	●	MDE 1010S11E02	27.7	42.8	94.8	1.8	11.0	2
	4	●	1010S11E04	52.7	67.8	115.8	1.8	11.0	2
10.2	2	●	MDE 1020S11E02	27.6	42.9	94.9	1.9	11.0	2
	4	●	1020S11E04	52.6	67.9	115.9	1.9	11.0	2
10.3	2	●	MDE 1030S11E02	27.5	42.9	94.9	1.9	11.0	2
	4	●	1030S11E04	52.5	67.9	115.9	1.9	11.0	2
10.4	2	●	MDE 1040S11E02	27.3	42.9	94.9	1.9	11.0	2
	4	●	1040S11E04	52.3	67.9	115.9	1.9	11.0	2
10.5	2	●	MDE 1050S11E02	27.2	42.9	94.9	1.9	11.0	2
	4	●	1050S11E04	52.2	67.9	115.9	1.9	11.0	2
10.6	2	●	MDE 1060S11E02	31.0	46.9	94.9	1.9	11.0	2
	4	●	1060S11E04	54.0	69.9	115.9	1.9	11.0	2
10.7	2	●	MDE 1070S11E02	30.9	46.9	94.9	1.9	11.0	2
	4	●	1070S11E04	53.9	69.9	115.9	1.9	11.0	2
10.8	2	●	MDE 1080S11E02	30.8	47.0	95.0	2.0	11.0	2
	4	●	1080S11E04	53.8	70.0	116.0	2.0	11.0	2
10.9	2	●	MDE 1090S11E02	30.7	47.0	95.0	2.0	11.0	2
	4	●	1090S11E04	53.7	70.0	116.0	2.0	11.0	2
11.0	2	●	MDE 1100S11E02	30.5	47.0	95.0	2.0	11.0	2
	4	●	1100S11E04	53.5	70.0	116.0	2.0	11.0	2

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	2
	4	●	1110S12E04	56.4	73.0	123.0	2.0	12.0	2
11.2	2	●	MDE 1120S12E02	30.2	47.0	102.0	2.0	12.0	2
	4	●	1120S12E04	56.2	73.0	123.0	2.0	12.0	2
11.22	2	●	MDE 1122S12E02	30.2	47.0	102.0	2.0	12.0	2
11.24	2	●	1124S12E02	30.2	47.0	102.0	2.0	12.0	2
11.3	2	●	MDE 1130S12E02	30.2	47.1	102.1	2.1	12.0	2
	4	●	1130S12E04	56.2	73.1	123.1	2.1	12.0	2
11.36	2	●	MDE 1136S12E02	30.0	47.1	102.1	2.1	12.0	2
11.38	2	●	1138S12E02	30.0	47.1	102.1	2.1	12.0	2
11.4	2	●	MDE 1140S12E02	30.0	47.1	102.1	2.1	12.0	2
	4	●	1140S12E04	56.0	73.1	123.1	2.1	12.0	2
11.5	2	●	MDE 1150S12E02	29.9	47.1	102.1	2.1	12.0	2
	4	●	1150S12E04	55.9	73.1	123.1	2.1	12.0	2
11.6	2	●	MDE 1160S12E02	31.7	49.1	102.1	2.1	12.0	2
	4	●	1160S12E04	57.7	75.1	123.1	2.1	12.0	2
11.7	2	●	MDE 1170S12E02	31.6	49.1	102.1	2.1	12.0	2
	4	●	1170S12E04	57.6	75.1	123.1	2.1	12.0	2
11.8	2	●	MDE 1180S12E02	31.4	49.1	102.1	2.1	12.0	2
	4	●	1180S12E04	57.4	75.1	123.1	2.1	12.0	2
11.9	2	●	MDE 1190S12E02	31.4	49.2	102.2	2.2	12.0	2
	4	●	1190S12E04	57.4	75.2	123.2	2.2	12.0	2
12.0	2	●	MDE 1200S12E02	31.2	49.2	102.2	2.2	12.0	2
	4	●	1200S12E04	57.2	75.2	123.2	2.2	12.0	2
12.1	2	●	MDE 1210S13E02	31.1	49.2	102.2	2.2	13.0	2
	4	●	1210S13E04	60.1	78.2	139.2	2.2	13.0	2
12.2	2	●	MDE 1220S13E02	30.9	49.2	102.2	2.2	13.0	2
	4	●	1220S13E04	59.9	78.2	139.2	2.2	13.0	2
12.3	2	●	MDE 1230S13E02	30.8	49.2	102.2	2.2	13.0	2
	4	●	1230S13E04	59.8	78.2	139.2	2.2	13.0	2
12.4	2	●	MDE 1240S13E02	30.7	49.3	102.3	2.3	13.0	2
	4	●	1240S13E04	59.7	78.3	139.3	2.3	13.0	2
12.5	2	●	MDE 1250S13E02	30.6	49.3	102.3	2.3	13.0	2
	4	●	1250S13E04	59.6	78.3	139.3	2.3	13.0	2
12.6	2	●	MDE 1260S13E02	32.4	51.3	102.3	2.3	13.0	2
	4	●	1260S13E04	61.4	80.3	139.3	2.3	13.0	2
12.7	2	●	MDE 1270S13E02	32.3	51.3	102.3	2.3	13.0	2
	4	●	1270S13E04	61.3	80.3	139.3	2.3	13.0	2
12.8	2	●	MDE 1280S13E02	32.1	51.3	102.3	2.3	13.0	2
	4	●	1280S13E04	61.1	80.3	139.3	2.3	13.0	2
12.9	2	●	MDE 1290S13E02	32.0	51.3	102.3	2.3	13.0	2
	4	●	1290S13E04	61.0	80.3	139.3	2.3	13.0	2
13.0	2	●	MDE 1300S13E02	31.9	51.4	102.4	2.4	13.0	2
	4	●	1300S13E04	60.9	80.4	139.4	2.4	13.0	2

Grade: ACT100

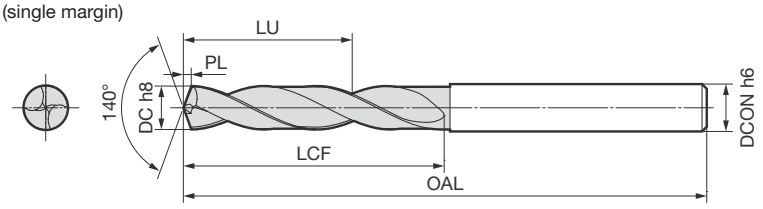
NeXEO MDE-E type (External Coolant Supply)

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 N36 for the tolerance of h6 and h8

Fig 2 (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	2
	4	●	1310S14E04	66.8	86.4	149.4	2.4	14.0	2
13.2	2	●	MDE 1320S14E02	32.6	52.4	107.4	2.4	14.0	2
	4	●	1320S14E04	66.6	86.4	149.4	2.4	14.0	2
13.3	2	●	MDE 1330S14E02	32.5	52.4	107.4	2.4	14.0	2
	4	●	1330S14E04	66.5	86.4	149.4	2.4	14.0	2
13.4	2	●	MDE 1340S14E02	32.3	52.4	107.4	2.4	14.0	2
	4	●	1340S14E04	66.3	86.4	149.4	2.4	14.0	2
13.5	2	●	MDE 1350S14E02	32.3	52.5	107.5	2.5	14.0	2
	4	●	1350S14E04	66.3	86.5	149.5	2.5	14.0	2
13.6	2	●	MDE 1360S14E02	34.1	54.5	107.5	2.5	14.0	2
	4	●	1360S14E04	68.1	88.5	149.5	2.5	14.0	2
13.7	2	●	MDE 1370S14E02	34.0	54.5	107.5	2.5	14.0	2
	4	●	1370S14E04	68.0	88.5	149.5	2.5	14.0	2
13.8	2	●	MDE 1380S14E02	33.8	54.5	107.5	2.5	14.0	2
	4	●	1380S14E04	67.8	88.5	149.5	2.5	14.0	2
13.9	2	●	MDE 1390S14E02	33.7	54.5	107.5	2.5	14.0	2
	4	●	1390S14E04	67.7	88.5	149.5	2.5	14.0	2
14.0	2	●	MDE 1400S14E02	33.5	54.5	107.5	2.5	14.0	2
	4	●	1400S14E04	67.5	88.5	149.5	2.5	14.0	2
14.1	2	●	MDE 1410S15E02	33.5	54.6	110.6	2.6	15.0	2
	4	●	1410S15E04	70.5	91.6	155.6	2.6	15.0	2
14.2	2	●	MDE 1420S15E02	33.3	54.6	110.6	2.6	15.0	2
	4	●	1420S15E04	70.3	91.6	155.6	2.6	15.0	2
14.3	2	●	MDE 1430S15E02	33.2	54.6	110.6	2.6	15.0	2
	4	●	1430S15E04	70.2	91.6	155.6	2.6	15.0	2
14.4	2	●	MDE 1440S15E02	33.0	54.6	110.6	2.6	15.0	2
	4	●	1440S15E04	70.0	91.6	155.6	2.6	15.0	2
14.5	2	●	MDE 1450S15E02	32.9	54.6	110.6	2.6	15.0	2
	4	●	1450S15E04	69.9	91.6	155.6	2.6	15.0	2
14.6	2	●	MDE 1460S15E02	33.8	55.7	110.7	2.7	15.0	2
	4	●	1460S15E04	71.8	93.7	155.7	2.7	15.0	2
14.7	2	●	MDE 1470S15E02	33.7	55.7	110.7	2.7	15.0	2
	4	●	1470S15E04	71.7	93.7	155.7	2.7	15.0	2
14.8	2	●	MDE 1480S15E02	33.5	55.7	110.7	2.7	15.0	2
	4	●	1480S15E04	71.5	93.7	155.7	2.7	15.0	2
14.9	2	●	MDE 1490S15E02	33.4	55.7	110.7	2.7	15.0	2
	4	●	1490S15E04	71.4	93.7	155.7	2.7	15.0	2
15.0	2	●	MDE 1500S15E02	33.2	55.7	110.7	2.7	15.0	2
	4	●	1500S15E04	71.2	93.7	155.7	2.7	15.0	2
15.1	2	●	MDE 1510S16E02	33.1	55.7	114.7	2.7	16.0	2
	4	●	1510S16E04	74.1	96.7	162.7	2.7	16.0	2
15.2	2	●	MDE 1520S16E02	33.0	55.8	114.8	2.8	16.0	2
	4	●	1520S16E04	74.0	96.8	162.8	2.8	16.0	2

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	2
	4	●	1530S16E04	73.9	96.8	162.8	2.8	16.0	2
15.4	2	●	MDE 1540S16E02	32.7	55.8	114.8	2.8	16.0	2
	4	●	1540S16E04	73.7	96.8	162.8	2.8	16.0	2
15.5	2	●	MDE 1550S16E02	32.6	55.8	114.8	2.8	16.0	2
	4	●	1550S16E04	73.6	96.8	162.8	2.8	16.0	2
15.6	2	●	MDE 1560S16E02	34.4	57.8	114.8	2.8	16.0	2
	4	●	1560S16E04	75.4	98.8	162.8	2.8	16.0	2
15.7	2	●	MDE 1570S16E02	34.4	57.9	114.9	2.9	16.0	2
	4	●	1570S16E04	75.4	98.9	162.9	2.9	16.0	2
15.8	2	●	MDE 1580S16E02	34.2	57.9	114.9	2.9	16.0	2
	4	●	1580S16E04	75.2	98.9	162.9	2.9	16.0	2
15.9	2	●	MDE 1590S16E02	34.1	57.9	114.9	2.9	16.0	2
	4	●	1590S16E04	75.1	98.9	162.9	2.9	16.0	2
16.0	2	●	MDE 1600S16E02	33.9	57.9	114.9	2.9	16.0	2
	4	●	1600S16E04	74.9	98.9	162.9	2.9	16.0	2
16.5	2	●	MDE 1650S17E02	34.3	59.0	119.0	3.0	17.0	2
	4	●	1650S17E04	76.3	101.0	170.0	3.0	17.0	2
16.8	4	●	MDE 1680S17E04	75.9	101.1	170.1	3.1	17.0	2
17.0	2	●	MDE 1700S17E02	34.6	60.1	119.1	3.1	17.0	2
	4	●	1700S17E04	75.7	101.2	170.2	3.2	17.0	2
17.5	2	●	MDE 1750S18E02	35.0	61.2	123.2	3.2	18.0	2
	4	●	1750S18E04	77.0	103.2	170.2	3.2	18.0	2
18.0	2	●	MDE 1800S18E02	35.3	62.3	123.3	3.3	18.0	2
	4	●	1800S18E04	78.3	105.3	170.3	3.3	18.0	2
18.5	2	●	MDE 1850S19E02	34.7	62.4	126.4	3.4	19.0	2
	4	●	1850S19E04	79.7	107.4	182.4	3.4	19.0	2
19.0	2	●	MDE 1900S19E02	35.0	63.5	126.5	3.5	19.0	2
	4	●	1900S19E04	80.9	109.4	182.4	3.4	19.0	2
19.5	2	●	MDE 1950S20E02	35.3	64.5	130.5	3.5	20.0	2
	4	●	1950S20E04	84.3	113.5	182.5	3.5	20.0	2
19.7	4	●	MDE 1970S20E04	88.1	117.6	182.6	3.6	20.0	2
20.0	2	●	MDE 2000S20E02	35.6	65.6	130.6	3.6	20.0	2
	4	●	2000S20E04	87.6	117.6	182.6	3.6	20.0	2

Grade: ACT100

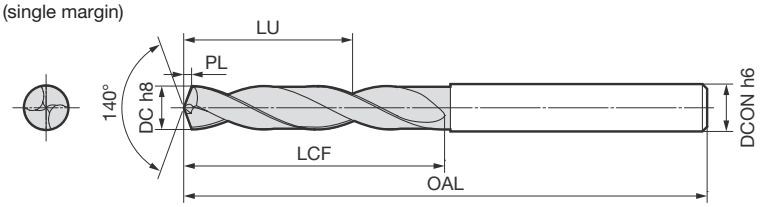
NeXEO MDE-E type for Hub Drilling (External Coolant Supply)

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 N36 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) *Including 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-drilling of a flat surface with a Flat MULTIDRILL MDF series drill 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 (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)
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 series		GS series		GS series		GS series	

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 38HRC	
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 (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)
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 series		GS series		GS series		GS series	

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 N36 for the tolerance of h6 and h8

Fig 1 (Double margin)

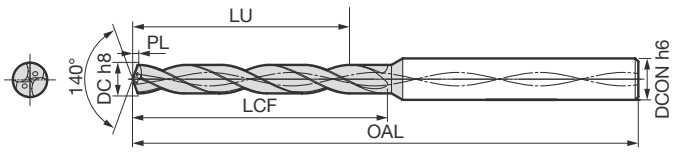
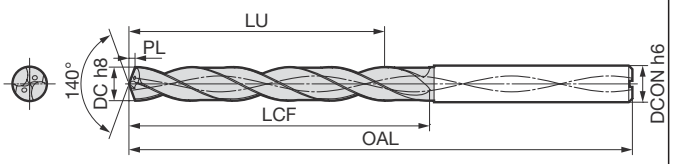


Fig 2 (Double margin)



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
1.0	3	●	MDE 0100S03H03	6.7	8.2	57.2	0.2	3.0	1
	5	●	0100S03H05	8.7	10.2	59.2	0.2	3.0	1
	8	●	0100S03H08	11.7	13.2	62.2	0.2	3.0	1
1.1	3	●	MDE 0110S03H03	6.6	8.2	57.2	0.2	3.0	1
	5	●	0110S03H05	8.6	10.2	59.2	0.2	3.0	1
	8	●	0110S03H08	12.6	14.2	62.2	0.2	3.0	1
1.2	3	●	MDE 0120S03H03	7.4	9.2	57.2	0.2	3.0	1
	5	●	0120S03H05	9.4	11.2	59.2	0.2	3.0	1
	8	●	0120S03H08	13.4	15.2	62.2	0.2	3.0	1
1.3	3	●	MDE 0130S03H03	7.3	9.2	57.2	0.2	3.0	1
	5	●	0130S03H05	10.3	12.2	59.2	0.2	3.0	1
	8	●	0130S03H08	14.3	16.2	62.2	0.2	3.0	1
1.4	3	●	MDE 0140S03H03	8.2	10.3	57.3	0.3	3.0	1
	5	●	0140S03H05	11.2	13.3	59.3	0.3	3.0	1
	8	●	0140S03H08	15.2	17.3	62.3	0.3	3.0	1
1.5	3	●	MDE 0150S03H03	9.1	11.3	57.3	0.3	3.0	1
	5	●	0150S03H05	12.1	14.3	59.3	0.3	3.0	1
	8	●	0150S03H08	16.1	18.3	62.3	0.3	3.0	1
1.6	3	●	MDE 0160S03H03	8.9	11.3	59.3	0.3	3.0	1
	5	●	0160S03H05	11.9	14.3	62.3	0.3	3.0	1
	8	●	0160S03H08	16.9	19.3	67.3	0.3	3.0	1
1.7	3	●	MDE 0170S03H03	9.8	12.3	59.3	0.3	3.0	1
	5	●	0170S03H05	12.8	15.3	62.3	0.3	3.0	1
	8	●	0170S03H08	17.8	20.3	67.3	0.3	3.0	1
1.8	3	●	MDE 0180S03H03	9.6	12.3	59.3	0.3	3.0	1
	5	●	0180S03H05	13.6	16.3	62.3	0.3	3.0	1
	8	●	0180S03H08	18.6	21.3	67.3	0.3	3.0	1
1.9	3	●	MDE 0190S03H03	10.5	13.3	59.3	0.3	3.0	1
	5	●	0190S03H05	14.5	17.3	62.3	0.3	3.0	1
	8	●	0190S03H08	19.5	22.3	70.3	0.3	3.0	1
2.0	3	●	MDE 0200S03H03	11.4	14.4	59.4	0.4	3.0	1
	5	●	0200S03H05	15.4	18.4	62.4	0.4	3.0	1
	8	●	0200S03H08	21.4	24.4	70.4	0.4	3.0	1
2.1	3	●	MDE 0210S03H03	11.3	14.4	59.4	0.4	3.0	1
	5	●	0210S03H05	15.3	18.4	62.4	0.4	3.0	1
	8	●	0210S03H08	22.3	25.4	70.4	0.4	3.0	1
2.2	3	●	MDE 0220S03H03	12.1	15.4	59.4	0.4	3.0	1
	5	●	0220S03H05	16.1	19.4	62.4	0.4	3.0	1
	8	●	0220S03H08	23.1	26.4	70.4	0.4	3.0	1
2.3	3	●	MDE 0230S03H03	12.0	15.4	63.4	0.4	3.0	1
	5	●	0230S03H05	17.0	20.4	68.4	0.4	3.0	1
	8	●	0230S03H08	24.0	27.4	75.4	0.4	3.0	1
2.4	3	●	MDE 0240S03H03	12.8	16.4	63.4	0.4	3.0	2
	5	●	0240S03H05	17.8	21.4	68.4	0.4	3.0	2
	8	●	0240S03H08	24.8	28.4	75.4	0.4	3.0	2

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
2.5	3	●	MDE 0250S03H03	13.8	17.5	63.5	0.5	3.0	2
	5	●	0250S03H05	18.8	22.5	68.5	0.5	3.0	2
	8	●	0250S03H08	25.8	29.5	75.5	0.5	3.0	2
2.6	3	●	MDE 0260S03H03	13.6	17.5	63.5	0.5	3.0	2
	5	●	0260S03H05	18.6	22.5	68.5	0.5	3.0	2
	8	●	0260S03H08	26.6	30.5	75.5	0.5	3.0	2
2.7	3	●	MDE 0270S03H03	14.5	18.5	68.5	0.5	3.0	2
	5	●	0270S03H05	19.5	23.5	78.5	0.5	3.0	2
	8	●	0270S03H08	27.5	31.5	81.5	0.5	3.0	2
2.76	5	●	MDE 0276S03H05	20.3	24.5	78.5	0.5	3.0	2
2.78	5	●	0278S03H05	20.3	24.5	78.5	0.5	3.0	2
2.8	3	●	MDE 0280S03H03	14.3	18.5	68.5	0.5	3.0	2
	5	●	0280S03H05	20.3	24.5	78.5	0.5	3.0	2
	8	●	0280S03H08	28.3	32.5	81.5	0.5	3.0	2
2.9	3	●	MDE 0290S03H03	15.2	19.5	68.5	0.5	3.0	2
	5	●	0290S03H05	21.2	25.5	78.5	0.5	3.0	2
	8	●	0290S03H08	29.2	33.5	81.5	0.5	3.0	2
3.0	3	●	MDE 0300S03H03	14.0	18.5	68.5	0.5	3.0	2
	5	●	0300S03H05	24.0	28.5	78.5	0.5	3.0	2
	8	●	0300S03H08	29.0	33.5	81.5	0.5	3.0	2
3.1	3	●	MDE 0310S04H03	16.0	20.6	72.6	0.6	4.0	2
	5	●	0310S04H05	28.0	32.6	86.6	0.6	4.0	2
	8	●	0310S04H08	34.5	39.1	92.6	0.6	4.0	2
3.2	3	●	MDE 0320S04H03	15.8	20.6	72.6	0.6	4.0	2
	5	●	0320S04H05	27.8	32.6	86.6	0.6	4.0	2
	8	●	0320S04H08	34.3	39.1	92.6	0.6	4.0	2
3.3	3	●	MDE 0330S04H03	15.7	20.6	72.6	0.6	4.0	2
	5	●	0330S04H05	27.7	32.6	86.6	0.6	4.0	2
	8	●	0330S04H08	34.2	39.1	92.6	0.6	4.0	2
3.4	3	●	MDE 0340S04H03	15.5	20.6	72.6	0.6	4.0	2
	5	●	0340S04H05	27.5	32.6	86.6	0.6	4.0	2
	8	●	0340S04H08	34.0	39.1	92.6	0.6	4.0	2
3.5	3	●	MDE 0350S04H03	15.4	20.6	72.6	0.6	4.0	2
	5	●	0350S04H05	27.4	32.6	86.6	0.6	4.0	2
	8	●	0350S04H08	33.9	39.1	92.6	0.6	4.0	2
3.6	3	●	MDE 0360S04H03	17.8	23.2	72.7	0.7	4.0	2
	5	●	0360S04H05	31.3	36.7	86.7	0.7	4.0	2
	8	●	0360S04H08	39.3	44.7	92.7	0.7	4.0	2
3.66	5	●	MDE 0366S04H05	31.2	36.7	86.7	0.7	4.0	2
3.68	5	●	0368S04H05	31.2	36.7	86.7	0.7	4.0	2
3.7	3	●	MDE 0370S04H03	17.7	23.2	72.7	0.7	4.0	2
	5	●	0370S04H05	31.2	36.7	86.7	0.7	4.0	2
	8	●	0370S04H08	39.2	44.7	92.7	0.7	4.0	2

Grade: ACT100

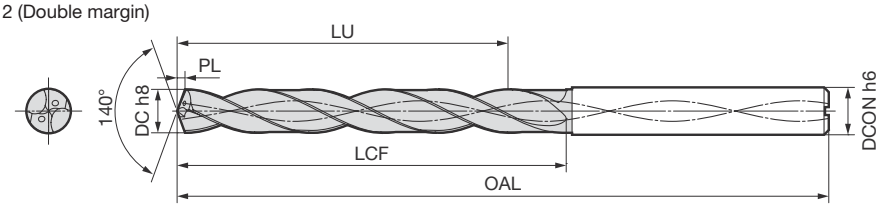
NeXEO MDE-H type (Internal Coolant Supply)

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 N36 for the tolerance of h6 and h8

Fig 2 (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
3.8	3	●	MDE 0380S04H03	17.5	23.2	72.7	0.7	4.0	2
	5	●	0380S04H05	31.0	36.7	86.7	0.7	4.0	2
	8	●	0380S04H08	39.0	44.7	92.7	0.7	4.0	2
3.9	3	●	MDE 0390S04H03	17.4	23.2	72.7	0.7	4.0	2
	5	●	0390S04H05	30.9	36.7	86.7	0.7	4.0	2
	8	●	0390S04H08	38.9	44.7	92.7	0.7	4.0	2
4.0	3	●	MDE 0400S04H03	17.2	23.2	72.7	0.7	4.0	2
	5	●	0400S04H05	30.7	36.7	86.7	0.7	4.0	2
	8	●	0400S04H08	38.7	44.7	92.7	0.7	4.0	2
4.1	3	●	MDE 0410S05H03	19.6	25.7	80.7	0.7	5.0	2
	5	●	0410S05H05	34.6	40.7	98.7	0.7	5.0	2
	8	●	0410S05H08	44.1	50.2	105.7	0.7	5.0	2
4.2	3	●	MDE 0420S05H03	19.5	25.8	80.8	0.8	5.0	2
	5	●	0420S05H05	34.5	40.8	98.8	0.8	5.0	2
	8	●	0420S05H08	44.0	50.3	105.8	0.8	5.0	2
4.3	3	●	MDE 0430S05H03	19.4	25.8	80.8	0.8	5.0	2
	5	●	0430S05H05	34.4	40.8	98.8	0.8	5.0	2
	8	●	0430S05H08	43.9	50.3	105.8	0.8	5.0	2
4.4	3	●	MDE 0440S05H03	19.2	25.8	80.8	0.8	5.0	2
	5	●	0440S05H05	34.2	40.8	98.8	0.8	5.0	2
	8	●	0440S05H08	43.7	50.3	105.8	0.8	5.0	2
4.5	3	●	MDE 0450S05H03	19.1	25.8	80.8	0.8	5.0	2
	5	●	0450S05H05	34.1	40.8	98.8	0.8	5.0	2
	8	●	0450S05H08	43.6	50.3	105.8	0.8	5.0	2
4.6	3	●	MDE 0460S05H03	21.4	28.3	80.8	0.8	5.0	2
	5	●	0460S05H05	37.9	44.8	98.8	0.8	5.0	2
	8	●	0460S05H08	48.9	55.8	105.8	0.8	5.0	2
4.62	5	●	MDE 0462S05H05	37.9	44.8	98.8	0.8	5.0	2
4.64	5	●	0464S05H05	37.9	44.8	98.8	0.8	5.0	2
4.7	3	●	MDE 0470S05H03	21.4	28.4	80.9	0.9	5.0	2
	5	●	0470S05H05	37.9	44.9	98.9	0.9	5.0	2
	8	●	0470S05H08	48.9	55.9	105.9	0.9	5.0	2
4.8	3	●	MDE 0480S05H03	21.2	28.4	80.9	0.9	5.0	2
	5	●	0480S05H05	37.7	44.9	98.9	0.9	5.0	2
	8	●	0480S05H08	48.7	55.9	105.9	0.9	5.0	2
4.9	3	●	MDE 0490S05H03	21.1	28.4	80.9	0.9	5.0	2
	5	●	0490S05H05	37.6	44.9	98.9	0.9	5.0	2
	8	●	0490S05H08	48.6	55.9	105.9	0.9	5.0	2
5.0	3	●	MDE 0500S05H03	20.9	28.4	80.9	0.9	5.0	2
	5	●	0500S05H05	37.4	44.9	98.9	0.9	5.0	2
	8	●	0500S05H08	48.4	55.9	105.9	0.9	5.0	2
5.1	3	●	MDE 0510S06H03	20.8	28.4	82.9	0.9	6.0	2
	5	●	0510S06H05	37.3	44.9	100.9	0.9	6.0	2
	8	●	0510S06H08	53.8	61.4	118.9	0.9	6.0	2

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
5.2	3	●	MDE 0520S06H03	20.6	28.4	82.9	0.9	6.0	2
	5	●	0520S06H05	37.1	44.9	100.9	0.9	6.0	2
	8	●	0520S06H08	53.6	61.4	118.9	0.9	6.0	2
5.3	3	●	MDE 0530S06H03	20.6	28.5	83.0	1.0	6.0	2
	5	●	0530S06H05	37.1	45.0	101.0	1.0	6.0	2
	8	●	0530S06H08	53.6	61.5	119.0	1.0	6.0	2
5.4	3	●	MDE 0540S06H03	20.4	28.5	83.0	1.0	6.0	2
	5	●	0540S06H05	36.9	45.0	101.0	1.0	6.0	2
	8	●	0540S06H08	53.4	61.5	119.0	1.0	6.0	2
5.5	3	●	MDE 0550S06H03	20.3	28.5	83.0	1.0	6.0	2
	5	●	0550S06H05	36.8	45.0	101.0	1.0	6.0	2
	8	●	0550S06H08	53.3	61.5	119.0	1.0	6.0	2
5.52	5	●	MDE 0552S06H05	40.6	49.0	101.0	1.0	6.0	2
5.54	5	●	0554S06H05	40.6	49.0	101.0	1.0	6.0	2
5.6	3	●	MDE 0560S06H03	22.6	31.0	83.0	1.0	6.0	2
	5	●	0560S06H05	40.6	49.0	101.0	1.0	6.0	2
	8	●	0560S06H08	58.6	67.0	119.0	1.0	6.0	2
5.7	3	●	MDE 0570S06H03	22.5	31.0	83.0	1.0	6.0	2
	5	●	0570S06H05	40.5	49.0	101.0	1.0	6.0	2
	8	●	0570S06H08	58.5	67.0	119.0	1.0	6.0	2
5.8	3	●	MDE 0580S06H03	22.4	31.1	83.1	1.1	6.0	2
	5	●	0580S06H05	40.4	49.1	101.1	1.1	6.0	2
	8	●	0580S06H08	58.4	67.1	119.1	1.1	6.0	2
5.9	3	●	MDE 0590S06H03	22.3	31.1	83.1	1.1	6.0	2
	5	●	0590S06H05	40.3	49.1	101.1	1.1	6.0	2
	8	●	0590S06H08	58.3	67.1	119.1	1.1	6.0	2
6.0	3	●	MDE 0600S06H03	22.1	31.1	83.1	1.1	6.0	2
	5	●	0600S06H05	40.1	49.1	101.1	1.1	6.0	2
	8	●	0600S06H08	58.1	67.1	119.1	1.1	6.0	2
6.1	3	●	MDE 0610S07H03	24.5	33.6	89.1	1.1	7.0	2
	5	●	0610S07H05	44.0	53.1	110.1	1.1	7.0	2
	8	●	0610S07H08	63.5	72.6	131.1	1.1	7.0	2
6.2	3	●	MDE 0620S07H03	24.3	33.6	89.1	1.1	7.0	2
	5	●	0620S07H05	43.8	53.1	110.1	1.1	7.0	2
	8	●	0620S07H08	63.3	72.6	131.1	1.1	7.0	2
6.3	3	●	MDE 0630S07H03	24.2	33.6	89.1	1.1	7.0	2
	5	●	0630S07H05	43.7	53.1	110.1	1.1	7.0	2
	8	●	0630S07H08	63.2	72.6	131.1	1.1	7.0	2
6.4	3	●	MDE 0640S07H03	24.1	33.7	89.2	1.2	7.0	2
	5	●	0640S07H05	43.6	53.2	110.2	1.2	7.0	2
	8	●	0640S07H08	63.1	72.7	131.2	1.2	7.0	2
6.5	3	●	MDE 0650S07H03	24.0	33.7	89.2	1.2	7.0	2
	5	●	0650S07H05	43.5	53.2	110.2	1.2	7.0	2
	8	●	0650S07H08	63.0	72.7	131.2	1.2	7.0	2

Grade: ACT100

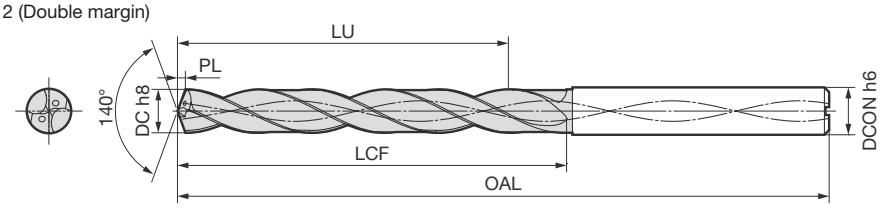
NeXEO MDE-H type (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.26% | Carbon Steel/ Alloy Steel from 0.25% | 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 N36 for the tolerance of h6 and h8

Fig 2 (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	2
	5	●	0660S07H05	47.3	57.2	110.2	1.2	7.0	2
	8	●	0660S07H08	68.3	78.2	131.2	1.2	7.0	2
6.7	3	●	MDE 0670S07H03	26.2	36.2	89.2	1.2	7.0	2
	5	●	0670S07H05	47.2	57.2	110.2	1.2	7.0	2
	8	●	0670S07H08	68.2	78.2	131.2	1.2	7.0	2
6.8	3	●	MDE 0680S07H03	26.0	36.2	89.2	1.2	7.0	2
	5	●	0680S07H05	47.0	57.2	110.2	1.2	7.0	2
	8	●	0680S07H08	68.0	78.2	131.2	1.2	7.0	2
6.9	3	●	MDE 0690S07H03	26.0	36.3	89.3	1.3	7.0	2
	5	●	0690S07H05	47.0	57.3	110.3	1.3	7.0	2
	8	●	0690S07H08	68.0	78.3	131.3	1.3	7.0	2
7.0	3	●	MDE 0700S07H03	25.8	36.3	89.3	1.3	7.0	2
	5	●	0700S07H05	46.8	57.3	110.3	1.3	7.0	2
	8	●	0700S07H08	67.8	78.3	131.3	1.3	7.0	2
7.1	3	●	MDE 0710S08H03	28.2	38.8	95.3	1.3	8.0	2
	5	●	0710S08H05	50.7	61.3	119.3	1.3	8.0	2
	8	●	0710S08H08	73.2	83.8	143.3	1.3	8.0	2
7.2	3	●	MDE 0720S08H03	28.0	38.8	95.3	1.3	8.0	2
	5	●	0720S08H05	50.5	61.3	119.3	1.3	8.0	2
	8	●	0720S08H08	73.0	83.8	143.3	1.3	8.0	2
7.3	3	●	MDE 0730S08H03	27.9	38.8	95.3	1.3	8.0	2
	5	●	0730S08H05	50.4	61.3	119.3	1.3	8.0	2
	8	●	0730S08H08	72.9	83.8	143.3	1.3	8.0	2
7.36	5	●	MDE 0736S08H05	50.2	61.3	119.3	1.3	8.0	2
7.38	5	●	0738S08H05	50.2	61.3	119.3	1.3	8.0	2
7.4	3	●	MDE 0740S08H03	27.7	38.8	95.3	1.3	8.0	2
	5	●	0740S08H05	50.2	61.3	119.3	1.3	8.0	2
	8	●	0740S08H08	72.7	83.8	143.3	1.3	8.0	2
7.5	3	●	MDE 0750S08H03	27.7	38.9	95.4	1.4	8.0	2
	5	●	0750S08H05	50.2	61.4	119.4	1.4	8.0	2
	8	●	0750S08H08	72.7	83.9	143.4	1.4	8.0	2
7.52	5	●	MDE 0752S08H05	54.0	65.4	119.4	1.4	8.0	2
7.54	5	●	0754S08H05	54.0	65.4	119.4	1.4	8.0	2
7.6	3	●	MDE 0760S08H03	30.0	41.4	95.4	1.4	8.0	2
	5	●	0760S08H05	54.0	65.4	119.4	1.4	8.0	2
	8	●	0760S08H08	78.0	89.4	143.4	1.4	8.0	2
7.7	3	●	MDE 0770S08H03	29.9	41.4	95.4	1.4	8.0	2
	5	●	0770S08H05	53.9	65.4	119.4	1.4	8.0	2
	8	●	0770S08H08	77.9	89.4	143.4	1.4	8.0	2
7.8	3	●	MDE 0780S08H03	29.7	41.4	95.4	1.4	8.0	2
	5	●	0780S08H05	53.7	65.4	119.4	1.4	8.0	2
	8	●	0780S08H08	77.7	89.4	143.4	1.4	8.0	2

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	2
	5	●	0790S08H05	53.6	65.4	119.4	1.4	8.0	2
	8	●	0790S08H08	77.6	89.4	143.4	1.4	8.0	2
8.0	3	●	MDE 0800S08H03	29.5	41.5	95.5	1.5	8.0	2
	5	●	0800S08H05	53.5	65.5	119.5	1.5	8.0	2
	8	●	0800S08H08	77.5	89.5	143.5	1.5	8.0	2
8.1	3	●	MDE 0810S09H03	31.9	44.0	101.5	1.5	9.0	2
	5	●	0810S09H05	57.4	69.5	128.5	1.5	9.0	2
	8	●	0810S09H08	82.9	95.0	155.5	1.5	9.0	2
8.2	3	●	MDE 0820S09H03	31.7	44.0	101.5	1.5	9.0	2
	5	●	0820S09H05	57.2	69.5	128.5	1.5	9.0	2
	8	●	0820S09H08	82.7	95.0	155.5	1.5	9.0	2
8.3	3	●	MDE 0830S09H03	31.6	44.0	101.5	1.5	9.0	2
	5	●	0830S09H05	57.1	69.5	128.5	1.5	9.0	2
	8	●	0830S09H08	82.6	95.0	155.5	1.5	9.0	2
8.4	3	●	MDE 0840S09H03	31.4	44.0	101.5	1.5	9.0	2
	5	●	0840S09H05	56.9	69.5	128.5	1.5	9.0	2
	8	●	0840S09H08	82.4	95.0	155.5	1.5	9.0	2
8.5	3	●	MDE 0850S09H03	31.3	44.0	101.5	1.5	9.0	2
	5	●	0850S09H05	56.8	69.5	128.5	1.5	9.0	2
	8	●	0850S09H08	82.3	95.0	155.5	1.5	9.0	2
8.6	3	●	MDE 0860S09H03	33.7	46.6	101.6	1.6	9.0	2
	5	●	0860S09H05	60.7	73.6	128.6	1.6	9.0	2
	8	●	0860S09H08	87.7	100.6	155.6	1.6	9.0	2
8.7	3	●	MDE 0870S09H03	33.6	46.6	101.6	1.6	9.0	2
	5	●	0870S09H05	60.6	73.6	128.6	1.6	9.0	2
	8	●	0870S09H08	87.6	100.6	155.6	1.6	9.0	2
8.8	3	●	MDE 0880S09H03	33.4	46.6	101.6	1.6	9.0	2
	5	●	0880S09H05	60.4	73.6	128.6	1.6	9.0	2
	8	●	0880S09H08	87.4	100.6	155.6	1.6	9.0	2
8.9	3	●	MDE 0890S09H03	33.3	46.6	101.6	1.6	9.0	2
	5	●	0890S09H05	60.3	73.6	128.6	1.6	9.0	2
	8	●	0890S09H08	87.3	100.6	155.6	1.6	9.0	2
9.0	3	●	MDE 0900S09H03	33.1	46.6	101.6	1.6	9.0	2
	5	●	0900S09H05	60.1	73.6	128.6	1.6	9.0	2
	8	●	0900S09H08	87.1	100.6	155.6	1.6	9.0	2
9.1	3	●	MDE 0910S10H03	35.6	49.2	107.7	1.7	10.0	2
	5	●	0910S10H05	64.1	77.7	137.7	1.7	10.0	2
	8	●	0910S10H08	92.6	106.2	167.7	1.7	10.0	2
9.2	3	●	MDE 0920S10H03	35.4	49.2	107.7	1.7	10.0	2
	5	●	0920S10H05	63.9	77.7	137.7	1.7	10.0	2
	8	●	0920S10H08	92.4	106.2	167.7	1.7	10.0	2

Grade: ACT100

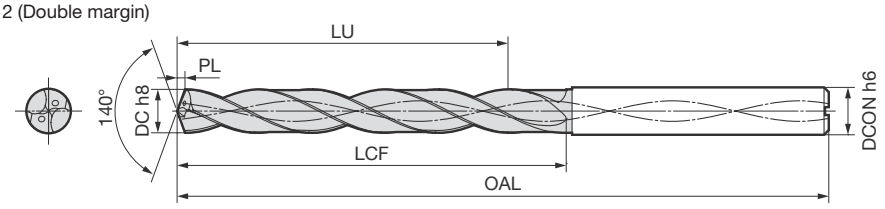
NeXEO MDE-H type (Internal Coolant Supply)

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 N36 for the tolerance of h6 and h8

Fig 2 (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	2
9.26	5	●	**0926S10H05**	63.8	77.7	137.7	1.7	10.0	2
9.3	3	●	**MDE 0930S10H03**	35.3	49.2	107.7	1.7	10.0	2
	5	●	**0930S10H05**	63.8	77.7	137.7	1.7	10.0	2
	8	●	**0930S10H08**	92.3	106.2	167.7	1.7	10.0	2
9.36	5	●	**MDE 0936S10H05**	63.6	77.7	137.7	1.7	10.0	2
9.38	5	●	**0938S10H05**	63.6	77.7	137.7	1.7	10.0	2
9.4	3	●	**MDE 0940S10H03**	35.1	49.2	107.7	1.7	10.0	2
	5	●	**0940S10H05**	63.6	77.7	137.7	1.7	10.0	2
	8	●	**0940S10H08**	92.1	106.2	167.7	1.7	10.0	2
9.5	3	●	**MDE 0950S10H03**	35.0	49.2	107.7	1.7	10.0	2
	5	●	**0950S10H05**	63.5	77.7	137.7	1.7	10.0	2
	8	●	**0950S10H08**	92.0	106.2	167.7	1.7	10.0	2
9.52	5	●	**MDE 0952S10H05**	67.3	81.7	137.7	1.7	10.0	2
9.54	5	●	**0954S10H05**	67.3	81.7	137.7	1.7	10.0	2
9.6	3	●	**MDE 0960S10H03**	37.3	51.7	107.7	1.7	10.0	2
	5	●	**0960S10H05**	67.3	81.7	137.7	1.7	10.0	2
	8	●	**0960S10H08**	97.3	111.7	167.7	1.7	10.0	2
9.7	3	●	**MDE 0970S10H03**	37.3	51.8	107.8	1.8	10.0	2
	5	●	**0970S10H05**	67.3	81.8	137.8	1.8	10.0	2
	8	●	**0970S10H08**	97.3	111.8	167.8	1.8	10.0	2
9.8	3	●	**MDE 0980S10H03**	37.1	51.8	107.8	1.8	10.0	2
	5	●	**0980S10H05**	67.1	81.8	137.8	1.8	10.0	2
	8	●	**0980S10H08**	97.1	111.8	167.8	1.8	10.0	2
9.9	3	●	**MDE 0990S10H03**	37.0	51.8	107.8	1.8	10.0	2
	5	●	**0990S10H05**	67.0	81.8	137.8	1.8	10.0	2
	8	●	**0990S10H08**	97.0	111.8	167.8	1.8	10.0	2
10.0	3	●	**MDE 1000S10H03**	36.8	51.8	107.8	1.8	10.0	2
	5	●	**1000S10H05**	66.8	81.8	137.8	1.8	10.0	2
	8	●	**1000S10H08**	96.8	111.8	167.8	1.8	10.0	2
10.1	3	●	**MDE 1010S11H03**	39.2	54.3	117.8	1.8	11.0	2
	5	●	**1010S11H05**	70.7	85.8	150.8	1.8	11.0	2
	8	●	**1010S11H08**	102.2	117.3	183.8	1.8	11.0	2
10.2	3	●	**MDE 1020S11H03**	39.1	54.4	117.9	1.9	11.0	2
	5	●	**1020S11H05**	70.6	85.9	150.9	1.9	11.0	2
	8	●	**1020S11H08**	102.1	117.4	183.9	1.9	11.0	2
10.3	3	●	**MDE 1030S11H03**	39.0	54.4	117.9	1.9	11.0	2
	5	●	**1030S11H05**	70.5	85.9	150.9	1.9	11.0	2
	8	●	**1030S11H08**	102.0	117.4	183.9	1.9	11.0	2
10.4	3	●	**MDE 1040S11H03**	38.8	54.4	117.9	1.9	11.0	2
	5	●	**1040S11H05**	70.3	85.9	150.9	1.9	11.0	2
	8	●	**1040S11H08**	101.8	117.4	183.9	1.9	11.0	2

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	2
	5	●	**1050S11H05**	70.2	85.9	150.9	1.9	11.0	2
	8	●	**1050S11H08**	101.7	117.4	183.9	1.9	11.0	2
10.6	3	●	**MDE 1060S11H03**	41.0	56.9	117.9	1.9	11.0	2
	5	●	**1060S11H05**	74.0	89.9	150.9	1.9	11.0	2
	8	●	**1060S11H08**	107.0	122.9	183.9	1.9	11.0	2
10.7	3	●	**MDE 1070S11H03**	40.9	56.9	117.9	1.9	11.0	2
	5	●	**1070S11H05**	73.9	89.9	150.9	1.9	11.0	2
	8	●	**1070S11H08**	106.9	122.9	183.9	1.9	11.0	2
10.8	3	●	**MDE 1080S11H03**	40.8	57.0	118.0	2.0	11.0	2
	5	●	**1080S11H05**	73.8	90.0	151.0	2.0	11.0	2
	8	●	**1080S11H08**	106.8	123.0	184.0	2.0	11.0	2
10.9	3	●	**MDE 1090S11H03**	40.7	57.0	118.0	2.0	11.0	2
	5	●	**1090S11H05**	73.7	90.0	151.0	2.0	11.0	2
	8	●	**1090S11H08**	106.7	123.0	184.0	2.0	11.0	2
11.0	3	●	**MDE 1100S11H03**	40.5	57.0	118.0	2.0	11.0	2
	5	●	**1100S11H05**	73.5	90.0	151.0	2.0	11.0	2
	8	●	**1100S11H08**	106.5	123.0	184.0	2.0	11.0	2
11.1	3	●	**MDE 1110S12H03**	42.9	59.5	124.0	2.0	12.0	2
	5	●	**1110S12H05**	77.4	94.0	160.0	2.0	12.0	2
	8	●	**1110S12H08**	111.9	128.5	196.0	2.0	12.0	2
11.2	3	●	**MDE 1120S12H03**	42.7	59.5	124.0	2.0	12.0	2
	5	●	**1120S12H05**	77.2	94.0	160.0	2.0	12.0	2
	8	●	**1120S12H08**	111.7	128.5	196.0	2.0	12.0	2
11.22	5	●	**MDE 1122S12H05**	77.2	94.0	160.0	2.0	12.0	2
11.24	5	●	**1124S12H05**	77.2	94.0	160.0	2.0	12.0	2
11.3	3	●	**MDE 1130S12H03**	42.7	59.6	124.1	2.1	12.0	2
	5	●	**1130S12H05**	77.2	94.1	160.1	2.1	12.0	2
	8	●	**1130S12H08**	111.7	128.6	196.1	2.1	12.0	2
11.36	5	●	**MDE 1136S12H05**	77.0	94.1	160.1	2.1	12.0	2
11.38	5	●	**1138S12H05**	77.0	94.1	160.1	2.1	12.0	2
11.4	3	●	**MDE 1140S12H03**	42.5	59.6	124.1	2.1	12.0	2
	5	●	**1140S12H05**	77.0	94.1	160.1	2.1	12.0	2
	8	●	**1140S12H08**	111.5	128.6	196.1	2.1	12.0	2
11.5	3	●	**MDE 1150S12H03**	42.4	59.6	124.1	2.1	12.0	2
	5	●	**1150S12H05**	76.9	94.1	160.1	2.1	12.0	2
	8	●	**1150S12H08**	111.4	128.6	196.1	2.1	12.0	2
11.6	3	●	**MDE 1160S12H03**	44.7	62.1	124.1	2.1	12.0	2
	5	●	**1160S12H05**	80.7	98.1	160.1	2.1	12.0	2
	8	●	**1160S12H08**	116.7	134.1	196.1	2.1	12.0	2
11.7	3	●	**MDE 1170S12H03**	44.6	62.1	124.1	2.1	12.0	2
	5	●	**1170S12H05**	80.6	98.1	160.1	2.1	12.0	2
	8	●	**1170S12H08**	116.6	134.1	196.1	2.1	12.0	2

Grade: ACT100

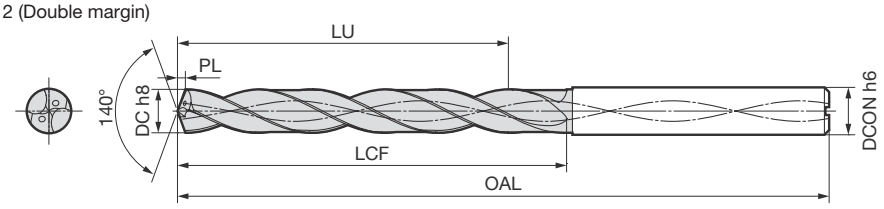
NeXEO MDE-H type (Internal Coolant Supply)

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 N36 for the tolerance of h6 and h8

Fig 2 (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
11.8	3	●	MDE 1180S12H03	44.4	62.1	124.1	2.1	12.0	2
	5	●	1180S12H05	80.4	98.1	160.1	2.1	12.0	2
	8	●	1180S12H08	116.4	134.1	196.1	2.1	12.0	2
11.9	3	●	MDE 1190S12H03	44.4	62.2	124.2	2.2	12.0	2
	5	●	1190S12H05	80.4	98.2	160.2	2.2	12.0	2
	8	●	1190S12H08	116.4	134.2	196.2	2.2	12.0	2
12.0	3	●	MDE 1200S12H03	44.2	62.2	124.2	2.2	12.0	2
	5	●	1200S12H05	80.2	98.2	160.2	2.2	12.0	2
	8	●	1200S12H08	116.2	134.2	196.2	2.2	12.0	2
12.1	3	●	MDE 1210S13H03	46.6	64.7	130.2	2.2	13.0	2
	5	●	1210S13H05	84.1	102.2	169.2	2.2	13.0	2
	8	●	1210S13H08	121.6	139.7	208.2	2.2	13.0	2
12.2	3	●	MDE 1220S13H03	46.4	64.7	130.2	2.2	13.0	2
	5	●	1220S13H05	83.9	102.2	169.2	2.2	13.0	2
	8	●	1220S13H08	121.4	139.7	208.2	2.2	13.0	2
12.3	3	●	MDE 1230S13H03	46.3	64.7	130.2	2.2	13.0	2
	5	●	1230S13H05	83.8	102.2	169.2	2.2	13.0	2
	8	●	1230S13H08	121.3	139.7	208.2	2.2	13.0	2
12.4	3	●	MDE 1240S13H03	46.2	64.8	130.3	2.3	13.0	2
	5	●	1240S13H05	83.7	102.3	169.3	2.3	13.0	2
	8	●	1240S13H08	121.2	139.8	208.3	2.3	13.0	2
12.5	3	●	MDE 1250S13H03	46.1	64.8	130.3	2.3	13.0	2
	5	●	1250S13H05	83.6	102.3	169.3	2.3	13.0	2
	8	●	1250S13H08	121.1	139.8	208.3	2.3	13.0	2
12.6	3	●	MDE 1260S13H03	48.4	67.3	130.3	2.3	13.0	2
	5	●	1260S13H05	87.4	106.3	169.3	2.3	13.0	2
	8	●	1260S13H08	126.4	145.3	208.3	2.3	13.0	2
12.7	3	●	MDE 1270S13H03	48.3	67.3	130.3	2.3	13.0	2
	5	●	1270S13H05	87.3	106.3	169.3	2.3	13.0	2
	8	●	1270S13H08	126.3	145.3	208.3	2.3	13.0	2
12.8	3	●	MDE 1280S13H03	48.1	67.3	130.3	2.3	13.0	2
	5	●	1280S13H05	87.1	106.3	169.3	2.3	13.0	2
	8	●	1280S13H08	126.1	145.3	208.3	2.3	13.0	2
12.9	3	●	MDE 1290S13H03	48.0	67.3	130.3	2.3	13.0	2
	5	●	1290S13H05	87.0	106.3	169.3	2.3	13.0	2
	8	●	1290S13H08	126.0	145.3	208.3	2.3	13.0	2
13.0	3	●	MDE 1300S13H03	47.9	67.4	130.4	2.4	13.0	2
	5	●	1300S13H05	86.9	106.4	169.4	2.4	13.0	2
	8	●	1300S13H08	125.9	145.4	208.4	2.4	13.0	2
13.1	3	●	MDE 1310S14H03	50.3	69.9	136.4	2.4	14.0	2
	5	●	1310S14H05	90.8	110.4	178.4	2.4	14.0	2
	8	●	1310S14H08	131.3	150.9	220.4	2.4	14.0	2

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
13.2	3	●	MDE 1320S14H03	50.1	69.9	136.4	2.4	14.0	2
	5	●	1320S14H05	90.6	110.4	178.4	2.4	14.0	2
	8	●	1320S14H08	131.1	150.9	220.4	2.4	14.0	2
13.3	3	●	MDE 1330S14H03	50.0	69.9	136.4	2.4	14.0	2
	5	●	1330S14H05	90.5	110.4	178.4	2.4	14.0	2
	8	●	1330S14H08	131.0	150.9	220.4	2.4	14.0	2
13.4	3	●	MDE 1340S14H03	49.8	69.9	136.4	2.4	14.0	2
	5	●	1340S14H05	90.3	110.4	178.4	2.4	14.0	2
	8	●	1340S14H08	130.8	150.9	220.4	2.4	14.0	2
13.5	3	●	MDE 1350S14H03	49.8	70.0	136.5	2.5	14.0	2
	5	●	1350S14H05	90.3	110.5	178.5	2.5	14.0	2
	8	●	1350S14H08	130.8	151.0	220.5	2.5	14.0	2
13.6	3	●	MDE 1360S14H03	52.1	72.5	136.5	2.5	14.0	2
	5	●	1360S14H05	94.1	114.5	178.5	2.5	14.0	2
	8	●	1360S14H08	136.1	156.5	220.5	2.5	14.0	2
13.7	3	●	MDE 1370S14H03	52.0	72.5	136.5	2.5	14.0	2
	5	●	1370S14H05	94.0	114.5	178.5	2.5	14.0	2
	8	●	1370S14H08	136.0	156.5	220.5	2.5	14.0	2
13.8	3	●	MDE 1380S14H03	51.8	72.5	136.5	2.5	14.0	2
	5	●	1380S14H05	93.8	114.5	178.5	2.5	14.0	2
	8	●	1380S14H08	135.8	156.5	220.5	2.5	14.0	2
13.9	3	●	MDE 1390S14H03	51.7	72.5	136.5	2.5	14.0	2
	5	●	1390S14H05	93.7	114.5	178.5	2.5	14.0	2
	8	●	1390S14H08	135.7	156.5	220.5	2.5	14.0	2
14.0	3	●	MDE 1400S14H03	51.5	72.5	136.5	2.5	14.0	2
	5	●	1400S14H05	93.5	114.5	178.5	2.5	14.0	2
	8	●	1400S14H08	135.5	156.5	220.5	2.5	14.0	2
14.1	3	●	MDE 1410S15H03	54.0	75.1	142.6	2.6	15.0	2
	5	●	1410S15H05	97.5	118.6	187.6	2.6	15.0	2
	8	●	1410S15H08	141.0	162.1	232.6	2.6	15.0	2
14.2	3	●	MDE 1420S15H03	53.8	75.1	142.6	2.6	15.0	2
	5	●	1420S15H05	97.3	118.6	187.6	2.6	15.0	2
	8	●	1420S15H08	140.8	162.1	232.6	2.6	15.0	2
14.3	3	●	MDE 1430S15H03	53.7	75.1	142.6	2.6	15.0	2
	5	●	1430S15H05	97.2	118.6	187.6	2.6	15.0	2
	8	●	1430S15H08	140.7	162.1	232.6	2.6	15.0	2
14.4	3	●	MDE 1440S15H03	53.5	75.1	142.6	2.6	15.0	2
	5	●	1440S15H05	97.0	118.6	187.6	2.6	15.0	2
	8	●	1440S15H08	140.5	162.1	232.6	2.6	15.0	2
14.5	3	●	MDE 1450S15H03	53.4	75.1	142.6	2.6	15.0	2
	5	●	1450S15H05	96.9	118.6	187.6	2.6	15.0	2
	8	●	1450S15H08	140.4	162.1	232.6	2.6	15.0	2

Grade: ACT100

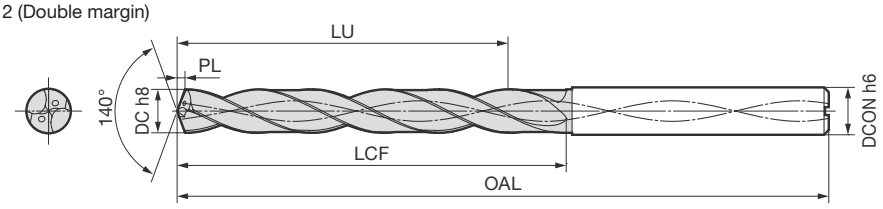
NeXEO MDE-H type (Internal Coolant Supply)

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 N36 for the tolerance of h6 and h8

Fig 2 (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	2
	5	●	1460S15H05	100.8	122.7	187.7	2.7	15.0	2
	8	●	1460S15H08	145.8	167.7	232.7	2.7	15.0	2
14.7	3	●	MDE 1470S15H03	55.7	77.7	142.7	2.7	15.0	2
	5	●	1470S15H05	100.7	122.7	187.7	2.7	15.0	2
	8	●	1470S15H08	145.7	167.7	232.7	2.7	15.0	2
14.8	3	●	MDE 1480S15H03	55.5	77.7	142.7	2.7	15.0	2
	5	●	1480S15H05	100.5	122.7	187.7	2.7	15.0	2
	8	●	1480S15H08	145.5	167.7	232.7	2.7	15.0	2
14.9	3	●	MDE 1490S15H03	55.4	77.7	142.7	2.7	15.0	2
	5	●	1490S15H05	100.4	122.7	187.7	2.7	15.0	2
	8	●	1490S15H08	145.4	167.7	232.7	2.7	15.0	2
15.0	3	●	MDE 1500S15H03	55.2	77.7	142.7	2.7	15.0	2
	5	●	1500S15H05	100.2	122.7	187.7	2.7	15.0	2
	8	●	1500S15H08	145.2	167.7	232.7	2.7	15.0	2
15.1	3	●	MDE 1510S16H03	57.6	80.2	148.7	2.7	16.0	2
	5	●	1510S16H05	104.1	126.7	196.7	2.7	16.0	2
	8	●	1510S16H08	150.6	173.2	244.7	2.7	16.0	2
15.2	3	●	MDE 1520S16H03	57.5	80.3	148.8	2.8	16.0	2
	5	●	1520S16H05	104.0	126.8	196.8	2.8	16.0	2
	8	●	1520S16H08	150.5	173.3	244.8	2.8	16.0	2
15.3	3	●	MDE 1530S16H03	57.4	80.3	148.8	2.8	16.0	2
	5	●	1530S16H05	103.9	126.8	196.8	2.8	16.0	2
	8	●	1530S16H08	150.4	173.3	244.8	2.8	16.0	2
15.4	3	●	MDE 1540S16H03	57.2	80.3	148.8	2.8	16.0	2
	5	●	1540S16H05	103.7	126.8	196.8	2.8	16.0	2
	8	●	1540S16H08	150.2	173.3	244.8	2.8	16.0	2
15.5	3	●	MDE 1550S16H03	57.1	80.3	148.8	2.8	16.0	2
	5	●	1550S16H05	103.6	126.8	196.8	2.8	16.0	2
	8	●	1550S16H08	150.1	173.3	244.8	2.8	16.0	2
15.6	3	●	MDE 1560S16H03	59.4	82.8	148.8	2.8	16.0	2
	5	●	1560S16H05	107.4	130.8	196.8	2.8	16.0	2
	8	●	1560S16H08	155.4	178.8	244.8	2.8	16.0	2
15.7	3	●	MDE 1570S16H03	59.4	82.9	148.9	2.9	16.0	2
	5	●	1570S16H05	107.4	130.9	196.9	2.9	16.0	2
	8	●	1570S16H08	155.4	178.9	244.9	2.9	16.0	2
15.8	3	●	MDE 1580S16H03	59.2	82.9	148.9	2.9	16.0	2
	5	●	1580S16H05	107.2	130.9	196.9	2.9	16.0	2
	8	●	1580S16H08	155.2	178.9	244.9	2.9	16.0	2
15.9	3	●	MDE 1590S16H03	59.1	82.9	148.9	2.9	16.0	2
	5	●	1590S16H05	107.1	130.9	196.9	2.9	16.0	2
	8	●	1590S16H08	155.1	178.9	244.9	2.9	16.0	2

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	2
	5	●	1600S16H05	106.9	130.9	196.9	2.9	16.0	2
	8	●	1600S16H08	154.9	178.9	244.9	2.9	16.0	2
16.5	3	●	MDE 1650S17H03	60.8	85.5	155.0	3.0	17.0	2
	5	●	1650S17H05	110.3	135.0	206.0	3.0	17.0	2
17.0	3	●	MDE 1700S17H03	62.6	88.1	155.1	3.1	17.0	2
	5	●	1700S17H05	113.6	139.1	206.1	3.1	17.0	2
17.5	3	●	MDE 1750S18H03	64.5	90.7	161.2	3.2	18.0	2
	5	●	1750S18H05	116.9	143.2	217.3	3.2	18.0	2
18.0	3	●	MDE 1800S18H03	66.3	93.3	161.3	3.3	18.0	2
	5	●	1800S18H05	120.3	147.3	217.3	3.3	18.0	2
18.5	3	●	MDE 1850S19H03	68.2	95.9	167.4	3.4	19.0	2
	5	●	1850S19H05	123.6	151.4	224.4	3.4	19.0	2
19.0	3	●	MDE 1900S19H03	70.0	98.5	167.5	3.5	19.0	2
	5	●	1900S19H05	127.0	155.5	224.5	3.5	19.0	2
19.5	3	●	MDE 1950S20H03	71.8	101.0	173.5	3.5	20.0	2
	5	●	1950S20H05	130.3	159.5	233.5	3.5	20.0	2
20.0	3	●	MDE 2000S20H03	73.6	103.6	173.6	3.6	20.0	2
	5	●	2000S20H05	133.6	163.6	233.6	3.6	20.0	2

Grade: ACT100

NeXEO MDE-H type (Internal Coolant Supply)

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-drilling of a flat surface with a Flat MULTIDRILL MDF series drill 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 (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)
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 series		HGS series		HGS series		HGS series	

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 38HRC	
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 (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)
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 series (HY series)		HX series (HY series)		MDM series		HGS series	

MDF series

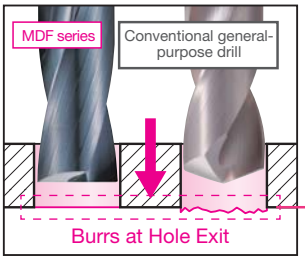
■ General Features

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

■ Features and Applications

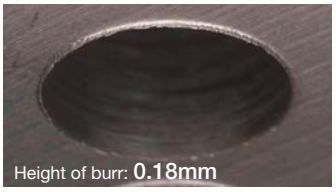
- Suited to various types of drilling thanks to a point angle of 180°
  Suitable for high-efficiency flat bottom drilling, drilling on non-flat surfaces such as inclined and cylindrical surfaces, and interrupted drilling. Also reduces burrs at the hole exit.
- Improves drilling stability
  Achieves high 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

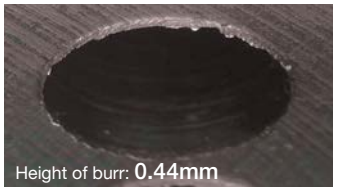


Work Material: SCM415
Machine: BT40 Vertical Machining Centre
Tool: MDF 0500S2D (ø5.0mm x 2D)
Cutting Conditions: Vc = 65m/min, f = 0.12mm/rev, H = 10mm, 150 holes, Wet

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

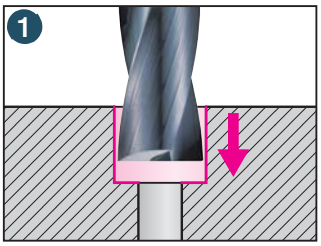


Flat MULTIDRILL MDF series

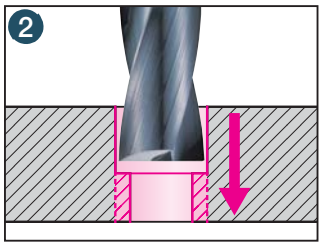


Conventional general-purpose drill

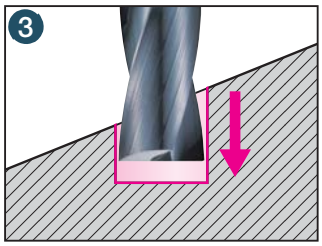
■ Drilling Applications



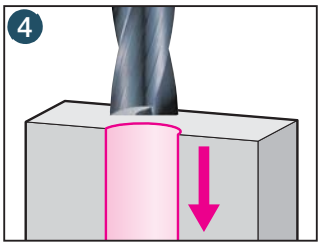
High-efficiency flat bottom drilling



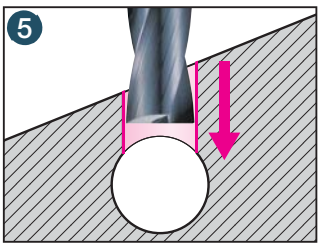
Hole expansion drilling



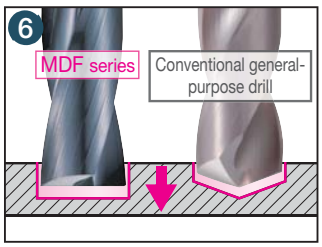
Drilling in non-horizontal surface (inclined surface, cylindrical surface, etc.)



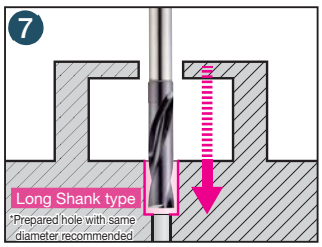
Interrupted drilling



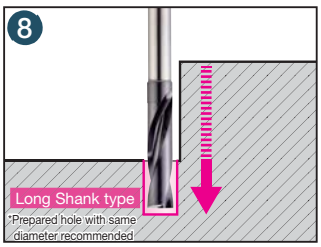
Cross-hole drilling



Pre-tap hole drilling in thin plates



Flat Bottom Drilling at deep positions



Avoids interference with work material

Long shanked type (MDF-L type 2D) for flat bottom 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 for drilling with the long shank type.

DC < 6mm, stepped shank

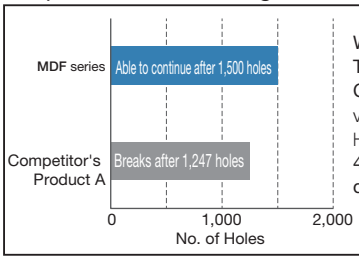
DC ≥ 6mm, relief shank

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

- Internal coolant supply enables deep flat bottom hole drilling.

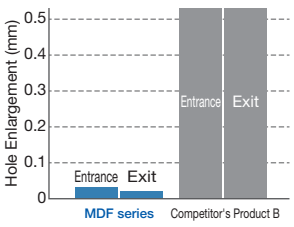
*A prepared hole with the same diameter or centring hole with a larger diameter than the tool is needed for drilling with an L/D=5 oil hole.

Deep Flat Bottom Drilling



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

Long Overhang Flat Bottom Drilling

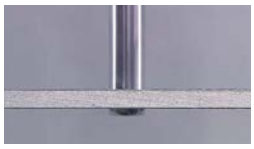


Work Material: S50C
Tool: MDF 0600H3D (ø6)
Cutting Conditions:
vc = 90m/min, f = 0.1mm/rev
H = 18mm (3D), Internal Coolant Supply
Overhang 35mm

Drilling on slanted surfaces

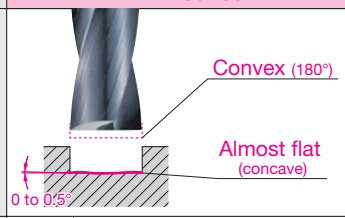
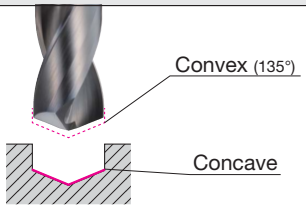
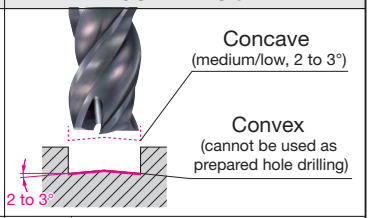
Work Material: SCM415
Tool: MDF 0500S2D (ø5)
Cutting Conditions:
vc = 65m/min, f = 0.08mm/rev
H = 10mm, External MQL

Prevents burrs and conical remnants on tool withdrawal



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

■ Distinguishing Flat Drills, General-purpose Drills and Endmills

Tool	Flat Drill **MDF series**		General-purpose Drill GS/HGS series		Endmill for Flat Bottom Drilling 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

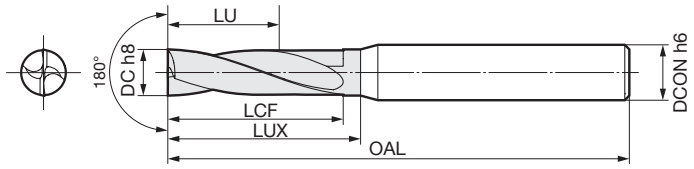
MDF-S type (External Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.28% | 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 N36 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	40	3.0	1
0.4*		●	0040S2D*	1.2	1.4	1.7	40	3.0	1
0.5		●	0050S2D	1.5	2.0	2.3	40	3.0	1
0.6	2	●	0060S2D	1.8	2.4	2.7	40	3.0	1
0.7		●	0070S2D	2.1	2.8	3.1	40	3.0	1
0.8		●	0080S2D	2.4	3.2	3.5	40	3.0	1
0.9		●	0090S2D	2.7	3.6	3.9	40	3.0	1
1.0		●	MDF 0100S2D	3.0	4.0	4.3	45	3.0	1
1.1		●	0110S2D	3.3	4.4	4.7	45	3.0	1
1.2		●	0120S2D	3.6	4.8	5.1	45	3.0	1
1.3		●	0130S2D	3.9	5.2	5.5	45	3.0	1
1.4	2	●	0140S2D	4.2	5.6	5.9	45	3.0	1
1.5		●	0150S2D	4.5	6.0	6.3	45	3.0	1
1.6		●	0160S2D	4.8	6.4	6.7	45	3.0	1
1.7		●	0170S2D	5.1	6.8	7.1	45	3.0	1
1.8		●	0180S2D	5.4	7.2	7.5	45	3.0	1
1.9		●	0190S2D	5.7	7.6	7.9	45	3.0	1
2.0		●	MDF 0200S2D	6.0	8.0	8.3	50	4.0	1
2.1		●	0210S2D	6.3	8.4	8.7	50	4.0	1
2.2		●	0220S2D	6.6	8.8	9.1	50	4.0	1
2.3		●	0230S2D	6.9	9.2	9.5	50	4.0	1
2.4		●	0240S2D	7.2	9.6	9.9	50	4.0	1
2.5		●	0250S2D	7.5	10.0	10.5	50	4.0	1
2.6		●	0260S2D	7.8	10.4	11.1	50	4.0	1
2.7		●	0270S2D	8.1	10.8	11.7	50	4.0	1
2.76		●	0276S2D	8.3	11.0	12.0	50	4.0	1
2.78		●	0278S2D	8.3	11.1	12.1	50	4.0	1
2.8		●	0280S2D	8.4	11.2	12.2	50	4.0	1
2.9		●	0290S2D	8.7	11.6	12.8	50	4.0	1
3.0	2	●	0300S2D	9.0	12.0	12.3	50	6.0	1
3.1		●	0310S2D	9.3	12.4	12.7	50	6.0	1
3.2		●	0320S2D	9.6	12.8	13.1	50	6.0	1
3.3		●	0330S2D	9.9	13.2	13.5	50	6.0	1
3.4		●	0340S2D	10.2	13.6	13.9	50	6.0	1
3.5		●	0350S2D	10.5	14.0	14.3	50	6.0	1
3.6		●	0360S2D	10.8	14.4	14.9	50	6.0	1
3.66		●	0366S2D	10.9	14.6	15.3	50	6.0	1
3.68		●	0368S2D	11.0	14.7	15.4	50	6.0	1
3.7		●	0370S2D	11.1	14.8	15.5	50	6.0	1
3.8		●	0380S2D	11.4	15.2	16.0	50	6.0	1
3.9		●	0390S2D	11.7	15.6	16.6	50	6.0	1
4.0		●	0400S2D	12.0	16.0	17.2	50	6.0	1
4.1		●	MDF 0410S2D	12.3	16.4	17.8	60	6.0	1
4.2		●	0420S2D	12.6	16.8	18.4	60	6.0	1
4.3		●	0430S2D	12.9	17.2	18.9	60	6.0	1
4.4		●	0440S2D	13.2	17.6	19.5	60	6.0	1
4.5		●	0450S2D	13.5	18.0	20.1	60	6.0	1
4.6		●	0460S2D	13.8	18.4	20.7	60	6.0	1
4.62	2	●	0462S2D	13.8	18.4	20.9	60	6.0	1
4.64		●	0464S2D	13.9	18.5	21.0	60	6.0	1
4.7		●	0470S2D	14.1	18.8	21.3	60	6.0	1
4.8		●	0480S2D	14.4	19.2	21.8	60	6.0	1
4.9		●	0490S2D	14.7	19.6	22.4	60	6.0	1
5.0		●	0500S2D	15.0	20.0	23.0	60	6.0	1
5.1		●	0510S2D	15.3	20.4	23.6	60	6.0	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	24.2	60	6.0	1
5.3		●	0530S2D	15.9	21.2	24.7	60	6.0	1
5.4		●	0540S2D	16.2	21.6	25.3	60	6.0	1
5.5		●	0550S2D	16.5	22.0	25.9	60	6.0	1
5.52		●	0552S2D	16.5	22.0	26.1	60	6.0	1
5.54	2	●	0554S2D	16.6	22.1	26.2	60	6.0	1
5.6		●	0560S2D	16.8	22.4	26.5	60	6.0	1
5.7		●	0570S2D	17.1	22.8	27.1	60	6.0	1
5.8		●	0580S2D	17.4	23.2	27.6	60	6.0	1
5.9		●	0590S2D	17.7	23.6	28.2	60	6.0	1
6.0		●	MDF 0600S2D	18.0	24.0	28.8	60	6.0	1
6.1		●	0610S2D	18.3	24.4	27.4	70	8.0	1
6.2		●	0620S2D	18.6	24.8	28.0	70	8.0	1
6.3		●	0630S2D	18.9	25.2	28.5	70	8.0	1
6.4		●	0640S2D	19.2	25.6	29.1	70	8.0	1
6.5		●	0650S2D	19.5	26.0	29.7	70	8.0	1
6.6		●	0660S2D	19.8	26.4	30.3	70	8.0	1
6.7		●	0670S2D	20.1	26.8	30.9	70	8.0	1
6.8		●	0680S2D	20.4	27.2	31.4	70	8.0	1
6.9		●	0690S2D	20.7	27.6	32.0	70	8.0	1
7.0		●	0700S2D	21.0	28.0	32.6	70	8.0	1
7.1		●	0710S2D	21.3	28.4	33.2	70	8.0	1
7.2	2	●	0720S2D	21.6	28.8	33.8	70	8.0	1
7.3		●	0730S2D	21.9	29.2	34.3	70	8.0	1
7.36		●	0736S2D	22.0	29.4	34.7	70	8.0	1
7.38		●	0738S2D	22.1	29.5	34.8	70	8.0	1
7.4		●	0740S2D	22.2	29.6	34.9	70	8.0	1
7.5		●	0750S2D	22.5	30.0	35.5	70	8.0	1
7.52		●	0752S2D	22.5	30.0	35.7	70	8.0	1
7.54		●	0754S2D	22.6	30.1	35.8	70	8.0	1
7.6		●	0760S2D	22.8	30.4	36.1	70	8.0	1
7.7		●	0770S2D	23.1	30.8	36.7	70	8.0	1
7.8		●	0780S2D	23.4	31.2	37.2	70	8.0	1
7.9		●	0790S2D	23.7	31.6	37.8	70	8.0	1
8.0		●	0800S2D	24.0	32.0	38.4	70	8.0	1
8.1		●	MDF 0810S2D	24.3	32.4	37.0	80	10.0	1
8.2		●	0820S2D	24.6	32.8	37.6	80	10.0	1
8.3		●	0830S2D	24.9	33.2	38.1	80	10.0	1
8.4		●	0840S2D	25.2	33.6	38.7	80	10.0	1
8.5		●	0850S2D	25.5	34.0	39.3	80	10.0	1
8.6		●	0860S2D	25.8	34.4	39.9	80	10.0	1
8.7		●	0870S2D	26.1	34.8	40.5	80	10.0	1
8.8		●	0880S2D	26.4	35.2	41.0	80	10.0	1
8.9		●	0890S2D	26.7	35.6	41.6	80	10.0	1
9.0		●	0900S2D	27.0	36.0	42.2	80	10.0	1
9.1	2	●	0910S2D	27.3	36.4	42.8	80	10.0	1
9.2		●	0920S2D	27.6	36.8	43.4	80	10.0	1
9.24		●	0924S2D	27.7	36.9	43.6	80	10.0	1
9.26		●	0926S2D	27.7	37.0	43.7	80	10.0	1
9.3		●	0930S2D	27.9	37.2	43.9	80	10.0	1
9.36		●	0936S2D	28.0	37.4	44.3	80	10.0	1
9.38		●	0938S2D	28.1	37.5	44.4	80	10.0	1
9.4		●	0940S2D	28.2	37.6	44.5	80	10.0	1
9.5		●	0950S2D	28.5	38.0	45.1	80	10.0	1
9.52		●	0952S2D	28.5	38.0	45.3	80	10.0	1

Grade: ACF75

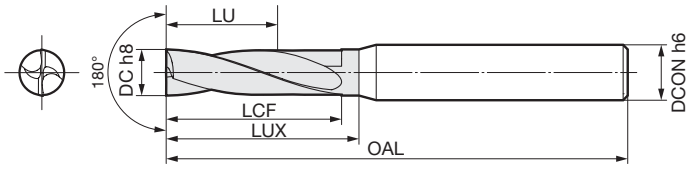
MDF-S type (External Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.25% | 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 N36 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	2	●	MDF 0954S2D	28.6	38.1	45.4	80	10.0	1
9.6		●	0960S2D	28.8	38.4	45.7	80	10.0	1
9.7		●	0970S2D	29.1	38.8	46.3	80	10.0	1
9.8		●	0980S2D	29.4	39.2	46.8	80	10.0	1
9.9		●	0990S2D	29.7	39.6	47.4	80	10.0	1
10.0		●	1000S2D	30.0	40.0	48.0	80	10.0	1
10.1	2	●	MDF 1010S2D	30.3	40.4	46.6	90	12.0	1
10.2		●	1020S2D	30.6	40.8	47.2	90	12.0	1
10.3		●	1030S2D	30.9	41.2	47.7	90	12.0	1
10.4		●	1040S2D	31.2	41.6	48.3	90	12.0	1
10.5		●	1050S2D	31.5	42.0	48.9	90	12.0	1
10.6		●	1060S2D	31.8	42.4	49.5	90	12.0	1
10.7		●	1070S2D	32.1	42.8	50.1	90	12.0	1
10.8		●	1080S2D	32.4	43.2	50.6	90	12.0	1
10.9		●	1090S2D	32.7	43.6	51.2	90	12.0	1
11.0		●	1100S2D	33.0	44.0	51.8	90	12.0	1
11.1		●	1110S2D	33.3	44.4	52.4	90	12.0	1
11.2		●	1120S2D	33.6	44.8	53.0	90	12.0	1
11.22		●	1122S2D	33.6	44.8	53.1	90	12.0	1
11.24		●	1124S2D	33.7	44.9	53.2	90	12.0	1
11.3		●	1130S2D	33.9	45.2	53.5	90	12.0	1
11.36		●	1136S2D	34.0	45.4	53.9	90	12.0	1
11.38		●	1138S2D	34.1	45.5	54.0	90	12.0	1
11.4		●	1140S2D	34.2	45.6	54.1	90	12.0	1
11.5		●	1150S2D	34.5	46.0	54.7	90	12.0	1
11.6		●	1160S2D	34.8	46.4	55.3	90	12.0	1
11.7		●	1170S2D	35.1	46.8	55.9	90	12.0	1
11.8		●	1180S2D	35.4	47.2	56.4	90	12.0	1
11.9		●	1190S2D	35.7	47.6	57.0	90	12.0	1
12.0		●	1200S2D	36.0	48.0	57.6	90	12.0	1
12.1	2	●	MDF 1210S2D	36.3	48.4	52.3	100	14.0	1
12.2		●	1220S2D	36.6	48.8	52.7	100	14.0	1
12.3		●	1230S2D	36.9	49.2	53.1	100	14.0	1
12.4		●	1240S2D	37.2	49.6	53.6	100	14.0	1
12.5		●	1250S2D	37.5	50.0	54.0	100	14.0	1
12.6		●	1260S2D	37.8	50.4	55.1	100	14.0	1
12.7		●	1270S2D	38.1	50.8	55.5	100	14.0	1
12.8		●	1280S2D	38.4	51.2	55.9	100	14.0	1
12.9		●	1290S2D	38.7	51.6	56.4	100	14.0	1
13.0		●	1300S2D	39.0	52.0	56.8	100	14.0	1
13.1		●	1310S2D	39.3	52.4	57.8	110	14.0	1
13.2		●	1320S2D	39.6	52.8	58.3	110	14.0	1
13.3		●	1330S2D	39.9	53.2	58.7	110	14.0	1
13.4		●	1340S2D	40.2	53.6	59.2	110	14.0	1
13.5		●	1350S2D	40.5	54.0	59.6	110	14.0	1
13.6		●	1360S2D	40.8	54.4	60.6	110	14.0	1
13.7		●	1370S2D	41.1	54.8	61.1	110	14.0	1
13.8		●	1380S2D	41.4	55.2	61.5	110	14.0	1
13.9		●	1390S2D	41.7	55.6	62.0	110	14.0	1
14.0		●	1400S2D	42.0	56.0	62.4	110	14.0	1
14.1		●	1410S2D	42.3	56.4	63.4	110	16.0	1
14.2		●	1420S2D	42.6	56.8	63.9	110	16.0	1
14.3		●	1430S2D	42.9	57.2	64.3	110	16.0	1
14.4		●	1440S2D	43.2	57.6	64.8	110	16.0	1
14.5		●	1450S2D	43.5	58.0	65.2	110	16.0	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	2	●	MDF 1460S2D	43.8	58.4	66.2	110	16.0	1
14.7		●	1470S2D	44.1	58.8	66.6	110	16.0	1
14.8		●	1480S2D	44.4	59.2	67.1	110	16.0	1
14.9		●	1490S2D	44.7	59.6	67.5	110	16.0	1
15.0		●	1500S2D	45.0	60.0	68.0	110	16.0	1
15.1	2	●	MDF 1510S2D	45.3	60.4	69.0	115	16.0	1
15.2		●	1520S2D	45.6	60.8	69.4	115	16.0	1
15.3		●	1530S2D	45.9	61.2	69.9	115	16.0	1
15.4		●	1540S2D	46.2	61.6	70.3	115	16.0	1
15.5		●	1550S2D	46.5	62.0	70.8	115	16.0	1
15.6		●	1560S2D	46.8	62.4	71.8	115	16.0	1
15.7		●	1570S2D	47.1	62.8	72.2	115	16.0	1
15.8		●	1580S2D	47.4	63.2	72.7	115	16.0	1
15.9		●	1590S2D	47.7	63.6	73.1	115	16.0	1
16.0		●	1600S2D	48.0	64.0	73.6	115	16.0	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	125	18.0	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	130	18.0	1
18.5	2	●	MDF 1850S2D	55.5	74.0	83.6	140	20.0	1
19.0		●	1900S2D	57.0	76.0	86.4	140	20.0	1
19.5		●	1950S2D	58.5	78.0	89.2	140	20.0	1
20.0		●	2000S2D	60.0	80.0	92.0	140	20.0	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.

(n: Spindle Speed min^{-1} vc: 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	n	25,500	22,300	12,700	12,700	25,500	19,000	51,000
	vc	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	n	17,500	14,300	9,500	8,000	17,500	12,700	32,000
	vc	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	n	9,500	8,000	4,800	4,800	9,500	8,800	17,500
	vc	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	n	6,000	5,200	3,400	2,400	6,000	5,200	8,800
	vc	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	n	4,000	3,400	1,600	1,600	4,000	3,700	5,800
	vc	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	n	3,000	2,600	1,200	1,200	3,000	2,800	4,400
	vc	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	n	2,400	2,100	950	950	2,400	2,200	3,500
	vc	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	n	2,000	1,700	800	800	2,000	1,900	2,900
	vc	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	n	1,500	1,300	600	600	1,500	1,400	2,200
	vc	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	n	1,200	1,000	480	480	1,200	1,100	1,750
	vc	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

* If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available. In this case, the tool life may be shortened.

Min. - **Optimum** - Max.

MEMO

MDF-L type Long Shank (External Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.26% | 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 N36 for the tolerance of h6 and h8

Fig 1 (DC ≤ DCON)

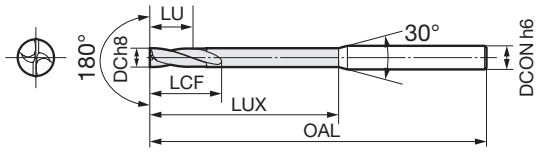
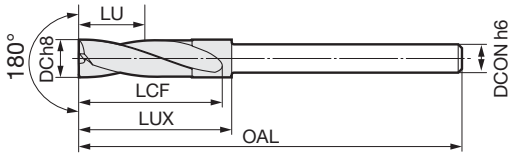


Fig 2 (DC > DCON)



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	100	6.0	1
3.1		●	0310L2D	9.3	14.0	31.0	100	6.0	1
3.2		●	0320L2D	9.6	14.4	32.0	100	6.0	1
3.3		●	0330L2D	9.9	14.9	33.0	100	6.0	1
3.4		●	0340L2D	10.2	15.3	34.0	100	6.0	1
3.5		●	0350L2D	10.5	15.8	35.0	100	6.0	1
3.6		●	0360L2D	10.8	16.2	36.0	100	6.0	1
3.7		●	0370L2D	11.1	16.7	37.0	100	6.0	1
3.8		●	0380L2D	11.4	17.1	38.0	100	6.0	1
3.9		●	0390L2D	11.7	17.6	39.0	100	6.0	1
4.0	2	●	0400L2D	12.0	18.0	40.0	100	6.0	1
4.1		●	0410L2D	12.3	18.5	41.0	100	6.0	1
4.2		●	0420L2D	12.6	18.9	42.0	100	6.0	1
4.3		●	0430L2D	12.9	19.4	43.0	100	6.0	1
4.4		●	0440L2D	13.2	19.8	44.0	100	6.0	1
4.5		●	0450L2D	13.5	20.3	45.0	100	6.0	1
4.6		●	0460L2D	13.8	20.7	46.0	100	6.0	1
4.7		●	0470L2D	14.1	21.2	47.0	100	6.0	1
4.8		●	0480L2D	14.4	21.6	48.0	100	6.0	1
4.9		●	0490L2D	14.7	22.1	49.0	100	6.0	1
5.0		●	0500L2D	15.0	22.5	50.0	100	6.0	1
5.1		●	MDF 0510L2D	15.3	23.0	51.0	110	6.0	1
5.2		●	0520L2D	15.6	23.4	52.0	110	6.0	1
5.3		●	0530L2D	15.9	23.9	53.0	110	6.0	1
5.4		●	0540L2D	16.2	24.3	54.0	110	6.0	1
5.5	2	●	0550L2D	16.5	24.8	55.0	110	6.0	1
5.6		●	0560L2D	16.8	25.2	56.0	110	6.0	1
5.7		●	0570L2D	17.1	25.7	57.0	110	6.0	1
5.8		●	0580L2D	17.4	26.1	58.0	110	6.0	1
5.9		●	0590L2D	17.7	26.6	59.0	110	6.0	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	120	6.0	2
6.2		●	0620L2D	18.6	27.9	30.9	120	6.0	2
6.3		●	0630L2D	18.9	28.4	31.4	120	6.0	2
6.4		●	0640L2D	19.2	28.8	31.8	120	6.0	2
6.5	2	●	0650L2D	19.5	29.3	32.3	120	6.0	2
6.6		●	0660L2D	19.8	29.7	32.7	120	6.0	2
6.7		●	0670L2D	20.1	30.2	33.2	120	6.0	2
6.8		●	0680L2D	20.4	30.6	33.6	120	6.0	2
6.9		●	0690L2D	20.7	31.1	34.1	120	6.0	2
7.0		●	0700L2D	21.0	31.5	34.5	120	6.0	2
7.1		●	MDF 0710L2D	21.3	32.0	35.0	130	6.0	2
7.2		●	0720L2D	21.6	32.4	35.4	130	6.0	2
7.3		●	0730L2D	21.9	32.9	35.9	130	6.0	2
7.4		●	0740L2D	22.2	33.3	36.3	130	6.0	2
7.5	2	●	0750L2D	22.5	33.8	36.8	130	6.0	2
7.6		●	0760L2D	22.8	34.2	37.2	130	6.0	2
7.7		●	0770L2D	23.1	34.7	37.7	130	6.0	2
7.8		●	0780L2D	23.4	35.1	38.1	130	6.0	2
7.9		●	0790L2D	23.7	35.6	38.6	130	6.0	2
8.0		●	0800L2D-S6	24.0	36.0	39.0	130	6.0	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	140	8.0	2
8.2		●	0820L2D	24.6	36.9	39.9	140	8.0	2
8.3	2	●	0830L2D	24.9	37.4	40.4	140	8.0	2
8.4		●	0840L2D	25.2	37.8	40.8	140	8.0	2
8.5		●	0850L2D	25.5	38.3	41.3	140	8.0	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	140	8.0	2
8.7		●	0870L2D	26.1	39.2	42.2	140	8.0	2
8.8	2	●	0880L2D	26.4	39.6	42.6	140	8.0	2
8.9		●	0890L2D	26.7	40.1	43.1	140	8.0	2
9.0		●	0900L2D	27.0	40.5	43.5	140	8.0	2
9.1		●	MDF 0910L2D	27.3	41.0	44.0	150	8.0	2
9.2		●	0920L2D	27.6	41.4	44.4	150	8.0	2
9.3		●	0930L2D	27.9	41.9	44.9	150	8.0	2
9.4		●	0940L2D	28.2	42.3	45.3	150	8.0	2
9.5	2	●	0950L2D	28.5	42.8	45.8	150	8.0	2
9.6		●	0960L2D	28.8	43.2	46.2	150	8.0	2
9.7		●	0970L2D	29.1	43.7	46.7	150	8.0	2
9.8		●	0980L2D	29.4	44.1	47.1	150	8.0	2
9.9		●	0990L2D	29.7	44.6	47.6	150	8.0	2
10.0		●	1000L2D-S8	30.0	45.0	48.0	150	8.0	2
10.0	2	●	MDF 1000L2D	30.0	45.0	100.0	150	10.0	1
10.1		●	MDF 1010L2D	30.3	45.5	48.5	160	10.0	2
10.2		●	1020L2D	30.6	45.9	48.9	160	10.0	2
10.3		●	1030L2D	30.9	46.4	49.4	160	10.0	2
10.4		●	1040L2D	31.2	46.8	49.8	160	10.0	2
10.5	2	●	1050L2D	31.5	47.3	50.3	160	10.0	2
10.6		●	1060L2D	31.8	47.7	50.7	160	10.0	2
10.7		●	1070L2D	32.1	48.2	51.2	160	10.0	2
10.8		●	1080L2D	32.4	48.6	51.6	160	10.0	2
10.9		●	1090L2D	32.7	49.1	52.1	160	10.0	2
11.0		●	1100L2D	33.0	49.5	52.5	160	10.0	2
11.1		●	MDF 1110L2D	33.3	50.0	53.0	170	10.0	2
11.2		●	1120L2D	33.6	50.4	53.4	160	10.0	2
11.3		●	1130L2D	33.9	50.9	53.9	160	10.0	2
11.4		●	1140L2D	34.2	51.3	54.3	160	10.0	2
11.5	2	●	1150L2D	34.5	51.8	54.8	160	10.0	2
11.6		●	1160L2D	34.8	52.2	55.2	160	10.0	2
11.7		●	1170L2D	35.1	52.7	55.7	160	10.0	2
11.8		●	1180L2D	35.4	53.1	56.1	160	10.0	2
11.9		●	1190L2D	35.7	53.6	56.6	160	10.0	2
12.0		●	1200L2D-S10	36.0	54.0	57.0	160	10.0	2
12.0	2	●	MDF 1200L2D	36.0	54.0	120.0	170	12.0	1
12.5	2	●	MDF 1250L2D	37.5	56.3	59.3	180	12.0	2
13.0		●	1300L2D	39.0	58.5	61.5	180	12.0	2
13.5	2	●	MDF 1350L2D	40.5	60.8	63.8	190	12.0	2
14.0		●	1400L2D-S12	42.0	63.0	66.0	190	12.0	2
14.0	2	●	MDF 1400L2D	42.0	63.0	140.0	190	14.0	2
14.5	2	●	MDF 1450L2D	43.5	65.3	68.3	200	14.0	2
15.0		●	1500L2D	45.0	67.5	70.5	200	14.0	2
15.5	2	●	MDF 1550L2D	46.5	69.8	72.8	210	14.0	2
16.0		●	1600L2D-S14	48.0	72.0	75.0	210	14.0	2
16.0	2	●	MDF 1600L2D	48.0	72.0	160.0	210	16.0	1
16.5	2	●	MDF 1650L2D	49.5	74.3	77.3	220	16.0	2
17.0		●	1700L2D	51.0	76.5	79.5	220	16.0	2
17.5	2	●	MDF 1750L2D	52.5	78.8	81.8	230	16.0	2
18.0		●	1800L2D-S16	54.0	81.0	84.0	230	16.0	2
18.0	2	●	MDF 1800L2D	54.0	81.0	180.0	230	18.0	1
18.5	2	●	MDF 1850L2D	55.5	83.3	86.3	240	18.0	2
19.0		●	1900L2D	57.0	85.5	88.5	240	18.0	2
19.5	2	●	MDF 1950L2D	58.5	87.8	90.8	250	18.0	2
20.0		●	2000L2D-S18	60.0	90.0	93.0	250	18.0	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.

MDF-L type Long Shank (External Coolant Supply)

Recommended Cutting Conditions (for 2D)

1. A prepared hole with the same diameter is needed for drilling with this tool.
2. The cutting conditions are recommended when there is a prepared hole with the same diameter.
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.

(n: Spindle Speed min^{-1} vc: 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	n	6,400	5,600	3,400	2,400	6,800	6,000	8,800
	vc	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	n	4,200	3,700	1,600	1,600	4,500	4,000	5,800
	vc	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	n	3,200	2,800	1,200	1,200	3,400	3,000	4,400
	vc	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	n	2,500	2,200	950	950	2,700	2,400	3,500
	vc	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	n	2,100	1,900	800	800	2,300	2,000	2,900
	vc	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	n	1,600	1,400	600	600	1,700	1,500	2,200
	vc	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	n	1,300	1,100	480	480	1,300	1,200	1,750
	vc	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 N36 for the tolerance of h6 and h8

Fig 1 (3D single margin)

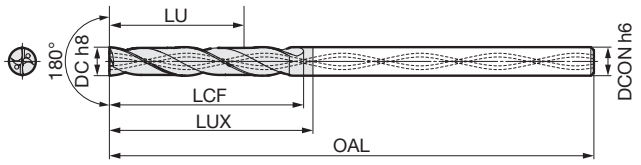
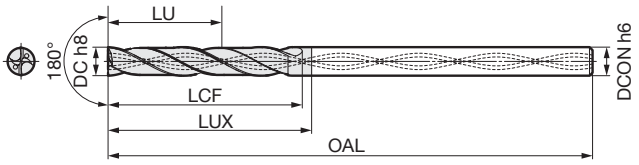


Fig 2 (5D double margin)



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	3.0	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	4.0	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	4.0	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	4.0	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	4.0	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	4.0	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	4.0	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	4.0	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	4.0	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	4.0	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	4.0	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	5.0	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	5.0	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	5.0	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	5.0	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	5.0	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	5.0	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	5.0	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	5.0	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	5.0	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	5.0	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	6.0	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	6.0	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	6.0	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	6.0	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	6.0	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	6.0	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	6.0	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	6.0	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	6.0	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	6.0	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	7.0	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	7.0	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	7.0	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	7.0	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	7.0	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	7.0	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	7.0	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	7.0	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	7.0	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	7.0	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	8.0	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	8.0	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	8.0	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	8.0	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	8.0	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	8.0	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	8.0	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	8.0	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	8.0	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	8.0	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	9.0	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	9.0	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	9.0	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	9.0	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	9.0	2

Grade: ACF75

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

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 N36 for the tolerance of h6 and h8

Fig 1 (3D single margin)

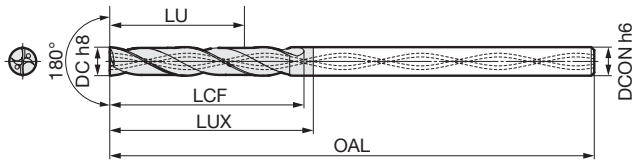
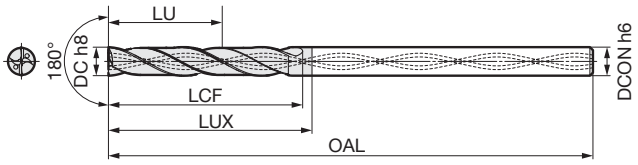


Fig 2 (5D double margin)



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	9.0	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	9.0	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	9.0	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	9.0	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	9.0	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	10.0	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	10.0	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	10.0	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	10.0	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	10.0	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	10.0	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	10.0	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	10.0	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	10.0	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	10.0	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	11.0	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	11.0	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	11.0	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	11.0	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	11.0	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	11.0	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	11.0	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	11.0	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	11.0	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	11.0	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	12.0	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	12.0	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	12.0	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	12.0	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	12.0	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	12.0	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	12.0	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	12.0	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	12.0	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	12.0	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	13.0	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	13.0	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	14.0	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	14.0	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	15.0	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	15.0	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	16.0	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	16.0	2

Grade: ACF75

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

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 drilling of stainless steel.

(n: Spindle Speed min^{-1} vc: 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	n	6,800	5,600	3,200	2,800	6,800	6,000	9,500
	vc	70 - **85** - 100	60 - **75** - 90	30 - **40** - 50	25 - **35** - 45	70 - **85** - 100	65 - **75** - 85	90 - **120** - 150
	f	0.06 - **0.08** - 0.10	0.05 - **0.08** - 0.10	0.01 - **0.02** - 0.03	0.01 - **0.02** - 0.03	0.06 - **0.08** - 0.10	0.04 - **0.06** - 0.08	0.06 - **0.08** - 0.10
ø6.0	n	4,500	3,700	2,100	1,900	4,500	4,200	6,400
	vc	70 - **85** - 100	60 - **75** - 90	30 - **40** - 50	25 - **35** - 45	70 - **85** - 100	70 - **80** - 90	90 - **120** - 150
	f	0.05 - **0.10** - 0.15	0.05 - **0.10** - 0.15	0.04 - **0.06** - 0.08	0.03 - **0.04** - 0.05	0.05 - **0.10** - 0.15	0.06 - **0.09** - 0.12	0.05 - **0.10** - 0.15
ø8.0	n	3,400	2,800	1,600	1,400	3,400	3,200	4,800
	vc	70 - **85** - 100	60 - **75** - 90	30 - **40** - 50	25 - **35** - 45	70 - **85** - 100	70 - **80** - 90	90 - **120** - 150
	f	0.10 - **0.15** - 0.20	0.10 - **0.15** - 0.20	0.06 - **0.08** - 0.10	0.04 - **0.06** - 0.08	0.10 - **0.15** - 0.20	0.10 - **0.12** - 0.15	0.10 - **0.15** - 0.20
ø10.0	n	2,700	2,200	1,300	1,100	2,700	2,500	3,800
	vc	70 - **85** - 100	60 - **75** - 90	30 - **40** - 50	25 - **35** - 45	70 - **85** - 100	70 - **80** - 90	90 - **120** - 150
	f	0.12 - **0.17** - 0.22	0.12 - **0.17** - 0.22	0.08 - **0.10** - 0.12	0.06 - **0.08** - 0.10	0.12 - **0.17** - 0.22	0.12 - **0.15** - 0.18	0.15 - **0.20** - 0.25
ø12.0	n	2,300	1,900	1,100	900	2,300	2,100	3,200
	vc	70 - **85** - 100	60 - **75** - 90	30 - **40** - 50	25 - **35** - 45	70 - **85** - 100	70 - **80** - 90	90 - **120** - 150
	f	0.15 - **0.20** - 0.25	0.15 - **0.20** - 0.25	0.12 - **0.15** - 0.18	0.08 - **0.10** - 0.12	0.15 - **0.20** - 0.25	0.15 - **0.18** - 0.20	0.20 - **0.25** - 0.30
ø16.0	n	1,700	1,400	600	700	1,700	1,600	2,400
	vc	70 - **85** - 100	60 - **75** - 90	30 - **40** - 50	25 - **35** - 45	70 - **85** - 100	70 - **80** - 90	90 - **120** - 150
	f	0.15 - **0.20** - 0.25	0.15 - **0.20** - 0.25	0.12 - **0.15** - 0.18	0.10 - **0.15** - 0.20	0.17 - **0.22** - 0.27	0.15 - **0.20** - 0.25	0.25 - **0.30** - 0.40

Min. - **Optimum** - Max.

Recommended Cutting Conditions (for 5D)

1. A prepared hole with the same diameter is needed for drilling with this tool.
2. The cutting conditions are recommended when there is a prepared hole with the same diameter.
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.

(n: Spindle Speed min^{-1} vc: 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	n	6,800	5,600	3,200	2,800	6,800	6,000	9,500
	vc	70 - **85** - 100	60 - **75** - 90	30 - **40** - 50	25 - **35** - 45	70 - **85** - 100	65 - **75** - 85	90 - **120** - 150
	f	0.06 - **0.08** - 0.10	0.05 - **0.08** - 0.10	0.01 - **0.02** - 0.03	0.01 - **0.02** - 0.03	0.06 - **0.08** - 0.10	0.04 - **0.06** - 0.08	0.06 - **0.08** - 0.10
ø6.0	n	4,500	3,700	2,100	1,900	4,500	4,000	6,400
	vc	70 - **85** - 100	60 - **75** - 90	30 - **40** - 50	25 - **35** - 45	70 - **85** - 100	65 - **75** - 85	90 - **120** - 150
	f	0.05 - **0.10** - 0.15	0.05 - **0.10** - 0.15	0.04 - **0.06** - 0.08	0.03 - **0.04** - 0.05	0.05 - **0.10** - 0.15	0.06 - **0.09** - 0.12	0.05 - **0.10** - 0.15
ø8.0	n	3,400	2,800	1,600	1,400	3,400	3,000	4,800
	vc	70 - **85** - 100	60 - **75** - 90	30 - **40** - 50	25 - **35** - 45	70 - **85** - 100	65 - **75** - 85	90 - **120** - 150
	f	0.10 - **0.15** - 0.20	0.10 - **0.15** - 0.20	0.06 - **0.08** - 0.10	0.04 - **0.06** - 0.08	0.10 - **0.15** - 0.20	0.10 - **0.12** - 0.15	0.10 - **0.15** - 0.20
ø10.0	n	2,700	2,200	1,300	1,100	2,700	2,400	3,800
	vc	70 - **85** - 100	60 - **75** - 90	30 - **40** - 50	25 - **35** - 45	70 - **85** - 100	65 - **75** - 85	90 - **120** - 150
	f	0.15 - **0.20** - 0.25	0.15 - **0.20** - 0.25	0.08 - **0.10** - 0.12	0.06 - **0.08** - 0.10	0.15 - **0.20** - 0.25	0.12 - **0.15** - 0.18	0.15 - **0.20** - 0.25
ø12.0	n	2,300	1,900	1,100	900	2,300	2,000	3,200
	vc	70 - **85** - 100	60 - **75** - 90	30 - **40** - 50	25 - **35** - 45	70 - **85** - 100	65 - **75** - 85	90 - **120** - 150
	f	0.20 - **0.25** - 0.30	0.20 - **0.25** - 0.30	0.12 - **0.15** - 0.18	0.08 - **0.10** - 0.12	0.17 - **0.22** - 0.27	0.15 - **0.20** - 0.25	0.20 - **0.25** - 0.30
ø16.0	n	1,700	1,400	600	700	1,700	1,500	2,400
	vc	70 - **85** - 100	60 - **75** - 90	30 - **40** - 50	25 - **35** - 45	70 - **85** - 100	65 - **75** - 85	90 - **120** - 150
	f	0.20 - **0.25** - 0.30	0.20 - **0.25** - 0.30	0.14 - **0.17** - 0.20	0.10 - **0.15** - 0.20	0.20 - **0.25** - 0.30	0.20 - **0.25** - 0.30	0.25 - **0.30** - 0.35

Min. - **Optimum** - Max.

MEMO

GS/HGS series

■ General Features

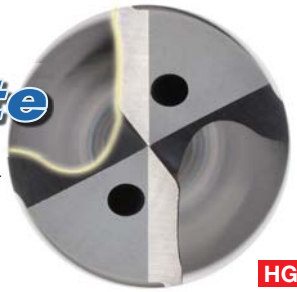
Super MULTIDRILL GS and HGS series are solid carbide drills that employs a proprietary J-flute design and wide chip pockets to achieve excellent chip control and evacuation.
In addition, DEX Coat enables long and stable tool life over a wide application range, for a variety of work materials.

■ 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.

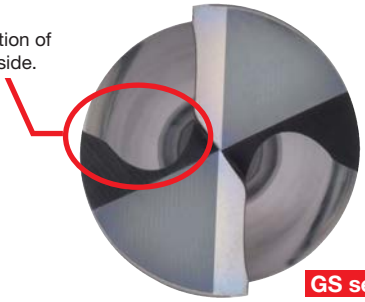
J flute

*"J flute" is a registered trademark.



HGS series

Wide chip pocket for smooth evacuation of chips generated inside.



GS series

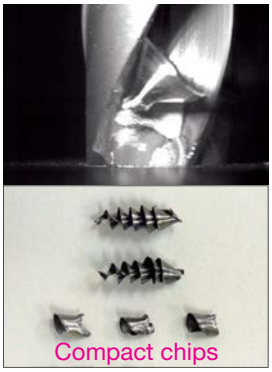
■ Product Range

Coolant Supply	Cat. No.	Diameter Range (mm)	Hole Depth (L/D)
External (GS series)	MDW□□□□GS2	ø1.0 to ø20.0	up to 2
	MDW□□□□GS4		up to 4
Internal (HGS series)	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 series



Compact chips

Conventional Tool

Comparison of Cutting Force

GS series Conventional Tool

GS series provides stable drill behaviour throughout the drilling process

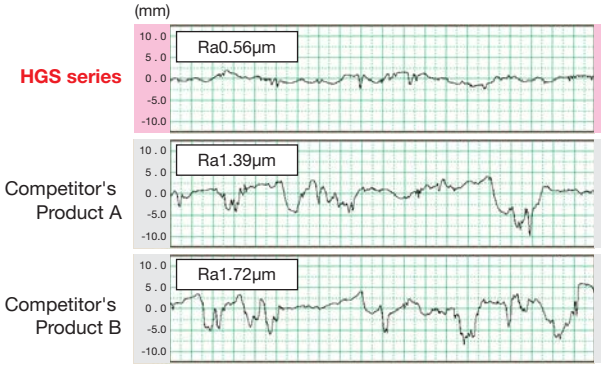
Tool : MDW 0800GS4
Work Material : S50C (200HB)
Cutting Conditions : vc = 80m/min, f = 0.25mm/rev, H = 24mm,
External Coolant Supply (water soluble)

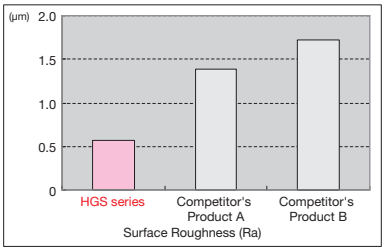
GS/HGS series

■ Uses Double Margin (HGS series) (excluding ø1.5 to ø2.4mm sizes)

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

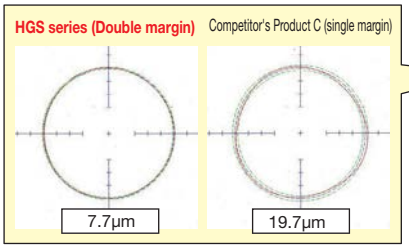
● Surface Roughness Comparison

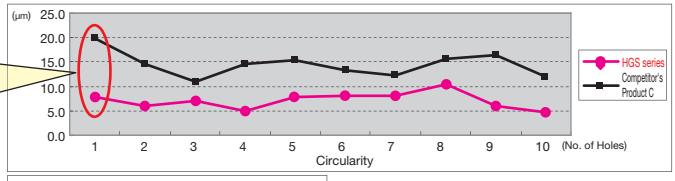




Work Material : SCM415 (120HB)
Tool : MDW0800HGS5
Cutting Conditions : vc = 80m/min, f = 0.25mm/rev, H = 38mm
Internal Coolant Supply (water soluble)

● Circularity Comparison



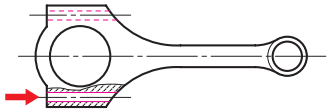


Work Material : S50C (200HB)
Tool : MDW 0800HGS8
Cutting Conditions : vc = 80m/min, f = 0.25mm/rev
H=64mm, internal coolant supply (water soluble)

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

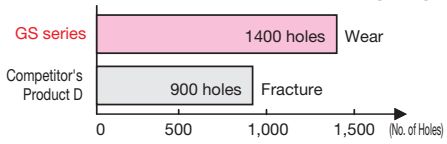
■ Application Examples (Super MULTIDRILL GS series)

● S43C (250HB) Automotive Component

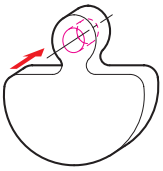


· Tool : MDW 0970GS4
· Cutting Conditions : vc = 80m/min, f = 0.25mm/rev
H = 25mm, External Coolant Supply (water soluble)

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

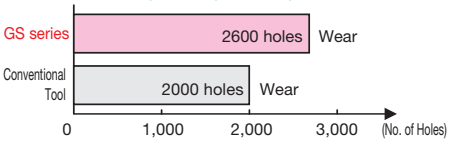


● Boron Steel (30HRC) Machine Component

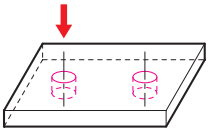


· Tool : MDW 0980GS2
· Cutting Conditions : vc = 70m/min, f = 0.15mm/rev
H=7mm, external coolant supply (water soluble)

1.3 times longer tool life than conventional drills
Good circularity and cylindricity

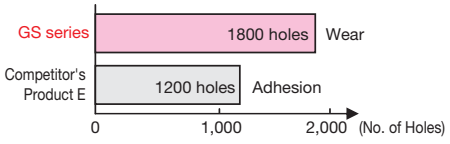


● SS400 Machine Component



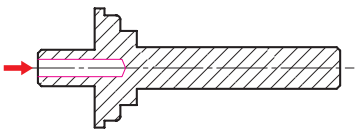
· Tool : MDW 1050GS4
· Cutting Conditions : vc = 150m/min, f = 0.3mm/rev
H=12mm, external coolant supply (water soluble)

Achieves 1.5 times longer tool life!
Good chip control



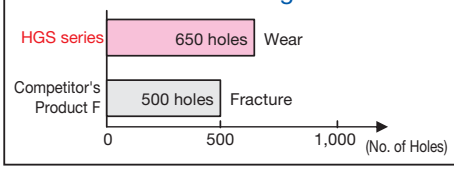
■ Application Examples (Super MULTIDRILL HGS series)

● SCr440H Automotive Component

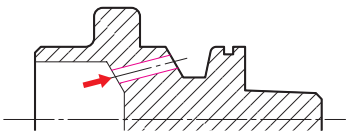


· Tool : MDW 0600HGS8
· Cutting Conditions : vc = 80m/min, f = 0.25mm/rev
H=48mm, internal coolant supply (oil-based)

Achieves 1.3 times longer tool life!

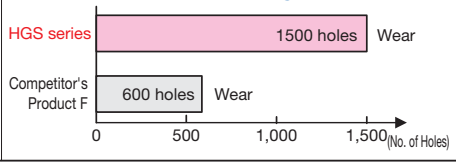


● SUJ2 Automotive Component

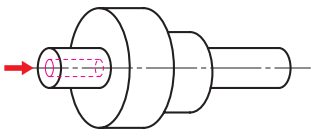


· Tool : MDW 0570HGS5
· Cutting Conditions : vc = 80m/min, f = 0.1mm/rev
H=35mm, internal coolant supply (water soluble)

Achieves 2.5 times longer tool life!

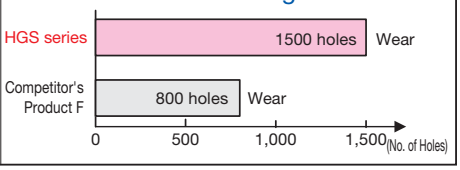


● SCM415 Machine Component



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

Achieves 1.8 times longer tool life!



GS series (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 N36 for the tolerance of h6 and h8

Fig 1

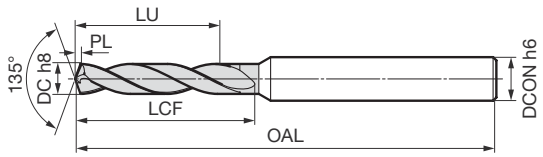
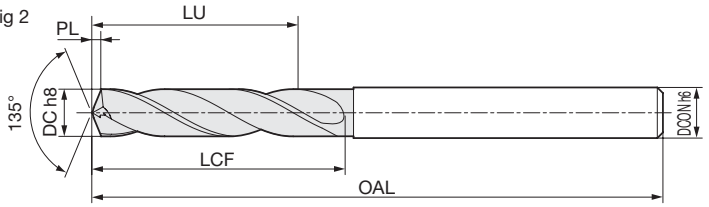


Fig 2



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	0.2	3.0	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	0.2	3.0	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	0.2	3.0	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	0.3	3.0	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	0.3	3.0	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	0.3	3.0	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	0.3	3.0	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	0.4	3.0	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	0.4	3.0	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	0.4	3.0	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	0.4	3.0	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	0.4	3.0	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	0.5	3.0	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	0.5	3.0	1
2.4	2	●	MDW 0240GS2	6.9	10.5	45.5	0.5	3.0	2
	4	●	0240GS4	13.9	17.5	49.5	0.5	3.0	2
2.5	2	●	MDW 0250GS2	6.8	10.5	45.5	0.5	3.0	2
	4	●	0250GS4	13.8	17.5	49.5	0.5	3.0	2
2.6	2	●	MDW 0260GS2	9.6	13.5	45.5	0.5	3.0	2
	4	●	0260GS4	15.6	19.5	49.5	0.5	3.0	2
2.7	2	●	MDW 0270GS2	9.6	13.6	45.6	0.6	3.0	2
	4	●	0270GS4	15.6	19.6	49.6	0.6	3.0	2
2.8	2	●	MDW 0280GS2	9.4	13.6	45.6	0.6	3.0	2
	4	●	0280GS4	15.4	19.6	49.6	0.6	3.0	2
2.9	2	●	MDW 0290GS2	9.3	13.6	45.6	0.6	3.0	2
	4	●	0290GS4	15.3	19.6	49.6	0.6	3.0	2
3.0	2	●	MDW 0300GS2	9.1	13.6	45.6	0.6	3.0	2
	4	●	0300GS4	15.1	19.6	49.6	0.6	3.0	2
3.1	2	●	MDW 0310GS2	15.0	19.6	54.6	0.6	4.0	2
	4	●	0310GS4	20.0	24.6	60.6	0.6	4.0	2
3.2	2	●	MDW 0320GS2	14.9	19.7	54.7	0.7	4.0	2
	4	●	0320GS4	19.9	24.7	60.7	0.7	4.0	2
3.3	2	●	MDW 0330GS2	14.8	19.7	54.7	0.7	4.0	2
	4	●	0330GS4	19.8	24.7	60.7	0.7	4.0	2
3.4	2	●	MDW 0340GS2	14.6	19.7	54.7	0.7	4.0	2
	4	●	0340GS4	19.6	24.7	60.7	0.7	4.0	2
3.5	2	●	MDW 0350GS2	14.5	19.7	54.7	0.7	4.0	2
	4	●	0350GS4	19.5	24.7	60.7	0.7	4.0	2
3.6	2	●	MDW 0360GS2	16.3	21.7	54.7	0.7	4.0	2
	4	●	0360GS4	22.3	27.7	60.7	0.7	4.0	2
3.7	2	●	MDW 0370GS2	16.3	21.8	54.8	0.8	4.0	2
	4	●	0370GS4	22.3	27.8	60.8	0.8	4.0	2

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	2
	4	●	0380GS4	22.1	27.8	60.8	0.8	4.0	2
3.9	2	●	MDW 0390GS2	16.0	21.8	54.8	0.8	4.0	2
	4	●	0390GS4	22.0	27.8	60.8	0.8	4.0	2
4.0	2	●	MDW 0400GS2	15.8	21.8	54.8	0.8	4.0	2
	4	●	0400GS4	21.8	27.8	60.8	0.8	4.0	2
4.1	2	●	MDW 0410GS2	17.7	23.8	61.8	0.8	5.0	2
	4	●	0410GS4	25.7	31.8	76.8	0.8	5.0	2
4.2	2	●	MDW 0420GS2	17.6	23.9	61.9	0.9	5.0	2
	4	●	0420GS4	25.6	31.9	76.9	0.9	5.0	2
4.3	2	●	MDW 0430GS2	17.5	23.9	61.9	0.9	5.0	2
	4	●	0430GS4	25.5	31.9	76.9	0.9	5.0	2
4.4	2	●	MDW 0440GS2	17.3	23.9	61.9	0.9	5.0	2
	4	●	0440GS4	25.3	31.9	76.9	0.9	5.0	2
4.5	2	●	MDW 0450GS2	17.2	23.9	61.9	0.9	5.0	2
	4	●	0450GS4	25.2	31.9	76.9	0.9	5.0	2
4.6	2	●	MDW 0460GS2	19.1	26.0	62.0	1.0	5.0	2
	4	●	0460GS4	32.1	39.0	77.0	1.0	5.0	2
4.7	2	●	MDW 0470GS2	19.0	26.0	62.0	1.0	5.0	2
	4	●	0470GS4	32.0	39.0	77.0	1.0	5.0	2
4.8	2	●	MDW 0480GS2	18.8	26.0	62.0	1.0	5.0	2
	4	●	0480GS4	31.8	39.0	77.0	1.0	5.0	2
4.9	2	●	MDW 0490GS2	18.7	26.0	62.0	1.0	5.0	2
	4	●	0490GS4	31.7	39.0	77.0	1.0	5.0	2
5.0	2	●	MDW 0500GS2	18.5	26.0	62.0	1.0	5.0	2
	4	●	0500GS4	31.5	39.0	77.0	1.0	5.0	2
5.1	2	●	MDW 0510GS2	18.5	26.1	66.1	1.1	6.0	2
	4	●	0510GS4	32.5	40.1	82.1	1.1	6.0	2
5.2	2	●	MDW 0520GS2	18.3	26.1	66.1	1.1	6.0	2
	4	●	0520GS4	32.3	40.1	82.1	1.1	6.0	2
5.3	2	●	MDW 0530GS2	18.2	26.1	66.1	1.1	6.0	2
	4	●	0530GS4	32.2	40.1	82.1	1.1	6.0	2
5.4	2	●	MDW 0540GS2	18.0	26.1	66.1	1.1	6.0	2
	4	●	0540GS4	32.0	40.1	82.1	1.1	6.0	2
5.5	2	●	MDW 0550GS2	17.9	26.1	66.1	1.1	6.0	2
	4	●	0550GS4	31.9	40.1	82.1	1.1	6.0	2
5.6	2	●	MDW 0560GS2	19.8	28.2	66.2	1.2	6.0	2
	4	●	0560GS4	33.8	42.2	82.2	1.2	6.0	2
5.7	2	●	MDW 0570GS2	19.7	28.2	66.2	1.2	6.0	2
	4	●	0570GS4	33.7	42.2	82.2	1.2	6.0	2
5.8	2	●	MDW 0580GS2	19.5	28.2	66.2	1.2	6.0	2
	4	●	0580GS4	33.5	42.2	82.2	1.2	6.0	2
5.9	2	●	MDW 0590GS2	19.4	28.2	66.2	1.2	6.0	2
	4	●	0590GS4	33.4	42.2	82.2	1.2	6.0	2
6.0	2	●	MDW 0600GS2	19.2	28.2	66.2	1.2	6.0	2
	4	●	0600GS4	33.2	42.2	82.2	1.2	6.0	2
6.1	2	●	MDW 0610GS2	23.2	32.3	74.3	1.3	7.0	2
	4	●	0610GS4	34.2	43.3	84.3	1.3	7.0	2
6.2	2	●	MDW 0620GS2	23.0	32.3	74.3	1.3	7.0	2
	4	●	0620GS4	34.0	43.3	84.3	1.3	7.0	2
6.3	2	●	MDW 0630GS2	22.9	32.3	74.3	1.3	7.0	2
	4	●	0630GS4	33.9	43.3	84.3	1.3	7.0	2
6.4	2	●	MDW 0640GS2	22.7	32.3	74.3	1.3	7.0	2
	4	●	0640GS4	33.7	43.3	84.3	1.3	7.0	2
6.5	2	●	MDW 0650GS2	22.6	32.3	74.3	1.3	7.0	2
	4	●	0650GS4	33.6	43.3	84.3	1.3	7.0	2

Grade: ACX70

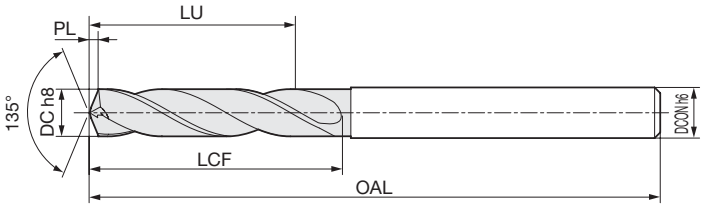
GS series (External Coolant Supply)

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 N36 for the tolerance of h6 and h8

Fig 2



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	2
	4	●	0660GS4	34.5	44.4	84.4	1.4	7.0	2
6.7	2	●	MDW 0670GS2	24.4	34.4	74.4	1.4	7.0	2
	4	●	0670GS4	34.4	44.4	84.4	1.4	7.0	2
6.8	2	●	MDW 0680GS2	24.2	34.4	74.4	1.4	7.0	2
	4	●	0680GS4	34.2	44.4	84.4	1.4	7.0	2
6.9	2	●	MDW 0690GS2	24.1	34.4	74.4	1.4	7.0	2
	4	●	0690GS4	34.1	44.4	84.4	1.4	7.0	2
7.0	2	●	MDW 0700GS2	23.9	34.4	74.4	1.4	7.0	2
	4	●	0700GS4	33.9	44.4	84.4	1.4	7.0	2
7.1	2	●	MDW 0710GS2	23.9	34.5	79.5	1.5	8.0	2
	4	●	0710GS4	35.9	46.5	91.5	1.5	8.0	2
7.2	2	●	MDW 0720GS2	23.7	34.5	79.5	1.5	8.0	2
	4	●	0720GS4	35.7	46.5	91.5	1.5	8.0	2
7.3	2	●	MDW 0730GS2	23.6	34.5	79.5	1.5	8.0	2
	4	●	0730GS4	35.6	46.5	91.5	1.5	8.0	2
7.4	2	●	MDW 0740GS2	23.4	34.5	79.5	1.5	8.0	2
	4	●	0740GS4	35.4	46.5	91.5	1.5	8.0	2
7.5	2	●	MDW 0750GS2	23.4	34.6	79.6	1.6	8.0	2
	4	●	0750GS4	35.4	46.6	91.6	1.6	8.0	2
7.6	2	●	MDW 0760GS2	26.2	37.6	79.6	1.6	8.0	2
	4	●	0760GS4	38.2	49.6	91.6	1.6	8.0	2
7.7	2	●	MDW 0770GS2	26.1	37.6	79.6	1.6	8.0	2
	4	●	0770GS4	38.1	49.6	91.6	1.6	8.0	2
7.8	2	●	MDW 0780GS2	25.9	37.6	79.6	1.6	8.0	2
	4	●	0780GS4	37.9	49.6	91.6	1.6	8.0	2
7.9	2	●	MDW 0790GS2	25.8	37.6	79.6	1.6	8.0	2
	4	●	0790GS4	37.8	49.6	91.6	1.6	8.0	2
8.0	2	●	MDW 0800GS2	25.7	37.7	79.7	1.7	8.0	2
	4	●	0800GS4	37.7	49.7	91.7	1.7	8.0	2
8.1	2	●	MDW 0810GS2	25.6	37.7	83.7	1.7	9.0	2
	4	●	0810GS4	42.6	54.7	99.7	1.7	9.0	2
8.2	2	●	MDW 0820GS2	25.4	37.7	83.7	1.7	9.0	2
	4	●	0820GS4	42.4	54.7	99.7	1.7	9.0	2
8.3	2	●	MDW 0830GS2	25.3	37.7	83.7	1.7	9.0	2
	4	●	0830GS4	42.3	54.7	99.7	1.7	9.0	2
8.4	2	●	MDW 0840GS2	25.1	37.7	83.7	1.7	9.0	2
	4	●	0840GS4	42.1	54.7	99.7	1.7	9.0	2
8.5	2	●	MDW 0850GS2	25.1	37.8	83.8	1.8	9.0	2
	4	●	0850GS4	42.1	54.8	99.8	1.8	9.0	2
8.6	2	●	MDW 0860GS2	26.9	39.8	83.8	1.8	9.0	2
	4	●	0860GS4	43.9	56.8	99.8	1.8	9.0	2
8.7	2	●	MDW 0870GS2	26.8	39.8	83.8	1.8	9.0	2
	4	●	0870GS4	43.8	56.8	99.8	1.8	9.0	2
8.8	2	●	MDW 0880GS2	26.6	39.8	83.8	1.8	9.0	2
	4	●	0880GS4	43.6	56.8	99.8	1.8	9.0	2
8.9	2	●	MDW 0890GS2	26.5	39.8	83.8	1.8	9.0	2
	4	●	0890GS4	43.5	56.8	99.8	1.8	9.0	2
9.0	2	●	MDW 0900GS2	26.4	39.9	83.9	1.9	9.0	2
	4	●	0900GS4	43.4	56.9	99.9	1.9	9.0	2
9.1	2	●	MDW 0910GS2	26.3	39.9	88.9	1.9	10.0	2
	4	●	0910GS4	46.3	59.9	106.9	1.9	10.0	2
9.2	2	●	MDW 0920GS2	26.1	39.9	88.9	1.9	10.0	2
	4	●	0920GS4	46.1	59.9	106.9	1.9	10.0	2
9.3	2	●	MDW 0930GS2	26.0	39.9	88.9	1.9	10.0	2
	4	●	0930GS4	46.0	59.9	106.9	1.9	10.0	2

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	2
	4	●	0940GS4	45.8	59.9	106.9	1.9	10.0	2
9.5	2	●	MDW 0950GS2	25.8	40.0	89.0	2.0	10.0	2
	4	●	0950GS4	45.8	60.0	107.0	2.0	10.0	2
9.6	2	●	MDW 0960GS2	28.6	43.0	89.0	2.0	10.0	2
	4	●	0960GS4	47.6	62.0	107.0	2.0	10.0	2
9.7	2	●	MDW 0970GS2	28.5	43.0	89.0	2.0	10.0	2
	4	●	0970GS4	47.5	62.0	107.0	2.0	10.0	2
9.8	2	●	MDW 0980GS2	28.3	43.0	89.0	2.0	10.0	2
	4	●	0980GS4	47.3	62.0	107.0	2.0	10.0	2
9.9	2	●	MDW 0990GS2	28.2	43.0	89.0	2.0	10.0	2
	4	●	0990GS4	47.2	62.0	107.0	2.0	10.0	2
10.0	2	●	MDW 1000GS2	28.1	43.1	89.1	2.1	10.0	2
	4	●	1000GS4	47.1	62.1	107.1	2.1	10.0	2
10.1	2	●	MDW 1010GS2	28.0	43.1	95.1	2.1	11.0	2
	4	●	1010GS4	53.0	68.1	116.1	2.1	11.0	2
10.2	2	●	MDW 1020GS2	27.8	43.1	95.1	2.1	11.0	2
	4	●	1020GS4	52.8	68.1	116.1	2.1	11.0	2
10.3	2	●	MDW 1030GS2	27.7	43.1	95.1	2.1	11.0	2
	4	●	1030GS4	52.7	68.1	116.1	2.1	11.0	2
10.4	2	●	MDW 1040GS2	27.6	43.2	95.2	2.2	11.0	2
	4	●	1040GS4	52.6	68.2	116.2	2.2	11.0	2
10.5	2	●	MDW 1050GS2	27.5	43.2	95.2	2.2	11.0	2
	4	●	1050GS4	52.5	68.2	116.2	2.2	11.0	2
10.6	2	●	MDW 1060GS2	31.3	47.2	95.2	2.2	11.0	2
	4	●	1060GS4	54.3	70.2	116.2	2.2	11.0	2
10.7	2	●	MDW 1070GS2	31.2	47.2	95.2	2.2	11.0	2
	4	●	1070GS4	54.2	70.2	116.2	2.2	11.0	2
10.8	2	●	MDW 1080GS2	31.0	47.2	95.2	2.2	11.0	2
	4	●	1080GS4	54.0	70.2	116.2	2.2	11.0	2
10.9	2	●	MDW 1090GS2	31.0	47.3	95.3	2.3	11.0	2
	4	●	1090GS4	54.0	70.3	116.3	2.3	11.0	2
11.0	2	●	MDW 1100GS2	30.8	47.3	95.3	2.3	11.0	2
	4	●	1100GS4	53.8	70.3	116.3	2.3	11.0	2
11.1	2	●	MDW 1110GS2	30.7	47.3	102.3	2.3	12.0	2
	4	●	1110GS4	56.7	73.3	123.3	2.3	12.0	2
11.2	2	●	MDW 1120GS2	30.5	47.3	102.3	2.3	12.0	2
	4	●	1120GS4	56.5	73.3	123.3	2.3	12.0	2
11.3	2	●	MDW 1130GS2	30.4	47.3	102.3	2.3	12.0	2
	4	●	1130GS4	56.4	73.3	123.3	2.3	12.0	2
11.4	2	●	MDW 1140GS2	30.3	47.4	102.4	2.4	12.0	2
	4	●	1140GS4	56.3	73.4	123.4	2.4	12.0	2
11.5	2	●	MDW 1150GS2	30.2	47.4	102.4	2.4	12.0	2
	4	●	1150GS4	56.2	73.4	123.4	2.4	12.0	2
11.6	2	●	MDW 1160GS2	32.0	49.4	102.4	2.4	12.0	2
	4	●	1160GS4	58.0	75.4	123.4	2.4	12.0	2
11.7	2	●	MDW 1170GS2	31.9	49.4	102.4	2.4	12.0	2
	4	●	1170GS4	57.9	75.4	123.4	2.4	12.0	2
11.8	2	●	MDW 1180GS2	31.7	49.4	102.4	2.4	12.0	2
	4	●	1180GS4	57.7	75.4	123.4	2.4	12.0	2
11.9	2	●	MDW 1190GS2	31.7	49.5	102.5	2.5	12.0	2
	4	●	1190GS4	57.7	75.5	123.5	2.5	12.0	2
12.0	2	●	MDW 1200GS2	31.5	49.5	102.5	2.5	12.0	2
	4	●	1200GS4	57.5	75.5	123.5	2.5	12.0	2
12.1	2		MDW 1210GS2	31.4	49.5	102.5	2.5	13.0	2
	4		1210GS4	60.4	78.5	139.5	2.5	13.0	2

Grade: ACX70

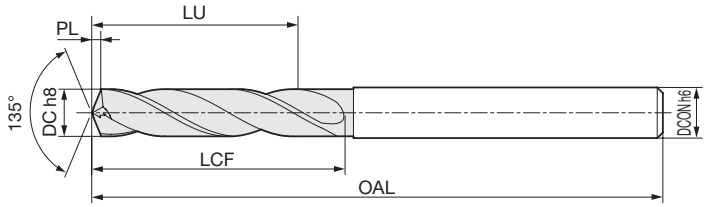
GS series (External Coolant Supply)

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 N36 for the tolerance of h6 and h8

Fig 2



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	2
	4		1220GS4	60.2	78.5	139.5	2.5	13.0	2
12.3	2		MDW 1230GS2	31.1	49.5	102.5	2.5	13.0	2
	4		1230GS4	60.1	78.5	139.5	2.5	13.0	2
12.4	2		MDW 1240GS2	31.0	49.6	102.6	2.6	13.0	2
	4		1240GS4	60.0	78.6	139.6	2.5	13.0	2
12.5	2		MDW 1250GS2	30.9	49.6	102.6	2.6	13.0	2
	4		1250GS4	59.9	78.6	139.6	2.6	13.0	2
12.6	2		MDW 1260GS2	32.7	51.6	102.6	2.6	13.0	2
	4		1260GS4	61.7	80.6	139.6	2.6	13.0	2
12.7	2		MDW 1270GS2	32.6	51.6	102.6	2.6	13.0	2
	4		1270GS4	61.6	80.6	139.6	2.6	13.0	2
12.8	2		MDW 1280GS2	32.4	51.6	102.6	2.6	13.0	2
	4		1280GS4	61.4	80.6	139.6	2.6	13.0	2
12.9	2		MDW 1290GS2	32.4	51.7	102.7	2.7	13.0	2
	4		1290GS4	61.4	80.7	139.7	2.7	13.0	2
13.0	2		MDW 1300GS2	32.2	51.7	102.7	2.7	13.0	2
	4		1300GS4	61.2	80.7	139.7	2.7	13.0	2
13.1	2		MDW 1310GS2	33.1	52.7	107.7	2.7	14.0	2
	4		1310GS4	67.1	86.7	149.7	2.7	14.0	2
13.2	2		MDW 1320GS2	32.9	52.7	107.7	2.7	14.0	2
	4		1320GS4	66.9	86.7	149.7	2.7	14.0	2
13.3	2		MDW 1330GS2	32.9	52.8	107.8	2.8	14.0	2
	4		1330GS4	66.9	86.8	149.8	2.8	14.0	2
13.4	2		MDW 1340GS2	32.7	52.8	107.8	2.8	14.0	2
	4		1340GS4	66.7	86.8	149.8	2.8	14.0	2
13.5	2		MDW 1350GS2	32.6	52.8	107.8	2.8	14.0	2
	4		1350GS4	66.6	86.8	149.8	2.8	14.0	2
13.6	2		MDW 1360GS2	34.4	54.8	107.8	2.8	14.0	2
	4		1360GS4	68.4	88.8	149.8	2.8	14.0	2
13.7	2		MDW 1370GS2	34.3	54.8	107.8	2.8	14.0	2
	4		1370GS4	68.3	88.8	149.8	2.8	14.0	2
13.8	2		MDW 1380GS2	34.2	54.9	107.9	2.9	14.0	2
	4		1380GS4	68.2	88.9	149.9	2.9	14.0	2
13.9	2		MDW 1390GS2	34.1	54.9	107.9	2.9	14.0	2
	4		1390GS4	68.1	88.9	149.9	2.9	14.0	2
14.0	2		MDW 1400GS2	33.9	54.9	107.9	2.9	14.0	2
	4		1400GS4	67.9	88.9	149.9	2.9	14.0	2
14.1	2		MDW 1410GS2	33.8	54.9	110.9	2.9	15.0	2
	4		1410GS4	70.8	91.9	155.9	2.9	15.0	2
14.2	2		MDW 1420GS2	33.6	54.9	110.9	2.9	15.0	2
	4		1420GS4	70.6	91.9	155.9	2.9	15.0	2
14.3	2		MDW 1430GS2	33.6	55.0	111.0	3.0	15.0	2
	4		1430GS4	70.6	92.0	156.0	3.0	15.0	2
14.4	2		MDW 1440GS2	33.4	55.0	111.0	3.0	15.0	2
	4		1440GS4	70.4	92.0	156.0	3.0	15.0	2
14.5	2		MDW 1450GS2	33.3	55.0	111.0	3.0	15.0	2
	4		1450GS4	70.3	92.0	156.0	3.0	15.0	2
14.6	2		MDW 1460GS2	34.1	56.0	111.0	3.0	15.0	2
	4		1460GS4	72.1	94.0	156.0	3.0	15.0	2
14.7	2		MDW 1470GS2	34.0	56.0	111.0	3.0	15.0	2
	4		1470GS4	72.0	94.0	156.0	3.0	15.0	2
14.8	2		MDW 1480GS2	33.9	56.1	111.1	3.1	15.0	2
	4		1480GS4	71.9	94.1	156.1	3.1	15.0	2
14.9	2		MDW 1490GS2	33.8	56.1	111.1	3.1	15.0	2
	4		1490GS4	71.8	94.1	156.1	3.1	15.0	2

Grade: ACX70

Diameter ø15.0 to 17.7mm

Dimensions (mm)

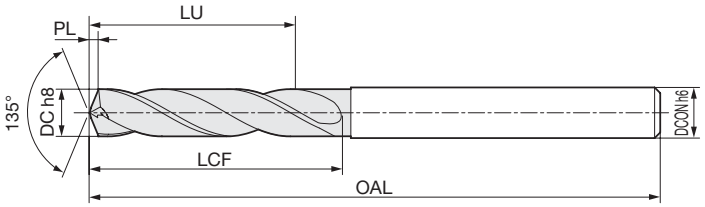
Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
15.0	2		MDW 1500GS2	33.6	56.1	111.1	3.1	15.0	2
	4		1500GS4	71.6	94.1	156.1	3.1	15.0	2
15.1	2		MDW 1510GS2	33.5	56.1	115.1	3.1	16.0	2
	4		1510GS4	74.5	97.1	163.1	3.1	16.0	2
15.2	2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

Grade: ACX70

DEX Coat 2D 4D

*Refer to N36 for the tolerance of h6 and h8

Fig 2



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	2
	4		1780GS4	79.0	105.7	170.7	3.7	18.0	2
17.9	2		MDW 1790GS2	35.9	62.7	123.7	3.7	18.0	2
	4		1790GS4	78.9	105.7	170.7	3.7	18.0	2
18.0	2		MDW 1800GS2	35.7	62.7	123.7	3.7	18.0	2
	4		1800GS4	78.7	105.7	170.7	3.7	18.0	2
18.1	2		MDW 1810GS2	35.6	62.7	126.7	3.7	19.0	2
	4		1810GS4	80.6	107.7	182.7	3.7	19.0	2
18.2	2		MDW 1820GS2	35.5	62.8	126.8	3.8	19.0	2
	4		1820GS4	80.5	107.8	182.8	3.8	19.0	2
18.3	2		MDW 1830GS2	35.4	62.8	126.8	3.8	19.0	2
	4		1830GS4	80.4	107.8	182.8	3.8	19.0	2
18.4	2		MDW 1840GS2	35.2	62.8	126.8	3.8	19.0	2
	4		1840GS4	80.2	107.8	182.8	3.8	19.0	2
18.5	2		MDW 1850GS2	35.1	62.8	126.8	3.8	19.0	2
	4		1850GS4	80.1	107.8	182.8	3.8	19.0	2
18.6	2		MDW 1860GS2	36.0	63.9	126.9	3.9	19.0	2
	4		1860GS4	82.0	109.9	182.9	3.9	19.0	2
18.7	2		MDW 1870GS2	35.9	63.9	126.9	3.9	19.0	2
	4		1870GS4	81.9	109.9	182.9	3.9	19.0	2
18.8	2		MDW 1880GS2	35.7	63.9	126.9	3.9	19.0	2
	4		1880GS4	81.7	109.9	182.9	3.9	19.0	2
18.9	2		MDW 1890GS2	35.6	63.9	126.9	3.9	19.0	2
	4		1890GS4	81.6	109.9	182.9	3.9	19.0	2

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	2
	4		1900GS4	81.4	109.9	182.9	3.9	19.0	2
19.1	2		MDW 1910GS2	36.4	65.0	131.0	4.0	20.0	2
	4		1910GS4	85.4	114.0	183.0	4.0	20.0	2
19.2	2		MDW 1920GS2	36.2	65.0	131.0	4.0	20.0	2
	4		1920GS4	85.2	114.0	183.0	4.0	20.0	2
19.3	2		MDW 1930GS2	36.1	65.0	131.0	4.0	20.0	2
	4		1930GS4	85.1	114.0	183.0	4.0	20.0	2
19.4	2		MDW 1940GS2	35.9	65.0	131.0	4.0	20.0	2
	4		1940GS4	84.9	114.0	183.0	4.0	20.0	2
19.5	2		MDW 1950GS2	35.8	65.0	131.0	4.0	20.0	2
	4		1950GS4	84.8	114.0	183.0	4.0	20.0	2
19.6	2		MDW 1960GS2	36.7	66.1	131.1	4.1	20.0	2
	4		1960GS4	88.7	118.1	183.1	4.1	20.0	2
19.7	2		MDW 1970GS2	36.6	66.1	131.1	4.1	20.0	2
	4		1970GS4	88.6	118.1	183.1	4.1	20.0	2
19.8	2		MDW 1980GS2	36.4	66.1	131.1	4.1	20.0	2
	4		1980GS4	88.4	118.1	183.1	4.1	20.0	2
19.9	2		MDW 1990GS2	36.3	66.1	131.1	4.1	20.0	2
	4		1990GS4	88.3	118.1	183.1	4.1	20.0	2
20.0	2		MDW 2000GS2	36.1	66.1	131.1	4.1	20.0	2
	4		2000GS4	88.1	118.1	183.1	4.1	20.0	2

Grade: ACX70

Recommended Cutting Conditions

(n: Spindle Speed min^{-1} vc: 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	n	6,400	3,200	1,600	2,700	5,300	4,800
	vc	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	n	4,800	2,400	1,200	2,000	4,000	3,600
	vc	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	n	3,800	1,900	950	1,900	3,200	3,200
	vc	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	n	3,200	1,200	600	1,400	2,000	2,400
	vc	40 - **80** - 120	20 - **30** - 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	n	2,500	1,000	500	1,300	1,900	1,900
	vc	50 - **80** - 130	20 - **30** - 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	n	2,100	800	400	1,100	1,700	1,600
	vc	50 - **80** - 130	20 - **30** - 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	n	1,800	600	300	800	1,600	1,200
	vc	50 - **90** - 130	20 - **30** - 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	n	1,600	500	250	650	1,300	950
	vc	60 - **100** - 140	20 - **30** - 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 series (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 N36 for the tolerance of h6 and h8

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

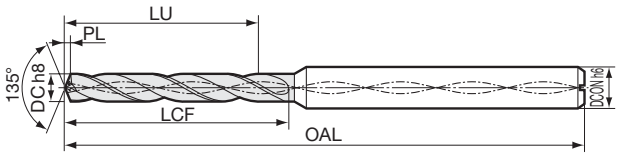
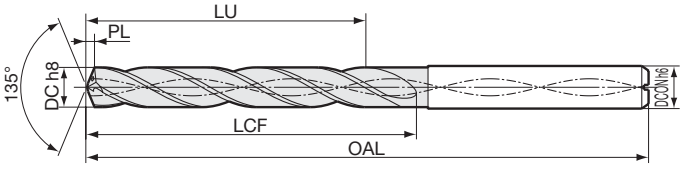


Fig 2 (diameter ø2.5 to 20.0mm, double margin)



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
1.5	3	●	MDW 0150HGS3	8.1	10.3	63.3	0.3	3.0	1
	5	●	0150HGS5	12.1	14.3	70.3	0.3	3.0	1
	8	●	0150HGS8	16.6	18.8	76.3	0.3	3.0	1
1.6	3	●	MDW 0160HGS3	10.4	12.8	63.3	0.3	3.0	1
	5	●	0160HGS5	16.9	19.3	70.3	0.3	3.0	1
	8	●	0160HGS8	21.9	24.3	76.3	0.3	3.0	1
1.7	3	●	MDW 0170HGS3	10.4	12.9	63.4	0.4	3.0	1
	5	●	0170HGS5	16.9	19.4	70.4	0.4	3.0	1
	8	●	0170HGS8	21.9	24.4	76.4	0.4	3.0	1
1.8	3	●	MDW 0180HGS3	10.2	12.9	63.4	0.4	3.0	1
	5	●	0180HGS5	16.7	19.4	70.4	0.4	3.0	1
	8	●	0180HGS8	21.7	24.4	76.4	0.4	3.0	1
1.9	3	●	MDW 0190HGS3	10.1	12.9	63.4	0.4	3.0	1
	5	●	0190HGS5	16.6	19.4	70.4	0.4	3.0	1
	8	●	0190HGS8	21.6	24.4	76.4	0.4	3.0	1
2.0	3	●	MDW 0200HGS3	9.9	12.9	63.4	0.4	3.0	1
	5	●	0200HGS5	16.4	19.4	70.4	0.4	3.0	1
	8	●	0200HGS8	21.4	24.4	76.4	0.4	3.0	1
2.1	3	●	MDW 0210HGS3	12.3	15.4	68.4	0.4	3.0	1
	5	●	0210HGS5	21.3	24.4	78.4	0.4	3.0	1
	8	●	0210HGS8	24.8	27.9	81.4	0.4	3.0	1
2.2	3	●	MDW 0220HGS3	12.2	15.5	68.5	0.5	3.0	1
	5	●	0220HGS5	21.2	24.5	78.5	0.5	3.0	1
	8	●	0220HGS8	24.7	28.0	81.5	0.5	3.0	1
2.3	3	●	MDW 0230HGS3	12.1	15.5	68.5	0.5	3.0	1
	5	●	0230HGS5	21.1	24.5	78.5	0.5	3.0	1
	8	●	0230HGS8	24.6	28.0	81.5	0.5	3.0	1
2.4	3	●	MDW 0240HGS3	11.9	15.5	68.5	0.5	3.0	1
	5	●	0240HGS5	20.9	24.5	78.5	0.5	3.0	1
	8	●	0240HGS8	24.4	28.0	81.5	0.5	3.0	1
2.5	3	●	MDW 0250HGS3	11.8	15.5	68.5	0.5	3.0	2
	5	●	0250HGS5	20.8	24.5	78.5	0.5	3.0	2
	8	●	0250HGS8	24.3	28.0	81.5	0.5	3.0	2
2.6	3	●	MDW 0260HGS3	14.1	18.0	68.5	0.5	3.0	2
	5	●	0260HGS5	24.6	28.5	78.5	0.5	3.0	2
	8	●	0260HGS8	29.6	33.5	81.5	0.5	3.0	2
2.7	3	●	MDW 0270HGS3	14.1	18.1	68.6	0.6	3.0	2
	5	●	0270HGS5	24.6	28.6	78.6	0.6	3.0	2
	8	●	0270HGS8	29.6	33.6	81.6	0.6	3.0	2
2.8	3	●	MDW 0280HGS3	13.9	18.1	68.6	0.6	3.0	2
	5	●	0280HGS5	24.4	28.6	78.6	0.6	3.0	2
	8	●	0280HGS8	29.4	33.6	81.6	0.6	3.0	2
2.9	3	●	MDW 0290HGS3	13.8	18.1	68.6	0.6	3.0	2
	5	●	0290HGS5	24.3	28.6	78.6	0.6	3.0	2
	8	●	0290HGS8	29.3	33.6	81.6	0.6	3.0	2
3.0	3	●	MDW 0300HGS3	13.6	18.1	68.6	0.6	3.0	2
	5	●	0300HGS5	24.1	28.6	78.6	0.6	3.0	2
	8	●	0300HGS8	29.1	33.6	81.6	0.6	3.0	2
3.1	3	●	MDW 0310HGS3	16.0	20.6	72.6	0.6	4.0	2
	5	●	0310HGS5	28.0	32.6	86.6	0.6	4.0	2
	8	●	0310HGS8	34.5	39.1	92.6	0.6	4.0	2
3.2	3	●	MDW 0320HGS3	15.9	20.7	72.7	0.7	4.0	2
	5	●	0320HGS5	27.9	32.7	86.7	0.7	4.0	2
	8	●	0320HGS8	34.4	39.2	92.7	0.7	4.0	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
3.3	3	●	MDW 0330HGS3	15.8	20.7	72.7	0.7	4.0	2
	5	●	0330HGS5	27.8	32.7	86.7	0.7	4.0	2
	8	●	0330HGS8	34.3	39.2	92.7	0.7	4.0	2
3.4	3	●	MDW 0340HGS3	15.6	20.7	72.7	0.7	4.0	2
	5	●	0340HGS5	27.6	32.7	86.7	0.7	4.0	2
	8	●	0340HGS8	34.1	39.2	92.7	0.7	4.0	2
3.5	3	●	MDW 0350HGS3	15.5	20.7	72.7	0.7	4.0	2
	5	●	0350HGS5	27.5	32.7	86.7	0.7	4.0	2
	8	●	0350HGS8	34.0	39.2	92.7	0.7	4.0	2
3.6	3	●	MDW 0360HGS3	17.8	23.2	72.7	0.7	4.0	2
	5	●	0360HGS5	31.3	36.7	86.7	0.7	4.0	2
	8	●	0360HGS8	39.3	44.7	92.7	0.7	4.0	2
3.7	3	●	MDW 0370HGS3	17.8	23.3	72.8	0.8	4.0	2
	5	●	0370HGS5	31.3	36.8	86.8	0.8	4.0	2
	8	●	0370HGS8	39.3	44.8	92.8	0.8	4.0	2
3.8	3	●	MDW 0380HGS3	17.6	23.3	72.8	0.8	4.0	2
	5	●	0380HGS5	31.1	36.8	86.8	0.8	4.0	2
	8	●	0380HGS8	39.1	44.8	92.8	0.8	4.0	2
3.9	3	●	MDW 0390HGS3	17.5	23.3	72.8	0.8	4.0	2
	5	●	0390HGS5	31.0	36.8	86.8	0.8	4.0	2
	8	●	0390HGS8	39.0	44.8	92.8	0.8	4.0	2
4.0	3	●	MDW 0400HGS3	17.3	23.3	72.8	0.8	4.0	2
	5	●	0400HGS5	30.8	36.8	86.8	0.8	4.0	2
	8	●	0400HGS8	38.8	44.8	92.8	0.8	4.0	2
4.1	3	●	MDW 0410HGS3	19.7	25.8	80.8	0.8	5.0	2
	5	●	0410HGS5	34.7	40.8	98.8	0.8	5.0	2
	8	●	0410HGS8	44.2	50.3	105.8	0.8	5.0	2
4.2	3	●	MDW 0420HGS3	19.6	25.9	80.9	0.9	5.0	2
	5	●	0420HGS5	34.6	40.9	98.9	0.9	5.0	2
	8	●	0420HGS8	44.1	50.4	105.9	0.9	5.0	2
4.3	3	●	MDW 0430HGS3	19.5	25.9	80.9	0.9	5.0	2
	5	●	0430HGS5	34.5	40.9	98.9	0.9	5.0	2
	8	●	0430HGS8	44.0	50.4	105.9	0.9	5.0	2
4.4	3	●	MDW 0440HGS3	19.3	25.9	80.9	0.9	5.0	2
	5	●	0440HGS5	34.3	40.9	98.9	0.9	5.0	2
	8	●	0440HGS8	43.8	50.4	105.9	0.9	5.0	2
4.5	3	●	MDW 0450HGS3	19.2	25.9	80.9	0.9	5.0	2
	5	●	0450HGS5	34.2	40.9	98.9	0.9	5.0	2
	8	●	0450HGS8	43.7	50.4	105.9	0.9	5.0	2
4.6	3	●	MDW 0460HGS3	21.6	28.5	81.0	1.0	5.0	2
	5	●	0460HGS5	38.1	45.0	99.0	1.0	5.0	2
	8	●	0460HGS8	49.1	56.0	106.0	1.0	5.0	2
4.7	3	●	MDW 0470HGS3	21.5	28.5	81.0	1.0	5.0	2
	5	●	0470HGS5	38.0	45.0	99.0	1.0	5.0	2
	8	●	0470HGS8	49.0	56.0	106.0	1.0	5.0	2
4.8	3	●	MDW 0480HGS3	21.3	28.5	81.0	1.0	5.0	2
	5	●	0480HGS5	37.8	45.0	99.0	1.0	5.0	2
	8	●	0480HGS8	48.8	56.0	106.0	1.0	5.0	2
4.9	3	●	MDW 0490HGS3	21.2	28.5	81.0	1.0	5.0	2
	5	●	0490HGS5	37.7	45.0	99.0	1.0	5.0	2
	8	●	0490HGS8	48.7	56.0	106.0	1.0	5.0	2
5.0	3	●	MDW 0500HGS3	21.0	28.5	81.0	1.0	5.0	2
	5	●	0500HGS5	37.5	45.0	99.0	1.0	5.0	2
	8	●	0500HGS8	48.5	56.0	106.0	1.0	5.0	2

Grade: ACX70

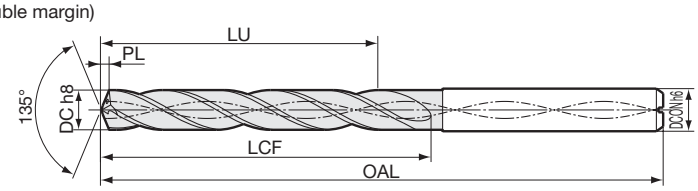
HGS series (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.28% | 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 N36 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
5.1	3	●	MDW 0510HGS3	21.0	28.6	83.1	1.1	6.0	2
	5	●	0510HGS5	37.5	45.1	101.1	1.1	6.0	2
	8	●	0510HGS8	54.0	61.6	119.1	1.1	6.0	2
5.2	3	●	MDW 0520HGS3	20.8	28.6	83.1	1.1	6.0	2
	5	●	0520HGS5	37.3	45.1	101.1	1.1	6.0	2
	8	●	0520HGS8	53.8	61.6	119.1	1.1	6.0	2
5.3	3	●	MDW 0530HGS3	20.7	28.6	83.1	1.1	6.0	2
	5	●	0530HGS5	37.2	45.1	101.1	1.1	6.0	2
	8	●	0530HGS8	53.7	61.6	119.1	1.1	6.0	2
5.4	3	●	MDW 0540HGS3	20.5	28.6	83.1	1.1	6.0	2
	5	●	0540HGS5	37.0	45.1	101.1	1.1	6.0	2
	8	●	0540HGS8	53.5	61.6	119.1	1.1	6.0	2
5.5	3	●	MDW 0550HGS3	20.4	28.6	83.1	1.1	6.0	2
	5	●	0550HGS5	36.9	45.1	101.1	1.1	6.0	2
	8	●	0550HGS8	53.4	61.6	119.1	1.1	6.0	2
5.6	3	●	MDW 0560HGS3	22.8	31.2	83.2	1.2	6.0	2
	5	●	0560HGS5	40.8	49.2	101.2	1.2	6.0	2
	8	●	0560HGS8	58.8	67.2	119.2	1.2	6.0	2
5.7	3	●	MDW 0570HGS3	22.7	31.2	83.2	1.2	6.0	2
	5	●	0570HGS5	40.7	49.2	101.2	1.2	6.0	2
	8	●	0570HGS8	58.7	67.2	119.2	1.2	6.0	2
5.8	3	●	MDW 0580HGS3	22.5	31.2	83.2	1.2	6.0	2
	5	●	0580HGS5	40.5	49.2	101.2	1.2	6.0	2
	8	●	0580HGS8	58.5	67.2	119.2	1.2	6.0	2
5.9	3	●	MDW 0590HGS3	22.4	31.2	83.2	1.2	6.0	2
	5	●	0590HGS5	40.4	49.2	101.2	1.2	6.0	2
	8	●	0590HGS8	58.4	67.2	119.2	1.2	6.0	2
6.0	3	●	MDW 0600HGS3	22.2	31.2	83.2	1.2	6.0	2
	5	●	0600HGS5	40.2	49.2	101.2	1.2	6.0	2
	8	●	0600HGS8	58.2	67.2	119.2	1.2	6.0	2
6.1	3	●	MDW 0610HGS3	24.7	33.8	89.3	1.3	7.0	2
	5	●	0610HGS5	44.2	53.3	110.3	1.3	7.0	2
	8	●	0610HGS8	63.7	72.8	131.3	1.3	7.0	2
6.2	3	●	MDW 0620HGS3	24.5	33.8	89.3	1.3	7.0	2
	5	●	0620HGS5	44.0	53.3	110.3	1.3	7.0	2
	8	●	0620HGS8	63.5	72.8	131.3	1.3	7.0	2
6.3	3	●	MDW 0630HGS3	24.4	33.8	89.3	1.3	7.0	2
	5	●	0630HGS5	43.9	53.3	110.3	1.3	7.0	2
	8	●	0630HGS8	63.4	72.8	131.3	1.3	7.0	2
6.4	3	●	MDW 0640HGS3	24.2	33.8	89.3	1.3	7.0	2
	5	●	0640HGS5	43.7	53.3	110.3	1.3	7.0	2
	8	●	0640HGS8	63.2	72.8	131.3	1.3	7.0	2
6.5	3	●	MDW 0650HGS3	24.1	33.8	89.3	1.3	7.0	2
	5	●	0650HGS5	43.6	53.3	110.3	1.3	7.0	2
	8	●	0650HGS8	63.1	72.8	131.3	1.3	7.0	2
6.6	3	●	MDW 0660HGS3	26.5	36.4	89.4	1.4	7.0	2
	5	●	0660HGS5	47.5	57.4	110.4	1.4	7.0	2
	8	●	0660HGS8	68.5	78.4	131.4	1.4	7.0	2
6.7	3	●	MDW 0670HGS3	26.4	36.4	89.4	1.4	7.0	2
	5	●	0670HGS5	47.4	57.4	110.4	1.4	7.0	2
	8	●	0670HGS8	68.4	78.4	131.4	1.4	7.0	2
6.8	3	●	MDW 0680HGS3	26.2	36.4	89.4	1.4	7.0	2
	5	●	0680HGS5	47.2	57.4	110.4	1.4	7.0	2
	8	●	0680HGS8	68.2	78.4	131.4	1.4	7.0	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
6.9	3	●	MDW 0690HGS3	26.1	36.4	89.4	1.4	7.0	2
	5	●	0690HGS5	47.1	57.4	110.4	1.4	7.0	2
	8	●	0690HGS8	68.1	78.4	131.4	1.4	7.0	2
7.0	3	●	MDW 0700HGS3	25.9	36.4	89.4	1.4	7.0	2
	5	●	0700HGS5	46.9	57.4	110.4	1.4	7.0	2
	8	●	0700HGS8	67.9	78.4	131.4	1.4	7.0	2
7.1	3	●	MDW 0710HGS3	28.4	39.0	95.5	1.5	8.0	2
	5	●	0710HGS5	50.9	61.5	119.5	1.5	8.0	2
	8	●	0710HGS8	73.4	84.0	143.5	1.5	8.0	2
7.2	3	●	MDW 0720HGS3	28.2	39.0	95.5	1.5	8.0	2
	5	●	0720HGS5	50.7	61.5	119.5	1.5	8.0	2
	8	●	0720HGS8	73.2	84.0	143.5	1.5	8.0	2
7.3	3	●	MDW 0730HGS3	28.1	39.0	95.5	1.5	8.0	2
	5	●	0730HGS5	50.6	61.5	119.5	1.5	8.0	2
	8	●	0730HGS8	73.1	84.0	143.5	1.5	8.0	2
7.4	3	●	MDW 0740HGS3	27.9	39.0	95.5	1.5	8.0	2
	5	●	0740HGS5	50.4	61.5	119.5	1.5	8.0	2
	8	●	0740HGS8	72.9	84.0	143.5	1.5	8.0	2
7.5	3	●	MDW 0750HGS3	27.9	39.1	95.6	1.6	8.0	2
	5	●	0750HGS5	50.4	61.6	119.6	1.6	8.0	2
	8	●	0750HGS8	72.9	84.1	143.6	1.6	8.0	2
7.6	3	●	MDW 0760HGS3	30.2	41.6	95.6	1.6	8.0	2
	5	●	0760HGS5	54.2	65.6	119.6	1.6	8.0	2
	8	●	0760HGS8	78.2	89.6	143.6	1.6	8.0	2
7.7	3	●	MDW 0770HGS3	30.1	41.6	95.6	1.6	8.0	2
	5	●	0770HGS5	54.1	65.6	119.6	1.6	8.0	2
	8	●	0770HGS8	78.1	89.6	143.6	1.6	8.0	2
7.8	3	●	MDW 0780HGS3	29.9	41.6	95.6	1.6	8.0	2
	5	●	0780HGS5	53.9	65.6	119.6	1.6	8.0	2
	8	●	0780HGS8	77.9	89.6	143.6	1.6	8.0	2
7.9	3	●	MDW 0790HGS3	29.8	41.6	95.6	1.6	8.0	2
	5	●	0790HGS5	53.8	65.6	119.6	1.6	8.0	2
	8	●	0790HGS8	77.8	89.6	143.6	1.6	8.0	2
8.0	3	●	MDW 0800HGS3	29.7	41.7	95.7	1.7	8.0	2
	5	●	0800HGS5	53.7	65.7	119.7	1.7	8.0	2
	8	●	0800HGS8	77.7	89.7	143.7	1.7	8.0	2
8.1	3	●	MDW 0810HGS3	32.1	44.2	101.7	1.7	9.0	2
	5	●	0810HGS5	57.6	69.7	128.7	1.7	9.0	2
	8	●	0810HGS8	83.1	95.2	155.7	1.7	9.0	2
8.2	3	●	MDW 0820HGS3	31.9	44.2	101.7	1.7	9.0	2
	5	●	0820HGS5	57.4	69.7	128.7	1.7	9.0	2
	8	●	0820HGS8	82.9	95.2	155.7	1.7	9.0	2
8.3	3	●	MDW 0830HGS3	31.8	44.2	101.7	1.7	9.0	2
	5	●	0830HGS5	57.3	69.7	128.7	1.7	9.0	2
	8	●	0830HGS8	82.8	95.2	155.7	1.7	9.0	2
8.4	3	●	MDW 0840HGS3	31.6	44.2	101.7	1.7	9.0	2
	5	●	0840HGS5	57.1	69.7	128.7	1.7	9.0	2
	8	●	0840HGS8	82.6	95.2	155.7	1.7	9.0	2
8.5	3	●	MDW 0850HGS3	31.6	44.3	101.8	1.8	9.0	2
	5	●	0850HGS5	57.1	69.8	128.8	1.8	9.0	2
	8	●	0850HGS8	82.6	95.3	155.8	1.8	9.0	2
8.6	3	●	MDW 0860HGS3	33.9	46.8	101.8	1.8	9.0	2
	5	●	0860HGS5	60.9	73.8	128.8	1.8	9.0	2
	8	●	0860HGS8	87.9	100.8	155.8	1.8	9.0	2

Grade: ACX70

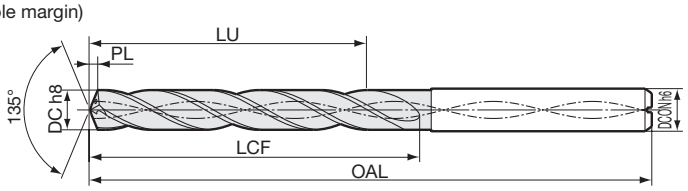
HGS series (Internal Coolant Supply)

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 N36 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
8.7	3	●	MDW 0870HGS3	33.8	46.8	101.8	1.8	9.0	2
	5	●	0870HGS5	60.8	73.8	128.8	1.8	9.0	2
	8	●	0870HGS8	87.8	100.8	155.8	1.8	9.0	2
8.8	3	●	MDW 0880HGS3	33.6	46.8	101.8	1.8	9.0	2
	5	●	0880HGS5	60.6	73.8	128.8	1.8	9.0	2
	8	●	0880HGS8	87.6	100.8	155.8	1.8	9.0	2
8.9	3	●	MDW 0890HGS3	33.5	46.8	101.8	1.8	9.0	2
	5	●	0890HGS5	60.5	73.8	128.8	1.8	9.0	2
	8	●	0890HGS8	87.5	100.8	155.8	1.8	9.0	2
9.0	3	●	MDW 0900HGS3	33.4	46.9	101.9	1.9	9.0	2
	5	●	0900HGS5	60.4	73.9	128.9	1.9	9.0	2
	8	●	0900HGS8	87.4	100.9	155.9	1.9	9.0	2
9.1	3	●	MDW 0910HGS3	35.8	49.4	107.9	1.9	10.0	2
	5	●	0910HGS5	64.3	77.9	137.9	1.9	10.0	2
	8	●	0910HGS8	92.8	106.4	167.9	1.9	10.0	2
9.2	3	●	MDW 0920HGS3	35.6	49.4	107.9	1.9	10.0	2
	5	●	0920HGS5	64.1	77.9	137.9	1.9	10.0	2
	8	●	0920HGS8	92.6	106.4	167.9	1.9	10.0	2
9.3	3	●	MDW 0930HGS3	35.5	49.4	107.9	1.9	10.0	2
	5	●	0930HGS5	64.0	77.9	137.9	1.9	10.0	2
	8	●	0930HGS8	92.5	106.4	167.9	1.9	10.0	2
9.4	3	●	MDW 0940HGS3	35.3	49.4	107.9	1.9	10.0	2
	5	●	0940HGS5	63.8	77.9	137.9	1.9	10.0	2
	8	●	0940HGS8	92.3	106.4	167.9	1.9	10.0	2
9.5	3	●	MDW 0950HGS3	35.3	49.5	108.0	2.0	10.0	2
	5	●	0950HGS5	63.8	78.0	138.0	2.0	10.0	2
	8	●	0950HGS8	92.3	106.5	168.0	2.0	10.0	2
9.6	3	●	MDW 0960HGS3	37.6	52.0	108.0	2.0	10.0	2
	5	●	0960HGS5	67.6	82.0	138.0	2.0	10.0	2
	8	●	0960HGS8	97.6	112.0	168.0	2.0	10.0	2
9.7	3	●	MDW 0970HGS3	37.5	52.0	108.0	2.0	10.0	2
	5	●	0970HGS5	67.5	82.0	138.0	2.0	10.0	2
	8	●	0970HGS8	97.5	112.0	168.0	2.0	10.0	2
9.8	3	●	MDW 0980HGS3	37.3	52.0	108.0	2.0	10.0	2
	5	●	0980HGS5	67.3	82.0	138.0	2.0	10.0	2
	8	●	0980HGS8	97.3	112.0	168.0	2.0	10.0	2
9.9	3	●	MDW 0990HGS3	37.2	52.0	108.0	2.0	10.0	2
	5	●	0990HGS5	67.2	82.0	138.0	2.0	10.0	2
	8	●	0990HGS8	97.2	112.0	168.0	2.0	10.0	2
10.0	3	●	MDW 1000HGS3	37.1	52.1	108.1	2.1	10.0	2
	5	●	1000HGS5	67.1	82.1	138.1	2.1	10.0	2
	8	●	1000HGS8	97.1	112.1	168.1	2.1	10.0	2
10.1	3	●	MDW 1010HGS3	39.5	54.6	118.1	2.1	11.0	2
	5	●	1010HGS5	71.0	86.1	151.1	2.1	11.0	2
	8	●	1010HGS8	102.5	117.6	184.1	2.1	11.0	2
10.2	3	●	MDW 1020HGS3	39.3	54.6	118.1	2.1	11.0	2
	5	●	1020HGS5	70.8	86.1	151.1	2.1	11.0	2
	8	●	1020HGS8	102.3	117.6	184.1	2.1	11.0	2
10.3	3	●	MDW 1030HGS3	39.2	54.6	118.1	2.1	11.0	2
	5	●	1030HGS5	70.7	86.1	151.1	2.1	11.0	2
	8	●	1030HGS8	102.2	117.6	184.1	2.1	11.0	2
10.4	3	●	MDW 1040HGS3	39.1	54.7	118.2	2.2	11.0	2
	5	●	1040HGS5	70.6	86.2	151.2	2.2	11.0	2
	8	●	1040HGS8	102.1	117.7	184.2	2.2	11.0	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
10.5	3	●	MDW 1050HGS3	39.0	54.7	118.2	2.2	11.0	2
	5	●	1050HGS5	70.5	86.2	151.2	2.2	11.0	2
	8	●	1050HGS8	102.0	117.7	184.2	2.2	11.0	2
10.6	3	●	MDW 1060HGS3	41.3	57.2	118.2	2.2	11.0	2
	5	●	1060HGS5	74.3	90.2	151.2	2.2	11.0	2
	8	●	1060HGS8	107.3	123.2	184.2	2.2	11.0	2
10.7	3	●	MDW 1070HGS3	41.2	57.2	118.2	2.2	11.0	2
	5	●	1070HGS5	74.2	90.2	151.2	2.2	11.0	2
	8	●	1070HGS8	107.2	123.2	184.2	2.2	11.0	2
10.8	3	●	MDW 1080HGS3	41.0	57.2	118.2	2.2	11.0	2
	5	●	1080HGS5	74.0	90.2	151.2	2.2	11.0	2
	8	●	1080HGS8	107.0	123.2	184.2	2.2	11.0	2
10.9	3	●	MDW 1090HGS3	41.0	57.3	118.3	2.3	11.0	2
	5	●	1090HGS5	74.0	90.3	151.3	2.3	11.0	2
	8	●	1090HGS8	107.0	123.3	184.3	2.3	11.0	2
11.0	3	●	MDW 1100HGS3	40.8	57.3	118.3	2.3	11.0	2
	5	●	1100HGS5	73.8	90.3	151.3	2.3	11.0	2
	8	●	1100HGS8	106.8	123.3	184.3	2.3	11.0	2
11.1	3	●	MDW 1110HGS3	43.2	59.8	124.3	2.3	12.0	2
	5	●	1110HGS5	77.7	94.3	160.3	2.3	12.0	2
	8	●	1110HGS8	112.2	128.8	196.3	2.3	12.0	2
11.2	3	●	MDW 1120HGS3	43.0	59.8	124.3	2.3	12.0	2
	5	●	1120HGS5	77.5	94.3	160.3	2.3	12.0	2
	8	●	1120HGS8	112.0	128.8	196.3	2.3	12.0	2
11.3	3	●	MDW 1130HGS3	42.9	59.8	124.3	2.3	12.0	2
	5	●	1130HGS5	77.4	94.3	160.3	2.3	12.0	2
	8	●	1130HGS8	111.9	128.8	196.3	2.3	12.0	2
11.4	3	●	MDW 1140HGS3	42.8	59.9	124.4	2.4	12.0	2
	5	●	1140HGS5	77.3	94.4	160.4	2.4	12.0	2
	8	●	1140HGS8	111.8	128.9	196.4	2.4	12.0	2
11.5	3	●	MDW 1150HGS3	42.7	59.9	124.4	2.4	12.0	2
	5	●	1150HGS5	77.2	94.4	160.4	2.4	12.0	2
	8	●	1150HGS8	111.7	128.9	196.4	2.4	12.0	2
11.6	3	●	MDW 1160HGS3	45.0	62.4	124.4	2.4	12.0	2
	5	●	1160HGS5	81.0	98.4	160.4	2.4	12.0	2
	8	●	1160HGS8	117.0	134.4	196.4	2.4	12.0	2
11.7	3	●	MDW 1170HGS3	44.9	62.4	124.4	2.4	12.0	2
	5	●	1170HGS5	80.9	98.4	160.4	2.4	12.0	2
	8	●	1170HGS8	116.9	134.4	196.4	2.4	12.0	2
11.8	3	●	MDW 1180HGS3	44.7	62.4	124.4	2.4	12.0	2
	5	●	1180HGS5	80.7	98.4	160.4	2.4	12.0	2
	8	●	1180HGS8	116.7	134.4	196.4	2.4	12.0	2
11.9	3	●	MDW 1190HGS3	44.7	62.5	124.5	2.5	12.0	2
	5	●	1190HGS5	80.7	98.5	160.5	2.5	12.0	2
	8	●	1190HGS8	116.7	134.5	196.5	2.5	12.0	2
12.0	3	●	MDW 1200HGS3	44.5	62.5	124.5	2.5	12.0	2
	5	●	1200HGS5	80.5	98.5	160.5	2.5	12.0	2
	8	●	1200HGS8	116.5	134.5	196.5	2.5	12.0	2
12.1	3	●	MDW 1210HGS3	46.9	65.0	130.5	2.5	13.0	2
	5	●	1210HGS5	84.4	102.5	169.5	2.5	13.0	2
	8		1210HGS8	121.9	140.0	208.5	2.5	13.0	2
12.2	3	●	MDW 1220HGS3	46.7	65.0	130.5	2.5	13.0	2
	5	●	1220HGS5	84.2	102.5	169.5	2.5	13.0	2
	8		1220HGS8	121.7	140.0	208.5	2.5	13.0	2

Grade: ACX70

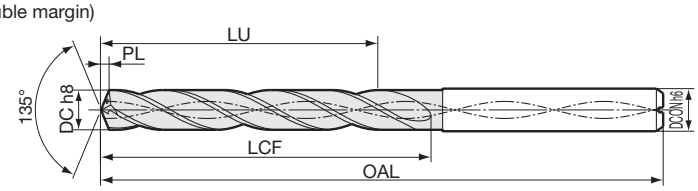
HGS series (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.28% | 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 N36 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	2.5	13.0	2
12.3	5	●	1230HGS5	84.1	102.5	169.5	2.5	13.0	2
	8		1230HGS8	121.6	140.0	208.5	2.5	13.0	2
	3	●	MDW 1240HGS3	46.5	65.1	130.6	2.6	13.0	2
12.4	5	●	1240HGS5	84.0	102.6	169.6	2.6	13.0	2
	8		1240HGS8	121.5	140.1	208.6	2.6	13.0	2
	3	●	MDW 1250HGS3	46.4	65.1	130.6	2.6	13.0	2
12.5	5	●	1250HGS5	83.9	102.6	169.6	2.6	13.0	2
	8	●	1250HGS8	121.4	140.1	208.6	2.6	13.0	2
	3	●	MDW 1260HGS3	48.7	67.6	130.6	2.6	13.0	2
12.6	5	●	1260HGS5	87.7	106.6	169.6	2.6	13.0	2
	8		1260HGS8	126.7	145.6	208.6	2.6	13.0	2
	3	●	MDW 1270HGS3	48.6	67.6	130.6	2.6	13.0	2
12.7	5	●	1270HGS5	87.6	106.6	169.6	2.6	13.0	2
	8		1270HGS8	126.6	145.6	208.6	2.6	13.0	2
	3	●	MDW 1280HGS3	48.4	67.6	130.6	2.6	13.0	2
12.8	5	●	1280HGS5	87.4	106.6	169.6	2.6	13.0	2
	8		1280HGS8	126.4	145.6	208.6	2.6	13.0	2
	3	●	MDW 1290HGS3	48.4	67.7	130.7	2.7	13.0	2
12.9	5	●	1290HGS5	87.4	106.7	169.7	2.7	13.0	2
	8		1290HGS8	126.4	145.7	208.7	2.7	13.0	2
	3	●	MDW 1300HGS3	48.2	67.7	130.7	2.7	13.0	2
13.0	5	●	1300HGS5	87.2	106.7	169.7	2.7	13.0	2
	8	●	1300HGS8	126.2	145.7	208.7	2.7	13.0	2
	3	●	MDW 1310HGS3	50.6	70.2	136.7	2.7	14.0	2
13.1	5	●	1310HGS5	91.1	110.7	178.7	2.7	14.0	2
	8		1310HGS8	131.6	151.2	220.7	2.7	14.0	2
	3	●	MDW 1320HGS3	50.4	70.2	136.7	2.7	14.0	2
13.2	5	●	1320HGS5	90.9	110.7	178.7	2.7	14.0	2
	8		1320HGS8	131.4	151.2	220.7	2.7	14.0	2
	3	●	MDW 1330HGS3	50.4	70.3	136.8	2.8	14.0	2
13.3	5	●	1330HGS5	90.9	110.8	178.8	2.8	14.0	2
	8		1330HGS8	131.4	151.3	220.8	2.8	14.0	2
	3	●	MDW 1340HGS3	50.2	70.3	136.8	2.8	14.0	2
13.4	5	●	1340HGS5	90.7	110.8	178.8	2.8	14.0	2
	8		1340HGS8	131.2	151.3	220.8	2.8	14.0	2
	3	●	MDW 1350HGS3	50.1	70.3	136.8	2.8	14.0	2
13.5	5	●	1350HGS5	90.6	110.8	178.8	2.8	14.0	2
	8	●	1350HGS8	131.1	151.3	220.8	2.8	14.0	2
	3	●	MDW 1360HGS3	52.4	72.8	136.8	2.8	14.0	2
13.6	5	●	1360HGS5	94.4	114.8	178.8	2.8	14.0	2
	8		1360HGS8	136.4	156.8	220.8	2.8	14.0	2
	3	●	MDW 1370HGS3	52.3	72.8	136.8	2.8	14.0	2
13.7	5	●	1370HGS5	94.3	114.8	178.8	2.8	14.0	2
	8		1370HGS8	136.3	156.8	220.8	2.8	14.0	2
	3	●	MDW 1380HGS3	52.2	72.9	136.9	2.9	14.0	2
13.8	5	●	1380HGS5	94.2	114.9	178.9	2.9	14.0	2
	8		1380HGS8	136.2	156.9	220.9	2.9	14.0	2
	3	●	MDW 1390HGS3	52.1	72.9	136.9	2.9	14.0	2
13.9	5	●	1390HGS5	94.1	114.9	178.9	2.9	14.0	2
	8		1390HGS8	136.1	156.9	220.9	2.9	14.0	2
	3	●	MDW 1400HGS3	51.9	72.9	136.9	2.9	14.0	2
14.0	5	●	1400HGS5	93.9	114.9	178.9	2.9	14.0	2
	8	●	1400HGS8	135.9	156.9	220.9	2.9	14.0	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	2.9	15.0	2
14.1	5	●	1410HGS5	97.8	118.9	187.9	2.9	15.0	2
	8		1410HGS8	141.3	162.4	232.9	2.9	15.0	2
	3	●	MDW 1420HGS3	54.1	75.4	142.9	2.9	15.0	2
14.2	5	●	1420HGS5	97.6	118.9	187.9	2.9	15.0	2
	8		1420HGS8	141.1	162.4	232.9	2.9	15.0	2
	3	●	MDW 1430HGS3	54.1	75.5	143.0	3.0	15.0	2
14.3	5	●	1430HGS5	97.6	119.0	188.0	3.0	15.0	2
	8		1430HGS8	141.1	162.5	233.0	3.0	15.0	2
	3	●	MDW 1440HGS3	53.9	75.5	143.0	3.0	15.0	2
14.4	5	●	1440HGS5	97.4	119.0	188.0	3.0	15.0	2
	8		1440HGS8	140.9	162.5	233.0	3.0	15.0	2
	3	●	MDW 1450HGS3	53.8	75.5	143.0	3.0	15.0	2
14.5	5	●	1450HGS5	97.3	119.0	188.0	3.0	15.0	2
	8	●	1450HGS8	140.8	162.5	233.0	3.0	15.0	2
	3	●	MDW 1460HGS3	56.1	78.0	143.0	3.0	15.0	2
14.6	5	●	1460HGS5	101.1	123.0	188.0	3.0	15.0	2
	8		1460HGS8	146.1	168.0	233.0	3.0	15.0	2
	3	●	MDW 1470HGS3	56.0	78.0	143.0	3.0	15.0	2
14.7	5	●	1470HGS5	101.0	123.0	188.0	3.0	15.0	2
	8		1470HGS8	146.0	168.0	233.0	3.0	15.0	2
	3	●	MDW 1480HGS3	55.9	78.1	143.1	3.1	15.0	2
14.8	5	●	1480HGS5	100.9	123.1	188.1	3.1	15.0	2
	8		1480HGS8	145.9	168.1	233.1	3.1	15.0	2
	3	●	MDW 1490HGS3	55.8	78.1	143.1	3.1	15.0	2
14.9	5	●	1490HGS5	100.8	123.1	188.1	3.1	15.0	2
	8		1490HGS8	145.8	168.1	233.1	3.1	15.0	2
	3	●	MDW 1500HGS3	55.6	78.1	143.1	3.1	15.0	2
15.0	5	●	1500HGS5	100.6	123.1	188.1	3.1	15.0	2
	8	●	1500HGS8	145.6	168.1	233.1	3.1	15.0	2
	3	●	MDW 1510HGS3	58.0	80.6	149.1	3.1	16.0	2
15.1	5	●	1510HGS5	104.5	127.1	197.1	3.1	16.0	2
	8		1510HGS8	151.0	173.6	245.1	3.1	16.0	2
	3	●	MDW 1520HGS3	57.8	80.6	149.1	3.1	16.0	2
15.2	5	●	1520HGS5	104.3	127.1	197.1	3.1	16.0	2
	8		1520HGS8	150.8	173.6	245.1	3.1	16.0	2
	3	●	MDW 1530HGS3	57.8	80.7	149.2	3.2	16.0	2
15.3	5	●	1530HGS5	104.3	127.2	197.2	3.2	16.0	2
	8		1530HGS8	150.8	173.7	245.2	3.2	16.0	2
	3	●	MDW 1540HGS3	57.6	80.7	149.2	3.2	16.0	2
15.4	5	●	1540HGS5	104.1	127.2	197.2	3.2	16.0	2
	8		1540HGS8	150.6	173.7	245.2	3.2	16.0	2
	3	●	MDW 1550HGS3	57.5	80.7	149.2	3.2	16.0	2
15.5	5	●	1550HGS5	104.0	127.2	197.2	3.2	16.0	2
	8	●	1550HGS8	150.5	173.7	245.2	3.2	16.0	2
	3	●	MDW 1560HGS3	59.8	83.2	149.2	3.2	16.0	2
15.6	5	●	1560HGS5	107.8	131.2	197.2	3.2	16.0	2
	8		1560HGS8	155.8	179.2	245.2	3.2	16.0	2
	3	●	MDW 1570HGS3	59.7	83.2	149.2	3.2	16.0	2
15.7	5	●	1570HGS5	107.7	131.2	197.2	3.2	16.0	2
	8		1570HGS8	155.7	179.2	245.2	3.2	16.0	2
	3	●	MDW 1580HGS3	59.6	83.3	149.3	3.3	16.0	2
15.8	5	●	1580HGS5	107.6	131.3	197.3	3.3	16.0	2
	8		1580HGS8	155.6	179.3	245.3	3.3	16.0	2

Grade: ACX70

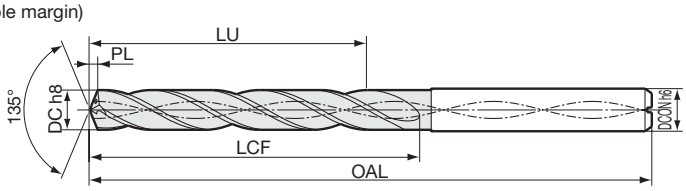
HGS series (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 43HRC | 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 N36 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	3.3	16.0	2
	8		1590HGS8	155.5	179.3	245.3	3.3	16.0	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	3.3	16.0	2
	8	●	1600HGS8	155.3	179.3	245.3	3.3	16.0	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	3.3	17.0	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	3.4	17.0	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	3.4	17.0	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	3.4	17.0	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	3.4	17.0	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	3.4	17.0	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	3.5	17.0	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	3.5	17.0	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	3.5	17.0	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	3.5	17.0	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	3.5	18.0	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	3.6	18.0	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	3.6	18.0	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	3.6	18.0	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	3.6	18.0	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	3.6	18.0	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	3.7	18.0	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	3.7	18.0	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	3.7	18.0	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	3.7	18.0	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	3.7	19.0	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	3.8	19.0	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	3.8	19.0	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	3.8	19.0	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	3.8	19.0	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	3.9	19.0	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	3.9	19.0	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	3.9	19.0	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	3.9	19.0	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	3.9	19.0	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	4.0	20.0	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	4.0	20.0	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	4.0	20.0	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	4.0	20.0	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	4.0	20.0	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	4.1	20.0	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	4.1	20.0	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	4.1	20.0	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	4.1	20.0	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	4.1	20.0	2

Grade: ACX70

HGS series (Internal Coolant Supply)

Recommended Cutting Conditions

(n: Spindle Speed min^{-1} vc: 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	n	6,400	3,200	1,600	4,200	7,400	5,300	3,200	1,100
	vc	30 - **60** - 100	20 - **30** - 40	10 - **15** - 20	30 - **40** - 50	50 - **70** - 90	40 - **50** - 80	20 - **30** - 40	5 - **10** - 30
	f	0.10 - **0.15** - 0.20	0.06 - **0.07** - 0.08	0.05 - **0.07** - 0.08	0.06 - **0.08** - 0.12	0.15 - **0.20** - 0.25	0.12 - **0.15** - 0.20	0.08 - **0.09** - 0.10	0.05 - **0.06** - 0.08
ø4.0	n	5,600	2,400	1,200	3,200	5,600	4,000	2,400	800
	vc	40 - **70** - 110	20 - **30** - 40	10 - **15** - 20	30 - **40** - 55	50 - **70** - 90	40 - **50** - 80	20 - **30** - 40	5 - **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 - **0.20** - 0.25	0.13 - **0.18** - 0.23	0.08 - **0.09** - 0.10	0.05 - **0.06** - 0.08
ø5.0	n	5,100	1,900	950	2,500	4,500	3,200	1,900	600
	vc	50 - **80** - 120	20 - **30** - 40	10 - **15** - 20	30 - **40** - 60	50 - **70** - 90	40 - **50** - 80	20 - **30** - 40	5 - **10** - 30
	f	0.15 - **0.2** - 0.25	0.08 - **0.09** - 0.10	0.05 - **0.07** - 0.08	0.08 - **0.12** - 0.15	0.15 - **0.20** - 0.30	0.15 - **0.20** - 0.25	0.08 - **0.09** - 0.10	0.05 - **0.06** - 0.08
ø8.0	n	3,600	1,200	600	1,800	3,200	2,400	1,200	600
	vc	60 - **90** - 140	20 - **30** - 40	10 - **15** - 20	30 - **45** - 70	60 - **80** - 100	50 - **60** - 90	20 - **30** - 40	10 - **15** - 30
	f	0.18 - **0.25** - 0.30	0.09 - **0.10** - 0.13	0.06 - **0.08** - 0.10	0.09 - **0.14** - 0.18	0.18 - **0.23** - 0.33	0.18 - **0.23** - 0.30	0.08 - **0.09** - 0.10	0.07 - **0.08** - 0.09
ø10.0	n	3,200	1,000	500	1,600	2,500	1,900	950	500
	vc	70 - **100** - 150	20 - **30** - 40	10 - **15** - 20	40 - **50** - 80	60 - **80** - 100	50 - **60** - 90	20 - **30** - 40	10 - **15** - 30
	f	0.20 - **0.25** - 0.35	0.10 - **0.12** - 0.15	0.06 - **0.08** - 0.10	0.10 - **0.15** - 0.20	0.20 - **0.30** - 0.35	0.20 - **0.25** - 0.35	0.08 - **0.10** - 0.12	0.08 - **0.09** - 0.10
ø12.0	n	2,700	800	400	1,300	2,100	1,600	800	400
	vc	70 - **100** - 150	20 - **30** - 40	10 - **15** - 20	40 - **50** - 80	60 - **80** - 100	50 - **60** - 90	20 - **30** - 40	10 - **15** - 30
	f	0.20 - **0.25** - 0.35	0.10 - **0.12** - 0.15	0.06 - **0.08** - 0.10	0.10 - **0.15** - 0.20	0.20 - **0.30** - 0.35	0.20 - **0.25** - 0.35	0.08 - **0.10** - 0.12	0.08 - **0.09** - 0.10
ø16.0	n	2,200	600	300	1,200	1,800	1,400	600	400
	vc	75 - **110** - 150	20 - **30** - 40	10 - **15** - 20	45 - **60** - 80	65 - **90** - 110	55 - **70** - 95	25 - **30** - 40	15 - **20** - 35
	f	0.22 - **0.27** - 0.35	0.10 - **0.12** - 0.15	0.07 - **0.09** - 0.11	0.10 - **0.15** - 0.20	0.25 - **0.30** - 0.35	0.22 - **0.28** - 0.35	0.09 - **0.11** - 0.13	0.08 - **0.09** - 0.10
ø20.0	n	1,900	500	250	950	1,600	1,300	500	300
	vc	80 - **120** - 160	20 - **30** - 40	10 - **15** - 20	45 - **60** - 80	70 - **100** - 120	60 - **80** - 100	25 - **30** - 40	15 - **20** - 35
	f	0.25 - **0.30** - 0.35	0.10 - **0.12** - 0.15	0.08 - **0.10** - 0.12	0.10 - **0.15** - 0.20	0.25 - **0.30** - 0.35	0.25 - **0.30** - 0.35	0.10 - **0.12** - 0.15	0.08 - **0.09** - 0.10

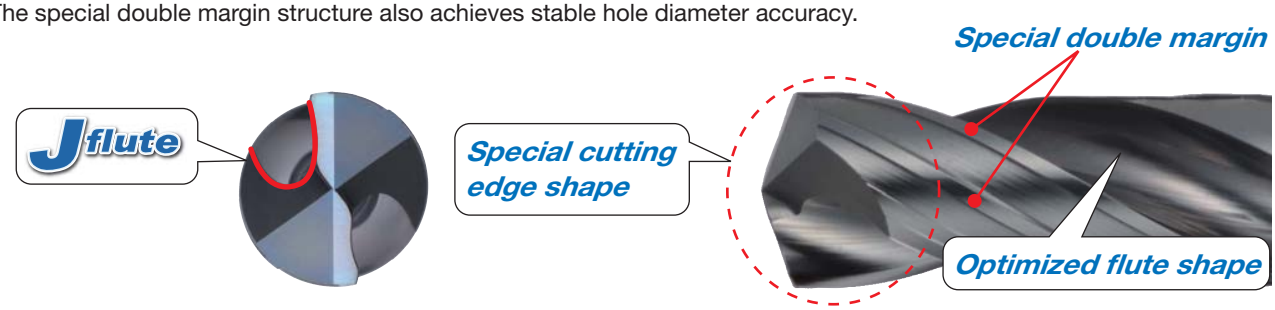
Min. - **Optimum** - Max.

■ General Features

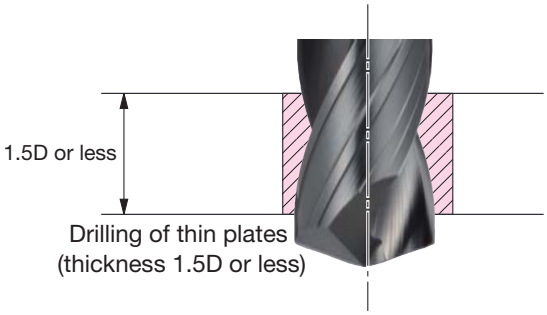
The J flutes of the Super MULTIDRILL WGS series have been tuned for improved chip breaking capabilities during drilling of thin plates. Excellent sharpness prevents hardening from drilling.
The special double margin structure also achieves stable hole diameter accuracy.

■ Features and Applications

J flutes (flute 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.



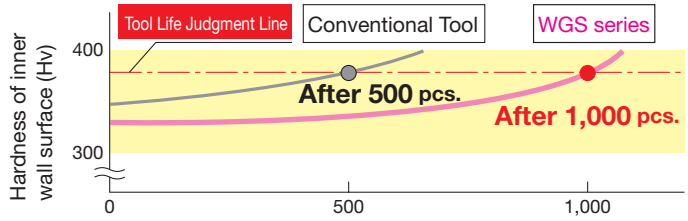
■ Target Workpieces



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

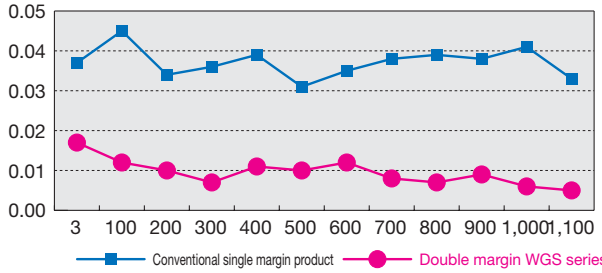
■ Cutting Performance

● Reduces hardening of the workpiece surface during drilling



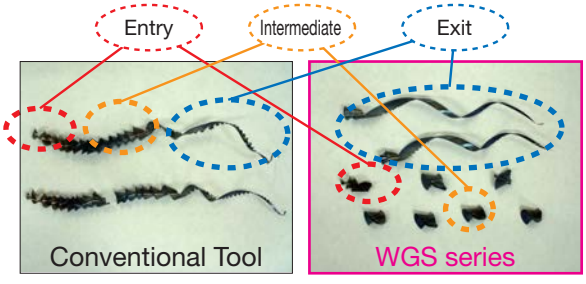
Work Material : S53C
Cutting Conditions : vc = 70m/min, f = 0.2mm/rev
H=13mm

● Stable hole expansion tolerance



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

● Better chip breaking capabilities



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

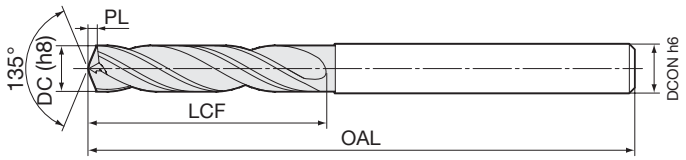
WGS series (External Coolant Supply)

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

DEX Coat 2D

*Refer to N36 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	80	1.6	8.0	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	84	1.8	9.0	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	89	2.0	10.0	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	95	2.2	11.0	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	102	2.4	12.0	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	103	2.7	13.0	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	108	2.9	14.0	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	111	3.1	15.0	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	115	3.3	16.0	1

Grade: ACX70

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

Recommended Cutting Conditions

(n: Spindle Speed min^{-1} vc: 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	n	2,600	1,300	1,900	1,900
	vc	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	n	2,000	800	1,600	1,200
	vc	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

* 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.

Min. - **Optimum** - Max.

MDM series

■ General Features

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

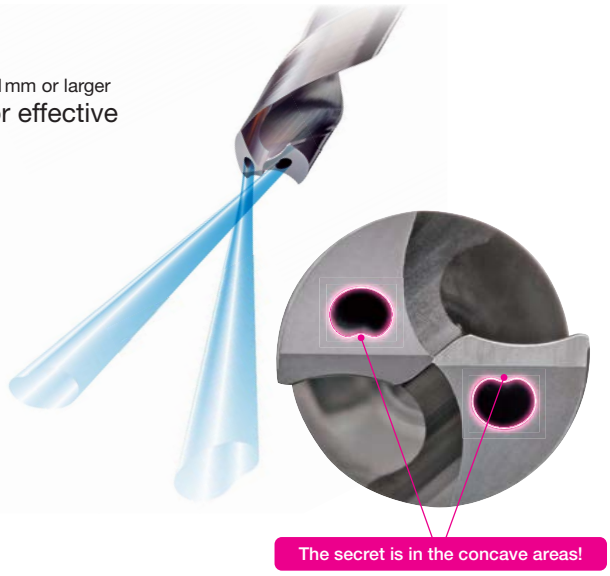
■ Features and Applications

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

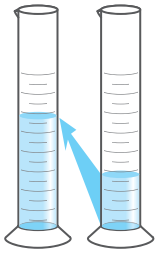
Bean Jet Cooling

*Utilised for diameters of ø4.1mm or larger

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



Discharge 2x or more

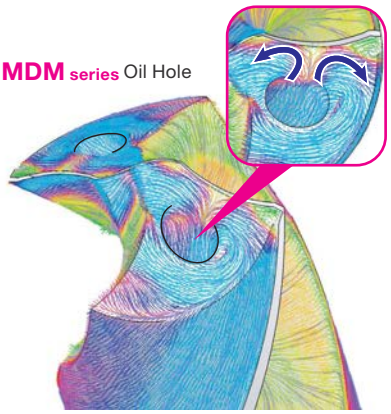


MDM series

Conventional Tool A

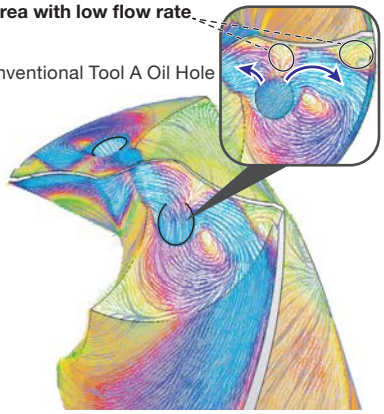
- Effective cooling of the cutting edge created through fluid analysis

MDM series Oil Hole



Area with low flow rate

Conventional Tool A Oil Hole



Analysed at tool rotation speed of 3,200min^{-1}

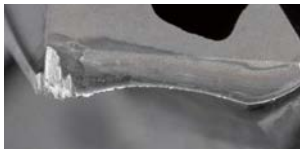
Low flow rate High flow rate

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

MDM series

Minimal adhesion, able to continue

Competitor's Product A

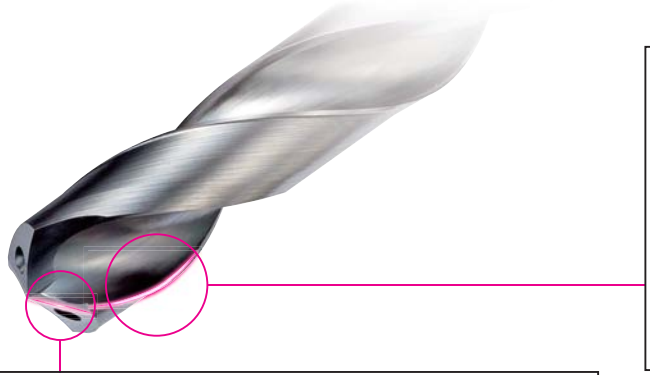


Adhesion fracture in peripheral edge

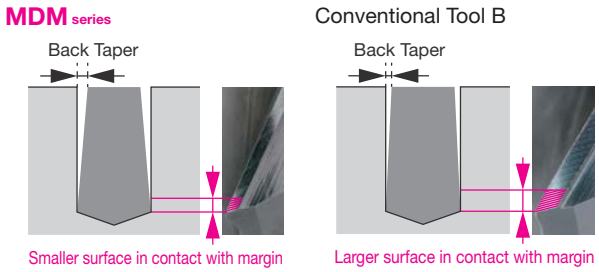
Work Material	: SUS304
Machine	: BT30 vertical machining centre
Tool	: MDM 0800S08H05 (ø8mmx5D)
Cutting Conditions	: vc = 80m/min, f = 0.25mm/rev, H = 40mm (through), Internal Coolant Supply (water soluble)
Drilling Distance	: 40m

MDM series

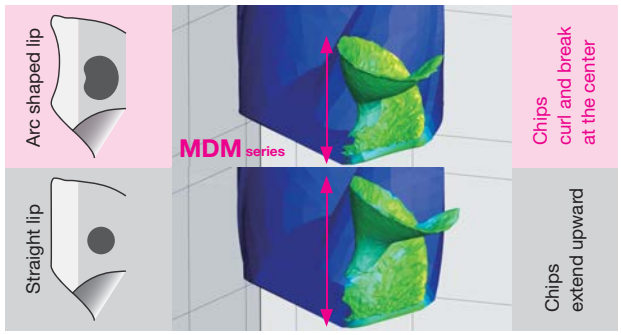
● New cutting edge design that emphasises sharpness for good chip control



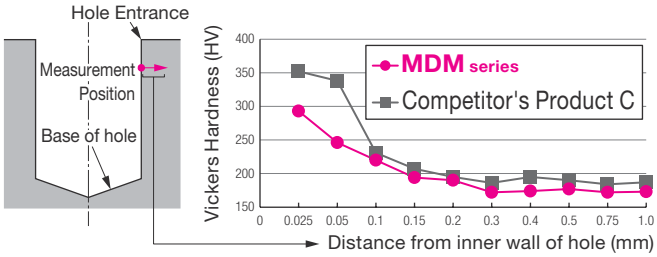
● Narrow margin and large back taper
Reducing the contact area with the workpiece, suppressing temperature rise at the margin



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



● Suppressing workpiece hardening on drilled hole wall
Reduces drilling load, reducing damage to the drill and increasing the life of the reamer and tap used in post-processing

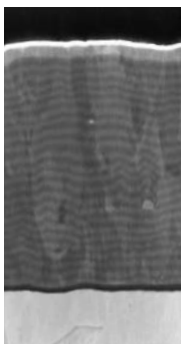


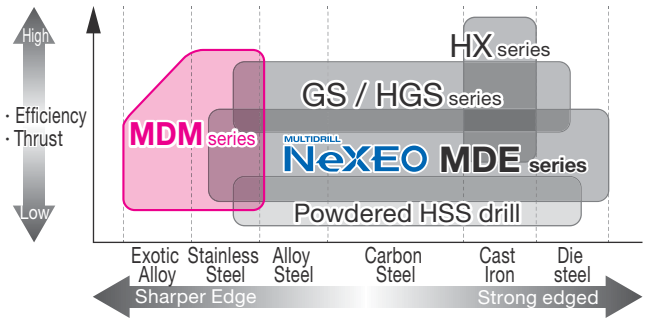
Work Material : SUS304
Machine : BT30 vertical machining centre
Tool : MDM 0800S08H05 (ø8.0mmx5D)
Cutting Conditions : vc = 80m/min, f = 0.20mm/rev, H = 40mm (through), Internal Coolant Supply (water soluble)

● Ideal grade for stainless steel and exotic alloy drilling

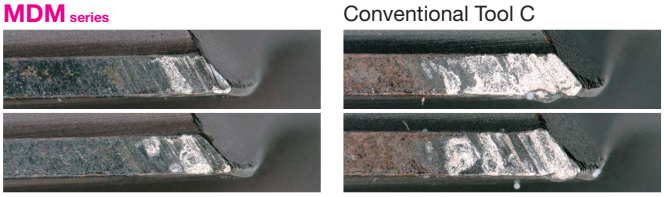
ACT70

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



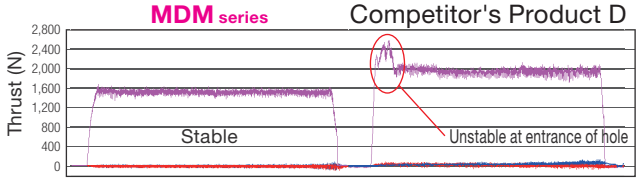


● NX Coat reduces margin wear



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

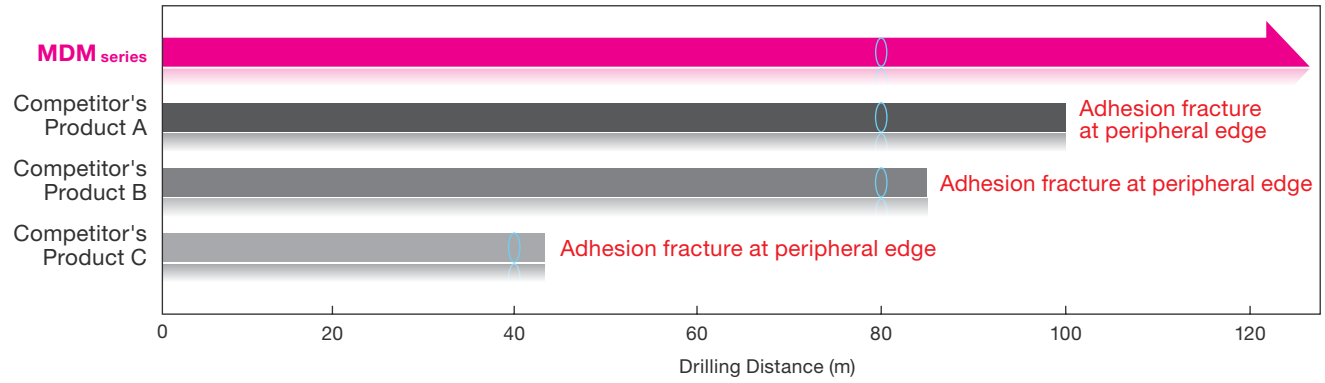
● Reduces thrust for stable drilling from the entrance to the exit of the hole

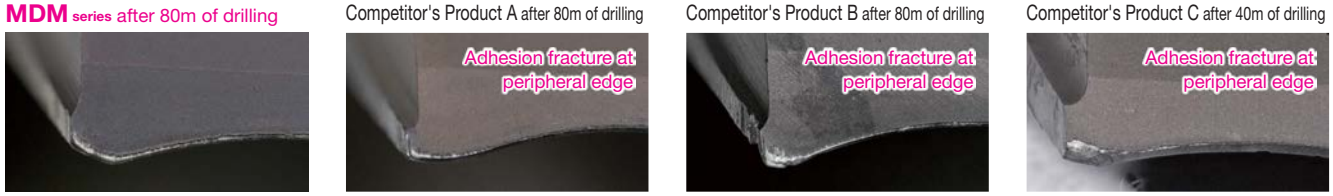


Work Material : SUS304, Machine: BT30 vertical machining centre
Tool : MDM 0800S08H05 (ø8.0mmx5D)
Cutting Conditions : vc = 80m/min, f = 0.20mm/rev, H = 40mm (through), Internal Coolant Supply (water soluble)

■ Application Examples

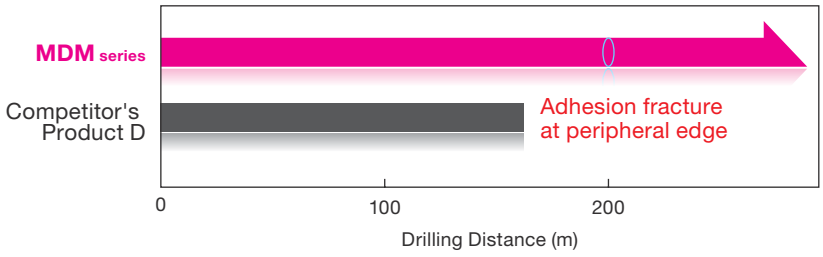
Austenitic Stainless Steel (Machining Centre)

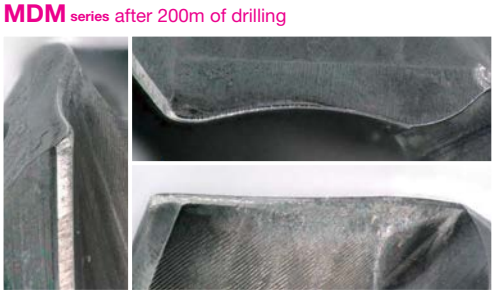




Work Material: SUS304, Machine: BT30 vertical machining centre, Tool: MDM 0800S08H05 (ø8mm×5D)
Cutting Conditions: vc = 80m/min, f = 0.20mm/rev, H = 40mm (through), Internal Coolant Supply (water soluble)

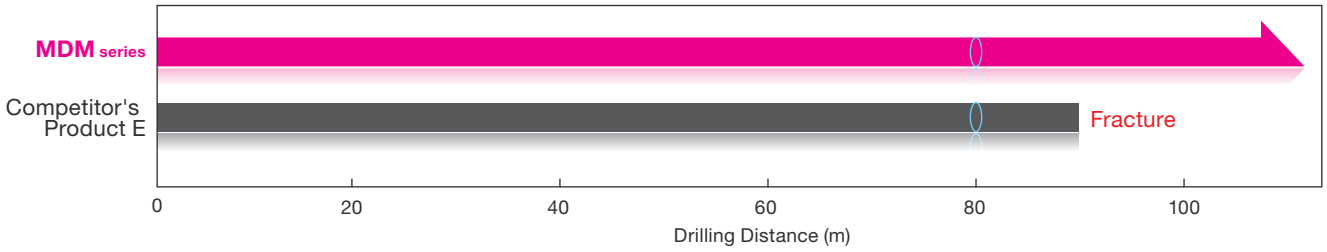
Austenitic Stainless Steel (Small Lathe)

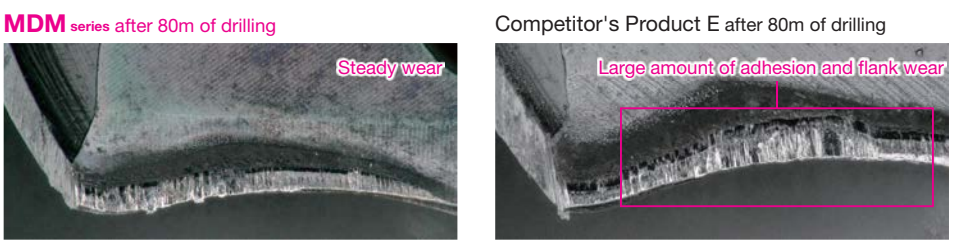




Work Material: SUS304, Machine: CNC autolathe (workpiece rotates), Tool: MDM 0540S06H03 (ø5.4mmx3D)
Cutting Conditions: vc = 47m/min, f = 0.12mm/rev, H = 25mm (blind), Internal Coolant Supply (non-water-soluble)

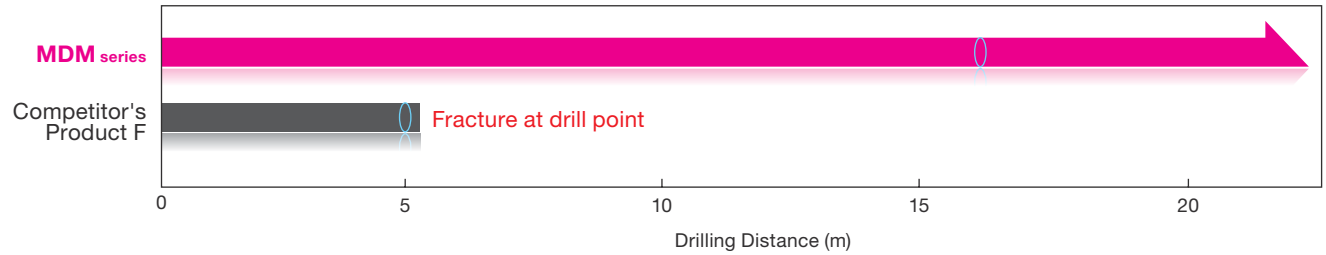
Stainless Steel with Deposition Hardened Structure



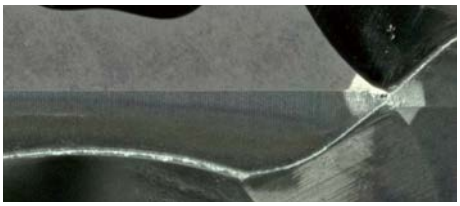


Work Material: SUS630, Machine: BT30 vertical machining centre, Tool: MDM 0400S04H05 (ø4mm×5D)
Cutting Conditions: vc = 50m/min, f = 0.10mm/rev, H = 14mm (blind), Internal Coolant Supply (water-soluble)

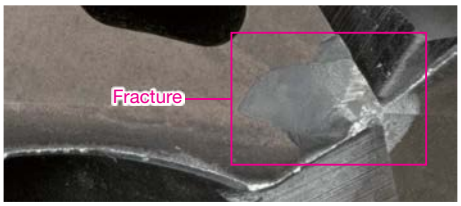
Duplex Stainless Steel



MDM series after 16m of drilling

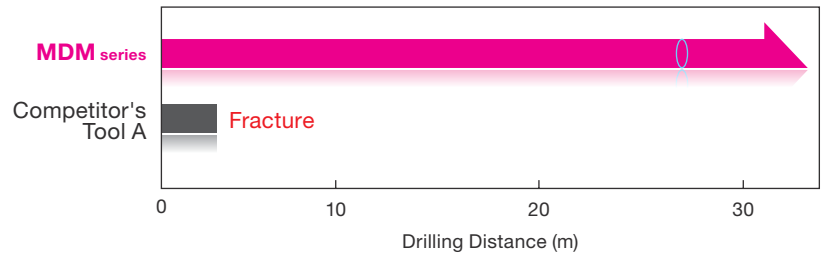


Competitor's Product F after 5m of drilling

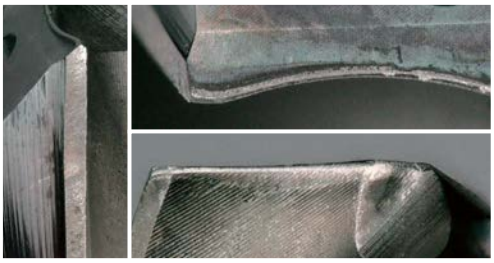


Work Material: SUS329J4L, Machine: BT30 vertical machining centre, Tool: MDM 0800S05H05 (ø8mm×5D)
Cutting Conditions: vc = 60m/min, f = 0.20mm/rev, H = 30mm (through), Internal Coolant Supply (water soluble)

Titanium Alloy



MDM series after 27m of drilling

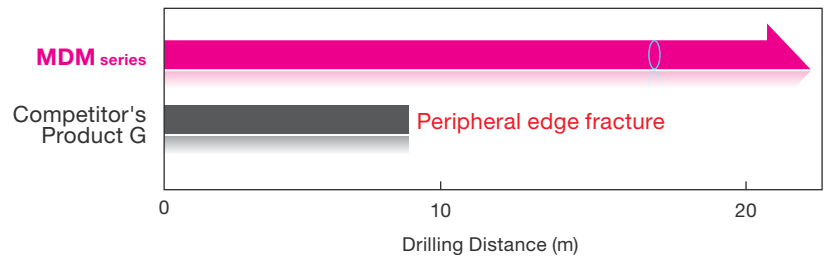


MDM series

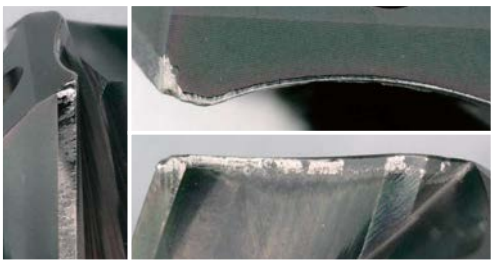
Conventional Tool A

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

Heat-resistant Cast Steel



MDM series after 17.1m of drilling



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

MDM series (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 to diameters ø4.1mm and up

*Refer to N36 for the tolerance of h6 and h8

Fig 1 (diameter under ø4.1)

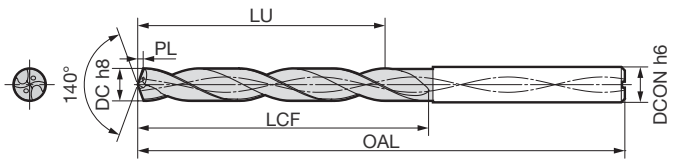
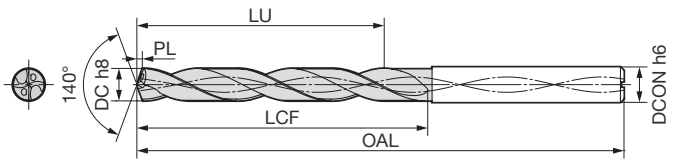


Fig 2 (diameter ø4.1 or larger) Bean Jet Cooling



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	0.5	3.0	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	0.6	4.0	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	0.6	4.0	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	0.6	4.0	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	0.6	4.0	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	0.6	4.0	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	0.7	4.0	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	0.7	4.0	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	0.7	4.0	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	0.7	4.0	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	0.7	4.0	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	0.7	5.0	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	0.8	5.0	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	0.8	5.0	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	0.8	5.0	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	0.8	5.0	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	0.8	5.0	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	0.9	5.0	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	0.9	5.0	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	0.9	5.0	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	0.9	5.0	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	0.9	6.0	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	0.9	6.0	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	1.0	6.0	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	1.0	6.0	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	1.0	6.0	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	1.0	6.0	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	1.0	6.0	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	1.1	6.0	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	1.1	6.0	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	1.1	6.0	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	1.1	7.0	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	1.1	7.0	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	1.1	7.0	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	1.2	7.0	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	1.2	7.0	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	1.2	7.0	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	1.2	7.0	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	1.2	7.0	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	1.3	7.0	2

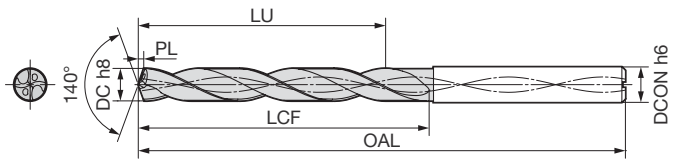
Grade: ACT70

MDM series (Internal Coolant Supply)

NX Coat | 3D | 5D

*Refer to N36 for the tolerance of h6 and h8

Fig 2 **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	2
	5	●	0700S07H05	46.8	57.3	110.3	1.3	7.0	2
7.1	3	●	MDM 0710S08H03	28.2	38.8	95.3	1.3	8.0	2
	5	●	0710S08H05	50.7	61.3	119.3	1.3	8.0	2
7.2	3	●	MDM 0720S08H03	28.0	38.8	95.3	1.3	8.0	2
	5	●	0720S08H05	50.5	61.3	119.3	1.3	8.0	2
7.3	3	●	MDM 0730S08H03	27.9	38.8	95.3	1.3	8.0	2
	5	●	0730S08H05	50.4	61.3	119.3	1.3	8.0	2
7.4	3	●	MDM 0740S08H03	27.7	38.8	95.3	1.3	8.0	2
	5	●	0740S08H05	50.2	61.3	119.3	1.3	8.0	2
7.5	3	●	MDM 0750S08H03	27.7	38.9	95.4	1.4	8.0	2
	5	●	0750S08H05	50.2	61.4	119.4	1.4	8.0	2
7.6	3	●	MDM 0760S08H03	30.0	41.4	95.4	1.4	8.0	2
	5	●	0760S08H05	54.0	65.4	119.4	1.4	8.0	2
7.7	3	●	MDM 0770S08H03	29.9	41.4	95.4	1.4	8.0	2
	5	●	0770S08H05	53.9	65.4	119.4	1.4	8.0	2
7.8	3	●	MDM 0780S08H03	29.7	41.4	95.4	1.4	8.0	2
	5	●	0780S08H05	53.7	65.4	119.4	1.4	8.0	2
7.9	3	●	MDM 0790S08H03	29.6	41.4	95.4	1.4	8.0	2
	5	●	0790S08H05	53.6	65.4	119.4	1.4	8.0	2
8.0	3	●	MDM 0800S08H03	29.5	41.5	95.5	1.5	8.0	2
	5	●	0800S08H05	53.5	65.5	119.5	1.5	8.0	2
8.1	3	●	MDM 0810S09H03	31.9	44.0	101.5	1.5	9.0	2
	5	●	0810S09H05	57.4	69.5	128.5	1.5	9.0	2
8.2	3	●	MDM 0820S09H03	31.7	44.0	101.5	1.5	9.0	2
	5	●	0820S09H05	57.2	69.5	128.5	1.5	9.0	2
8.3	3	●	MDM 0830S09H03	31.6	44.0	101.5	1.5	9.0	2
	5	●	0830S09H05	57.1	69.5	128.5	1.5	9.0	2
8.4	3	●	MDM 0840S09H03	31.4	44.0	101.5	1.5	9.0	2
	5	●	0840S09H05	56.9	69.5	128.5	1.5	9.0	2
8.5	3	●	MDM 0850S09H03	31.3	44.0	101.5	1.5	9.0	2
	5	●	0850S09H05	56.8	69.5	128.5	1.5	9.0	2
8.6	3	●	MDM 0860S09H03	33.7	46.6	101.6	1.6	9.0	2
	5	●	0860S09H05	60.7	73.6	128.6	1.6	9.0	2
8.7	3	●	MDM 0870S09H03	33.6	46.6	101.6	1.6	9.0	2
	5	●	0870S09H05	60.6	73.6	128.6	1.6	9.0	2
8.8	3	●	MDM 0880S09H03	33.4	46.6	101.6	1.6	9.0	2
	5	●	0880S09H05	60.4	73.6	128.6	1.6	9.0	2
8.9	3	●	MDM 0890S09H03	33.3	46.6	101.6	1.6	9.0	2
	5	●	0890S09H05	60.3	73.6	128.6	1.6	9.0	2

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	2
	5	●	0900S09H05	60.1	73.6	128.6	1.6	9.0	2
9.1	3	●	MDM 0910S10H03	35.6	49.2	107.7	1.7	10.0	2
	5	●	0910S10H05	64.1	77.7	137.7	1.7	10.0	2
9.2	3	●	MDM 0920S10H03	35.4	49.2	107.7	1.7	10.0	2
	5	●	0920S10H05	63.9	77.7	137.7	1.7	10.0	2
9.3	3	●	MDM 0930S10H03	35.3	49.2	107.7	1.7	10.0	2
	5	●	0930S10H05	63.8	77.7	137.7	1.7	10.0	2
9.4	3	●	MDM 0940S10H03	35.1	49.2	107.7	1.7	10.0	2
	5	●	0940S10H05	63.6	77.7	137.7	1.7	10.0	2
9.5	3	●	MDM 0950S10H03	35.0	49.2	107.7	1.7	10.0	2
	5	●	0950S10H05	63.5	77.7	137.7	1.7	10.0	2
9.6	3	●	MDM 0960S10H03	37.3	51.7	107.7	1.7	10.0	2
	5	●	0960S10H05	67.3	81.7	137.7	1.7	10.0	2
9.7	3	●	MDM 0970S10H03	37.3	51.8	107.8	1.8	10.0	2
	5	●	0970S10H05	67.3	81.8	137.8	1.8	10.0	2
9.8	3	●	MDM 0980S10H03	37.1	51.8	107.8	1.8	10.0	2
	5	●	0980S10H05	67.1	81.8	137.8	1.8	10.0	2
9.9	3	●	MDM 0990S10H03	37.0	51.8	107.8	1.8	10.0	2
	5	●	0990S10H05	67.0	81.8	137.8	1.8	10.0	2
10.0	3	●	MDM 1000S10H03	36.8	51.8	107.8	1.8	10.0	2
	5	●	1000S10H05	66.8	81.8	137.8	1.8	10.0	2
10.1	3	●	MDM 1010S11H03	39.2	54.3	117.8	1.8	11.0	2
	5	●	1010S11H05	70.7	85.8	150.8	1.8	11.0	2
10.2	3	●	MDM 1020S11H03	39.1	54.4	117.9	1.9	11.0	2
	5	●	1020S11H05	70.6	85.9	150.9	1.9	11.0	2
10.3	3	●	MDM 1030S11H03	39.0	54.4	117.9	1.9	11.0	2
	5	●	1030S11H05	70.5	85.9	150.9	1.9	11.0	2
10.4	3	●	MDM 1040S11H03	38.8	54.4	117.9	1.9	11.0	2
	5	●	1040S11H05	70.3	85.9	150.9	1.9	11.0	2
10.5	3	●	MDM 1050S11H03	38.7	54.4	117.9	1.9	11.0	2
	5	●	1050S11H05	70.2	85.9	150.9	1.9	11.0	2
10.6	3	●	MDM 1060S11H03	41.0	56.9	117.9	1.9	11.0	2
	5	●	1060S11H05	74.0	89.9	150.9	1.9	11.0	2
10.7	3	●	MDM 1070S11H03	40.9	56.9	117.9	1.9	11.0	2
	5	●	1070S11H05	73.9	89.9	150.9	1.9	11.0	2
10.8	3	●	MDM 1080S11H03	40.8	57.0	118.0	2.0	11.0	2
	5	●	1080S11H05	73.8	90.0	151.0	2.0	11.0	2
10.9	3	●	MDM 1090S11H03	40.7	57.0	118.0	2.0	11.0	2
	5	●	1090S11H05	73.7	90.0	151.0	2.0	11.0	2

Grade: ACT70

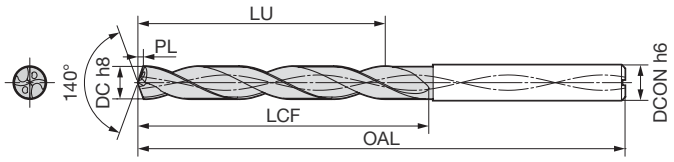
MDM series (Internal Coolant Supply)

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 N36 for the tolerance of h6 and h8

Fig 2 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	2
	5	●	1100S11H05	73.5	90.0	151.0	2.0	11.0	2
11.1	3	●	MDM 1110S12H03	42.9	59.5	124.0	2.0	12.0	2
	5	●	1110S12H05	77.4	94.0	160.0	2.0	12.0	2
11.2	3	●	MDM 1120S12H03	42.7	59.5	124.0	2.0	12.0	2
	5	●	1120S12H05	77.2	94.0	160.0	2.0	12.0	2
11.3	3	●	MDM 1130S12H03	42.7	59.6	124.1	2.1	12.0	2
	5	●	1130S12H05	77.2	94.1	160.1	2.1	12.0	2
11.4	3	●	MDM 1140S12H03	42.5	59.6	124.1	2.1	12.0	2
	5	●	1140S12H05	77.0	94.1	160.1	2.1	12.0	2
11.5	3	●	MDM 1150S12H03	42.4	59.6	124.1	2.1	12.0	2
	5	●	1150S12H05	76.9	94.1	160.1	2.1	12.0	2
11.6	3	●	MDM 1160S12H03	44.7	62.1	124.1	2.1	12.0	2
	5	●	1160S12H05	80.7	98.1	160.1	2.1	12.0	2
11.7	3	●	MDM 1170S12H03	44.6	62.1	124.1	2.1	12.0	2
	5	●	1170S12H05	80.6	98.1	160.1	2.1	12.0	2
11.8	3	●	MDM 1180S12H03	44.4	62.1	124.1	2.1	12.0	2
	5	●	1180S12H05	80.4	98.1	160.1	2.1	12.0	2
11.9	3	●	MDM 1190S12H03	44.4	62.2	124.2	2.2	12.0	2
	5	●	1190S12H05	80.4	98.2	160.2	2.2	12.0	2
12.0	3	●	MDM 1200S12H03	44.2	62.2	124.2	2.2	12.0	2
	5	●	1200S12H05	80.2	98.2	160.2	2.2	12.0	2
12.1	3	●	MDM 1210S13H03	46.6	64.7	130.2	2.2	13.0	2
	5	●	1210S13H05	84.1	102.2	169.2	2.2	13.0	2
12.2	3	●	MDM 1220S13H03	46.4	64.7	130.2	2.2	13.0	2
	5	●	1220S13H05	83.9	102.2	169.2	2.2	13.0	2
12.3	3	●	MDM 1230S13H03	46.3	64.7	130.2	2.2	13.0	2
	5	●	1230S13H05	83.8	102.2	169.2	2.2	13.0	2
12.4	3	●	MDM 1240S13H03	46.2	64.8	130.3	2.3	13.0	2
	5	●	1240S13H05	83.7	102.3	169.3	2.3	13.0	2
12.5	3	●	MDM 1250S13H03	46.1	64.8	130.3	2.3	13.0	2
	5	●	1250S13H05	83.6	102.3	169.3	2.3	13.0	2
12.6	3	●	MDM 1260S13H03	48.4	67.3	130.3	2.3	13.0	2
	5	●	1260S13H05	87.4	106.3	169.3	2.3	13.0	2
12.7	3	●	MDM 1270S13H03	48.3	67.3	130.3	2.3	13.0	2
	5	●	1270S13H05	87.3	106.3	169.3	2.3	13.0	2
12.8	3	●	MDM 1280S13H03	48.1	67.3	130.3	2.3	13.0	2
	5	●	1280S13H05	87.1	106.3	169.3	2.3	13.0	2
12.9	3	●	MDM 1290S13H03	48.0	67.3	130.3	2.3	13.0	2
	5	●	1290S13H05	87.0	106.3	169.3	2.3	13.0	2

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	2
	5	●	1300S13H05	86.9	106.4	169.4	2.4	13.0	2
13.1	3	●	MDM 1310S14H03	50.3	69.9	136.4	2.4	14.0	2
	5	●	1310S14H05	90.8	110.4	178.4	2.4	14.0	2
13.2	3	●	MDM 1320S14H03	50.1	69.9	136.4	2.4	14.0	2
	5	●	1320S14H05	90.6	110.4	178.4	2.4	14.0	2
13.3	3	●	MDM 1330S14H03	50.0	69.9	136.4	2.4	14.0	2
	5	●	1330S14H05	90.5	110.4	178.4	2.4	14.0	2
13.4	3	●	MDM 1340S14H03	49.8	69.9	136.4	2.4	14.0	2
	5	●	1340S14H05	90.3	110.4	178.4	2.4	14.0	2
13.5	3	●	MDM 1350S14H03	49.8	70.0	136.5	2.5	14.0	2
	5	●	1350S14H05	90.3	110.5	178.5	2.5	14.0	2
13.6	3	●	MDM 1360S14H03	52.1	72.5	136.5	2.5	14.0	2
	5	●	1360S14H05	94.1	114.5	178.5	2.5	14.0	2
13.7	3	●	MDM 1370S14H03	52.0	72.5	136.5	2.5	14.0	2
	5	●	1370S14H05	94.0	114.5	178.5	2.5	14.0	2
13.8	3	●	MDM 1380S14H03	51.8	72.5	136.5	2.5	14.0	2
	5	●	1380S14H05	93.8	114.5	178.5	2.5	14.0	2
13.9	3	●	MDM 1390S14H03	51.7	72.5	136.5	2.5	14.0	2
	5	●	1390S14H05	93.7	114.5	178.5	2.5	14.0	2
14.0	3	●	MDM 1400S14H03	51.5	72.5	136.5	2.5	14.0	2
	5	●	1400S14H05	93.5	114.5	178.5	2.5	14.0	2
14.1	3	●	MDM 1410S15H03	54.0	75.1	142.6	2.6	15.0	2
	5	●	1410S15H05	97.5	118.6	187.6	2.6	15.0	2
14.2	3	●	MDM 1420S15H03	53.8	75.1	142.6	2.6	15.0	2
	5	●	1420S15H05	97.3	118.6	187.6	2.6	15.0	2
14.3	3	●	MDM 1430S15H03	53.7	75.1	142.6	2.6	15.0	2
	5	●	1430S15H05	97.2	118.6	187.6	2.6	15.0	2
14.4	3	●	MDM 1440S15H03	53.5	75.1	142.6	2.6	15.0	2
	5	●	1440S15H05	97.0	118.6	187.6	2.6	15.0	2
14.5	3	●	MDM 1450S15H03	53.4	75.1	142.6	2.6	15.0	2
	5	●	1450S15H05	96.9	118.6	187.6	2.6	15.0	2
14.6	3	●	MDM 1460S15H03	55.8	77.7	142.7	2.7	15.0	2
	5	●	1460S15H05	100.8	122.7	187.7	2.7	15.0	2
14.7	3	●	MDM 1470S15H03	55.7	77.7	142.7	2.7	15.0	2
	5	●	1470S15H05	100.7	122.7	187.7	2.7	15.0	2
14.8	3	●	MDM 1480S15H03	55.5	77.7	142.7	2.7	15.0	2
	5	●	1480S15H05	100.5	122.7	187.7	2.7	15.0	2
14.9	3	●	MDM 1490S15H03	55.4	77.7	142.7	2.7	15.0	2
	5	●	1490S15H05	100.4	122.7	187.7	2.7	15.0	2

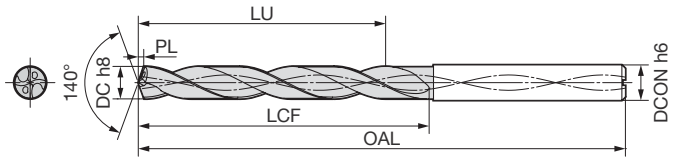
Grade: ACT70

MDM series (Internal Coolant Supply)

NX Coat | 3D | 5D

*Refer to N36 for the tolerance of h6 and h8

Fig 2 **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	2
	5	●	1500S15H05	100.2	122.7	187.7	2.7	15.0	2
15.1	3	●	MDM 1510S16H03	57.6	80.2	148.7	2.7	16.0	2
	5	●	1510S16H05	104.1	126.7	196.7	2.7	16.0	2
15.2	3	●	MDM 1520S16H03	57.5	80.3	148.8	2.8	16.0	2
	5	●	1520S16H05	104.0	126.8	196.8	2.8	16.0	2
15.3	3	●	MDM 1530S16H03	57.4	80.3	148.8	2.8	16.0	2
	5	●	1530S16H05	103.9	126.8	196.8	2.8	16.0	2
15.4	3	●	MDM 1540S16H03	57.2	80.3	148.8	2.8	16.0	2
	5	●	1540S16H05	103.7	126.8	196.8	2.8	16.0	2
15.5	3	●	MDM 1550S16H03	57.1	80.3	148.8	2.8	16.0	2
	5	●	1550S16H05	103.6	126.8	196.8	2.8	16.0	2
15.6	3	●	MDM 1560S16H03	59.4	82.8	148.8	2.8	16.0	2
	5	●	1560S16H05	107.4	130.8	196.8	2.8	16.0	2
15.7	3	●	MDM 1570S16H03	59.4	82.9	148.9	2.9	16.0	2
	5	●	1570S16H05	107.4	130.9	196.9	2.9	16.0	2
15.8	3	●	MDM 1580S16H03	59.2	82.9	148.9	2.9	16.0	2
	5	●	1580S16H05	107.2	130.9	196.9	2.9	16.0	2
15.9	3	●	MDM 1590S16H03	59.1	82.9	148.9	2.9	16.0	2
	5	●	1590S16H05	107.1	130.9	196.9	2.9	16.0	2
16.0	3	●	MDM 1600S16H03	58.9	82.9	148.9	2.9	16.0	2
	5	●	1600S16H05	106.9	130.9	196.9	2.9	16.0	2

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	-
Stainless Steel with Deposition Hardened Structure	≤ 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 series (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-drilling of a flat surface with a Flat MULTIDRILL MDF series drill 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	
Diameter 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

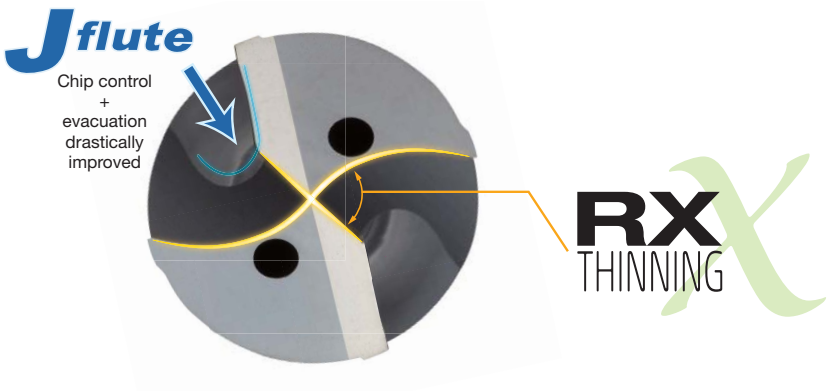
Work Material	Stainless Steel with Deposition Hardened Structure ≤ 340HB		Duplex Stainless Steel ≤ 310HB		Titanium Alloy 260HB to 340HB		Ni-based heat resistant alloy (Inconel 718) 38 to 45HRC	
Cutting Speed	40 to 60m/min		40 to 60m/min		30 to 50m/min		10 to 30m/min	
Diameter DC (mm)	Spindle Speed (min^{-1})	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	2,100	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	1,600	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	1,250	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	1,050	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	900	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	800	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	700	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	650	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	600	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	550	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	500	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	450	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	420	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	400	0.15 to 0.20

MEMO

HX series

■ General Features

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



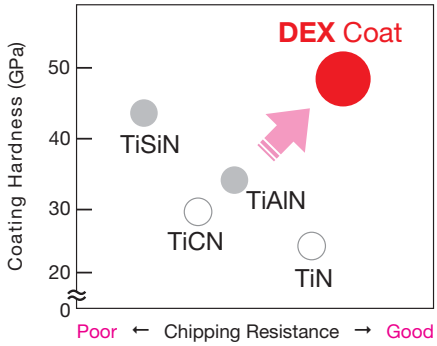
■ Features and Applications

● 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 feed rates of over vf=1,000mm/min. (for ø10mm 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.

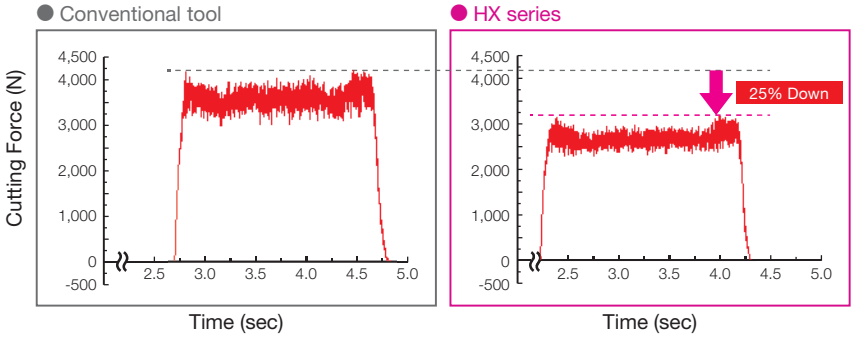


Low Resistance Wide chip pocket reduces thrust resistance.

RX THINNING

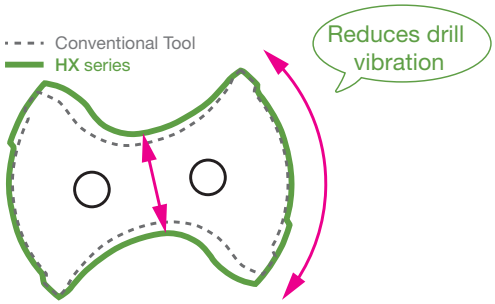
Improves tool load

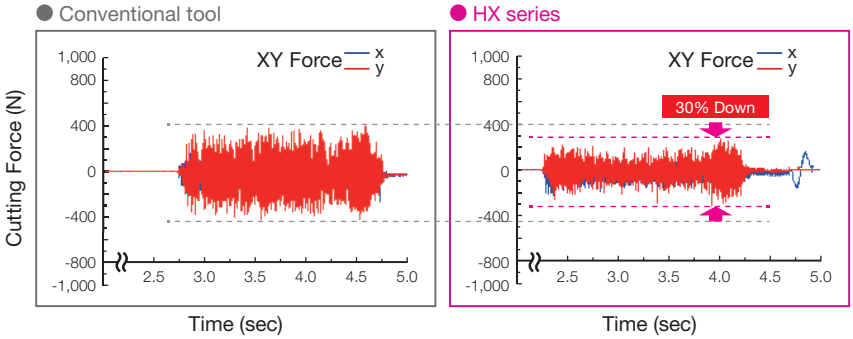
Also suitable for small machining centres



Work Material : FC250, Tool: Conventional tool, MDW 1250HX5 (ø12.5mm 5D)
Cutting Conditions : vc = 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.





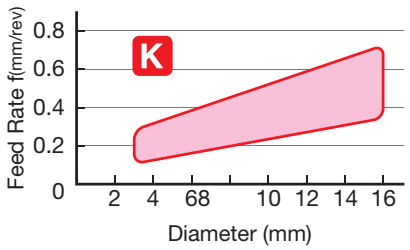
Work Material : FC250, Tool: Conventional tool, MDW 1250HX5 (ø12.5mm 5D)
Cutting Conditions: vc = 100m/min, f = 0.60mm/rev, H = 50mm, Internal Coolant Supply (water soluble)

HX series

■ Product Range

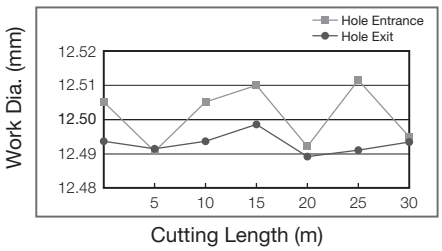
Coolant Supply	Cat. No.	Diameter Range (mm)	Hole Depth (L/D)	Number of items
Internal	MDW□□□□HX3	ø3.0 to ø20.0	up to 3	108 items in stock
	MDW□□□□HX5	ø3.0 to ø20.0	up to 5	108 items in stock
	MDW□□□□HX8	ø3.0 to ø18.0	up to 8	32 items in stock

● Drilling of grey cast iron

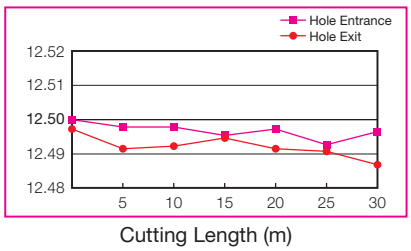


High-precision Improved margin tip position improves drilling precision.

● Conventional tool



● HX series



Work Material : FC250, Tool: Conventional Tool, MDW 1250HX5 (ø12.5mm 5D)
Cutting Conditions : vc = 100m/min, f = 0.60mm/rev, H = 50mm, Internal Coolant Supply (water soluble)

Longer Tool Life High-feed drilling 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 series

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 : vc = 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: vc = 70m/min, f = 0.9mm/rev, H = 27mm (blind), Internal Coolant Supply (water soluble)

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

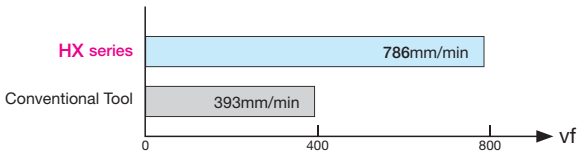
Cutting Edge Rake Face Condition after Preset Tool Life

Competitor's High-efficiency Drill

HX series

Equipment Component (**FCD450**)
·Tool: MDW 0850HX5 (ø8.5mm 5D)
·Drilling Distance: 60m
·Cutting Conditions: vc = 70m/min, f = 0.30mm/rev, vf=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: vc = 50m/min, f = 0.22mm/rev, vf = 291.7mm/min
HX series: vc = 50m/min, f = 0.40mm/rev, vf = 530.4mm/min
H = 28mm (blind), Internal Coolant Supply (water soluble)

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

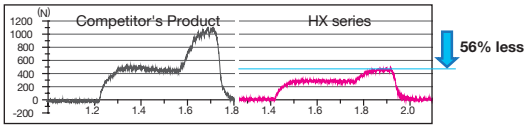
Cutting Edge Wear Comparison after Fixed Tool Life

Conventional Tool (f = **0.22**mm/rev)

HX series (f = **0.40**mm/rev)

Machine Component (Sintered Material)
·Tool: MDW 0570HX3
·Cutting Conditions: vc = 70m/min, f = 0.9mm/rev, H = 27mm (blind), Internal Coolant Supply (water soluble)

Less cutting force and edge chipping than competitor's products.



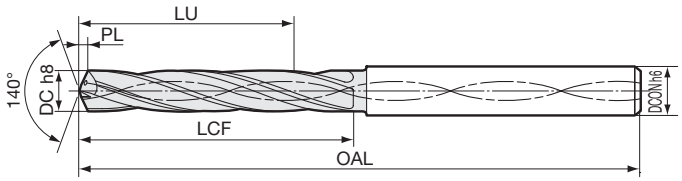
HX series (Internal Coolant Supply)

Cast Iron | Ductile Cast Iron

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

*Refer to N36 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	0.5	3.0	1
	8	●	0300HX8	29.0	33.5	81.5	0.5	3.0	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	0.6	4.0	1
	8		0310HX8	34.5	39.1	92.6	0.6	4.0	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	0.6	4.0	1
	8		0320HX8	34.3	39.1	92.6	0.6	4.0	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	0.6	4.0	1
	8		0330HX8	34.2	39.1	92.6	0.6	4.0	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	0.6	4.0	1
	8		0340HX8	34.0	39.1	92.6	0.6	4.0	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	0.6	4.0	1
	8	●	0350HX8	33.9	39.1	92.6	0.6	4.0	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	0.7	4.0	1
	8		0360HX8	39.3	44.7	92.7	0.7	4.0	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	0.7	4.0	1
	8		0370HX8	39.2	44.7	92.7	0.7	4.0	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	0.7	4.0	1
	8		0380HX8	39.0	44.7	92.7	0.7	4.0	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	0.7	4.0	1
	8		0390HX8	38.9	44.7	92.7	0.7	4.0	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	0.7	4.0	1
	8	●	0400HX8	38.7	44.7	92.7	0.7	4.0	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	0.7	5.0	1
	8		0410HX8	44.1	50.2	105.7	0.7	5.0	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	0.8	5.0	1
	8		0420HX8	44.0	50.3	105.8	0.8	5.0	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	0.8	5.0	1
	8		0430HX8	43.9	50.3	105.8	0.8	5.0	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	0.8	5.0	1
	8		0440HX8	43.7	50.3	105.8	0.8	5.0	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	0.8	5.0	1
	8	●	0450HX8	43.6	50.3	105.8	0.8	5.0	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	0.8	5.0	1
	8		0460HX8	48.9	55.8	105.8	0.8	5.0	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	0.9	5.0	1
	8		0470HX8	48.9	55.9	105.9	0.9	5.0	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	0.9	5.0	1
	8		0480HX8	48.7	55.9	105.9	0.9	5.0	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	0.9	5.0	1
	8		0490HX8	48.6	55.9	105.9	0.9	5.0	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	0.9	5.0	1
	8	●	0500HX8	48.4	55.9	105.9	0.9	5.0	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	0.9	6.0	1
	8	●	0510HX8	53.8	61.4	118.9	0.9	6.0	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	0.9	6.0	1
	8		0520HX8	53.6	61.4	118.9	0.9	6.0	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	1.0	6.0	1
	8		0530HX8	53.6	61.5	119.0	1.0	6.0	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	1.0	6.0	1
	8		0540HX8	53.4	61.5	119.0	1.0	6.0	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	1.0	6.0	1
	8	●	0550HX8	53.3	61.5	119.0	1.0	6.0	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	1.0	6.0	1
	8		0560HX8	58.6	67.0	119.0	1.0	6.0	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	1.0	6.0	1
	8		0570HX8	58.5	67.0	119.0	1.0	6.0	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	1.1	6.0	1
	8	●	0580HX8	58.4	67.1	119.1	1.1	6.0	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	1.1	6.0	1
	8	●	0590HX8	58.3	67.1	119.1	1.1	6.0	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	1.1	6.0	1
	8	●	0600HX8	58.1	67.1	119.1	1.1	6.0	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	1.1	7.0	1
	8		0610HX8	63.5	72.6	131.1	1.1	7.0	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	1.1	7.0	1
	8		0620HX8	63.3	72.6	131.1	1.1	7.0	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	1.1	7.0	1
	8		0630HX8	63.2	72.6	131.1	1.1	7.0	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	1.2	7.0	1
	8		0640HX8	63.1	72.7	131.2	1.2	7.0	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	1.2	7.0	1
	8	●	0650HX8	63.0	72.7	131.2	1.2	7.0	1

Grade: ACX70

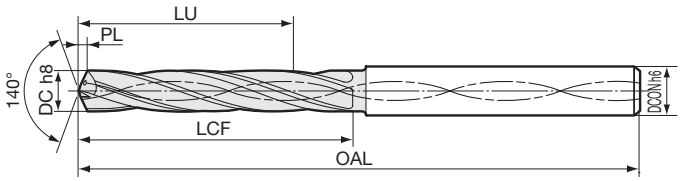
HX series (Internal Coolant Supply)

Cast Iron | Ductile Cast Iron

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

*Refer to N36 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
6.6	3	●	MDW 0660HX3	26.3	36.2	89.2	1.2	7.0	1
	5	●	0660HX5	47.3	57.2	110.2	1.2	7.0	1
	8		0660HX8	68.3	78.2	131.2	1.2	7.0	1
6.7	3	●	MDW 0670HX3	26.2	36.2	89.2	1.2	7.0	1
	5	●	0670HX5	47.2	57.2	110.2	1.2	7.0	1
	8	●	0670HX8	68.2	78.2	131.2	1.2	7.0	1
6.8	3	●	MDW 0680HX3	26.0	36.2	89.2	1.2	7.0	1
	5	●	0680HX5	47.0	57.2	110.2	1.2	7.0	1
	8	●	0680HX8	68.0	78.2	131.2	1.2	7.0	1
6.9	3	●	MDW 0690HX3	26.0	36.3	89.3	1.3	7.0	1
	5	●	0690HX5	47.0	57.3	110.3	1.3	7.0	1
	8	●	0690HX8	68.0	78.3	131.3	1.3	7.0	1
7.0	3	●	MDW 0700HX3	25.8	36.3	89.3	1.3	7.0	1
	5	●	0700HX5	46.8	57.3	110.3	1.3	7.0	1
	8	●	0700HX8	67.8	78.3	131.3	1.3	7.0	1
7.1	3	●	MDW 0710HX3	28.2	38.8	95.3	1.3	8.0	1
	5	●	0710HX5	50.7	61.3	119.3	1.3	8.0	1
	8		0710HX8	73.2	83.8	143.3	1.3	8.0	1
7.2	3	●	MDW 0720HX3	28.0	38.8	95.3	1.3	8.0	1
	5	●	0720HX5	50.5	61.3	119.3	1.3	8.0	1
	8		0720HX8	73.0	83.8	143.3	1.3	8.0	1
7.3	3	●	MDW 0730HX3	27.9	38.8	95.3	1.3	8.0	1
	5	●	0730HX5	50.4	61.3	119.3	1.3	8.0	1
	8		0730HX8	72.9	83.8	143.3	1.3	8.0	1
7.4	3	●	MDW 0740HX3	27.7	38.8	95.3	1.3	8.0	1
	5	●	0740HX5	50.2	61.3	119.3	1.3	8.0	1
	8		0740HX8	72.7	83.8	143.3	1.3	8.0	1
7.5	3	●	MDW 0750HX3	27.7	38.9	95.4	1.4	8.0	1
	5	●	0750HX5	50.2	61.4	119.4	1.4	8.0	1
	8	●	0750HX8	72.7	83.9	143.4	1.4	8.0	1
7.6	3	●	MDW 0760HX3	30.0	41.4	95.4	1.4	8.0	1
	5	●	0760HX5	54.0	65.4	119.4	1.4	8.0	1
	8		0760HX8	78.0	89.4	143.4	1.4	8.0	1
7.7	3	●	MDW 0770HX3	29.9	41.4	95.4	1.4	8.0	1
	5	●	0770HX5	53.9	65.4	119.4	1.4	8.0	1
	8		0770HX8	77.9	89.4	143.4	1.4	8.0	1
7.8	3	●	MDW 0780HX3	29.7	41.4	95.4	1.4	8.0	1
	5	●	0780HX5	53.7	65.4	119.4	1.4	8.0	1
	8		0780HX8	77.7	89.4	143.4	1.4	8.0	1
7.9	3	●	MDW 0790HX3	29.6	41.4	95.4	1.4	8.0	1
	5	●	0790HX5	53.6	65.4	119.4	1.4	8.0	1
	8		0790HX8	77.6	89.4	143.4	1.4	8.0	1
8.0	3	●	MDW 0800HX3	29.5	41.5	95.5	1.5	8.0	1
	5	●	0800HX5	53.5	65.5	119.5	1.5	8.0	1
	8	●	0800HX8	77.5	89.5	143.5	1.5	8.0	1
8.1	3	●	MDW 0810HX3	31.9	44.0	101.5	1.5	9.0	1
	5	●	0810HX5	57.4	69.5	128.5	1.5	9.0	1
	8		0810HX8	82.9	95.0	155.5	1.5	9.0	1
8.2	3	●	MDW 0820HX3	31.7	44.0	101.5	1.5	9.0	1
	5	●	0820HX5	57.2	69.5	128.5	1.5	9.0	1
	8		0820HX8	82.7	95.0	155.5	1.5	9.0	1
8.3	3	●	MDW 0830HX3	31.6	44.0	101.5	1.5	9.0	1
	5	●	0830HX5	57.1	69.5	128.5	1.5	9.0	1
	8		0830HX8	82.6	95.0	155.5	1.5	9.0	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
8.4	3	●	MDW 0840HX3	31.4	44.0	101.5	1.5	9.0	1
	5	●	0840HX5	56.9	69.5	128.5	1.5	9.0	1
	8		0840HX8	82.4	95.0	155.5	1.5	9.0	1
8.5	3	●	MDW 0850HX3	31.3	44.0	101.5	1.5	9.0	1
	5	●	0850HX5	56.8	69.5	128.5	1.5	9.0	1
	8	●	0850HX8	82.3	95.0	155.5	1.5	9.0	1
8.6	3	●	MDW 0860HX3	33.7	46.6	101.6	1.6	9.0	1
	5	●	0860HX5	60.7	73.6	128.6	1.6	9.0	1
	8		0860HX8	87.7	100.6	155.6	1.6	9.0	1
8.7	3	●	MDW 0870HX3	33.6	46.6	101.6	1.6	9.0	1
	5	●	0870HX5	60.6	73.6	128.6	1.6	9.0	1
	8		0870HX8	87.6	100.6	155.6	1.6	9.0	1
8.8	3	●	MDW 0880HX3	33.4	46.6	101.6	1.6	9.0	1
	5	●	0880HX5	60.4	73.6	128.6	1.6	9.0	1
	8	●	0880HX8	87.4	100.6	155.6	1.6	9.0	1
8.9	3	●	MDW 0890HX3	33.3	46.6	101.6	1.6	9.0	1
	5	●	0890HX5	60.3	73.6	128.6	1.6	9.0	1
	8		0890HX8	87.3	100.6	155.6	1.6	9.0	1
9.0	3	●	MDW 0900HX3	33.1	46.6	101.6	1.6	9.0	1
	5	●	0900HX5	60.1	73.6	128.6	1.6	9.0	1
	8	●	0900HX8	87.1	100.6	155.6	1.6	9.0	1
9.1	3	●	MDW 0910HX3	35.6	49.2	107.7	1.7	10.0	1
	5	●	0910HX5	64.1	77.7	137.7	1.7	10.0	1
	8		0910HX8	92.6	106.2	167.7	1.7	10.0	1
9.2	3	●	MDW 0920HX3	35.4	49.2	107.7	1.7	10.0	1
	5	●	0920HX5	63.9	77.7	137.7	1.7	10.0	1
	8		0920HX8	92.4	106.2	167.7	1.7	10.0	1
9.3	3	●	MDW 0930HX3	35.3	49.2	107.7	1.7	10.0	1
	5	●	0930HX5	63.8	77.7	137.7	1.7	10.0	1
	8		0930HX8	92.3	106.2	167.7	1.7	10.0	1
9.4	3	●	MDW 0940HX3	35.1	49.2	107.7	1.7	10.0	1
	5	●	0940HX5	63.6	77.7	137.7	1.7	10.0	1
	8		0940HX8	92.1	106.2	167.7	1.7	10.0	1
9.5	3	●	MDW 0950HX3	35.0	49.2	107.7	1.7	10.0	1
	5	●	0950HX5	63.5	77.7	137.7	1.7	10.0	1
	8	●	0950HX8	92.0	106.2	167.7	1.7	10.0	1
9.6	3	●	MDW 0960HX3	37.3	51.7	107.7	1.7	10.0	1
	5	●	0960HX5	67.3	81.7	137.7	1.7	10.0	1
	8		0960HX8	97.3	111.7	167.7	1.7	10.0	1
9.7	3	●	MDW 0970HX3	37.3	51.8	107.8	1.8	10.0	1
	5	●	0970HX5	67.3	81.8	137.8	1.8	10.0	1
	8		0970HX8	97.3	111.8	167.8	1.8	10.0	1
9.8	3	●	MDW 0980HX3	37.1	51.8	107.8	1.8	10.0	1
	5	●	0980HX5	67.1	81.8	137.8	1.8	10.0	1
	8		0980HX8	97.1	111.8	167.8	1.8	10.0	1
9.9	3	●	MDW 0990HX3	37.0	51.8	107.8	1.8	10.0	1
	5	●	0990HX5	67.0	81.8	137.8	1.8	10.0	1
	8		0990HX8	97.0	111.8	167.8	1.8	10.0	1
10.0	3	●	MDW 1000HX3	36.8	51.8	107.8	1.8	10.0	1
	5	●	1000HX5	66.8	81.8	137.8	1.8	10.0	1
	8	●	1000HX8	96.8	111.8	167.8	1.8	10.0	1
10.1	3	●	MDW 1010HX3	39.2	54.3	117.8	1.8	11.0	1
	5	●	1010HX5	70.7	85.8	150.8	1.8	11.0	1
	8		1010HX8	102.2	117.3	183.8	1.8	11.0	1

Grade: ACX70

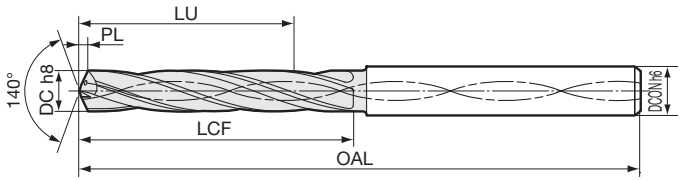
HX series (Internal Coolant Supply)

Cast Iron | Ductile Cast Iron

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

*Refer to N36 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
10.2	3	●	MDW 1020HX3	39.1	54.4	117.9	1.9	11.0	1
	5	●	1020HX5	70.6	85.9	150.9	1.9	11.0	1
	8		1020HX8	102.1	117.4	183.9	1.9	11.0	1
10.3	3	●	MDW 1030HX3	39.0	54.4	117.9	1.9	11.0	1
	5	●	1030HX5	70.5	85.9	150.9	1.9	11.0	1
	8	●	1030HX8	102.0	117.4	183.9	1.9	11.0	1
10.4	3	●	MDW 1040HX3	38.8	54.4	117.9	1.9	11.0	1
	5	●	1040HX5	70.3	85.9	150.9	1.9	11.0	1
	8		1040HX8	101.8	117.4	183.9	1.9	11.0	1
10.5	3	●	MDW 1050HX3	38.7	54.4	117.9	1.9	11.0	1
	5	●	1050HX5	70.2	85.9	150.9	1.9	11.0	1
	8	●	1050HX8	101.7	117.4	183.9	1.9	11.0	1
10.6	3	●	MDW 1060HX3	41.0	56.9	117.9	1.9	11.0	1
	5	●	1060HX5	74.0	89.9	150.9	1.9	11.0	1
	8		1060HX8	107.0	122.9	183.9	1.9	11.0	1
10.7	3	●	MDW 1070HX3	40.9	56.9	117.9	1.9	11.0	1
	5	●	1070HX5	73.9	89.9	150.9	1.9	11.0	1
	8		1070HX8	106.9	122.9	183.9	1.9	11.0	1
10.8	3	●	MDW 1080HX3	40.8	57.0	118.0	2.0	11.0	1
	5	●	1080HX5	73.8	90.0	151.0	2.0	11.0	1
	8		1080HX8	106.8	123.0	184.0	2.0	11.0	1
10.9	3	●	MDW 1090HX3	40.7	57.0	118.0	2.0	11.0	1
	5	●	1090HX5	73.7	90.0	151.0	2.0	11.0	1
	8		1090HX8	106.7	123.0	184.0	2.0	11.0	1
11.0	3	●	MDW 1100HX3	40.5	57.0	118.0	2.0	11.0	1
	5	●	1100HX5	73.5	90.0	151.0	2.0	11.0	1
	8	●	1100HX8	106.5	123.0	184.0	2.0	11.0	1
11.1	3	●	MDW 1110HX3	42.9	59.5	124.0	2.0	12.0	1
	5	●	1110HX5	77.4	94.0	160.0	2.0	12.0	1
	8		1110HX8	111.9	128.5	196.0	2.0	12.0	1
11.2	3	●	MDW 1120HX3	42.7	59.5	124.0	2.0	12.0	1
	5	●	1120HX5	77.2	94.0	160.0	2.0	12.0	1
	8		1120HX8	111.7	128.5	196.0	2.0	12.0	1
11.3	3	●	MDW 1130HX3	42.7	59.6	124.1	2.1	12.0	1
	5	●	1130HX5	77.2	94.1	160.1	2.1	12.0	1
	8		1130HX8	111.7	128.6	196.1	2.1	12.0	1
11.4	3	●	MDW 1140HX3	42.5	59.6	124.1	2.1	12.0	1
	5	●	1140HX5	77.0	94.1	160.1	2.1	12.0	1
	8		1140HX8	111.5	128.6	196.1	2.1	12.0	1
11.5	3	●	MDW 1150HX3	42.4	59.6	124.1	2.1	12.0	1
	5	●	1150HX5	76.9	94.1	160.1	2.1	12.0	1
	8	●	1150HX8	111.4	128.6	196.1	2.1	12.0	1
11.6	3	●	MDW 1160HX3	44.7	62.1	124.1	2.1	12.0	1
	5	●	1160HX5	80.7	98.1	160.1	2.1	12.0	1
	8		1160HX8	116.7	134.1	196.1	2.1	12.0	1
11.7	3	●	MDW 1170HX3	44.6	62.1	124.1	2.1	12.0	1
	5	●	1170HX5	80.6	98.1	160.1	2.1	12.0	1
	8		1170HX8	116.6	134.1	196.1	2.1	12.0	1
11.8	3	●	MDW 1180HX3	44.4	62.1	124.1	2.1	12.0	1
	5	●	1180HX5	80.4	98.1	160.1	2.1	12.0	1
	8		1180HX8	116.4	134.1	196.1	2.1	12.0	1
11.9	3	●	MDW 1190HX3	44.4	62.2	124.2	2.2	12.0	1
	5	●	1190HX5	80.4	98.2	160.2	2.2	12.0	1
	8		1190HX8	116.4	134.2	196.2	2.2	12.0	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
12.0	3	●	MDW 1200HX3	44.2	62.2	124.2	2.2	12.0	1
	5	●	1200HX5	80.2	98.2	160.2	2.2	12.0	1
	8	●	1200HX8	116.2	134.2	196.2	2.2	12.0	1
12.1	3		MDW 1210HX3	46.6	64.7	130.2	2.2	13.0	1
	5		1210HX5	84.1	102.2	169.2	2.2	13.0	1
	8		1210HX8	121.6	139.7	208.2	2.2	13.0	1
12.2	3		MDW 1220HX3	46.4	64.7	130.2	2.2	13.0	1
	5		1220HX5	83.9	102.2	169.2	2.2	13.0	1
	8		1220HX8	121.4	139.7	208.2	2.2	13.0	1
12.3	3		MDW 1230HX3	46.3	64.7	130.2	2.2	13.0	1
	5		1230HX5	83.8	102.2	169.2	2.2	13.0	1
	8		1230HX8	121.3	139.7	208.2	2.2	13.0	1
12.4	3		MDW 1240HX3	46.2	64.8	130.3	2.3	13.0	1
	5		1240HX5	83.7	102.3	169.3	2.3	13.0	1
	8		1240HX8	121.2	139.8	208.3	2.3	13.0	1
12.5	3	●	MDW 1250HX3	46.1	64.8	130.3	2.3	13.0	1
	5	●	1250HX5	83.6	102.3	169.3	2.3	13.0	1
	8	●	1250HX8	121.1	139.8	208.3	2.3	13.0	1
12.6	3		MDW 1260HX3	48.4	67.3	130.3	2.3	13.0	1
	5		1260HX5	87.4	106.3	169.3	2.3	13.0	1
	8		1260HX8	126.4	145.3	208.3	2.3	13.0	1
12.7	3		MDW 1270HX3	48.3	67.3	130.3	2.3	13.0	1
	5		1270HX5	87.3	106.3	169.3	2.3	13.0	1
	8		1270HX8	126.3	145.3	208.3	2.3	13.0	1
12.8	3		MDW 1280HX3	48.1	67.3	130.3	2.3	13.0	1
	5		1280HX5	87.1	106.3	169.3	2.3	13.0	1
	8		1280HX8	126.1	145.3	208.3	2.3	13.0	1
12.9	3		MDW 1290HX3	48.0	67.3	130.3	2.3	13.0	1
	5		1290HX5	87.0	106.3	169.3	2.3	13.0	1
	8		1290HX8	126.0	145.3	208.3	2.3	13.0	1
13.0	3	●	MDW 1300HX3	47.9	67.4	130.4	2.4	13.0	1
	5	●	1300HX5	86.9	106.4	169.4	2.4	13.0	1
	8	●	1300HX8	125.9	145.4	208.4	2.4	13.0	1
13.1	3		MDW 1310HX3	50.3	69.9	136.4	2.4	14.0	1
	5		1310HX5	90.8	110.4	178.4	2.4	14.0	1
	8		1310HX8	131.3	150.9	220.4	2.4	14.0	1
13.2	3		MDW 1320HX3	50.1	69.9	136.4	2.4	14.0	1
	5		1320HX5	90.6	110.4	178.4	2.4	14.0	1
	8		1320HX8	131.1	150.9	220.4	2.4	14.0	1
13.3	3		MDW 1330HX3	50.0	69.9	136.4	2.4	14.0	1
	5		1330HX5	90.5	110.4	178.4	2.4	14.0	1
	8		1330HX8	131.0	150.9	220.4	2.4	14.0	1
13.4	3		MDW 1340HX3	49.8	69.9	136.4	2.4	14.0	1
	5		1340HX5	90.3	110.4	178.4	2.4	14.0	1
	8		1340HX8	130.8	150.9	220.4	2.4	14.0	1
13.5	3	●	MDW 1350HX3	49.8	70.0	136.5	2.5	14.0	1
	5	●	1350HX5	90.3	110.5	178.5	2.5	14.0	1
	8	●	1350HX8	130.8	151.0	220.5	2.5	14.0	1
13.6	3		MDW 1360HX3	52.1	72.5	136.5	2.5	14.0	1
	5		1360HX5	94.1	114.5	178.5	2.5	14.0	1
	8		1360HX8	136.1	156.5	220.5	2.5	14.0	1
13.7	3		MDW 1370HX3	52.0	72.5	136.5	2.5	14.0	1
	5		1370HX5	94.0	114.5	178.5	2.5	14.0	1
	8		1370HX8	136.0	156.5	220.5	2.5	14.0	1

Grade: ACX70

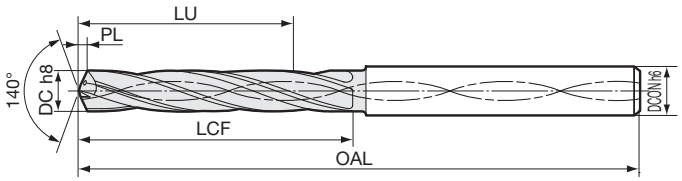
HX series (Internal Coolant Supply)

Cast Iron | Ductile Cast Iron

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

*Refer to N36 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	2.5	14.0	1
13.8	5		**1380HX5**	93.8	114.5	178.5	2.5	14.0	1
	8		**1380HX8**	135.8	156.5	220.5	2.5	14.0	1
	3		**MDW 1390HX3**	51.7	72.5	136.5	2.5	14.0	1
13.9	5		**1390HX5**	93.7	114.5	178.5	2.5	14.0	1
	8		**1390HX8**	135.7	156.5	220.5	2.5	14.0	1
	3	●	**MDW 1400HX3**	51.5	72.5	136.5	2.5	14.0	1
14.0	5	●	**1400HX5**	93.5	114.5	178.5	2.5	14.0	1
	8		**1400HX8**	135.5	156.5	220.5	2.5	14.0	1
	3		**MDW 1410HX3**	54.0	75.1	142.6	2.6	15.0	1
14.1	5		**1410HX5**	97.5	118.6	187.6	2.6	15.0	1
	8		**1410HX8**	141.0	162.1	232.6	2.6	15.0	1
	3		**MDW 1420HX3**	53.8	75.1	142.6	2.6	15.0	1
14.2	5		**1420HX5**	97.3	118.6	187.6	2.6	15.0	1
	8		**1420HX8**	140.8	162.1	232.6	2.6	15.0	1
	3		**MDW 1430HX3**	53.7	75.1	142.6	2.6	15.0	1
14.3	5		**1430HX5**	97.2	118.6	187.6	2.6	15.0	1
	8		**1430HX8**	140.7	162.1	232.6	2.6	15.0	1
	3		**MDW 1440HX3**	53.5	75.1	142.6	2.6	15.0	1
14.4	5		**1440HX5**	97.0	118.6	187.6	2.6	15.0	1
	8		**1440HX8**	140.5	162.1	232.6	2.6	15.0	1
	3	●	**MDW 1450HX3**	53.4	75.1	142.6	2.6	15.0	1
14.5	5	●	**1450HX5**	96.9	118.6	187.6	2.6	15.0	1
	8		**1450HX8**	140.4	162.1	232.6	2.6	15.0	1
	3		**MDW 1460HX3**	55.8	77.7	142.7	2.7	15.0	1
14.6	5		**1460HX5**	100.8	122.7	187.7	2.7	15.0	1
	8		**1460HX8**	145.8	167.7	232.7	2.7	15.0	1
	3		**MDW 1470HX3**	55.7	77.7	142.7	2.7	15.0	1
14.7	5		**1470HX5**	100.7	122.7	187.7	2.7	15.0	1
	8		**1470HX8**	145.7	167.7	232.7	2.7	15.0	1
	3		**MDW 1480HX3**	55.5	77.7	142.7	2.7	15.0	1
14.8	5		**1480HX5**	100.5	122.7	187.7	2.7	15.0	1
	8		**1480HX8**	145.5	167.7	232.7	2.7	15.0	1
	3		**MDW 1490HX3**	55.4	77.7	142.7	2.7	15.0	1
14.9	5		**1490HX5**	100.4	122.7	187.7	2.7	15.0	1
	8		**1490HX8**	145.4	167.7	232.7	2.7	15.0	1
	3	●	**MDW 1500HX3**	55.2	77.7	142.7	2.7	15.0	1
15.0	5	●	**1500HX5**	100.2	122.7	187.7	2.7	15.0	1
	8	●	**1500HX8**	145.2	167.7	232.7	2.7	15.0	1
	3		**MDW 1510HX3**	57.6	80.2	148.7	2.7	16.0	1
15.1	5		**1510HX5**	104.1	126.7	196.7	2.7	16.0	1
	8		**1510HX8**	150.6	173.2	244.7	2.7	16.0	1
	3		**MDW 1520HX3**	57.5	80.3	148.8	2.8	16.0	1
15.2	5		**1520HX5**	104.0	126.8	196.8	2.8	16.0	1
	8		**1520HX8**	150.5	173.3	244.8	2.8	16.0	1
	3		**MDW 1530HX3**	57.4	80.3	148.8	2.8	16.0	1
15.3	5		**1530HX5**	103.9	126.8	196.8	2.8	16.0	1
	8		**1530HX8**	150.4	173.3	244.8	2.8	16.0	1
	3		**MDW 1540HX3**	57.2	80.3	148.8	2.8	16.0	1
15.4	5		**1540HX5**	103.7	126.8	196.8	2.8	16.0	1
	8		**1540HX8**	150.2	173.3	244.8	2.8	16.0	1
	3	●	**MDW 1550HX3**	57.1	80.3	148.8	2.8	16.0	1
15.5	5	●	**1550HX5**	103.6	126.8	196.8	2.8	16.0	1
	8		**1550HX8**	150.1	173.3	244.8	2.8	16.0	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	2.8	16.0	1
15.6	5		**1560HX5**	107.4	130.8	196.8	2.8	16.0	1
	8		**1560HX8**	155.4	178.8	244.8	2.8	16.0	1
	3		**MDW 1570HX3**	59.4	82.9	148.9	2.9	16.0	1
15.7	5		**1570HX5**	107.4	130.9	196.9	2.9	16.0	1
	8		**1570HX8**	155.4	178.9	244.9	2.9	16.0	1
	3		**MDW 1580HX3**	59.2	82.9	148.9	2.9	16.0	1
15.8	5		**1580HX5**	107.2	130.9	196.9	2.9	16.0	1
	8		**1580HX8**	155.2	178.9	244.9	2.9	16.0	1
	3		**MDW 1590HX3**	59.1	82.9	148.9	2.9	16.0	1
15.9	5		**1590HX5**	107.1	130.9	196.9	2.9	16.0	1
	8		**1590HX8**	155.1	178.9	244.9	2.9	16.0	1
	3	●	**MDW 1600HX3**	58.9	82.9	148.9	2.9	16.0	1
16.0	5	●	**1600HX5**	106.9	130.9	196.9	2.9	16.0	1
	8		**1600HX8**	154.9	178.9	244.9	2.9	16.0	1
	3		**MDW 1610HX3**	61.3	85.4	154.9	2.9	17.0	1
16.1	5		**1610HX5**	110.8	134.9	205.9	2.9	17.0	1
	8		**1610HX8**	160.3	184.4	256.9	2.9	17.0	1
	3		**MDW 1620HX3**	61.1	85.4	154.9	2.9	17.0	1
16.2	5		**1620HX5**	110.6	134.9	205.9	2.9	17.0	1
	8		**1620HX8**	160.1	184.4	256.9	2.9	17.0	1
	3		**MDW 1630HX3**	61.1	85.5	155.0	3.0	17.0	1
16.3	5		**1630HX5**	110.6	135.0	206.0	3.0	17.0	1
	8		**1630HX8**	160.1	184.5	257.0	3.0	17.0	1
	3		**MDW 1640HX3**	60.9	85.5	155.0	3.0	17.0	1
16.4	5		**1640HX5**	110.4	135.0	206.0	3.0	17.0	1
	8		**1640HX8**	159.9	184.5	257.0	3.0	17.0	1
	3	●	**MDW 1650HX3**	60.8	85.5	155.0	3.0	17.0	1
16.5	5	●	**1650HX5**	110.3	135.0	206.0	3.0	17.0	1
	8		**1650HX8**	159.8	184.5	257.0	3.0	17.0	1
	3		**MDW 1660HX3**	63.1	88.0	155.0	3.0	17.0	1
16.6	5		**1660HX5**	114.1	139.0	206.0	3.0	17.0	1
	8		**1660HX8**	165.1	190.0	257.0	3.0	17.0	1
	3		**MDW 1670HX3**	63.0	88.0	155.0	3.0	17.0	1
16.7	5		**1670HX5**	114.0	139.0	206.0	3.0	17.0	1
	8		**1670HX8**	165.0	190.0	257.0	3.0	17.0	1
	3		**MDW 1680HX3**	62.9	88.1	155.1	3.1	17.0	1
16.8	5		**1680HX5**	113.9	139.1	206.1	3.1	17.0	1
	8		**1680HX8**	164.9	190.1	257.1	3.1	17.0	1
	3		**MDW 1690HX3**	62.8	88.1	155.1	3.1	17.0	1
16.9	5		**1690HX5**	113.8	139.1	206.1	3.1	17.0	1
	8		**1690HX8**	164.8	190.1	257.1	3.1	17.0	1
	3	●	**MDW 1700HX3**	62.6	88.1	155.1	3.1	17.0	1
17.0	5	●	**1700HX5**	113.6	139.1	206.1	3.1	17.0	1
	8		**1700HX8**	164.6	190.1	257.1	3.1	17.0	1
	3	●	**MDW 1710HX3**	65.0	90.6	161.1	3.1	18.0	1
17.1	5	●	**1710HX5**	117.5	143.1	217.1	3.1	18.0	1
	8	●	**1710HX8**	170.0	195.6	269.1	3.1	18.0	1
	3		**MDW 1720HX3**	64.8	90.6	161.1	3.1	18.0	1
17.2	5		**1720HX5**	117.3	143.1	217.1	3.1	18.0	1
	8		**1720HX8**	169.8	195.6	269.1	3.1	18.0	1
	3		**MDW 1730HX3**	64.7	90.6	161.1	3.1	18.0	1
17.3	5		**1730HX5**	117.2	143.1	217.1	3.1	18.0	1
	8		**1730HX8**	169.7	195.6	269.1	3.1	18.0	1

Grade: ACX70

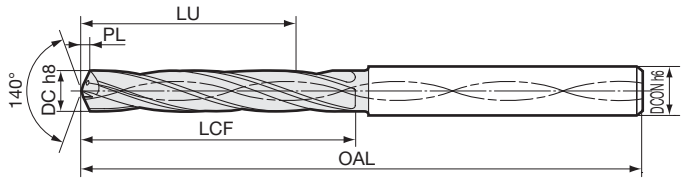
HX series (Internal Coolant Supply)

Cast Iron | Ductile Cast Iron

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

*Refer to N36 for the tolerance of h6 and h8

Fig 1



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	3.2	18.0	1
	8		1740HX8	169.6	195.7	269.2	3.2	18.0	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	3.2	18.0	1
	8		1750HX8	169.5	195.7	269.2	3.2	18.0	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	3.2	18.0	1
	8		1760HX8	174.8	201.2	269.2	3.2	18.0	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	3.2	18.0	1
	8		1770HX8	174.7	201.2	269.2	3.2	18.0	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	3.2	18.0	1
	8		1780HX8	174.5	201.2	269.2	3.2	18.0	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	3.3	18.0	1
	8		1790HX8	174.5	201.3	269.3	3.3	18.0	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	3.3	18.0	1
	8		1800HX8	174.3	201.3	269.3	3.3	18.0	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	3.3	19.0	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	3.3	19.0	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	3.3	19.0	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	3.3	19.0	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	3.4	19.0	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	3.4	19.0	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	3.4	19.0	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	3.4	19.0	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	3.4	19.0	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	3.5	19.0	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	3.5	20.0	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	3.5	20.0	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	3.5	20.0	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	3.5	20.0	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	3.5	20.0	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	3.6	20.0	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	3.6	20.0	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	3.6	20.0	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	3.6	20.0	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	3.6	20.0	1

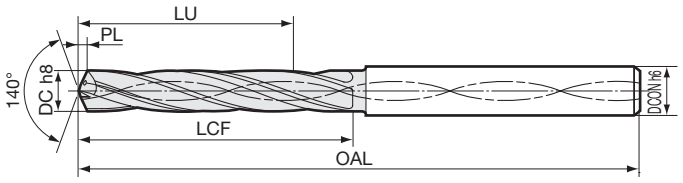
Grade: ACX70

HX series (Internal Coolant Supply)

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

*Refer to N36 for the tolerance of h6 and h8

Fig 1



Recommended Cutting Conditions

(n: Spindle Speed min^{-1} vc: Cutting Speed m/min f: Feed Rate mm/rev)

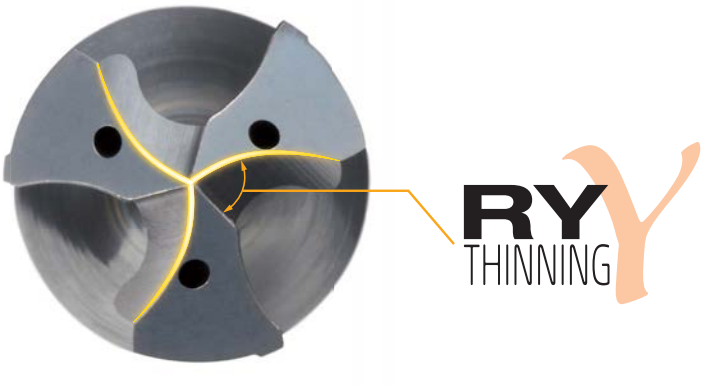
Diameter DC (mm)	Cutting Conditions	Gray Cast Iron FC250	Ductile Cast Iron FCD450
ø3.0	n	7,400	5,300
	vc	50 - **70** - 90	40 - **50** - 80
	f	0.10 - **0.20** - 0.30	0.12 - **0.18** - 0.24
ø5.0	n	4,500	3,800
	vc	50 - **70** - 90	40 - **50** - 80
	f	0.15 - **0.25** - 0.35	0.15 - **0.22** - 0.30
ø10.0	n	2,500	1,900
	vc	60 - **80** - 100	50 - **60** - 90
	f	0.20 - **0.35** - 0.50	0.20 - **0.30** - 0.40
ø20.0	n	1,600	1,000
	vc	70 - **100** - 120	60 - **80** - 100
	f	0.25 - **0.50** - 0.70	0.25 - **0.45** - 0.60

Min. - **Optimum** - Max.

HY series

■ General Features

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



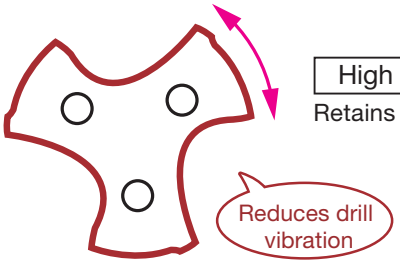
■ Features and Applications

● 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 vf = 800mm/min in steel drilling and vf = 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.



High Rigidity
Retains high rigidity with wide land

Jflute

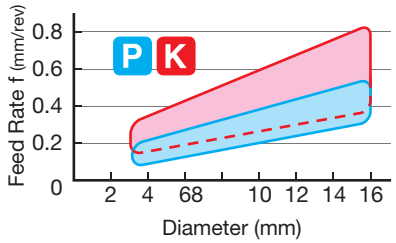
Evacuation
Drastically improved chip control and evacuation

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

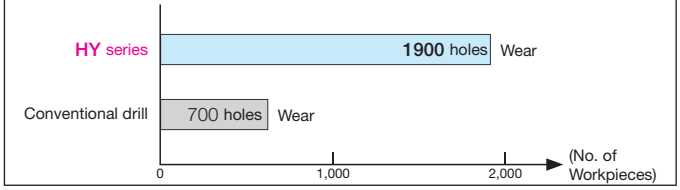
● Drilling of general steel and grey cast iron



■ Application Examples

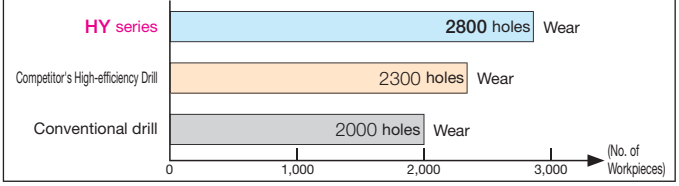
Machine Component (**SCM420**)
·Tool : MDW 1250HY3 (ø12.5mm 3D)
·Cutting Conditions : Conventional Tool: vc = 90m/min, f = 0.25mm/rev, vf = 573mm/min
HY series: vc = 70m/min, f = 0.40mm/rev, vf = 713mm/min
H = 12mm (through) Internal Coolant Supply (water-soluble)

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



Machine Component (**FCD450**)
·Tool : MDW 1020HY3 (ø10.2mm 3D)
·Cutting Conditions : Conventional Tool: vc = 70m/min, f = 0.28mm/rev, vf = 610mm/min
HY series: vc = 80m/min, f = 0.60mm/rev, vf = 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)



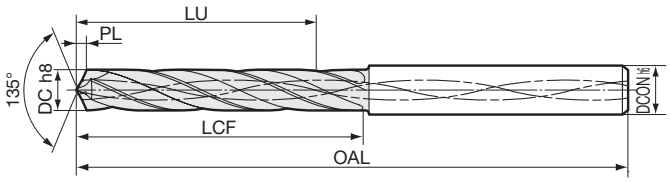
HY series (Internal Coolant Supply)

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 N36 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
5.0	3	●	MDW 0500HY3	21.0	28.5	81.0	1.0	5.0	1
	5	●	0500HY5	37.5	45.0	99.0	1.0	5.0	1
	8	●	0500HY8	48.5	56.0	106.0	1.0	5.0	1
5.1	3	●	MDW 0510HY3	21.0	28.6	83.1	1.1	6.0	1
	5	●	0510HY5	37.5	45.1	101.1	1.1	6.0	1
	8		0510HY8	54.0	61.6	119.1	1.1	6.0	1
6.0	3	●	MDW 0600HY3	22.2	31.2	83.2	1.2	6.0	1
	5	●	0600HY5	40.2	49.2	101.2	1.2	6.0	1
	8	●	0600HY8	58.2	67.2	119.2	1.2	6.0	1
6.5	3	●	MDW 0650HY3	24.1	33.8	89.3	1.3	7.0	1
	5	●	0650HY5	43.6	53.3	110.3	1.3	7.0	1
	8		0650HY8	63.1	72.8	131.3	1.3	7.0	1
6.8	3	●	MDW 0680HY3	26.2	36.4	89.4	1.4	7.0	1
	5	●	0680HY5	47.2	57.4	110.4	1.4	7.0	1
	8	●	0680HY8	68.2	78.4	131.4	1.4	7.0	1
7.0	3	●	MDW 0700HY3	25.9	36.4	89.4	1.4	7.0	1
	5	●	0700HY5	46.9	57.4	110.4	1.4	7.0	1
	8		0700HY8	67.9	78.4	131.4	1.4	7.0	1
8.0	3	●	MDW 0800HY3	29.7	41.7	95.7	1.7	8.0	1
	5	●	0800HY5	53.7	65.7	119.7	1.7	8.0	1
	8		0800HY8	77.7	89.7	143.7	1.7	8.0	1
8.5	3	●	MDW 0850HY3	31.6	44.3	101.8	1.8	9.0	1
	5	●	0850HY5	57.1	69.8	128.8	1.8	9.0	1
	8	●	0850HY8	82.6	95.3	155.8	1.8	9.0	1
8.6	3	●	MDW 0860HY3	33.9	46.8	101.8	1.8	9.0	1
	5	●	0860HY5	60.9	73.8	128.8	1.8	9.0	1
	8		0860HY8	87.9	100.8	155.8	1.8	9.0	1
8.8	3	●	MDW 0880HY3	33.6	46.8	101.8	1.8	9.0	1
	5	●	0880HY5	60.6	73.8	128.8	1.8	9.0	1
	8		0880HY8	87.6	100.8	155.8	1.8	9.0	1
9.0	3	●	MDW 0900HY3	33.4	46.9	101.9	1.9	9.0	1
	5	●	0900HY5	60.4	73.9	128.9	1.9	9.0	1
	8		0900HY8	87.4	100.9	155.9	1.9	9.0	1
9.5	3	●	MDW 0950HY3	35.3	49.5	108.0	2.0	10.0	1
	5	●	0950HY5	63.8	78.0	138.0	2.0	10.0	1
	8		0950HY8	92.3	106.5	168.0	2.0	10.0	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
10.0	3	●	MDW 1000HY3	37.1	52.1	108.1	2.1	10.0	1
	5	●	1000HY5	67.1	82.1	138.1	2.1	10.0	1
	8		1000HY8	97.1	112.1	168.1	2.1	10.0	1
10.2	3	●	MDW 1020HY3	39.3	54.6	118.1	2.1	11.0	1
	5	●	1020HY5	70.8	86.1	151.1	2.1	11.0	1
	8		1020HY8	102.3	117.6	184.1	2.1	11.0	1
10.3	3	●	MDW 1030HY3	39.2	54.6	118.1	2.1	11.0	1
	5	●	1030HY5	70.7	86.1	151.1	2.1	11.0	1
	8	●	1030HY8	102.2	117.6	184.1	2.1	11.0	1
11.0	3	●	MDW 1100HY3	40.8	57.3	118.3	2.3	11.0	1
	5	●	1100HY5	73.8	90.3	151.3	2.3	11.0	1
	8		1100HY8	106.8	123.3	184.3	2.3	11.0	1
11.4	3	●	MDW 1140HY3	42.8	59.9	124.4	2.4	12.0	1
	5	●	1140HY5	77.3	94.4	160.4	2.4	12.0	1
	8		1140HY8	111.8	128.9	196.4	2.4	12.0	1
11.5	3	●	MDW 1150HY3	42.7	59.9	124.4	2.4	12.0	1
	5	●	1150HY5	77.2	94.4	160.4	2.4	12.0	1
	8		1150HY8	111.7	128.9	196.4	2.4	12.0	1
12.0	3	●	MDW 1200HY3	44.5	62.5	124.5	2.5	12.0	1
	5	●	1200HY5	80.5	98.5	160.5	2.5	12.0	1
	8		1200HY8	116.5	134.5	196.5	2.5	12.0	1
12.5	3	●	MDW 1250HY3	46.4	65.1	130.6	2.6	13.0	1
	5	●	1250HY5	83.9	102.6	169.6	2.6	13.0	1
	8	●	1250HY8	121.4	140.1	208.6	2.6	13.0	1
13.0	3	●	MDW 1300HY3	48.2	67.7	130.7	2.7	13.0	1
	5	●	1300HY5	87.2	106.7	169.7	2.7	13.0	1
	8		1300HY8	126.2	145.7	208.7	2.7	13.0	1
14.0	3	●	MDW 1400HY3	51.9	72.9	136.9	2.9	14.0	1
	5	●	1400HY5	93.9	114.9	178.9	2.9	14.0	1
	8		1400HY8	135.9	156.9	220.9	2.9	14.0	1
16.0	3	●	MDW 1600HY3	59.3	83.3	149.3	3.3	16.0	1
	5	●	1600HY5	107.3	131.3	197.3	3.3	16.0	1
	8		1600HY8	155.3	179.3	245.3	3.3	16.0	1

Grade: ACX70

Recommended Cutting Conditions

(n: Spindle Speed min^{-1} vc: 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	n	2,600	1,900	1,900
	vc	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	n	2,600	1,900	1,900
	vc	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	n	2,000	1,600	1,200
	vc	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 series (External Coolant Supply/Standard type)

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

ZX Coat | 3D

*Refer to N36 for the tolerance of h8

Fig 1 (ø1.9 or less)

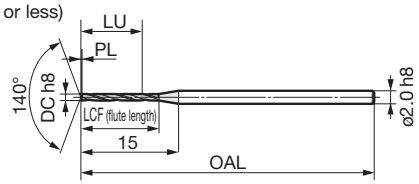
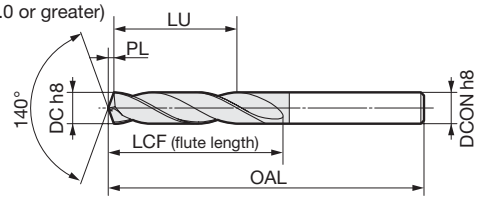


Fig 2 (ø2.0 or greater)



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	45.2	0.2	2.0	1
1.2			012MD	12.4	14.2	45.2	0.2	2.0	1
1.3			013MD	12.3	14.2	45.2	0.2	2.0	1
1.4	3		MDS 014MD	13.2	15.3	45.3	0.3	2.0	1
1.5			015MD	13.1	15.3	45.3	0.3	2.0	1
1.6			016MD	12.9	15.3	45.3	0.3	2.0	1
1.7			017MD	12.8	15.3	45.3	0.3	2.0	1
1.8			018MD	12.6	15.3	45.3	0.3	2.0	1
1.9			019MD	12.5	15.3	45.3	0.3	2.0	1
2.0	3		MDS 020MD	12.4	15.4	45.4	0.4	2.0	2
2.1			021MD	12.3	15.4	45.4	0.4	2.1	2
2.2			022MD	13.1	16.4	46.4	0.4	2.2	2
2.3			023MD	13.0	16.4	46.4	0.4	2.3	2
2.4			024MD	13.8	17.4	47.4	0.4	2.4	2
2.5	3		MDS 025MD	13.8	17.5	47.5	0.5	2.5	2
2.6			026MD	13.6	17.5	47.5	0.5	2.6	2
2.7			027MD	15.5	19.5	49.5	0.5	2.7	2
2.8			028MD	15.3	19.5	49.5	0.5	2.8	2
2.9			029MD	15.2	19.5	49.5	0.5	2.9	2
3.0			030MD	15.0	19.5	49.5	0.5	3.0	2
3.1	3		MDS 031MD	17.0	21.6	52.6	0.6	3.1	2
3.2			032MD	16.8	21.6	52.6	0.6	3.2	2
3.3			033MD	16.7	21.6	52.6	0.6	3.3	2
3.4			034MD	19.5	24.6	56.6	0.6	3.4	2
3.5			035MD	19.4	24.6	56.6	0.6	3.5	2
3.6	3		MDS 036MD	19.3	24.7	56.7	0.7	3.6	2
3.7			037MD	19.2	24.7	56.7	0.7	3.7	2
3.8			038MD	22.0	27.7	60.7	0.7	3.8	2
3.9			039MD	21.9	27.7	60.7	0.7	3.9	2
4.0			040MD	21.7	27.7	60.7	0.7	4.0	2
4.1			041MD	21.6	27.7	60.7	0.7	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	0.8	4.3	2
4.4			044MD	25.2	31.8	65.8	0.8	4.4	2
4.5			045MD	25.1	31.8	65.8	0.8	4.5	2
4.6			046MD	24.9	31.8	65.8	0.8	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	0.9	4.8	2
4.9			049MD	26.6	33.9	69.9	0.9	4.9	2
5.0			050MD	31.4	38.9	76.9	0.9	5.0	2
5.1			051MD	31.3	38.9	76.9	0.9	5.1	2
5.2			052MD	31.1	38.9	76.9	0.9	5.2	2
5.3	3		MDS 053MD	31.1	39.0	77.0	1.0	5.3	2
5.4			054MD	30.9	39.0	77.0	1.0	5.4	2
5.5			055MD	30.8	39.0	77.0	1.0	5.5	2
5.6			056MD	33.6	42.0	82.0	1.0	5.6	2
5.7			057MD	33.5	42.0	82.0	1.0	5.7	2
5.8	3		MDS 058MD	33.4	42.1	82.1	1.1	5.8	2
5.9			059MD	33.3	42.1	82.1	1.1	5.9	2
6.0			060MD	33.1	42.1	82.1	1.1	6.0	2
6.1			061MD	33.0	42.1	82.1	1.1	6.1	2
6.2			062MD	32.8	42.1	82.1	1.1	6.2	2
6.3			063MD	32.7	42.1	82.1	1.1	6.3	2
6.4	3		MDS 064MD	32.6	42.2	82.2	1.2	6.4	2
6.5			065MD	32.5	42.2	82.2	1.2	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	44.2	84.2	1.2	6.7	2
6.8			068MD	34.0	44.2	84.2	1.2	6.8	2
6.9	3		MDS 069MD	34.0	44.3	84.3	1.3	6.9	2
7.0			070MD	33.8	44.3	84.3	1.3	7.0	2
7.1			071MD	35.7	46.3	88.3	1.3	7.1	2
7.2			072MD	35.5	46.3	88.3	1.3	7.2	2
7.3			073MD	35.4	46.3	88.3	1.3	7.3	2
7.4			074MD	35.2	46.3	88.3	1.3	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	1.4	7.6	2
7.7			077MD	37.9	49.4	91.4	1.4	7.7	2
7.8			078MD	37.7	49.4	91.4	1.4	7.8	2
7.9			079MD	37.6	49.4	91.4	1.4	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	1.5	8.1	2
8.2			082MD	42.2	54.5	97.5	1.5	8.2	2
8.3			083MD	42.1	54.5	97.5	1.5	8.3	2
8.4			084MD	41.9	54.5	97.5	1.5	8.4	2
8.5			085MD	41.8	54.5	97.5	1.5	8.5	2
8.6	3		MDS 086MD	43.7	56.6	99.6	1.6	8.6	2
8.7			087MD	43.6	56.6	99.6	1.6	8.7	2
8.8			088MD	43.4	56.6	99.6	1.6	8.8	2
8.9			089MD	43.3	56.6	99.6	1.6	8.9	2
9.0			090MD	43.1	56.6	99.6	1.6	9.0	2
9.1	3		MDS 091MD	46.1	59.7	103.7	1.7	9.1	2
9.2			092MD	45.9	59.7	103.7	1.7	9.2	2
9.3			093MD	45.8	59.7	103.7	1.7	9.3	2
9.4			094MD	45.6	59.7	103.7	1.7	9.4	2
9.5			095MD	45.5	59.7	103.7	1.7	9.5	2
9.6			096MD	47.3	61.7	106.7	1.7	9.6	2
9.7	3		MDS 097MD	47.3	61.8	106.8	1.8	9.7	2
9.8			098MD	47.1	61.8	106.8	1.8	9.8	2
9.9			099MD	47.0	61.8	106.8	1.8	9.9	2
10.0			100MD	46.8	61.8	106.8	1.8	10.0	2
10.1			101MD	52.7	67.8	113.8	1.8	10.1	2
10.2	3		MDS 102MD	52.6	67.9	113.9	1.9	10.2	2
10.3			103MD	52.5	67.9	113.9	1.9	10.3	2
10.4			104MD	52.3	67.9	113.9	1.9	10.4	2
10.5			105MD	52.2	67.9	113.9	1.9	10.5	2
10.6			106MD	54.0	69.9	115.9	1.9	10.6	2
10.7			107MD	53.9	69.9	115.9	1.9	10.7	2
10.8	3		MDS 108MD	53.8	70.0	116.0	2.0	10.8	2
10.9			109MD	53.7	70.0	116.0	2.0	10.9	2
11.0			110MD	53.5	70.0	116.0	2.0	11.0	2
11.1			111MD	56.4	73.0	120.0	2.0	11.1	2
11.2			112MD	56.2	73.0	120.0	2.0	11.2	2
11.3	3		MDS 113MD	56.2	73.1	120.1	2.1	11.3	2
11.4			114MD	56.0	73.1	120.1	2.1	11.4	2
11.5			115MD	55.9	73.1	120.1	2.1	11.5	2
11.6			116MD	57.7	75.1	123.1	2.1	11.6	2
11.7			117MD	57.6	75.1	123.1	2.1	11.7	2
11.8			118MD	57.4	75.1	123.1	2.1	11.8	2
11.9	3		MDS 119MD	57.4	75.2	123.2	2.2	11.9	2
12.0			120MD	57.2	75.2	123.2	2.2	12.0	2
12.1			121MD	60.1	78.2	137.2	2.2	12.1	2

Grade: ACZ51S

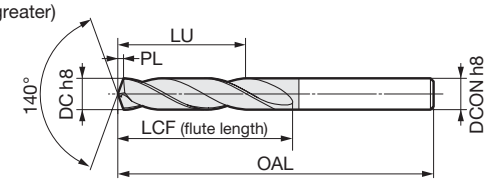
D series (External Coolant Supply/Standard type)

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

ZX Coat | 3D

*Refer to N36 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	78.2	137.2	2.2	12.3	2
12.4	3		**MDS 124MD**	59.7	78.3	137.3	2.3	12.4	2
12.5			**125MD**	59.6	78.3	137.3	2.3	12.5	2
12.6			**126MD**	61.4	80.3	139.3	2.3	12.6	2
12.7			**127MD**	61.3	80.3	139.3	2.3	12.7	2
12.8			**128MD**	61.1	80.3	139.3	2.3	12.8	2
12.9			**129MD**	61.0	80.3	139.3	2.3	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	2.4	13.1	2
13.2			**132MD**	66.6	86.4	146.4	2.4	13.2	2
13.3			**133MD**	66.5	86.4	146.4	2.4	13.3	2
13.4			**134MD**	66.3	86.4	146.4	2.4	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	2.5	13.6	2
13.7			**137MD**	68.0	88.5	149.5	2.5	13.7	2
13.8			**138MD**	67.8	88.5	149.5	2.5	13.8	2
13.9			**139MD**	67.7	88.5	149.5	2.5	13.9	2
14.0			**140MD**	67.5	88.5	149.5	2.5	14.0	2
14.1	3		**MDS 141MD**	70.5	91.6	153.6	2.6	14.1	2
14.2			**142MD**	70.3	91.6	153.6	2.6	14.2	2
14.3			**143MD**	70.2	91.6	153.6	2.6	14.3	2
14.4			**144MD**	70.0	91.6	153.6	2.6	14.4	2
14.5			**145MD**	69.9	91.6	153.6	2.6	14.5	2
14.6	3		**MDS 146MD**	71.8	93.7	155.7	2.7	14.6	2
14.7			**147MD**	71.7	93.7	155.7	2.7	14.7	2
14.8			**148MD**	71.5	93.7	155.7	2.7	14.8	2
14.9			**149MD**	71.4	93.7	155.7	2.7	14.9	2
15.0			**150MD**	71.2	93.7	155.7	2.7	15.0	2
15.1			**151MD**	74.1	96.7	159.7	2.7	15.1	2
15.2	3		**MDS 152MD**	74.0	96.8	159.8	2.8	15.2	2
15.3			**153MD**	73.9	96.8	159.8	2.8	15.3	2
15.4			**154MD**	73.7	96.8	159.8	2.8	15.4	2
15.5			**155MD**	73.6	96.8	159.8	2.8	15.5	2
15.6			**156MD**	75.4	98.8	162.8	2.8	15.6	2
15.7	3		**MDS 157MD**	75.4	98.9	162.9	2.9	15.7	2
15.8			**158MD**	75.2	98.9	162.9	2.9	15.8	2
15.9			**159MD**	75.1	98.9	162.9	2.9	15.9	2
16.0			**160MD**	74.9	98.9	162.9	2.9	16.0	2
16.1			**161MD**	80.8	104.9	169.9	2.9	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	105.0	170.0	3.0	16.4	2
16.5			**165MD**	80.3	105.0	170.0	3.0	16.5	2
16.6			**166MD**	80.1	105.0	170.0	3.0	16.6	2
16.7			**167MD**	80.0	105.0	170.0	3.0	16.7	2
16.8	3		**MDS 168MD**	79.9	105.1	170.1	3.1	16.8	2
16.9			**169MD**	79.8	105.1	170.1	3.1	16.9	2
17.0			**170MD**	79.6	105.1	170.1	3.1	17.0	2
17.1			**171MD**	79.5	105.1	170.1	3.1	17.1	2
17.2			**172MD**	79.3	105.1	170.1	3.1	17.2	2
17.3			**173MD**	79.2	105.1	170.1	3.1	17.3	2
17.4	3		**MDS 174MD**	79.1	105.2	170.2	3.2	17.4	2
17.5			**175MD**	79.0	105.2	170.2	3.2	17.5	2
17.6			**176MD**	78.8	105.2	170.2	3.2	17.6	2
17.7			**177MD**	78.7	105.2	170.2	3.2	17.7	2
17.8			**178MD**	78.5	105.2	170.2	3.2	17.8	2
17.9	3		**MDS 179MD**	78.5	105.3	170.3	3.3	17.9	2
18.0			**180MD**	78.3	105.3	170.3	3.3	18.0	2
18.1			**181MD**	90.2	117.3	182.3	3.3	18.1	2
18.2			**182MD**	90.0	117.3	182.3	3.3	18.2	2
18.3			**183MD**	89.9	117.3	182.3	3.3	18.3	2
18.4			**184MD**	89.7	117.3	182.3	3.3	18.4	2
18.5	3		**MDS 185MD**	89.7	117.4	182.4	3.4	18.5	2
18.6			**186MD**	89.5	117.4	182.4	3.4	18.6	2
18.7			**187MD**	89.4	117.4	182.4	3.4	18.7	2
18.8			**188MD**	89.2	117.4	182.4	3.4	18.8	2
18.9			**189MD**	89.1	117.4	182.4	3.4	18.9	2
19.0	3		**MDS 190MD**	89.0	117.5	182.5	3.5	19.0	2
19.1			**191MD**	88.9	117.5	182.5	3.5	19.1	2
19.2			**192MD**	88.7	117.5	182.5	3.5	19.2	2
19.3			**193MD**	88.6	117.5	182.5	3.5	19.3	2
19.4			**194MD**	88.4	117.5	182.5	3.5	19.4	2
19.5			**195MD**	88.3	117.5	182.5	3.5	19.5	2
19.6	3		**MDS 196MD**	88.2	117.6	182.6	3.6	19.6	2
19.7			**197MD**	88.1	117.6	182.6	3.6	19.7	2
19.8			**198MD**	87.9	117.6	182.6	3.6	19.8	2
19.9			**199MD**	87.8	117.6	182.6	3.6	19.9	2
20.0			**200MD**	87.6	117.6	182.6	3.6	20.0	2

Grade: ACZ51S

Recommended Cutting Conditions (D series)

(n: Spindle Speed min^{-1} vc: 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	n	3,200	1,600	3,200
	vc	20 - **30** - 40	10 - **15** - 20	5 - **10** - 25
	f	0.06 - **0.07** - 0.08	0.05 - **0.06** - 0.08	0.05 - **0.06** - 0.08
ø5.0	n	2,400	1,200	2,400
	vc	20 - **30** - 40	10 - **15** - 20	5 - **10** - 25
	f	0.08 - **0.09** - 0.10	0.05 - **0.06** - 0.08	0.05 - **0.06** - 0.08
ø10.0	n	1,000	500	950
	vc	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	n	600	300	600
	vc	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	n	500	250	500
	vc	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 series

■ General Features

SGS series 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 (cutting edge treatment) amount and special thinning shape reduce cutting force. This reduces cutting edge fracture.
· Perfect for drilling Ni-based heat-resistant alloys (Inconel/Waspaloy/Hastelloy).

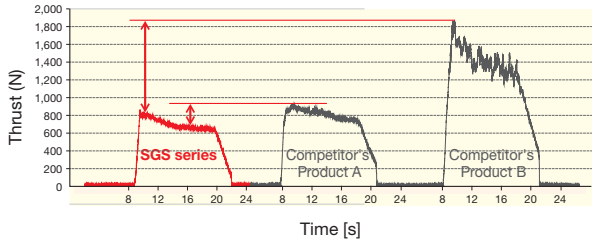
■ Product Range

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)

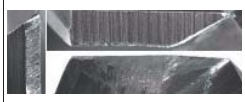
Low Resistance (Reduced Load on Cutting Edge)



Tool Diameter : ø6.0
Work Material : Inconel 718
Cutting Conditions : vc = 10m/min, f = 0.08mm/rev, H = 8mm (through), External Coolant Supply

Tool Life Comparison

Long Tool Life (No Fracturing or Breakage)

Tool	SGS series	Competitor's Product A	Competitor's Product B
No. of Workpieces	Able to continue after 50 holes	Fracture after 30 holes	Breakage after 5 holes
Photo			

Tool Diameter : ø6.0
Work Material : Inconel 718
Cutting Conditions : vc = 10m/min, f = 0.08mm/rev, H = 16mm (blind), External Coolant Supply

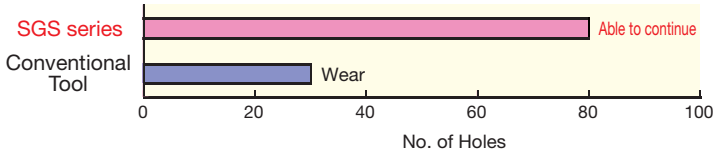
■ Application Examples

Comparison of Cutting Edge Wear after 30 Holes

Significantly Reduced Flank Wear

SGS series

Conventional Tool



Tool : MDW 0600SGS3
Work Material : Inconel 718 (aerospace components)
Cutting Conditions : vc = 10m/min, f = 0.06mm/rev, H = 3mm (through), External Coolant Supply

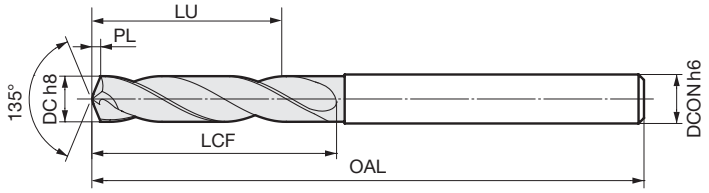
SGS series (External Coolant Supply)

Stainless Steel | Ti Alloy | Heat-resistant Steel

PVD Coat | 3D

*Refer to N36 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	3	●	**0400SGS3**	17.3	23.3	60.8	0.8	4.0	1
4.5	3	●	**MDW 0450SGS3**	19.2	25.9	76.9	0.9	5.0	1
5.0	3	●	**0500SGS3**	21.0	28.5	77.0	1.0	5.0	1
5.5	3	●	**MDW 0550SGS3**	20.4	28.6	82.1	1.1	6.0	1
6.0	3	●	**0600SGS3**	22.2	31.2	82.2	1.2	6.0	1
6.5	3	●	**MDW 0650SGS3**	24.1	33.8	84.3	1.3	7.0	1
7.0	3	●	**0700SGS3**	25.9	36.4	84.4	1.4	7.0	1
7.5	3	●	**MDW 0750SGS3**	27.9	39.1	91.6	1.6	8.0	1
8.0	3	●	**0800SGS3**	29.7	41.7	91.7	1.7	8.0	1
8.5	3	●	**MDW 0850SGS3**	31.6	44.3	99.8	1.8	9.0	1
9.0	3	●	**0900SGS3**	33.4	46.9	99.9	1.9	9.0	1
9.5	3	●	**MDW 0950SGS3**	35.3	49.5	107.0	2.0	10.0	1
10.0	3	●	**1000SGS3**	37.1	52.1	107.1	2.1	10.0	1
10.5	3	●	**MDW 1050SGS3**	39.0	54.7	116.2	2.2	11.0	1
11.0	3	●	**1100SGS3**	40.8	57.3	116.3	2.3	11.0	1
11.5	3	●	**MDW 1150SGS3**	42.7	59.9	123.4	2.4	12.0	1
12.0	3	●	**1200SGS3**	44.5	62.5	123.5	2.5	12.0	1

Grade: ACW52S

Recommended Cutting Conditions

(n: Spindle Speed min^{-1} vc: Cutting Speed m/min f: Feed Rate mm/rev)

Diameter DC (mm)	Cutting Conditions	Titanium Alloy Ti	Heat-Resistant Alloy Inconel
ø6.0	n	1,100	800
	vc	10 - **20** - 30	10 - **15** - 30
	f	0.05 - **0.08** - 0.10	0.05 - **0.08** - 0.10
ø10.0	n	600	500
	vc	10 - **20** - 30	10 - **15** - 30
	f	0.07 - **0.10** - 0.12	0.07 - **0.10** - 0.12
ø12.0	n	500	500
	vc	10 - **20** - 30	15 - **20** - 30
	f	0.07 - **0.10** - 0.12	0.07 - **0.10** - 0.12

Min. - **Optimum** - Max.

Super MULTIDRILL

XHGS series/PHT series

■ General Features

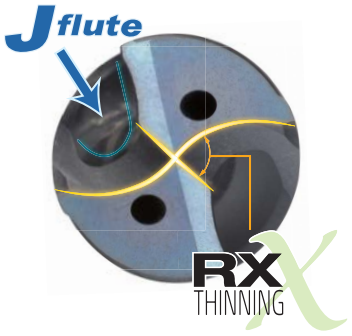
Super MULTIDRILL XHGS series, a next-generation drill specialized for deep hole drilling, features high drill strength and stable chip control to further enhance efficiency of deep hole drilling.

■ Features

● Deep hole drilling
- · J-flute shape achieves improved chip control during deep hole drilling
- · High-efficiency drilling at over vf = 1,000mm/min at depths 20 times the diameter (diameter ø5, equivalent to S48C)
- · Special web thinning shape (RX THINNING) reduces drilling force during high-efficiency machining

● 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 Component (equivalent to S38C)

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

● Automotive Component (equivalent to S43C)

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

● Automotive Component (equivalent to FCD700)

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

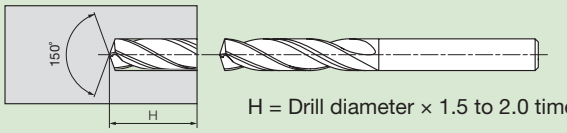
● Machine Component (equivalent to S45C)

Tool : ø6.0x90mm (PHT series), ø6.0x145mm (XHGS series)
Machine : Horizontal single-spindle NC machine
Coolant : MQL (air pressure 0.5MPa, volume approx. 60cc/h)
Cutting Conditions : vc = 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 series

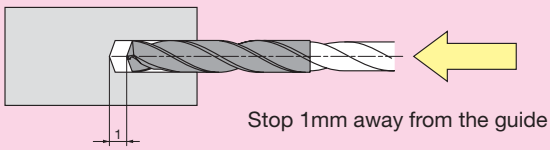
- Select the same nominal diameter for the PHT series dedicated guide hole drill as the XHGS series deep hole drill. (The guide drill diameter is designed to be 0. 02mm to 0. 05mm larger than the long drill diameter.)



H = Drill diameter × 1.5 to 2.0 times the depth

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

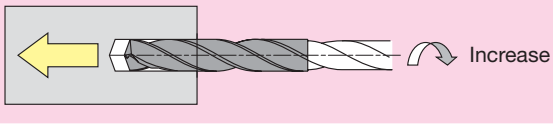
- Spindle Speed: 500min^{-1}
- Feed Rate: 1,000 to 2,000mm/min



Stop 1mm away from the guide hole depth

* 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

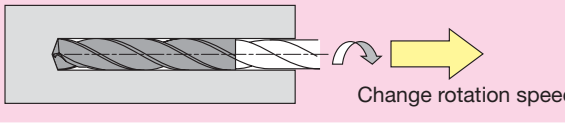


Increase rotation speed

* 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

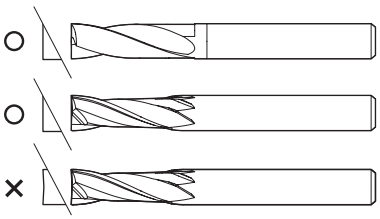


Change rotation speed to 500 min^{-1}

* 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.).



○ Flat Bottom Drilling using an endmill or Flat MULTIDRILL MDF series (see page J26)

○

× 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 fracturing 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 series/PHT series (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.25% | 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 N36 for the tolerance of h6, h8 and e8

Fig 1 (PHT series)

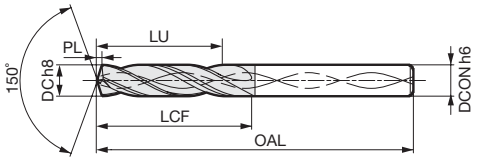
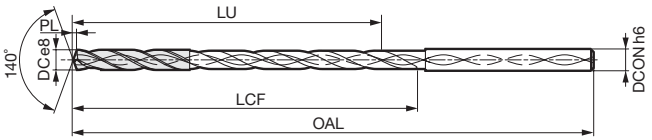


Fig 2 (XHGS series)



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	3.0	2
	15	●	0210XHGS15	45.3	48.4	98.4	0.4	3.0	2
	20	●	0210XHGS20	58.3	61.4	111.4	0.4	3.0	2
	25	●	0210XHGS25	70.3	73.4	123.4	0.4	3.0	2
	30	●	0210XHGS30	83.3	86.4	136.4	0.4	3.0	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	3.0	2
	15	●	0220XHGS15	45.1	48.4	98.4	0.4	3.0	2
	20	●	0220XHGS20	58.1	61.4	111.4	0.4	3.0	2
	25	●	0220XHGS25	70.1	73.4	123.4	0.4	3.0	2
	30	●	0220XHGS30	83.1	86.4	136.4	0.4	3.0	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	3.0	2
	15	●	0230XHGS15	45.0	48.4	98.4	0.4	3.0	2
	20	●	0230XHGS20	58.0	61.4	111.4	0.4	3.0	2
	25	●	0230XHGS25	70.0	73.4	123.4	0.4	3.0	2
	30	●	0230XHGS30	83.0	86.4	136.4	0.4	3.0	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	3.0	2
	15	●	0240XHGS15	44.8	48.4	98.4	0.4	3.0	2
	20	●	0240XHGS20	57.8	61.4	111.4	0.4	3.0	2
	25	●	0240XHGS25	69.8	73.4	123.4	0.4	3.0	2
	30	●	0240XHGS30	82.8	86.4	136.4	0.4	3.0	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	3.0	2
	12	●	0250XHGS12	37.8	41.5	91.5	0.5	3.0	2
	15	●	0250XHGS15	44.8	48.5	98.5	0.5	3.0	2
	20	●	0250XHGS20	57.8	61.5	111.5	0.5	3.0	2
	25	●	0250XHGS25	69.8	73.5	123.5	0.5	3.0	2
	30	●	0250XHGS30	82.8	86.5	136.5	0.5	3.0	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	3.0	2
	12		0260XHGS12	47.6	51.5	99.5	0.5	3.0	2
	15	●	0260XHGS15	56.6	60.5	108.5	0.5	3.0	2
	20	●	0260XHGS20	71.6	75.5	123.5	0.5	3.0	2
	25	●	0260XHGS25	86.6	90.5	138.5	0.5	3.0	2
	30	●	0260XHGS30	101.6	105.5	153.5	0.5	3.0	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	3.0	2
	12		0270XHGS12	47.5	51.5	99.5	0.5	3.0	2
	15	●	0270XHGS15	56.5	60.5	108.5	0.5	3.0	2
	20	●	0270XHGS20	71.5	75.5	123.5	0.5	3.0	2
	25	●	0270XHGS25	86.5	90.5	138.5	0.5	3.0	2
	30	●	0270XHGS30	101.5	105.5	153.5	0.5	3.0	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	3.0	2
	12		0280XHGS12	47.3	51.5	99.5	0.5	3.0	2
	15	●	0280XHGS15	56.3	60.5	108.5	0.5	3.0	2
	20	●	0280XHGS20	71.3	75.5	123.5	0.5	3.0	2
	25	●	0280XHGS25	86.3	90.5	138.5	0.5	3.0	2
	30	●	0280XHGS30	101.3	105.5	153.5	0.5	3.0	2

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

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	3.0	2
	12		0290XHGS12	47.2	51.5	99.5	0.5	3.0	2
	15	●	0290XHGS15	56.2	60.5	108.5	0.5	3.0	2
	20	●	0290XHGS20	71.2	75.5	123.5	0.5	3.0	2
	25	●	0290XHGS25	86.2	90.5	138.5	0.5	3.0	2
	30	●	0290XHGS30	101.2	105.5	153.5	0.5	3.0	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	3.0	2
	12	●	0300XHGS12	47.0	51.5	99.5	0.5	3.0	2
	15	●	0300XHGS15	56.0	60.5	108.5	0.5	3.0	2
	20	●	0300XHGS20	71.0	75.5	123.5	0.5	3.0	2
	25	●	0300XHGS25	86.0	90.5	138.5	0.5	3.0	2
	30	●	0300XHGS30	101.0	105.5	153.5	0.5	3.0	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	4.0	2
	12		0310XHGS12	54.0	58.6	108.6	0.6	4.0	2
	15	●	0310XHGS15	64.0	68.6	118.6	0.6	4.0	2
	20	●	0310XHGS20	82.0	86.6	136.6	0.6	4.0	2
	25	●	0310XHGS25	99.0	103.6	153.6	0.6	4.0	2
	30	●	0310XHGS30	117.0	121.6	171.6	0.6	4.0	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	4.0	2
	12		0320XHGS12	53.8	58.6	108.6	0.6	4.0	2
	15	●	0320XHGS15	63.8	68.6	118.6	0.6	4.0	2
	20	●	0320XHGS20	81.8	86.6	136.6	0.6	4.0	2
	25	●	0320XHGS25	98.8	103.6	153.6	0.6	4.0	2
	30	●	0320XHGS30	116.8	121.6	171.6	0.6	4.0	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	4.0	2
	12		0330XHGS12	53.7	58.6	108.6	0.6	4.0	2
	15	●	0330XHGS15	63.7	68.6	118.6	0.6	4.0	2
	20	●	0330XHGS20	81.7	86.6	136.6	0.6	4.0	2
	25	●	0330XHGS25	98.7	103.6	153.6	0.6	4.0	2
	30	●	0330XHGS30	116.7	121.6	171.6	0.6	4.0	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	4.0	2
	12		0340XHGS12	53.5	58.6	108.6	0.6	4.0	2
	15	●	0340XHGS15	63.5	68.6	118.6	0.6	4.0	2
	20	●	0340XHGS20	81.5	86.6	136.6	0.6	4.0	2
	25	●	0340XHGS25	98.5	103.6	153.6	0.6	4.0	2
	30	●	0340XHGS30	116.5	121.6	171.6	0.6	4.0	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	4.0	2
	12	●	0350XHGS12	53.4	58.6	108.6	0.6	4.0	2
	15	●	0350XHGS15	63.4	68.6	118.6	0.6	4.0	2
	20	●	0350XHGS20	81.4	86.6	136.6	0.6	4.0	2
	25	●	0350XHGS25	98.4	103.6	153.6	0.6	4.0	2
	30	●	0350XHGS30	116.4	121.6	171.6	0.6	4.0	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	4.0	2
	12		0360XHGS12	63.3	68.7	116.7	0.7	4.0	2
	15	●	0360XHGS15	75.3	80.7	128.7	0.7	4.0	2
	20	●	0360XHGS20	95.3	100.7	148.7	0.7	4.0	2
	25	●	0360XHGS25	115.3	120.7	168.7	0.7	4.0	2
	30	●	0360XHGS30	135.3	140.7	188.7	0.7	4.0	2

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

XHGS series/PHT series (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 N36 for the tolerance of h6, h8 and e8

Fig 1 (PHT series)

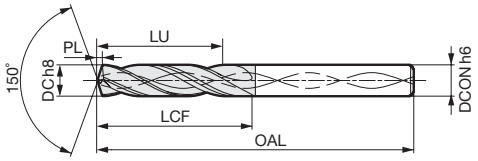
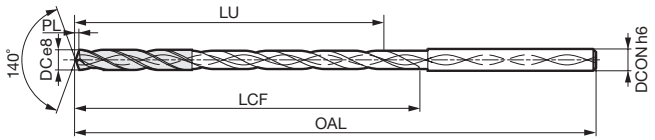


Fig 2 (XHGS series)



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	●	MDW 0370PHT	17.5	23.0	72.5	0.5	4.0	1
	10	●	0370XHGS10	55.2	60.7	108.7	0.7	4.0	2
	12		0370XHGS12	63.2	68.7	116.7	0.7	4.0	2
3.7	15	●	0370XHGS15	75.2	80.7	128.7	0.7	4.0	2
	20	●	0370XHGS20	95.2	100.7	148.7	0.7	4.0	2
	25	●	0370XHGS25	115.2	120.7	168.7	0.7	4.0	2
	30	●	0370XHGS30	135.2	140.7	188.7	0.7	4.0	2
	3	●	MDW 0380PHT	17.3	23.0	72.5	0.5	4.0	1
	10	●	0380XHGS10	55.0	60.7	108.7	0.7	4.0	2
	12		0380XHGS12	63.0	68.7	116.7	0.7	4.0	2
3.8	15	●	0380XHGS15	75.0	80.7	128.7	0.7	4.0	2
	20	●	0380XHGS20	95.0	100.7	148.7	0.7	4.0	2
	25	●	0380XHGS25	115.0	120.7	168.7	0.7	4.0	2
	30	●	0380XHGS30	135.0	140.7	188.7	0.7	4.0	2
	3	●	MDW 0390PHT	17.2	23.0	72.5	0.5	4.0	1
	10	●	0390XHGS10	54.9	60.7	108.7	0.7	4.0	2
	12		0390XHGS12	62.9	68.7	116.7	0.7	4.0	2
3.9	15	●	0390XHGS15	74.9	80.7	128.7	0.7	4.0	2
	20	●	0390XHGS20	94.9	100.7	148.7	0.7	4.0	2
	25	●	0390XHGS25	114.9	120.7	168.7	0.7	4.0	2
	30	●	0390XHGS30	134.9	140.7	188.7	0.7	4.0	2
	3	●	MDW 0400PHT	17.0	23.0	72.5	0.5	4.0	1
	10	●	0400XHGS10	54.7	60.7	108.7	0.7	4.0	2
	12	●	0400XHGS12	62.7	68.7	116.7	0.7	4.0	2
4.0	15	●	0400XHGS15	74.7	80.7	128.7	0.7	4.0	2
	20	●	0400XHGS20	94.7	100.7	148.7	0.7	4.0	2
	25	●	0400XHGS25	114.7	120.7	168.7	0.7	4.0	2
	30	●	0400XHGS30	134.7	140.7	188.7	0.7	4.0	2
	3	●	MDW 0410PHT	19.4	25.5	80.5	0.5	5.0	1
	10	●	0410XHGS10	62.6	68.7	120.7	0.7	5.0	2
	12		0410XHGS12	69.6	75.7	127.7	0.7	5.0	2
4.1	15	●	0410XHGS15	82.6	88.7	140.7	0.7	5.0	2
	20	●	0410XHGS20	105.6	111.7	163.7	0.7	5.0	2
	25	●	0410XHGS25	127.6	133.7	185.7	0.7	5.0	2
	30	●	0410XHGS30	150.6	156.7	208.7	0.7	5.0	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	5.0	2
	12		0420XHGS12	69.5	75.8	127.8	0.8	5.0	2
4.2	15	●	0420XHGS15	82.5	88.8	140.8	0.8	5.0	2
	20	●	0420XHGS20	105.5	111.8	163.8	0.8	5.0	2
	25	●	0420XHGS25	127.5	133.8	185.8	0.8	5.0	2
	30	●	0420XHGS30	150.5	156.8	208.8	0.8	5.0	2
	3	●	MDW 0430PHT	19.2	25.6	80.6	0.6	5.0	1
	10	●	0430XHGS10	62.4	68.8	120.8	0.8	5.0	2
	12		0430XHGS12	69.4	75.8	127.8	0.8	5.0	2
4.3	15	●	0430XHGS15	82.4	88.8	140.8	0.8	5.0	2
	20	●	0430XHGS20	105.4	111.8	163.8	0.8	5.0	2
	25	●	0430XHGS25	127.4	133.8	185.8	0.8	5.0	2
	30	●	0430XHGS30	150.4	156.8	208.8	0.8	5.0	2
	3	●	MDW 0440PHT	19.0	25.6	80.6	0.6	5.0	1
	10	●	0440XHGS10	62.2	68.8	120.8	0.8	5.0	2
	12		0440XHGS12	69.2	75.8	127.8	0.8	5.0	2
4.4	15	●	0440XHGS15	82.2	88.8	140.8	0.8	5.0	2
	20	●	0440XHGS20	105.2	111.8	163.8	0.8	5.0	2
	25	●	0440XHGS25	127.2	133.8	185.8	0.8	5.0	2
	30	●	0440XHGS30	150.2	156.8	208.8	0.8	5.0	2

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

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
	3	●	MDW 0450PHT	18.9	25.6	80.6	0.6	5.0	1
	10	●	0450XHGS10	62.1	68.8	120.8	0.8	5.0	2
	12	●	0450XHGS12	69.1	75.8	127.8	0.8	5.0	2
4.5	15	●	0450XHGS15	82.1	88.8	140.8	0.8	5.0	2
	20	●	0450XHGS20	105.1	111.8	163.8	0.8	5.0	2
	25	●	0450XHGS25	127.1	133.8	185.8	0.8	5.0	2
	30	●	0450XHGS30	150.1	156.8	208.8	0.8	5.0	2
	3	●	MDW 0460PHT	21.2	28.1	80.6	0.6	5.0	1
	10	●	0460XHGS10	68.9	75.8	125.8	0.8	5.0	2
	12		0460XHGS12	78.9	85.8	135.8	0.8	5.0	2
4.6	15	●	0460XHGS15	93.9	100.8	150.8	0.8	5.0	2
	20	●	0460XHGS20	118.9	125.8	175.8	0.8	5.0	2
	25	●	0460XHGS25	143.9	150.8	200.8	0.8	5.0	2
	30	●	0460XHGS30	168.9	175.8	225.8	0.8	5.0	2
	3	●	MDW 0470PHT	21.1	28.1	80.6	0.6	5.0	1
	10	●	0470XHGS10	68.9	75.9	125.9	0.9	5.0	2
	12		0470XHGS12	78.9	85.9	135.9	0.9	5.0	2
4.7	15	●	0470XHGS15	93.9	100.9	150.9	0.9	5.0	2
	20	●	0470XHGS20	118.9	125.9	175.9	0.9	5.0	2
	25	●	0470XHGS25	143.9	150.9	200.9	0.9	5.0	2
	30	●	0470XHGS30	168.9	175.9	225.9	0.9	5.0	2
	3	●	MDW 0480PHT	20.9	28.1	80.6	0.6	5.0	1
	10	●	0480XHGS10	68.7	75.9	125.9	0.9	5.0	2
	12		0480XHGS12	78.7	85.9	135.9	0.9	5.0	2
4.8	15	●	0480XHGS15	93.7	100.9	150.9	0.9	5.0	2
	20	●	0480XHGS20	118.7	125.9	175.9	0.9	5.0	2
	25	●	0480XHGS25	143.7	150.9	200.9	0.9	5.0	2
	30	●	0480XHGS30	168.7	175.9	225.9	0.9	5.0	2
	3	●	MDW 0490PHT	20.9	28.2	80.7	0.7	5.0	1
	10	●	0490XHGS10	68.6	75.9	125.9	0.9	5.0	2
	12		0490XHGS12	78.6	85.9	135.9	0.9	5.0	2
4.9	15	●	0490XHGS15	93.6	100.9	150.9	0.9	5.0	2
	20	●	0490XHGS20	118.6	125.9	175.9	0.9	5.0	2
	25	●	0490XHGS25	143.6	150.9	200.9	0.9	5.0	2
	30	●	0490XHGS30	168.6	175.9	225.9	0.9	5.0	2
	3	●	MDW 0500PHT	20.7	28.2	80.7	0.7	5.0	1
	10	●	0500XHGS10	68.4	75.9	125.9	0.9	5.0	2
	12	●	0500XHGS12	78.4	85.9	135.9	0.9	5.0	2
5.0	15	●	0500XHGS15	93.4	100.9	150.9	0.9	5.0	2
	20	●	0500XHGS20	118.4	125.9	175.9	0.9	5.0	2
	25	●	0500XHGS25	143.4	150.9	200.9	0.9	5.0	2
	30	●	0500XHGS30	168.4	175.9	225.9	0.9	5.0	2
	3	●	MDW 0510PHT	20.6	28.2	82.7	0.7	6.0	1
	10	●	0510XHGS10	76.3	83.9	137.9	0.9	6.0	2
	12		0510XHGS12	85.3	92.9	146.9	0.9	6.0	2
5.1	15	●	0510XHGS15	101.3	108.9	162.9	0.9	6.0	2
	20	●	0510XHGS20	131.3	138.9	192.9	0.9	6.0	2
	25	●	0510XHGS25	156.3	163.9	217.9	0.9	6.0	2
	30	●	0510XHGS30	184.3	191.9	245.9	0.9	6.0	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	6.0	2
	12		0520XHGS12	85.1	92.9	146.9	0.9	6.0	2
5.2	15	●	0520XHGS15	101.1	108.9	162.9	0.9	6.0	2
	20	●	0520XHGS20	131.1	138.9	192.9	0.9	6.0	2
	25	●	0520XHGS25	156.1	163.9	217.9	0.9	6.0	2
	30	●	0520XHGS30	184.1	191.9	245.9	0.9	6.0	2

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

XHGS series/PHT series (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 N36 for the tolerance of h6, h8 and e8

Fig 1 (PHT series)

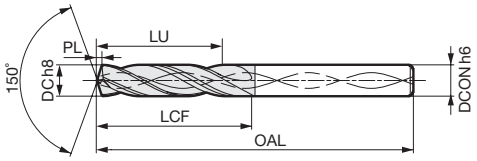
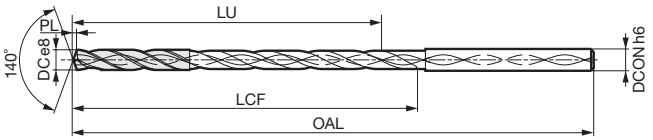


Fig 2 (XHGS series)



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
5.3	3	●	MDW 0530PHT	20.3	28.2	82.7	0.7	6.0	1
	10	●	0530XHGS10	76.1	84.0	138.0	1.0	6.0	2
	12		0530XHGS12	85.1	93.0	147.0	1.0	6.0	2
	15	●	0530XHGS15	101.1	109.0	163.0	1.0	6.0	2
	20	●	0530XHGS20	131.1	139.0	193.0	1.0	6.0	2
	25	●	0530XHGS25	156.1	164.0	218.0	1.0	6.0	2
	30	●	0530XHGS30	184.1	192.0	246.0	1.0	6.0	2
5.4	3	●	MDW 0540PHT	20.1	28.2	82.7	0.7	6.0	1
	10	●	0540XHGS10	75.9	84.0	138.0	1.0	6.0	2
	12		0540XHGS12	84.9	93.0	147.0	1.0	6.0	2
	15	●	0540XHGS15	100.9	109.0	163.0	1.0	6.0	2
	20	●	0540XHGS20	130.9	139.0	193.0	1.0	6.0	2
	25	●	0540XHGS25	155.9	164.0	218.0	1.0	6.0	2
	30	●	0540XHGS30	183.9	192.0	246.0	1.0	6.0	2
5.5	3	●	MDW 0550PHT	20.0	28.2	82.7	0.7	6.0	1
	10	●	0550XHGS10	75.8	84.0	138.0	1.0	6.0	2
	12	●	0550XHGS12	84.8	93.0	147.0	1.0	6.0	2
	15	●	0550XHGS15	100.8	109.0	163.0	1.0	6.0	2
	20	●	0550XHGS20	130.8	139.0	193.0	1.0	6.0	2
	25	●	0550XHGS25	155.8	164.0	218.0	1.0	6.0	2
	30	●	0550XHGS30	183.8	192.0	246.0	1.0	6.0	2
5.6	3	●	MDW 0560PHT	22.4	30.8	82.8	0.8	6.0	1
	10	●	0560XHGS10	82.6	91.0	143.0	1.0	6.0	2
	12		0560XHGS12	94.6	103.0	155.0	1.0	6.0	2
	15	●	0560XHGS15	112.6	121.0	173.0	1.0	6.0	2
	20	●	0560XHGS20	142.6	151.0	203.0	1.0	6.0	2
	25	●	0560XHGS25	172.6	181.0	233.0	1.0	6.0	2
	30	●	0560XHGS30	202.6	211.0	263.0	1.0	6.0	2
5.7	3	●	MDW 0570PHT	22.3	30.8	82.8	0.8	6.0	1
	10	●	0570XHGS10	82.5	91.0	143.0	1.0	6.0	2
	12		0570XHGS12	94.5	103.0	155.0	1.0	6.0	2
	15	●	0570XHGS15	112.5	121.0	173.0	1.0	6.0	2
	20	●	0570XHGS20	142.5	151.0	203.0	1.0	6.0	2
	25	●	0570XHGS25	172.5	181.0	233.0	1.0	6.0	2
	30	●	0570XHGS30	202.5	211.0	263.0	1.0	6.0	2
5.8	3	●	MDW 0580PHT	22.1	30.8	82.8	0.8	6.0	1
	10	●	0580XHGS10	82.4	91.1	143.1	1.1	6.0	2
	12		0580XHGS12	94.4	103.1	155.1	1.1	6.0	2
	15	●	0580XHGS15	112.4	121.1	173.1	1.1	6.0	2
	20	●	0580XHGS20	142.4	151.1	203.1	1.1	6.0	2
	25	●	0580XHGS25	172.4	181.1	233.1	1.1	6.0	2
	30	●	0580XHGS30	202.4	211.1	263.1	1.1	6.0	2
5.9	3	●	MDW 0590PHT	22.0	30.8	82.8	0.8	6.0	1
	10	●	0590XHGS10	82.3	91.1	143.1	1.1	6.0	2
	12		0590XHGS12	94.3	103.1	155.1	1.1	6.0	2
	15	●	0590XHGS15	112.3	121.1	173.1	1.1	6.0	2
	20	●	0590XHGS20	142.3	151.1	203.1	1.1	6.0	2
	25	●	0590XHGS25	172.3	181.1	233.1	1.1	6.0	2
	30	●	0590XHGS30	202.3	211.1	263.1	1.1	6.0	2

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

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
6.0	3	●	MDW 0600PHT	21.8	30.8	82.8	0.8	6.0	1
	10	●	0600XHGS10	82.1	91.1	143.1	1.1	6.0	2
	12	●	0600XHGS12	94.1	103.1	155.1	1.1	6.0	2
	15	●	0600XHGS15	112.1	121.1	173.1	1.1	6.0	2
	20	●	0600XHGS20	142.1	151.1	203.1	1.1	6.0	2
	25	●	0600XHGS25	172.1	181.1	233.1	1.1	6.0	2
	30	●	0600XHGS30	202.1	211.1	263.1	1.1	6.0	2
6.1	3	●	MDW 0610PHT	24.2	33.3	88.8	0.8	7.0	1
	10	●	0610XHGS10	90.0	99.1	154.1	1.1	7.0	2
	12		0610XHGS12	101.0	110.1	165.1	1.1	7.0	2
	15	●	0610XHGS15	120.0	129.1	184.1	1.1	7.0	2
	20	●	0610XHGS20	153.0	162.1	217.1	1.1	7.0	2
	25	●	0610XHGS25	185.0	194.1	249.1	1.1	7.0	2
	30	●	0610XHGS30	218.0	227.1	282.1	1.1	7.0	2
6.2	3	●	MDW 0620PHT	24.0	33.3	88.8	0.8	7.0	1
	10	●	0620XHGS10	89.8	99.1	154.1	1.1	7.0	2
	12		0620XHGS12	100.8	110.1	165.1	1.1	7.0	2
	15	●	0620XHGS15	119.8	129.1	184.1	1.1	7.0	2
	20	●	0620XHGS20	152.8	162.1	217.1	1.1	7.0	2
	25	●	0620XHGS25	184.8	194.1	249.1	1.1	7.0	2
	30	●	0620XHGS30	217.8	227.1	282.1	1.1	7.0	2
6.3	3	●	MDW 0630PHT	23.9	33.3	88.8	0.8	7.0	1
	10	●	0630XHGS10	89.7	99.1	154.1	1.1	7.0	2
	12		0630XHGS12	100.7	110.1	165.1	1.1	7.0	2
	15	●	0630XHGS15	119.7	129.1	184.1	1.1	7.0	2
	20	●	0630XHGS20	152.7	162.1	217.1	1.1	7.0	2
	25	●	0630XHGS25	184.7	194.1	249.1	1.1	7.0	2
	30	●	0630XHGS30	217.7	227.1	282.1	1.1	7.0	2
6.4	3	●	MDW 0640PHT	23.8	33.4	88.9	0.9	7.0	1
	10	●	0640XHGS10	89.6	99.2	154.2	1.2	7.0	2
	12		0640XHGS12	100.6	110.2	165.2	1.2	7.0	2
	15	●	0640XHGS15	119.6	129.2	184.2	1.2	7.0	2
	20	●	0640XHGS20	152.6	162.2	217.2	1.2	7.0	2
	25	●	0640XHGS25	184.6	194.2	249.2	1.2	7.0	2
	30	●	0640XHGS30	217.6	227.2	282.2	1.2	7.0	2
6.5	3	●	MDW 0650PHT	23.7	33.4	88.9	0.9	7.0	1
	10	●	0650XHGS10	89.5	99.2	154.2	1.2	7.0	2
	12	●	0650XHGS12	100.5	110.2	165.2	1.2	7.0	2
	15	●	0650XHGS15	119.5	129.2	184.2	1.2	7.0	2
	20	●	0650XHGS20	152.5	162.2	217.2	1.2	7.0	2
	25	●	0650XHGS25	184.5	194.2	249.2	1.2	7.0	2
	30	●	0650XHGS30	217.5	227.2	282.2	1.2	7.0	2
6.6	3	●	MDW 0660PHT	26.0	35.9	88.9	0.9	7.0	1
	10	●	0660XHGS10	96.3	106.2	159.2	1.2	7.0	2
	12		0660XHGS12	110.3	120.2	173.2	1.2	7.0	2
	15	●	0660XHGS15	131.3	141.2	194.2	1.2	7.0	2
	20	●	0660XHGS20	166.3	176.2	229.2	1.2	7.0	2
	25	●	0660XHGS25	201.3	211.2	264.2	1.2	7.0	2
	30	●	0660XHGS30	236.3	246.2	299.2	1.2	7.0	2

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

XHGS series/PHT series (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 N36 for the tolerance of h6, h8 and e8

Fig 1 (PHT series)

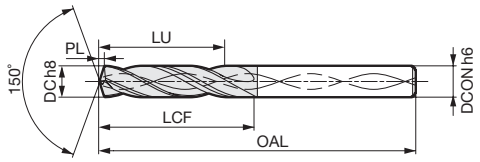
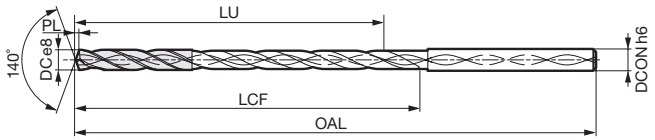


Fig 2 (XHGS series)



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
	3	●	**MDW 0670PHT**	25.9	35.9	88.9	0.9	7.0	1
	10	●	**0670XHGS10**	96.2	106.2	159.2	1.2	7.0	2
	12		**0670XHGS12**	110.2	120.2	173.2	1.2	7.0	2
6.7	15	●	**0670XHGS15**	131.2	141.2	194.2	1.2	7.0	2
	20	●	**0670XHGS20**	166.2	176.2	229.2	1.2	7.0	2
	25	●	**0670XHGS25**	201.2	211.2	264.2	1.2	7.0	2
	30	●	**0670XHGS30**	236.2	246.2	299.2	1.2	7.0	2
	3	●	**MDW 0680PHT**	25.7	35.9	88.9	0.9	7.0	1
	10	●	**0680XHGS10**	96.0	106.2	159.2	1.2	7.0	2
	12		**0680XHGS12**	110.0	120.2	173.2	1.2	7.0	2
6.8	15	●	**0680XHGS15**	131.0	141.2	194.2	1.2	7.0	2
	20	●	**0680XHGS20**	166.0	176.2	229.2	1.2	7.0	2
	25	●	**0680XHGS25**	201.0	211.2	264.2	1.2	7.0	2
	30	●	**0680XHGS30**	236.0	246.2	299.2	1.2	7.0	2
	3	●	**MDW 0690PHT**	25.6	35.9	88.9	0.9	7.0	1
	10	●	**0690XHGS10**	96.0	106.3	159.3	1.3	7.0	2
	12		**0690XHGS12**	110.0	120.3	173.3	1.3	7.0	2
6.9	15	●	**0690XHGS15**	131.0	141.3	194.3	1.3	7.0	2
	20	●	**0690XHGS20**	166.0	176.3	229.3	1.3	7.0	2
	25	●	**0690XHGS25**	201.0	211.3	264.3	1.3	7.0	2
	30	●	**0690XHGS30**	236.0	246.3	299.3	1.3	7.0	2
	3	●	**MDW 0700PHT**	25.4	35.9	88.9	0.9	7.0	1
	10	●	**0700XHGS10**	95.8	106.3	159.3	1.3	7.0	2
	12	●	**0700XHGS12**	109.8	120.3	173.3	1.3	7.0	2
7.0	15	●	**0700XHGS15**	130.8	141.3	194.3	1.3	7.0	2
	20	●	**0700XHGS20**	165.8	176.3	229.3	1.3	7.0	2
	25	●	**0700XHGS25**	200.8	211.3	264.3	1.3	7.0	2
	30	●	**0700XHGS30**	235.8	246.3	299.3	1.3	7.0	2
	3	●	**MDW 0710PHT**	27.9	38.5	95.0	1.0	8.0	1
	10	●	**0710XHGS10**	103.7	114.3	170.3	1.3	8.0	2
	12		**0710XHGS12**	116.7	127.3	183.3	1.3	8.0	2
7.1	15	●	**0710XHGS15**	138.7	149.3	205.3	1.3	8.0	2
	20	●	**0710XHGS20**	176.7	187.3	243.3	1.3	8.0	2
	25	●	**0710XHGS25**	213.7	224.3	280.3	1.3	8.0	2
	30	●	**0710XHGS30**	251.7	262.3	318.3	1.3	8.0	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	8.0	2
	12		**0720XHGS12**	116.5	127.3	183.3	1.3	8.0	2
7.2	15	●	**0720XHGS15**	138.5	149.3	205.3	1.3	8.0	2
	20	●	**0720XHGS20**	176.5	187.3	243.3	1.3	8.0	2
	25	●	**0720XHGS25**	213.5	224.3	280.3	1.3	8.0	2
	30	●	**0720XHGS30**	251.5	262.3	318.3	1.3	8.0	2
	3	●	**MDW 0730PHT**	27.6	38.5	95.0	1.0	8.0	1
	10	●	**0730XHGS10**	103.4	114.3	170.3	1.3	8.0	2
	12		**0730XHGS12**	116.4	127.3	183.3	1.3	8.0	2
7.3	15	●	**0730XHGS15**	138.4	149.3	205.3	1.3	8.0	2
	20	●	**0730XHGS20**	176.4	187.3	243.3	1.3	8.0	2
	25	●	**0730XHGS25**	213.4	224.3	280.3	1.3	8.0	2
	30	●	**0730XHGS30**	251.4	262.3	318.3	1.3	8.0	2

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

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
	3	●	**MDW 0740PHT**	27.4	38.5	95.0	1.0	8.0	1
	10	●	**0740XHGS10**	103.2	114.3	170.3	1.3	8.0	2
	12		**0740XHGS12**	116.2	127.3	183.3	1.3	8.0	2
7.4	15	●	**0740XHGS15**	138.2	149.3	205.3	1.3	8.0	2
	20	●	**0740XHGS20**	176.2	187.3	243.3	1.3	8.0	2
	25	●	**0740XHGS25**	213.2	224.3	280.3	1.3	8.0	2
	30	●	**0740XHGS30**	251.2	262.3	318.3	1.3	8.0	2
	3	●	**MDW 0750PHT**	27.3	38.5	95.0	1.0	8.0	1
	10	●	**0750XHGS10**	103.2	114.4	170.4	1.4	8.0	2
	12	●	**0750XHGS12**	116.2	127.4	183.4	1.4	8.0	2
7.5	15	●	**0750XHGS15**	138.2	149.4	205.4	1.4	8.0	2
	20	●	**0750XHGS20**	176.2	187.4	243.4	1.4	8.0	2
	25	●	**0750XHGS25**	213.2	224.4	280.4	1.4	8.0	2
	30	●	**0750XHGS30**	251.2	262.4	318.4	1.4	8.0	2
	3	●	**MDW 0760PHT**	29.6	41.0	95.0	1.0	8.0	1
	10	●	**0760XHGS10**	110.0	121.4	175.4	1.4	8.0	2
	12		**0760XHGS12**	126.0	137.4	191.4	1.4	8.0	2
7.6	15	●	**0760XHGS15**	150.0	161.4	215.4	1.4	8.0	2
	20	●	**0760XHGS20**	190.0	201.4	255.4	1.4	8.0	2
	25	●	**0760XHGS25**	230.0	241.4	295.4	1.4	8.0	2
	30	●	**0760XHGS30**	270.0	281.4	335.4	1.4	8.0	2
	3	●	**MDW 0770PHT**	29.5	41.0	95.0	1.0	8.0	1
	10	●	**0770XHGS10**	109.9	121.4	175.4	1.4	8.0	2
	12		**0770XHGS12**	125.9	137.4	191.4	1.4	8.0	2
7.7	15	●	**0770XHGS15**	149.9	161.4	215.4	1.4	8.0	2
	20	●	**0770XHGS20**	189.9	201.4	255.4	1.4	8.0	2
	25	●	**0770XHGS25**	229.9	241.4	295.4	1.4	8.0	2
	30	●	**0770XHGS30**	269.9	281.4	335.4	1.4	8.0	2
	3	●	**MDW 0780PHT**	29.3	41.0	95.0	1.0	8.0	1
	10	●	**0780XHGS10**	109.7	121.4	175.4	1.4	8.0	2
	12		**0780XHGS12**	125.7	137.4	191.4	1.4	8.0	2
7.8	15	●	**0780XHGS15**	149.7	161.4	215.4	1.4	8.0	2
	20	●	**0780XHGS20**	189.7	201.4	255.4	1.4	8.0	2
	25	●	**0780XHGS25**	229.7	241.4	295.4	1.4	8.0	2
	30	●	**0780XHGS30**	269.7	281.4	335.4	1.4	8.0	2
	3	●	**MDW 0790PHT**	29.3	41.1	95.1	1.1	8.0	1
	10	●	**0790XHGS10**	109.6	121.4	175.4	1.4	8.0	2
	12		**0790XHGS12**	125.6	137.4	191.4	1.4	8.0	2
7.9	15	●	**0790XHGS15**	149.6	161.4	215.4	1.4	8.0	2
	20	●	**0790XHGS20**	189.6	201.4	255.4	1.4	8.0	2
	25	●	**0790XHGS25**	229.6	241.4	295.4	1.4	8.0	2
	30	●	**0790XHGS30**	269.6	281.4	335.4	1.4	8.0	2
	3	●	**MDW 0800PHT**	29.1	41.1	95.1	1.1	8.0	1
	10	●	**0800XHGS10**	109.5	121.5	175.5	1.5	8.0	2
	12	●	**0800XHGS12**	125.5	137.5	191.5	1.5	8.0	2
8.0	15	●	**0800XHGS15**	149.5	161.5	215.5	1.5	8.0	2
	20	●	**0800XHGS20**	189.5	201.5	255.5	1.5	8.0	2
	25	●	**0800XHGS25**	229.5	241.5	295.5	1.5	8.0	2
	30	●	**0800XHGS30**	269.5	281.5	335.5	1.5	8.0	2

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

XHGS series/PHT series (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 N36 for the tolerance of h6, h8 and e8

Fig 1 (PHT series)

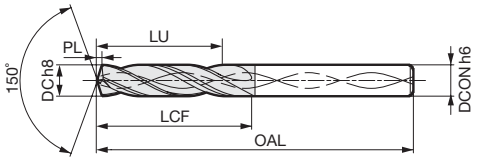
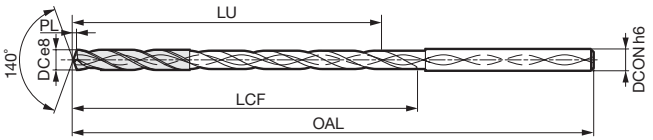


Fig 2 (XHGS series)



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
	10	●	0850XHGS10	116.8	129.5	186.5	1.5	9.0	2
	12	●	0850XHGS12	131.8	144.5	201.5	1.5	9.0	2
	15	●	0850XHGS15	156.8	169.5	226.5	1.5	9.0	2
	20	●	0850XHGS20	199.8	212.5	269.5	1.5	9.0	2
	25	●	0850XHGS25	241.8	254.5	311.5	1.5	9.0	2
	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
	10	●	0900XHGS10	123.1	136.6	191.6	1.6	9.0	2
	12	●	0900XHGS12	141.1	154.6	209.6	1.6	9.0	2
	15	●	0900XHGS15	168.1	181.6	236.6	1.6	9.0	2
	20	●	0900XHGS20	213.1	226.6	281.6	1.6	9.0	2
	25	●	0900XHGS25	258.1	271.6	326.6	1.6	9.0	2
	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
	10	●	0950XHGS10	130.5	144.7	202.7	1.7	10.0	2
	12	●	0950XHGS12	147.5	161.7	219.7	1.7	10.0	2
	15	●	0950XHGS15	175.5	189.7	247.7	1.7	10.0	2
	20	●	0950XHGS20	223.5	237.7	295.7	1.7	10.0	2
	25	●	0950XHGS25	270.5	284.7	342.7	1.7	10.0	2
	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	●	1000XHGS10	136.8	151.8	207.8	1.8	10.0	2
	12	●	1000XHGS12	156.8	171.8	227.8	1.8	10.0	2
	15	●	1000XHGS15	186.8	201.8	257.8	1.8	10.0	2
	20	●	1000XHGS20	236.8	251.8	307.8	1.8	10.0	2
	25	●	1000XHGS25	286.8	301.8	357.8	1.8	10.0	2
	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	●	1050XHGS10	144.2	159.9	222.9	1.9	11.0	2
	12	●	1050XHGS12	163.2	178.9	241.9	1.9	11.0	2
	15	●	1050XHGS15	194.2	209.9	272.9	1.9	11.0	2
	20	●	1050XHGS20	247.2	262.9	325.9	1.9	11.0	2
	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
	10	●	1100XHGS10	150.5	167.0	228.0	2.0	11.0	2
	12	●	1100XHGS12	172.5	189.0	250.0	2.0	11.0	2
	15	●	1100XHGS15	205.5	222.0	283.0	2.0	11.0	2
	20	●	1100XHGS20	260.5	277.0	338.0	2.0	11.0	2
	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
	10	●	1150XHGS10	157.9	175.1	239.1	2.1	12.0	2
	12	●	1150XHGS12	178.9	196.1	260.1	2.1	12.0	2
	15	●	1150XHGS15	212.9	230.1	294.1	2.1	12.0	2
	20	●	1150XHGS20	270.9	288.1	352.1	2.1	12.0	2
	25	●	1150XHGS25	327.9	345.1	409.1	2.1	12.0	2

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

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
	10	●	1200XHGS10	164.2	182.2	244.2	2.2	12.0	2
	12	●	1200XHGS12	188.2	206.2	268.2	2.2	12.0	2
	15	●	1200XHGS15	224.2	242.2	304.2	2.2	12.0	2
	20	●	1200XHGS20	284.2	302.2	364.2	2.2	12.0	2
	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
	10	●	1250XHGS10	171.6	190.3	255.3	2.3	13.0	2
	12	●	1250XHGS12	194.6	213.3	278.3	2.3	13.0	2
	15	●	1250XHGS15	231.6	250.3	315.3	2.3	13.0	2
	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
	10	●	1300XHGS10	177.9	197.4	260.4	2.4	13.0	2
	12	●	1300XHGS12	203.9	223.4	286.4	2.4	13.0	2
	15	●	1300XHGS15	242.9	262.4	325.4	2.4	13.0	2
	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
	10	●	1350XHGS10	185.3	205.5	271.5	2.5	14.0	2
	12	●	1350XHGS12	210.3	230.5	296.5	2.5	14.0	2
	15	●	1350XHGS15	250.3	270.5	336.5	2.5	14.0	2
	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
	10	●	1400XHGS10	191.5	212.5	276.5	2.5	14.0	2
	12	●	1400XHGS12	219.5	240.5	304.5	2.5	14.0	2
	15	●	1400XHGS15	261.5	282.5	346.5	2.5	14.0	2
	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
	10	●	1450XHGS10	198.9	220.6	287.6	2.6	15.0	2
	12	●	1450XHGS12	225.9	247.6	314.6	2.6	15.0	2
	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
	10	●	1500XHGS10	205.2	227.7	292.7	2.7	15.0	2
	12	●	1500XHGS12	235.2	257.7	322.7	2.7	15.0	2
	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
	10	●	1550XHGS10	212.6	235.8	303.8	2.8	16.0	2
	12	●	1550XHGS12	241.6	264.8	332.8	2.8	16.0	2
	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
	10	●	1600XHGS10	218.9	242.9	308.9	2.9	16.0	2
	12	●	1600XHGS12	248.9	272.9	340.9	2.9	16.0	2
	15	●	1600XHGS15	298.9	322.9	388.9	2.9	16.0	2

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

XHGS series/PHT series (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 N36 for the tolerance of h6, h8 and e8

Fig 1 (PHT series)

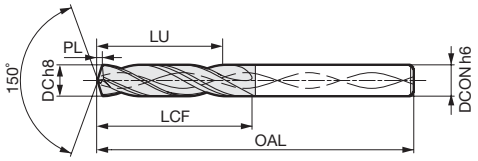
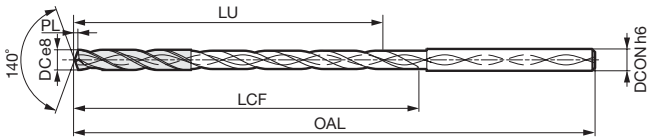


Fig 2 (XHGS series)



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 (n: Spindle Speed min^{-1} vc: 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)	Grey Cast Iron Ductile Cast Iron
ø3.0	n	6,400	8,500	5,800	4,200	5,800
	vc	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	n	3,800	5,100	3,800	2,900	3,800
	vc	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	n	2,200	2,500	2,100	1,600	2,100
	vc	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	n	1,600	1,800	1,300	1,100	1,300
	vc	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.

MDA series

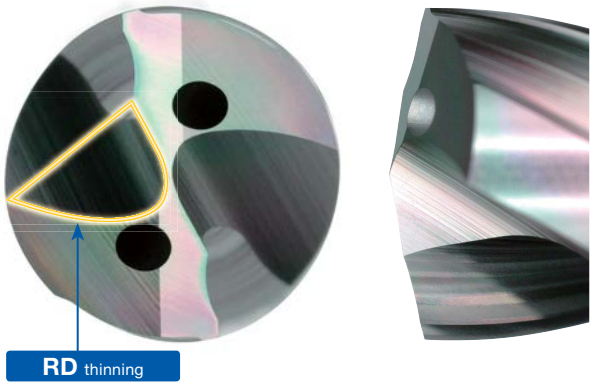
New

■ Features

- Venturing into new regions of aluminum alloy drilling
  Covers a wide application range from high-precision to high-efficiency drilling
- New DLC Coat and AURORA Coat X adopted

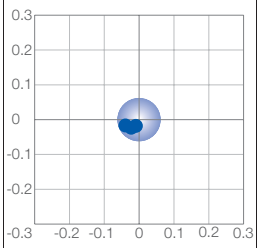
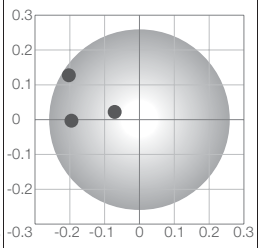
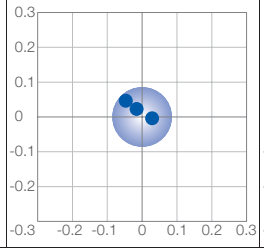
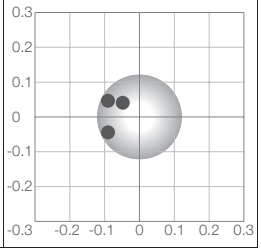
RD THINNING

Outstanding centring with special web thinning effect!



■ Hole Position Accuracy

Direct drilling

Cutting Speed	vc=180m/min	
Feed Rate	MDA series	Competitor's Product
f=0.6mm/rev		
f=1.2mm/rev		

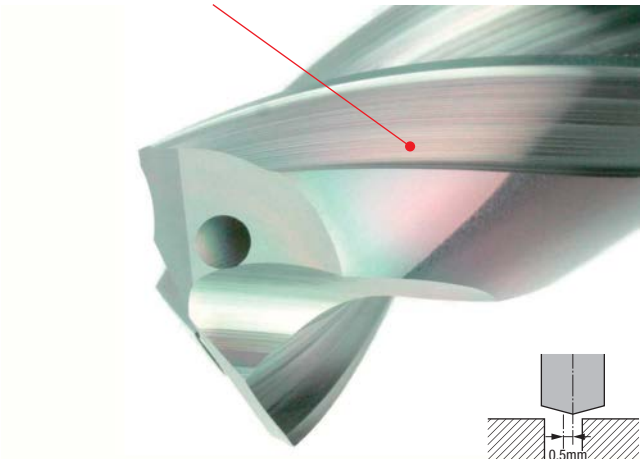
Unit (mm)

Work Material: ADC12 Tool: MDA0600S06H05 (ø6mm × 5D) Wet

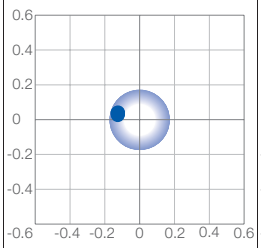
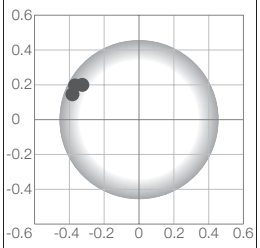
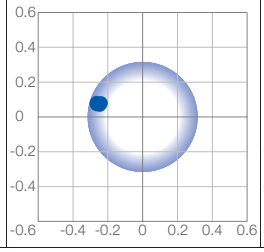
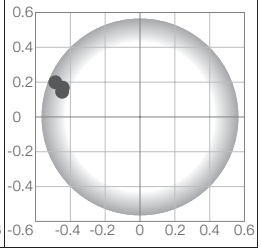
Hole position stable even under high-efficiency conditions

Wide Double Margin *Diameter: 3.1mm up

Hole precision is improved with wide double margin providing excellent guide performance!



Pre-cast drilling Pre-cast hole deviation: 0.5mm

Cutting Speed	vc=180m/min	
Feed Rate	MDA series	Competitor's Product
f=0.4mm/rev		
f=1.2mm/rev		

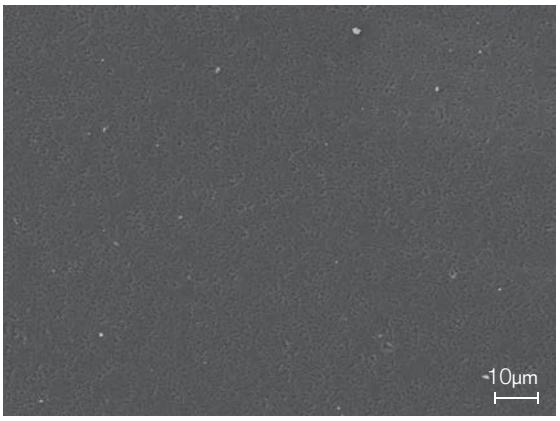
Unit (mm)

Work Material: ADC12 Tool: MDA0600S06H05 (ø6mm × 5D) Wet

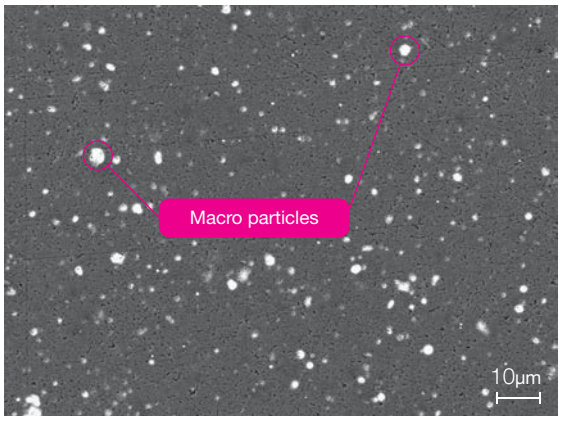
Significantly reduces the effects of pre-cast hole misalignment

AURORA Coat X DLC Coat

● Coating Surface Properties (SEM image)



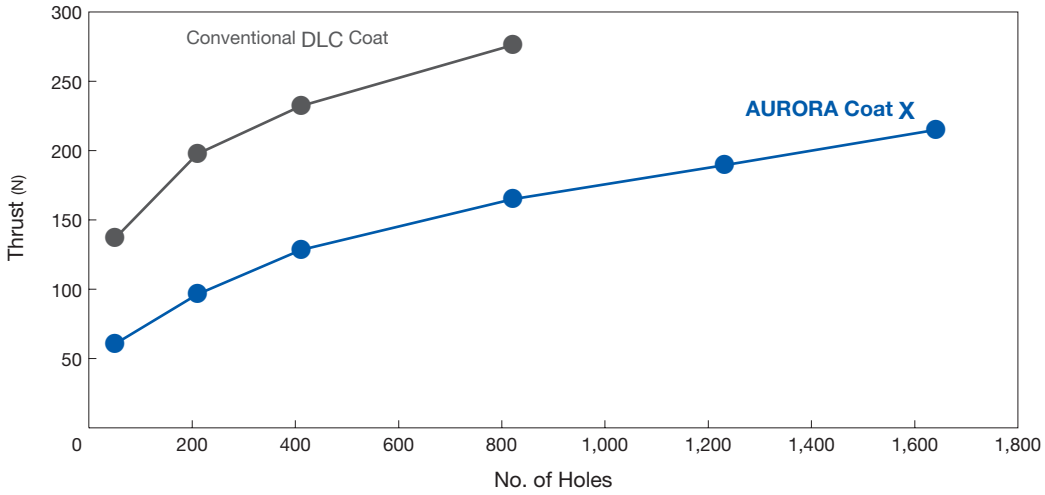
AURORA Coat X



Conventional DLC Coat

New technology significantly improves smoothness

● Cutting Force



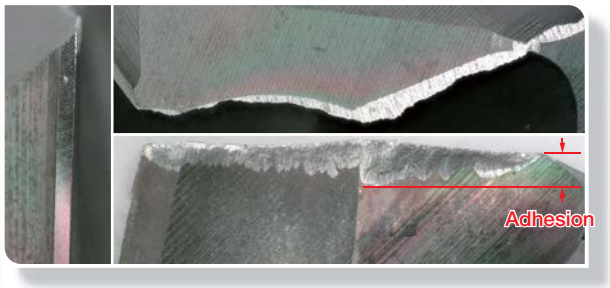
Work Material: ADC12 Machine: Vertical Machining Centre BT30
Tool: MDA0600S06H05 (ø6mm × 5D)
Cutting Conditions: vc = 180m/min f = 0.2mm/rev Internal Coolant Supply (Water-soluble)

Improved coating surface smoothness keeps resistance low at the initial stage, then transitions to a gradual rise in resistance for a longer tool life

● Adhesion Resistance

AURORA Coat X

Conventional DLC Coat



Work Material: ADC12 Machine: Vertical Machining Centre BT30
Tool: MDA0600S06H05 (ø6mm × 5D)
Cutting Conditions: vc = 180m/min f = 0.2mm/rev Internal Coolant Supply (Water-soluble)

Excellent smoothness significantly reduces adhesion

MDA series

Aluminum Alloy | Copper Alloy

New AURORA Coat DLC 3D 5D 10D 15D 20D

*Refer to N36 for the tolerance of h6

Fig 1 L/D = 3/5D single margin

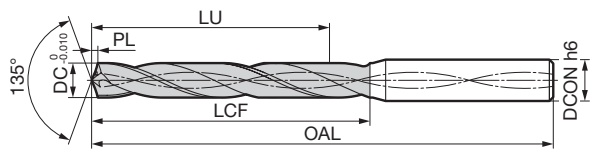
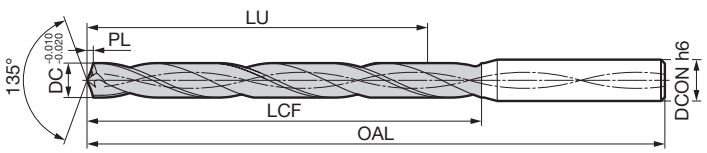


Fig 2 L/D = 10/15/20D single margin



Diameter ø1.0 to 2.0mm

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	3	●	MDA 0100S03H03	4.5	6.0	45.0	0.2	3.0	1
	5	●	0100S03H05	8.5	10.0	50.0	0.2	3.0	1
	10	●	0100S03H10	12.5	14.0	55.0	0.2	3.0	2
	15	●	0100S03H15	17.5	19.0	60.0	0.2	3.0	2
	20	●	0100S03H20	22.5	24.0	65.0	0.2	3.0	2
1.1	3	●	MDA 0110S03H03	6.4	8.0	45.0	0.2	3.0	1
	5	●	0110S03H05	10.4	12.0	50.0	0.2	3.0	1
	10	●	0110S03H10	16.4	18.0	55.0	0.2	3.0	2
	15	●	0110S03H15	19.4	21.0	65.0	0.2	3.0	2
	20	●	0110S03H20	24.4	26.0	70.0	0.2	3.0	2
1.2	3	●	MDA 0120S03H03	6.2	8.0	48.0	0.2	3.0	1
	5	●	0120S03H05	10.2	12.0	55.0	0.2	3.0	1
	10	●	0120S03H10	16.2	18.0	60.0	0.2	3.0	2
	15	●	0120S03H15	21.2	23.0	65.0	0.2	3.0	2
	20	●	0120S03H20	27.2	29.0	70.0	0.2	3.0	2
1.3	3	●	MDA 0130S03H03	6.1	8.0	48.0	0.3	3.0	1
	5	●	0130S03H05	12.1	14.0	55.0	0.3	3.0	1
	10	●	0130S03H10	18.1	20.0	60.0	0.3	3.0	2
	15	●	0130S03H15	23.1	25.0	65.0	0.3	3.0	2
	20	●	0130S03H20	29.1	31.0	75.0	0.3	3.0	2
1.4	3	●	MDA 0140S03H03	5.9	8.0	48.0	0.3	3.0	1
	5	●	0140S03H05	11.9	14.0	55.0	0.3	3.0	1
	10	●	0140S03H10	17.9	20.0	60.0	0.3	3.0	2
	15	●	0140S03H15	25.9	28.0	70.0	0.3	3.0	2
	20	●	0140S03H20	31.9	34.0	75.0	0.3	3.0	2
1.5	3	●	MDA 0150S03H03	5.8	8.0	48.0	0.3	3.0	1
	5	●	0150S03H05	13.8	16.0	55.0	0.3	3.0	1
	10	●	0150S03H10	20.8	23.0	65.0	0.3	3.0	2
	15	●	0150S03H15	25.8	28.0	70.0	0.3	3.0	2
	20	●	0150S03H20	33.8	36.0	75.0	0.3	3.0	2
1.6	3	●	MDA 0160S03H03	7.6	10.0	50.0	0.3	3.0	1
	5	●	0160S03H05	13.6	16.0	55.0	0.3	3.0	1
	10	●	0160S03H10	22.6	25.0	65.0	0.3	3.0	2
	15	●	0160S03H15	29.6	32.0	75.0	0.3	3.0	2
	20	●	0160S03H20	35.6	38.0	80.0	0.3	3.0	2
1.7	3	●	MDA 0170S03H03	7.5	10.0	50.0	0.4	3.0	1
	5	●	0170S03H05	15.5	18.0	60.0	0.4	3.0	1
	10	●	0170S03H10	22.5	25.0	65.0	0.4	3.0	2
	15	●	0170S03H15	29.5	32.0	75.0	0.4	3.0	2
	20	●	0170S03H20	38.5	41.0	80.0	0.4	3.0	2
1.8	3	●	MDA 0180S03H03	7.3	10.0	50.0	0.4	3.0	1
	5	●	0180S03H05	15.3	18.0	60.0	0.4	3.0	1
	10	●	0180S03H10	25.3	28.0	70.0	0.4	3.0	2
	15	●	0180S03H15	32.3	35.0	75.0	0.4	3.0	2
	20	●	0180S03H20	40.3	43.0	85.0	0.4	3.0	2
1.9	3	●	MDA 0190S03H03	7.2	10.0	50.0	0.4	3.0	1
	5	●	0190S03H05	17.2	20.0	60.0	0.4	3.0	1
	10	●	0190S03H10	25.2	28.0	70.0	0.4	3.0	2
	15	●	0190S03H15	32.2	35.0	75.0	0.4	3.0	2
	20	●	0190S03H20	43.2	46.0	85.0	0.4	3.0	2
2.0	3	●	MDA 0200S03H03	7.0	10.0	50.0	0.4	3.0	1
	5	●	0200S03H05	17.0	20.0	60.0	0.4	3.0	1
	10	●	0200S03H10	27.0	30.0	70.0	0.4	3.0	2
	15	●	0200S03H15	37.0	40.0	80.0	0.4	3.0	2
	20	●	0200S03H20	45.0	48.0	90.0	0.4	3.0	2

Grade: DLX1700

Diameter ø2.1 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
2.1	3	●	MDA 0210S03H03	9.9	13.0	55.0	0.4	3.0	1
	5	●	0210S03H05	18.9	22.0	65.0	0.4	3.0	1
	10	●	0210S03H10	26.9	30.0	70.0	0.4	3.0	2
	15	●	0210S03H15	36.9	40.0	80.0	0.4	3.0	2
	20	●	0210S03H20	46.9	50.0	95.0	0.4	3.0	2
2.2	3	●	MDA 0220S03H03	9.7	13.0	55.0	0.5	3.0	1
	5	●	0220S03H05	18.7	22.0	65.0	0.5	3.0	1
	10	●	0220S03H10	28.7	32.0	75.0	0.5	3.0	2
	15	●	0220S03H15	38.7	42.0	85.0	0.5	3.0	2
	20	●	0220S03H20	47.7	51.0	95.0	0.5	3.0	2
2.3	3	●	MDA 0230S03H03	9.6	13.0	55.0	0.5	3.0	1
	5	●	0230S03H05	20.6	24.0	65.0	0.5	3.0	1
	10	●	0230S03H10	28.6	32.0	75.0	0.5	3.0	2
	15	●	0230S03H15	41.6	45.0	85.0	0.5	3.0	2
	20	●	0230S03H20	49.6	53.0	100.0	0.5	3.0	2
2.4	3	●	MDA 0240S03H03	9.4	13.0	55.0	0.5	3.0	1
	5	●	0240S03H05	20.4	24.0	65.0	0.5	3.0	1
	10	●	0240S03H10	31.4	35.0	75.0	0.5	3.0	2
	15	●	0240S03H15	41.4	45.0	85.0	0.5	3.0	2
	20	●	0240S03H20	52.4	56.0	100.0	0.5	3.0	2
2.5	3	●	MDA 0250S03H03	9.3	13.0	55.0	0.5	3.0	1
	5	●	0250S03H05	22.3	26.0	65.0	0.5	3.0	1
	10	●	0250S03H10	31.3	35.0	75.0	0.5	3.0	2
	15	●	0250S03H15	41.3	45.0	85.0	0.5	3.0	2
	20	●	0250S03H20	56.3	60.0	105.0	0.5	3.0	2
2.6	3	●	MDA 0260S03H03	11.1	15.0	60.0	0.5	3.0	1
	5	●	0260S03H05	22.1	26.0	70.0	0.5	3.0	1
	10	●	0260S03H10	34.1	38.0	80.0	0.5	3.0	2
	15	●	0260S03H15	46.1	50.0	90.0	0.5	3.0	2
	20	●	0260S03H20	57.1	61.0	105.0	0.5	3.0	2
2.7	3	●	MDA 0270S03H03	11.0	15.0	60.0	0.6	3.0	1
	5	●	0270S03H05	24.0	28.0	70.0	0.6	3.0	1
	10	●	0270S03H10	34.0	38.0	80.0	0.6	3.0	2
	15	●	0270S03H15	46.0	50.0	90.0	0.6	3.0	2
	20	●	0270S03H20	59.0	63.0	105.0	0.6	3.0	2
2.8	3	●	MDA 0280S03H03	10.8	15.0	60.0	0.6	3.0	1
	5	●	0280S03H05	23.8	28.0	70.0	0.6	3.0	1
	10	●	0280S03H10	35.8	40.0	80.0	0.6	3.0	2
	15	●	0280S03H15	50.8	55.0	95.0	0.6	3.0	2
	20	●	0280S03H20	60.8	65.0	110.0	0.6	3.0	2
2.9	3	●	MDA 0290S03H03	10.7	15.0	60.0	0.6	3.0	1
	5	●	0290S03H05	25.7	30.0	70.0	0.6	3.0	1
	10	●	0290S03H10	35.7	40.0	80.0	0.6	3.0	2
	15	●	0290S03H15	50.7	55.0	95.0	0.6	3.0	2
	20	●	0290S03H20	62.7	67.0	110.0	0.6	3.0	2
3.0	3	●	MDA 0300S03H03	10.5	15.0	60.0	0.6	3.0	1
	5	●	0300S03H05	25.5	30.0	70.0	0.6	3.0	1
	10	●	0300S03H10	37.5	42.0	82.0	0.6	3.0	2
	15	●	0300S03H15	53.5	58.0	98.0	0.6	3.0	2
	20	●	0300S03H20	64.5	69.0	110.0	0.6	3.0	2

Grade: DLX1700

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

MDA series

Aluminum Alloy | Copper Alloy

New | AURORA Coat DLC | 3D | 5D | 10D

*Refer to N36 for the tolerance of h6

Fig 1 L/D = 3/5D double margin

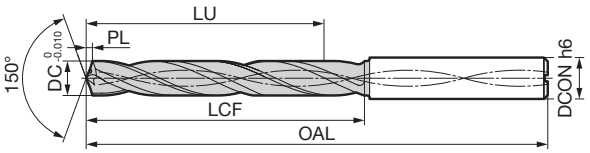
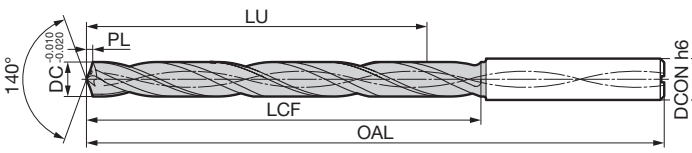


Fig 2 L/D = 10D double margin



Diameter ø3.1 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
3.1	3	●	MDA 0310S04H03	15.8	20.4	72.4	0.4	4.0	1
	5	●	0310S04H05	27.8	32.4	86.4	0.4	4.0	1
	10	●	0310S04H10	44.9	49.6	106.6	0.6	4.0	2
3.2	3	●	MDA 0320S04H03	15.6	20.4	72.4	0.4	4.0	1
	5	●	0320S04H05	27.6	32.4	86.4	0.4	4.0	1
	10	●	0320S04H10	44.8	49.6	106.6	0.6	4.0	2
3.3	3	●	MDA 0330S04H03	15.5	20.4	72.4	0.4	4.0	1
	5	●	0330S04H05	27.5	32.4	86.4	0.4	4.0	1
	10		0330S04H10	44.7	49.6	106.6	0.6	4.0	2
3.4	3		MDA 0340S04H03	15.4	20.5	72.5	0.5	4.0	1
	5	●	0340S04H05	27.4	32.5	86.5	0.5	4.0	1
	10	●	0340S04H10	44.5	49.6	106.6	0.6	4.0	2
3.5	3	●	MDA 0350S04H03	15.2	20.5	72.5	0.5	4.0	1
	5	●	0350S04H05	27.2	32.5	86.5	0.5	4.0	1
	10	●	0350S04H10	44.4	49.6	106.6	0.6	4.0	2
3.6	3		MDA 0360S04H03	17.6	23.0	72.5	0.5	4.0	1
	5	●	0360S04H05	31.1	36.5	86.5	0.5	4.0	1
	10	●	0360S04H10	51.3	56.7	106.7	0.7	4.0	2
3.65	3	●	MDA 0365S04H03	17.4	23.0	72.5	0.5	4.0	1
	5	●	0365S04H05	30.9	36.5	86.5	0.5	4.0	1
3.66	5	●	MDA 0366S04H05	30.9	36.5	86.5	0.5	4.0	1
3.7	3		MDA 0370S04H03	17.4	23.0	72.5	0.5	4.0	1
	5	●	0370S04H05	30.9	36.5	86.5	0.5	4.0	1
	10		0370S04H10	51.1	56.7	106.7	0.7	4.0	2
3.8	3		MDA 0380S04H03	17.3	23.0	72.5	0.5	4.0	1
	5	●	0380S04H05	30.8	36.5	86.5	0.5	4.0	1
	10		0380S04H10	51.0	56.7	106.7	0.7	4.0	2
3.9	3		MDA 0390S04H03	17.2	23.0	72.5	0.5	4.0	1
	5	●	0390S04H05	30.7	36.5	86.5	0.5	4.0	1
	10		0390S04H10	50.9	56.7	106.7	0.7	4.0	2
4.0	3	●	MDA 0400S04H03	17.0	23.0	72.5	0.5	4.0	1
	5	●	0400S04H05	30.5	36.5	86.5	0.5	4.0	1
	10	●	0400S04H10	50.7	56.7	106.7	0.7	4.0	2
4.1	3	●	MDA 0410S06H03	19.4	25.5	80.5	0.5	6.0	1
	5	●	0410S06H05	34.4	40.5	98.5	0.5	6.0	1
	10		0410S06H10	57.6	63.7	121.7	0.7	6.0	2
4.2	3	●	MDA 0420S06H03	19.3	25.6	80.6	0.6	6.0	1
	5	●	0420S06H05	34.3	40.6	98.6	0.6	6.0	1
	10		0420S06H10	57.5	63.8	121.8	0.8	6.0	2
4.3	3		MDA 0430S06H03	19.1	25.6	80.6	0.6	6.0	1
	5	●	0430S06H05	34.1	40.6	98.6	0.6	6.0	1
	10		0430S06H10	57.3	63.8	121.8	0.8	6.0	2
4.4	3		MDA 0440S06H03	19.0	25.6	80.6	0.6	6.0	1
	5	●	0440S06H05	34.0	40.6	98.6	0.6	6.0	1
	10		0440S06H10	57.2	63.8	121.8	0.8	6.0	2
4.5	3	●	MDA 0450S06H03	18.9	25.6	80.6	0.6	6.0	1
	5	●	0450S06H05	33.9	40.6	98.6	0.6	6.0	1
	10	●	0450S06H10	57.1	63.8	121.8	0.8	6.0	2

Grade: DLX1700

Diameter ø4.6 to 6.0mm

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
4.6	3	●	MDA 0460S06H03	20.7	27.6	80.6	0.6	6.0	1
	5	●	0460S06H05	37.7	44.6	98.6	0.6	6.0	1
	10		0460S06H10	61.9	68.8	121.8	0.8	6.0	2
4.7	3		MDA 0470S06H03	20.6	27.6	80.6	0.6	6.0	1
	5	●	0470S06H05	37.6	44.6	98.6	0.6	6.0	1
	10		0470S06H10	61.8	68.9	121.9	0.9	6.0	2
4.8	3		MDA 0480S06H03	20.4	27.6	80.6	0.6	6.0	1
	5	●	0480S06H05	37.4	44.6	98.6	0.6	6.0	1
	10	●	0480S06H10	61.7	68.9	121.9	0.9	6.0	2
4.9	3		MDA 0490S06H03	20.5	27.7	80.7	0.7	6.0	1
	5	●	0490S06H05	37.5	44.7	98.7	0.7	6.0	1
	10	●	0490S06H10	61.7	68.9	121.9	0.9	6.0	2
5.0	3	●	MDA 0500S06H03	20.2	27.7	80.7	0.7	6.0	1
	5	●	0500S06H05	37.2	44.7	98.7	0.7	6.0	1
	10	●	0500S06H10	61.4	68.9	121.9	0.9	6.0	2
5.1	3		MDA 0510S06H03	20.5	28.2	82.7	0.7	6.0	1
	5	●	0510S06H05	37.0	44.7	100.7	0.7	6.0	1
	10	●	0510S06H10	70.3	77.9	136.9	0.9	6.0	2
5.2	3	●	MDA 0520S06H03	20.4	28.2	82.7	0.7	6.0	1
	5	●	0520S06H05	36.9	44.7	100.7	0.7	6.0	1
	10		0520S06H10	70.1	77.9	136.9	0.9	6.0	2
5.3	3	●	MDA 0530S06H03	20.3	28.2	82.7	0.7	6.0	1
	5	●	0530S06H05	36.8	44.7	100.7	0.7	6.0	1
	10		0530S06H10	70.0	78.0	137.0	1.0	6.0	2
5.4	3		MDA 0540S06H03	20.1	28.2	82.7	0.7	6.0	1
	5	●	0540S06H05	36.6	44.7	100.7	0.7	6.0	1
	10		0540S06H10	69.9	78.0	137.0	1.0	6.0	2
5.5	3	●	MDA 0550S06H03	20.0	28.2	82.7	0.7	6.0	1
	5	●	0550S06H05	36.5	44.7	100.7	0.7	6.0	1
	10	●	0550S06H10	69.8	78.0	137.0	1.0	6.0	2
5.6	3		MDA 0560S06H03	22.3	30.7	82.7	0.8	6.0	1
	5	●	0560S06H05	40.3	48.7	100.7	0.8	6.0	1
	10	●	0560S06H10	76.6	85.0	137.0	1.0	6.0	2
5.7	3		MDA 0570S06H03	22.2	30.8	82.8	0.8	6.0	1
	5	●	0570S06H05	40.2	48.8	100.8	0.8	6.0	1
	10		0570S06H10	76.5	85.0	137.0	1.0	6.0	2
5.8	3		MDA 0580S06H03	22.1	30.8	82.8	0.8	6.0	1
	5	●	0580S06H05	40.1	48.8	100.8	0.8	6.0	1
	10	●	0580S06H10	76.4	85.1	137.1	1.1	6.0	2
5.9	3	●	MDA 0590S06H03	21.9	30.8	82.8	0.8	6.0	1
	5	●	0590S06H05	39.9	48.8	100.8	0.8	6.0	1
	10	●	0590S06H10	76.2	85.1	137.1	1.1	6.0	2
6.0	3	●	MDA 0600S06H03	21.8	30.8	82.8	0.8	6.0	1
	5	●	0600S06H05	39.8	48.8	100.8	0.8	6.0	1
	10	●	0600S06H10	76.1	85.1	137.1	1.1	6.0	2

Grade: DLX1700

MDA series

Aluminum Alloy | Copper Alloy

New | AURORA Coat DLC | 3D | 5D | 10D

*Refer to N36 for the tolerance of h6

Fig 1 L/D = 3/5D double margin

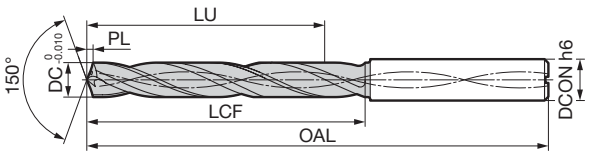
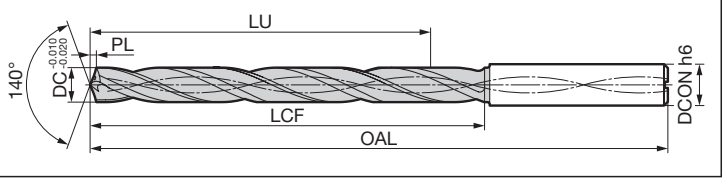


Fig 2 L/D = 10D double margin



Diameter ø6.1 to 7.5mm

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
6.1	3		MDA 0610S08H03	24.2	33.3	88.8	0.8	8.0	1
	5	●	0610S08H05	43.7	52.8	109.8	0.8	8.0	1
	10	●	0610S08H10	83.0	92.1	152.1	1.1	8.0	2
6.2	3		MDA 0620S08H03	24.0	33.3	88.8	0.8	8.0	1
	5	●	0620S08H05	43.5	52.8	109.8	0.8	8.0	1
	10		0620S08H10	82.8	92.1	152.1	1.1	8.0	2
6.3	3		MDA 0630S08H03	23.9	33.3	88.8	0.8	8.0	1
	5	●	0630S08H05	43.4	52.8	109.8	0.8	8.0	1
	10		0630S08H10	82.7	92.1	152.1	1.1	8.0	2
6.4	3		MDA 0640S08H03	23.8	33.4	88.9	0.9	8.0	1
	5	●	0640S08H05	43.3	52.9	109.9	0.9	8.0	1
	10		0640S08H10	82.6	92.2	152.2	1.2	8.0	2
6.5	3	●	MDA 0650S08H03	23.6	33.4	88.9	0.9	8.0	1
	5	●	0650S08H05	43.1	52.9	109.9	0.9	8.0	1
	10	●	0650S08H10	82.4	92.2	152.2	1.2	8.0	2
6.6	3		MDA 0660S08H03	24.0	33.9	88.9	0.9	8.0	1
	5	●	0660S08H05	45.0	54.9	109.9	0.9	8.0	1
	10		0660S08H10	87.3	97.2	152.2	1.2	8.0	2
6.7	3	●	MDA 0670S08H03	24.0	33.9	88.9	0.9	8.0	1
	5	●	0670S08H05	45.0	54.9	109.9	0.9	8.0	1
	10		0670S08H10	87.3	97.2	152.2	1.2	8.0	2
6.8	3	●	MDA 0680S08H03	23.7	33.9	88.9	0.9	8.0	1
	5	●	0680S08H05	44.7	54.9	109.9	0.9	8.0	1
	10	●	0680S08H10	87.0	97.2	152.2	1.2	8.0	2
6.9	3		MDA 0690S08H03	23.6	33.9	88.9	0.9	8.0	1
	5		0690S08H05	44.6	54.9	109.9	0.9	8.0	1
	10		0690S08H10	86.9	97.3	152.3	1.3	8.0	2
7.0	3	●	MDA 0700S08H03	23.4	33.9	88.9	0.9	8.0	1
	5	●	0700S08H05	44.4	54.9	109.9	0.9	8.0	1
	10	●	0700S08H10	86.8	97.3	152.3	1.3	8.0	2
7.1	3		MDA 0710S08H03	27.8	38.4	94.9	1.0	8.0	1
	5	●	0710S08H05	50.3	60.9	118.9	1.0	8.0	1
	10		0710S08H10	95.6	106.3	167.3	1.3	8.0	2
7.2	3		MDA 0720S08H03	27.7	38.5	95.0	1.0	8.0	1
	5	●	0720S08H05	50.2	61.0	119.0	1.0	8.0	1
	10		0720S08H10	95.5	106.3	167.3	1.3	8.0	2
7.3	3		MDA 0730S08H03	27.5	38.5	95.0	1.0	8.0	1
	5	●	0730S08H05	50.0	61.0	119.0	1.0	8.0	1
	10		0730S08H10	95.4	106.3	167.3	1.3	8.0	2
7.35	3	●	MDA 0735S08H03	27.4	38.5	95.0	1.0	8.0	1
	5	●	0735S08H05	49.9	61.0	119.0	1.0	8.0	1
7.4	3	●	MDA 0740S08H03	27.4	38.5	95.0	1.0	8.0	1
	5	●	0740S08H05	49.9	61.0	119.0	1.0	8.0	1
	10		0740S08H10	95.2	106.3	167.3	1.3	8.0	2
7.5	3	●	MDA 0750S08H03	27.3	38.5	95.0	1.0	8.0	1
	5	●	0750S08H05	49.8	61.0	119.0	1.0	8.0	1
	10	●	0750S08H10	95.1	106.4	167.4	1.4	8.0	2

Grade: DLX1700

Diameter ø7.6 to 9.0mm

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
7.6	3		MDA 0760S08H03	29.6	41.0	95.0	1.0	8.0	1
	5	●	0760S08H05	53.6	65.0	119.0	1.0	8.0	1
	10		0760S08H10	102.0	113.4	167.4	1.4	8.0	2
7.7	3		MDA 0770S08H03	29.5	41.0	95.0	1.0	8.0	1
	5	●	0770S08H05	53.5	65.0	119.0	1.0	8.0	1
	10		0770S08H10	101.9	113.4	167.4	1.4	8.0	2
7.8	3	●	MDA 0780S08H03	29.3	41.0	95.0	1.0	8.0	1
	5	●	0780S08H05	53.3	65.0	119.0	1.0	8.0	1
	10	●	0780S08H10	101.7	113.4	167.4	1.4	8.0	2
7.9	3		MDA 0790S08H03	29.2	41.1	95.1	1.1	8.0	1
	5	●	0790S08H05	53.2	65.1	119.1	1.1	8.0	1
	10		0790S08H10	101.6	113.4	167.4	1.4	8.0	2
8.0	3	●	MDA 0800S08H03	29.1	41.1	95.1	1.1	8.0	1
	5	●	0800S08H05	53.1	65.1	119.1	1.1	8.0	1
	10	●	0800S08H10	101.5	113.5	167.5	1.5	8.0	2
8.1	3		MDA 0810S10H03	31.4	43.6	101.1	1.1	10.0	1
	5	●	0810S10H05	56.9	69.1	128.1	1.1	10.0	1
	10	●	0810S10H10	108.3	120.5	182.5	1.5	10.0	2
8.2	3		MDA 0820S10H03	31.3	43.6	101.1	1.1	10.0	1
	5	●	0820S10H05	56.8	69.1	128.1	1.1	10.0	1
	10	●	0820S10H10	108.2	120.5	182.5	1.5	10.0	2
8.3	3		MDA 0830S10H03	31.2	43.6	101.1	1.1	10.0	1
	5	●	0830S10H05	56.7	69.1	128.1	1.1	10.0	1
	10		0830S10H10	108.1	120.5	182.5	1.5	10.0	2
8.4	3		MDA 0840S10H03	31.0	43.6	101.1	1.1	10.0	1
	5	●	0840S10H05	56.5	69.1	128.1	1.1	10.0	1
	10		0840S10H10	107.9	120.5	182.5	1.5	10.0	2
8.5	3	●	MDA 0850S10H03	31.0	43.6	101.1	1.1	10.0	1
	5	●	0850S10H05	56.5	69.1	128.1	1.1	10.0	1
	10	●	0850S10H10	107.9	120.5	182.5	1.5	10.0	2
8.6	3	●	MDA 0860S10H03	31.2	44.1	101.1	1.2	10.0	1
	5	●	0860S10H05	58.2	71.1	128.1	1.2	10.0	1
	10		0860S10H10	112.7	125.6	182.6	1.6	10.0	2
8.7	3		MDA 0870S10H03	31.1	44.2	101.2	1.2	10.0	1
	5	●	0870S10H05	58.1	71.2	128.2	1.2	10.0	1
	10		0870S10H10	112.5	125.6	182.6	1.6	10.0	2
8.8	3	●	MDA 0880S10H03	31.0	44.2	101.2	1.2	10.0	1
	5	●	0880S10H05	58.0	71.2	128.2	1.2	10.0	1
	10		0880S10H10	112.4	125.6	182.6	1.6	10.0	2
8.9	3		MDA 0890S10H03	30.8	44.2	101.2	1.2	10.0	1
	5	●	0890S10H05	57.8	71.2	128.2	1.2	10.0	1
	10		0890S10H10	112.3	125.6	182.6	1.6	10.0	2
9.0	3	●	MDA 0900S10H03	30.7	44.2	101.2	1.2	10.0	1
	5	●	0900S10H05	57.7	71.2	128.2	1.2	10.0	1
	10	●	0900S10H10	112.1	125.6	182.6	1.6	10.0	2

Grade: DLX1700

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

MDA series

Aluminum Alloy | Copper Alloy

New | AURORA Coat DLC | 3D | 5D | 10D

*Refer to N36 for the tolerance of h6

Fig 1 L/D = 3/5D double margin

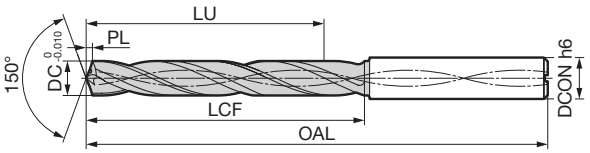
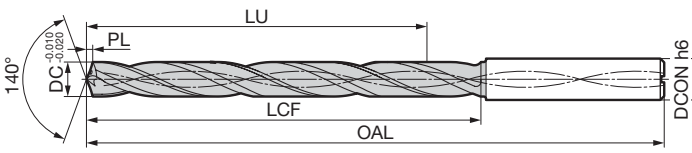


Fig 2 L/D = 10D double margin



Diameter ø9.1 to 10.5mm

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
9.1	3		MDA 0910S10H03	35.1	48.7	107.2	1.2	10.0	1
	5	●	0910S10H05	63.6	77.2	137.2	1.2	10.0	1
	10		0910S10H10	121.0	134.7	197.7	1.7	10.0	2
9.2	3		MDA 0920S10H03	34.9	48.7	107.2	1.2	10.0	1
	5	●	0920S10H05	63.4	77.2	137.2	1.2	10.0	1
	10		0920S10H10	120.9	134.7	197.7	1.7	10.0	2
9.21	5	●	MDA 0921S10H05	63.3	77.2	137.2	1.2	10.0	1
9.3	3		MDA 0930S10H03	34.8	48.7	107.2	1.2	10.0	1
	5	●	0930S10H05	63.3	77.2	137.2	1.2	10.0	1
	10	●	0930S10H10	120.7	134.7	197.7	1.7	10.0	2
9.4	3	●	MDA 0940S10H03	34.7	48.8	107.3	1.3	10.0	1
	5	●	0940S10H05	63.2	77.3	137.3	1.3	10.0	1
	10		0940S10H10	120.6	134.7	197.7	1.7	10.0	2
9.5	3	●	MDA 0950S10H03	34.5	48.8	107.3	1.3	10.0	1
	5	●	0950S10H05	63.0	77.3	137.3	1.3	10.0	1
	10	●	0950S10H10	120.5	134.7	197.7	1.7	10.0	2
9.6	3	●	MDA 0960S10H03	36.9	51.3	107.3	1.3	10.0	1
	5	●	0960S10H05	66.9	81.3	137.3	1.3	10.0	1
	10		0960S10H10	127.3	141.7	197.7	1.7	10.0	2
9.7	3		MDA 0970S10H03	36.7	51.3	107.3	1.3	10.0	1
	5		0970S10H05	66.7	81.3	137.3	1.3	10.0	1
	10		0970S10H10	127.2	141.8	197.8	1.8	10.0	2
9.8	3		MDA 0980S10H03	36.6	51.3	107.3	1.3	10.0	1
	5	●	0980S10H05	66.6	81.3	137.3	1.3	10.0	1
	10	●	0980S10H10	127.1	141.8	197.8	1.8	10.0	2
9.9	3		MDA 0990S10H03	36.5	51.3	107.3	1.3	10.0	1
	5		0990S10H05	66.5	81.3	137.3	1.3	10.0	1
	10		0990S10H10	127.0	141.8	197.8	1.8	10.0	2
10.0	3	●	MDA 1000S10H03	36.3	51.3	107.3	1.3	10.0	1
	5	●	1000S10H05	66.3	81.3	137.3	1.3	10.0	1
	10	●	1000S10H10	126.8	141.8	197.8	1.8	10.0	2
10.1	3	●	MDA 1010S12H03	38.7	53.8	117.3	1.4	12.0	1
	5	●	1010S12H05	70.2	85.3	150.3	1.4	12.0	1
	10		1010S12H10	133.7	148.8	216.8	1.8	12.0	2
10.2	3		MDA 1020S12H03	38.6	53.9	117.4	1.4	12.0	1
	5		1020S12H05	70.1	85.4	150.4	1.4	12.0	1
	10		1020S12H10	133.6	148.9	216.9	1.9	12.0	2
10.3	3	●	MDA 1030S12H03	38.6	53.9	117.4	1.4	12.0	1
	5	●	1030S12H05	70.1	85.4	150.4	1.4	12.0	1
	10		1030S12H10	133.6	148.9	216.9	1.9	12.0	2
10.4	3	●	MDA 1040S12H03	38.3	53.9	117.4	1.4	12.0	1
	5	●	1040S12H05	69.8	85.4	150.4	1.4	12.0	1
	10		1040S12H10	133.3	148.9	216.9	1.9	12.0	2
10.5	3	●	MDA 1050S12H03	38.2	53.9	117.4	1.4	12.0	1
	5	●	1050S12H05	69.7	85.4	150.4	1.4	12.0	1
	10	●	1050S12H10	133.2	148.9	216.9	1.9	12.0	2

Grade: DLX1700

Diameter ø10.6 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
10.6	3	●	MDA 1060S12H03	38.5	54.4	117.4	1.4	12.0	1
	5	●	1060S12H05	71.5	87.4	150.4	1.4	12.0	1
	10		1060S12H10	138.0	153.9	216.9	1.9	12.0	2
10.7	3		MDA 1070S12H03	38.4	54.4	117.4	1.4	12.0	1
	5		1070S12H05	71.4	87.4	150.4	1.4	12.0	1
	10		1070S12H10	137.9	153.9	216.9	1.9	12.0	2
10.8	3		MDA 1080S12H03	38.2	54.4	117.4	1.4	12.0	1
	5	●	1080S12H05	71.2	87.4	150.4	1.4	12.0	1
	10	●	1080S12H10	137.8	154.0	217.0	2.0	12.0	2
10.9	3		MDA 1090S12H03	38.1	54.5	117.5	1.5	12.0	1
	5		1090S12H05	71.1	87.5	150.5	1.5	12.0	1
	10		1090S12H10	137.6	154.0	217.0	2.0	12.0	2
11.0	3	●	MDA 1100S12H03	38.0	54.5	117.5	1.5	12.0	1
	5	●	1100S12H05	71.0	87.5	150.5	1.5	12.0	1
	10	●	1100S12H10	137.5	154.0	217.0	2.0	12.0	2
11.1	3	●	MDA 1110S12H03	42.3	59.0	123.5	1.5	12.0	1
	5	●	1110S12H05	76.8	93.5	159.5	1.5	12.0	1
	10		1110S12H10	146.4	163.0	232.0	2.0	12.0	2
11.2	3		MDA 1120S12H03	42.2	59.0	123.5	1.5	12.0	1
	5	●	1120S12H05	76.7	93.5	159.5	1.5	12.0	1
	10		1120S12H10	146.2	163.0	232.0	2.0	12.0	2
11.3	3		MDA 1130S12H03	42.1	59.0	123.5	1.5	12.0	1
	5		1130S12H05	76.6	93.5	159.5	1.5	12.0	1
	10		1130S12H10	146.1	163.1	232.1	2.1	12.0	2
11.4	3		MDA 1140S12H03	41.9	59.0	123.5	1.5	12.0	1
	5	●	1140S12H05	76.4	93.5	159.5	1.5	12.0	1
	10		1140S12H10	146.0	163.1	232.1	2.1	12.0	2
11.5	3	●	MDA 1150S12H03	41.8	59.0	123.5	1.5	12.0	1
	5	●	1150S12H05	76.3	93.5	159.5	1.5	12.0	1
	10	●	1150S12H10	145.8	163.1	232.1	2.1	12.0	2
11.6	3		MDA 1160S12H03	44.1	61.5	123.5	1.6	12.0	1
	5		1160S12H05	80.1	97.5	159.5	1.6	12.0	1
	10		1160S12H10	152.7	170.1	232.1	2.1	12.0	2
11.7	3		MDA 1170S12H03	44.0	61.6	123.6	1.6	12.0	1
	5		1170S12H05	80.0	97.6	159.6	1.6	12.0	1
	10		1170S12H10	152.6	170.1	232.1	2.1	12.0	2
11.8	3		MDA 1180S12H03	43.9	61.6	123.6	1.6	12.0	1
	5	●	1180S12H05	79.9	97.6	159.6	1.6	12.0	1
	10		1180S12H10	152.4	170.1	232.1	2.1	12.0	2
11.9	3		MDA 1190S12H03	43.7	61.6	123.6	1.6	12.0	1
	5		1190S12H05	79.7	97.6	159.6	1.6	12.0	1
	10		1190S12H10	152.3	170.2	232.2	2.2	12.0	2
12.0	3	●	MDA 1200S12H03	43.6	61.6	123.6	1.6	12.0	1
	5	●	1200S12H05	79.6	97.6	159.6	1.6	12.0	1
	10	●	1200S12H10	152.2	170.2	232.2	2.2	12.0	2

Grade: DLX1700

Recommended Cutting Conditions (L/D = 3D, 5D)

Work Material	Aluminum alloy casting/Aluminum alloy die cast material ADC, AC		Duralumin-based aluminum alloy Al-Zn-Mg type (7075)		Wrought aluminum alloy Al-Mg type (5052)	
Dia. (mm)	Cutting Speed (m/min)	Feed Rate (mm/rev)	Cutting Speed (m/min)	Feed Rate (mm/rev)	Cutting Speed (m/min)	Feed Rate (mm/rev)
up to ø2.00	50 - 120	0.05 - 0.40	40 - 90	0.05 - 0.20	50 - 120	0.04 - 0.08
up to ø3.00	60 - 150	0.10 - 0.60	50 - 100	0.10 - 0.30	60 - 150	0.04 - 0.08
up to ø4.00	60 - 150	0.15 - 0.80	50 - 120	0.15 - 0.40	60 - 150	0.05 - 0.12
up to ø6.00	80 - 200	0.20 - 1.20	80 - 180	0.20 - 0.60	80 - 200	0.08 - 0.18
up to ø8.00	100 - 200	0.20 - 1.20	80 - 180	0.20 - 0.80	100 - 200	0.10 - 0.20
up to ø10.00	100 - 200	0.20 - 1.20	100 - 180	0.20 - 0.80	100 - 200	0.10 - 0.25
up to ø12.00	120 - 250	0.20 - 1.20	120 - 200	0.20 - 0.80	120 - 250	0.10 - 0.30

· The recommended cutting conditions above are for cases where a water-soluble coolant is used.
· Use with internal coolant supply.
· Recommended coolant supply pressure of 2.0MPa or higher for ø3 or below, and 1.5MPa or higher for over ø3.
· Keep the drill runout at 0.02mm or lower.
· If abnormalities such as noise or vibration occur, change the cutting conditions accordingly.
· When drilling with pre-cast holes, we recommend the lower-limit end of the recommended conditions.

Recommended Cutting Conditions (L/D = 10D or longer)

Work Material	Aluminum alloy casting/Aluminum alloy die cast material ADC, AC		Duralumin-based aluminum alloy Al-Zn-Mg type (7075)		Wrought aluminum alloy Al-Mg type (5052)	
Dia. (mm)	Cutting Speed (m/min)	Feed Rate (mm/rev)	Cutting Speed (m/min)	Feed Rate (mm/rev)	Cutting Speed (m/min)	Feed Rate (mm/rev)
up to ø2.00	50 - 100	0.05 - 0.20	40 - 60	0.05 - 0.15	50 - 100	0.04 - 0.08
up to ø3.00	60 - 120	0.10 - 0.30	50 - 80	0.10 - 0.20	60 - 120	0.04 - 0.08
up to ø4.00	60 - 120	0.15 - 0.40	50 - 100	0.10 - 0.25	60 - 120	0.04 - 0.10
up to ø6.00	80 - 150	0.20 - 0.60	60 - 120	0.15 - 0.30	80 - 150	0.06 - 0.12
up to ø8.00	80 - 180	0.20 - 0.60	80 - 150	0.20 - 0.40	80 - 180	0.08 - 0.15
up to ø10.00	100 - 180	0.20 - 0.60	100 - 150	0.20 - 0.40	100 - 180	0.10 - 0.20
up to ø12.00	120 - 200	0.20 - 0.60	120 - 180	0.20 - 0.40	120 - 200	0.10 - 0.25

· The recommended cutting conditions above are for cases where a water-soluble coolant is used.
· Use with internal coolant supply.
· Recommended coolant supply pressure of 2.0MPa or higher for ø3 or below, and 1.5MPa or higher for over ø3.
· Keep the drill runout at 0.02mm or lower.
· If abnormalities such as noise or vibration occur, change the cutting conditions accordingly.
· For drilling with pre-cast holes, drills of 10D (or longer) are not recommended.
· Drilling holes 10D or longer may lead to abnormalities; drill a guide hole (hole depth 1D to 2D) in advance.
· A 3D (5D) drill can be used for guide hole drilling. (For guide hole drilling, use conditions lower than the "Recommended feed for 10D or longer")

MEMO

■ 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 order.
(Production range: Diameters: ø3.0 to ø16.0mm
Overall length: Available on inquiry)

■ Product Range (Stocked Sizes)

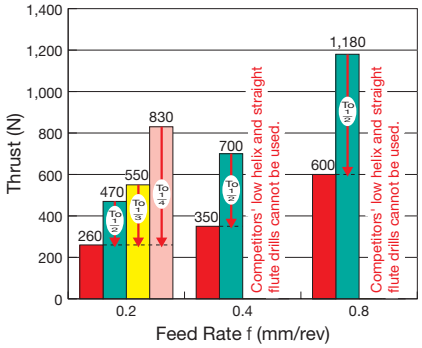
Coolant Supply	Cat. No.	Diameter Range (mm)	Hole Depth (L/D)
Internal	MDW□□□□NHGS3	ø3.0 to 16.0	up to 3
	MDW□□□□NHGS5		up to 5
	MDW□□□□NHGS10	ø3.0 to 13.0	up to 10

■ Performance

Cutting Force

● **Low cutting force, achieving 2 to 4 times the feed rate**
The cutting force of the NHGS series is 1/2 that of competitors' 30° helix drills ⇨ double the feed rate!
1/3 that of competitors' low helix drills ⇨ 3x the feed rate!
1/4 that of straight flute drills ⇨ 4x the feed rate!

Thrust

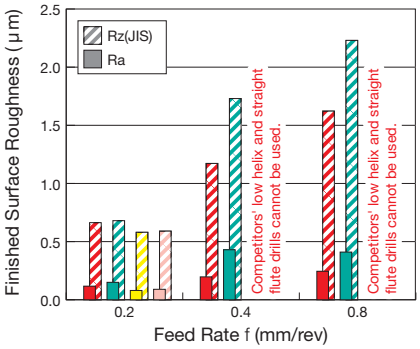


Tool: MDW 0800NHGS5 (DL1300)	Work Material: ADC12
Cutting Speed: vc = 200m/min	Machine: Vertical machining centre (BT30)
Coolant: Internal supply (1.5MPa)	Coolant: Emulsion (dilute to around 25x)

Drilled hole 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



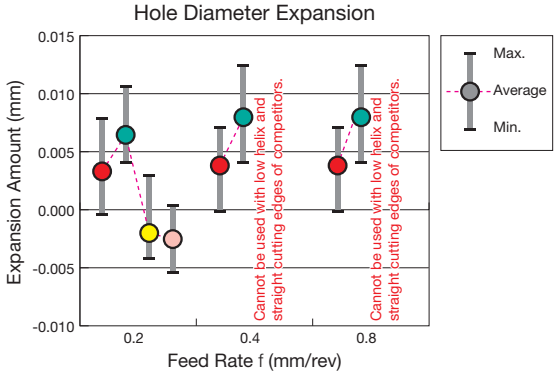
Legend (common)

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

Drilled 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



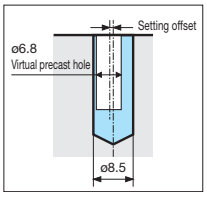
Tool: MDW 0800NHGS5 (DL1300)	Work Material: ADC12
Cutting Speed: vc = 200m/min	Machine: Vertical machining centre (BT30)
Coolant: Internal supply (1.5MPa)	Coolant: Emulsion (dilute to around 25x)

Drilled hole accuracy (hole position accuracy)

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

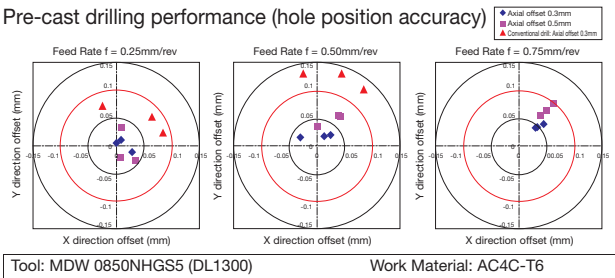
Pre-cast hole accuracy (hole position accuracy)

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: vc = 200m/min (n = 7, 489min^{-1})	Machine: Vertical machining centre (BT30)
Coolant: Internal supply	

NHGS series (Internal Coolant Supply)

Aluminum Alloy | Copper Alloy

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

*Refer to N36 for the tolerance of h6

Fig 1 (NHGS3/5 type, ø3.0 to 16.0mm)

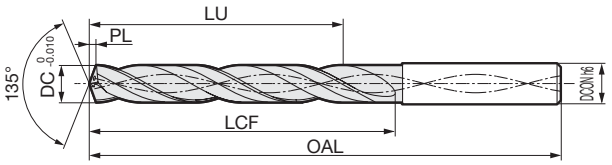
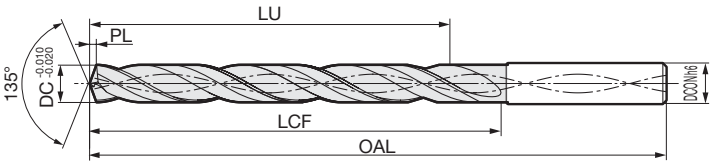


Fig 2 (NHGS10 type, ø3.0 to 16.0mm)



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	0.6	3.0	1
	5	●	0300NHGS5	24.1	28.6	78.6	0.6	3.0	1
	10	●	0300NHGS10	38.1	42.6	92.6	0.6	3.0	2
3.1	3		MDW 0310NHGS3	16.0	20.6	72.6	0.6	4.0	1
	5	●	0310NHGS5	28.0	32.6	86.6	0.6	4.0	1
	10		0310NHGS10	45.0	49.6	106.6	0.6	4.0	2
3.2	3	●	MDW 0320NHGS3	15.9	20.7	72.7	0.7	4.0	1
	5	●	0320NHGS5	27.9	32.7	86.7	0.7	4.0	1
	10	●	0320NHGS10	44.9	49.7	106.7	0.7	4.0	2
3.3	3	●	MDW 0330NHGS3	15.8	20.7	72.7	0.7	4.0	1
	5	●	0330NHGS5	27.8	32.7	86.7	0.7	4.0	1
	10		0330NHGS10	44.8	49.7	106.7	0.7	4.0	2
3.4	3		MDW 0340NHGS3	15.6	20.7	72.7	0.7	4.0	1
	5	●	0340NHGS5	27.6	32.7	86.7	0.7	4.0	1
	10	●	0340NHGS10	44.6	49.7	106.7	0.7	4.0	2
3.5	3	●	MDW 0350NHGS3	15.5	20.7	72.7	0.7	4.0	1
	5	●	0350NHGS5	27.5	32.7	86.7	0.7	4.0	1
	10	●	0350NHGS10	44.5	49.7	106.7	0.7	4.0	2
3.6	3		MDW 0360NHGS3	17.8	23.2	72.7	0.7	4.0	1
	5	●	0360NHGS5	31.3	36.7	86.7	0.7	4.0	1
	10	●	0360NHGS10	51.3	56.7	106.7	0.7	4.0	2
3.65	3	●	MDW 0365NHGS3	17.8	23.3	72.8	0.8	4.0	1
	5	●	0365NHGS5	31.3	36.8	86.8	0.8	4.0	1
	10		0365NHGS10	51.3	56.8	106.8	0.8	4.0	2
3.66	3		MDW 0366NHGS3	17.8	23.3	72.8	0.8	4.0	1
	5	●	0366NHGS5	31.3	36.8	86.8	0.8	4.0	1
	10		0366NHGS10	51.3	56.8	106.8	0.8	4.0	2
3.7	3		MDW 0370NHGS3	17.8	23.3	72.8	0.8	4.0	1
	5	●	0370NHGS5	31.3	36.8	86.8	0.8	4.0	1
	10		0370NHGS10	51.3	56.8	106.8	0.8	4.0	2
3.8	3		MDW 0380NHGS3	17.6	23.3	72.8	0.8	4.0	1
	5	●	0380NHGS5	31.1	36.8	86.8	0.8	4.0	1
	10		0380NHGS10	51.1	56.8	106.8	0.8	4.0	2
3.9	3		MDW 0390NHGS3	17.5	23.3	72.8	0.8	4.0	1
	5	●	0390NHGS5	31.0	36.8	86.8	0.8	4.0	1
	10	●	0390NHGS10	51.0	56.8	106.8	0.8	4.0	2
4.0	3	●	MDW 0400NHGS3	17.3	23.3	72.8	0.8	4.0	1
	5	●	0400NHGS5	30.8	36.8	86.8	0.8	4.0	1
	10	●	0400NHGS10	50.8	56.8	106.8	0.8	4.0	2
4.1	3	●	MDW 0410NHGS3	19.7	25.8	80.8	0.8	5.0	1
	5	●	0410NHGS5	34.7	40.8	98.8	0.8	5.0	1
	10		0410NHGS10	57.7	63.8	121.8	0.8	5.0	2
4.2	3	●	MDW 0420NHGS3	19.6	25.9	80.9	0.9	5.0	1
	5	●	0420NHGS5	34.6	40.9	98.9	0.9	5.0	1
	10		0420NHGS10	57.6	63.9	121.9	0.9	5.0	2
4.3	3		MDW 0430NHGS3	19.5	25.9	80.9	0.9	5.0	1
	5	●	0430NHGS5	34.5	40.9	98.9	0.9	5.0	1
	10		0430NHGS10	57.5	63.9	121.9	0.9	5.0	2
4.4	3		MDW 0440NHGS3	19.3	25.9	80.9	0.9	5.0	1
	5	●	0440NHGS5	34.3	40.9	98.9	0.9	5.0	1
	10		0440NHGS10	57.3	63.9	121.9	0.9	5.0	2
4.5	3	●	MDW 0450NHGS3	19.2	25.9	80.9	0.9	5.0	1
	5	●	0450NHGS5	34.2	40.9	98.9	0.9	5.0	1
	10	●	0450NHGS10	57.2	63.9	121.9	0.9	5.0	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	1.0	5.0	1
	5	●	0460NHGS5	38.1	45.0	99.0	1.0	5.0	1
	10		0460NHGS10	64.1	71.0	122.0	1.0	5.0	2
4.7	3		MDW 0470NHGS3	21.5	28.5	81.0	1.0	5.0	1
	5	●	0470NHGS5	38.0	45.0	99.0	1.0	5.0	1
	10		0470NHGS10	64.0	71.0	122.0	1.0	5.0	2
4.8	3		MDW 0480NHGS3	21.3	28.5	81.0	1.0	5.0	1
	5	●	0480NHGS5	37.8	45.0	99.0	1.0	5.0	1
	10		0480NHGS10	63.8	71.0	122.0	1.0	5.0	2
4.9	3		MDW 0490NHGS3	21.2	28.5	81.0	1.0	5.0	1
	5	●	0490NHGS5	37.7	45.0	99.0	1.0	5.0	1
	10	●	0490NHGS10	63.7	71.0	122.0	1.0	5.0	2
5.0	3	●	MDW 0500NHGS3	21.0	28.5	81.0	1.0	5.0	1
	5	●	0500NHGS5	37.5	45.0	99.0	1.0	5.0	1
	10	●	0500NHGS10	63.5	71.0	122.0	1.0	5.0	2
5.1	3		MDW 0510NHGS3	21.0	28.6	83.1	1.1	6.0	1
	5	●	0510NHGS5	37.5	45.1	101.1	1.1	6.0	1
	10	●	0510NHGS10	70.5	78.1	137.1	1.1	6.0	2
5.2	3	●	MDW 0520NHGS3	20.8	28.6	83.1	1.1	6.0	1
	5	●	0520NHGS5	37.3	45.1	101.1	1.1	6.0	1
	10		0520NHGS10	70.3	78.1	137.1	1.1	6.0	2
5.3	3	●	MDW 0530NHGS3	20.7	28.6	83.1	1.1	6.0	1
	5	●	0530NHGS5	37.2	45.1	101.1	1.1	6.0	1
	10		0530NHGS10	70.2	78.1	137.1	1.1	6.0	2
5.4	3		MDW 0540NHGS3	20.5	28.6	83.1	1.1	6.0	1
	5	●	0540NHGS5	37.0	45.1	101.1	1.1	6.0	1
	10		0540NHGS10	70.0	78.1	137.1	1.1	6.0	2
5.5	3	●	MDW 0550NHGS3	20.4	28.6	83.1	1.1	6.0	1
	5	●	0550NHGS5	36.9	45.1	101.1	1.1	6.0	1
	10	●	0550NHGS10	69.9	78.1	137.1	1.1	6.0	2
5.6	3		MDW 0560NHGS3	22.8	31.2	83.2	1.2	6.0	1
	5	●	0560NHGS5	40.8	49.2	101.2	1.2	6.0	1
	10		0560NHGS10	76.8	85.2	137.2	1.2	6.0	2
5.7	3		MDW 0570NHGS3	22.7	31.2	83.2	1.2	6.0	1
	5	●	0570NHGS5	40.7	49.2	101.2	1.2	6.0	1
	10		0570NHGS10	76.7	85.2	137.2	1.2	6.0	2
5.8	3		MDW 0580NHGS3	22.5	31.2	83.2	1.2	6.0	1
	5	●	0580NHGS5	40.5	49.2	101.2	1.2	6.0	1
	10		0580NHGS10	76.5	85.2	137.2	1.2	6.0	2
5.9	3	●	MDW 0590NHGS3	22.4	31.2	83.2	1.2	6.0	1
	5	●	0590NHGS5	40.4	49.2	101.2	1.2	6.0	1
	10		0590NHGS10	76.4	85.2	137.2	1.2	6.0	2
6.0	3	●	MDW 0600NHGS3	22.2	31.2	83.2	1.2	6.0	1
	5	●	0600NHGS5	40.2	49.2	101.2	1.2	6.0	1
	10	●	0600NHGS10	76.2	85.2	137.2	1.2	6.0	2
6.1	3		MDW 0610NHGS3	24.7	33.8	89.3	1.3	7.0	1
	5	●	0610NHGS5	44.2	53.3	110.3	1.3	7.0	1
	10	●	0610NHGS10	83.2	92.3	152.3	1.3	7.0	2
6.2	3		MDW 0620NHGS3	24.5	33.8	89.3	1.3	7.0	1
	5	●	0620NHGS5	44.0	53.3	110.3	1.3	7.0	1
	10		0620NHGS10	83.0	92.3	152.3	1.3	7.0	2
6.3	3		MDW 0630NHGS3	24.4	33.8	89.3	1.3	7.0	1
	5	●	0630NHGS5	43.9	53.3	110.3	1.3	7.0	1
	10		0630NHGS10	82.9	92.3	152.3	1.3	7.0	2

Grade: DL1300

NHGS series (Internal Coolant Supply)

Aluminum Alloy | Copper Alloy

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

*Refer to N36 for the tolerance of h6

Fig 1 (NHGS3/5 type, ø3.0 to 16.0mm)

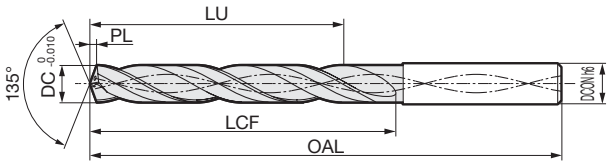
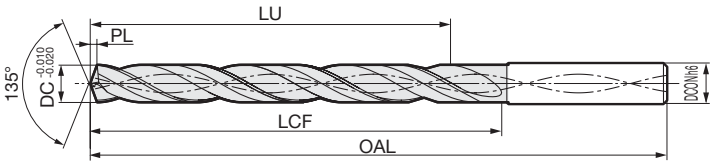


Fig 2 (NHGS10 type, ø3.0 to 16.0mm)



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
6.4	3		MDW 0640NHGS3	24.2	33.8	89.3	1.3	7.0	1
	5	●	0640NHGS5	43.7	53.3	110.3	1.3	7.0	1
	10		0640NHGS10	82.7	92.3	152.3	1.3	7.0	2
6.5	3	●	MDW 0650NHGS3	24.1	33.8	89.3	1.3	7.0	1
	5	●	0650NHGS5	43.6	53.3	110.3	1.3	7.0	1
	10	●	0650NHGS10	82.6	92.3	152.3	1.3	7.0	2
6.6	3		MDW 0660NHGS3	26.5	36.4	89.4	1.4	7.0	1
	5	●	0660NHGS5	47.5	57.4	110.4	1.4	7.0	1
	10		0660NHGS10	89.5	99.4	152.4	1.4	7.0	2
6.7	3	●	MDW 0670NHGS3	26.4	36.4	89.4	1.4	7.0	1
	5	●	0670NHGS5	47.4	57.4	110.4	1.4	7.0	1
	10	●	0670NHGS10	89.4	99.4	152.4	1.4	7.0	2
6.8	3	●	MDW 0680NHGS3	26.2	36.4	89.4	1.4	7.0	1
	5	●	0680NHGS5	47.2	57.4	110.4	1.4	7.0	1
	10	●	0680NHGS10	89.2	99.4	152.4	1.4	7.0	2
6.9	3		MDW 0690NHGS3	26.1	36.4	89.4	1.4	7.0	1
	5	●	0690NHGS5	47.1	57.4	110.4	1.4	7.0	1
	10		0690NHGS10	89.1	99.4	152.4	1.4	7.0	2
7.0	3	●	MDW 0700NHGS3	25.9	36.4	89.4	1.4	7.0	1
	5	●	0700NHGS5	46.9	57.4	110.4	1.4	7.0	1
	10	●	0700NHGS10	88.9	99.4	152.4	1.4	7.0	2
7.1	3		MDW 0710NHGS3	28.4	39.0	95.5	1.5	8.0	1
	5	●	0710NHGS5	50.9	61.5	119.5	1.5	8.0	1
	10		0710NHGS10	95.9	106.5	167.5	1.5	8.0	2
7.2	3		MDW 0720NHGS3	28.2	39.0	95.5	1.5	8.0	1
	5	●	0720NHGS5	50.7	61.5	119.5	1.5	8.0	1
	10	●	0720NHGS10	95.7	106.5	167.5	1.5	8.0	2
7.3	3		MDW 0730NHGS3	28.1	39.0	95.5	1.5	8.0	1
	5	●	0730NHGS5	50.6	61.5	119.5	1.5	8.0	1
	10		0730NHGS10	95.6	106.5	167.5	1.5	8.0	2
7.35	3	●	MDW 0735NHGS3	28.0	39.0	95.5	1.5	8.0	1
	5	●	0735NHGS5	50.5	61.5	119.5	1.5	8.0	1
	10		0735NHGS10	95.5	106.5	167.5	1.5	8.0	2
7.4	3	●	MDW 0740NHGS3	27.9	39.0	95.5	1.5	8.0	1
	5	●	0740NHGS5	50.4	61.5	119.5	1.5	8.0	1
	10		0740NHGS10	95.4	106.5	167.5	1.5	8.0	2
7.5	3	●	MDW 0750NHGS3	27.9	39.1	95.6	1.6	8.0	1
	5	●	0750NHGS5	50.4	61.6	119.6	1.6	8.0	1
	10	●	0750NHGS10	95.4	106.6	167.6	1.6	8.0	2
7.6	3		MDW 0760NHGS3	30.2	41.6	95.6	1.6	8.0	1
	5	●	0760NHGS5	54.2	65.6	119.6	1.6	8.0	1
	10		0760NHGS10	102.2	113.6	167.6	1.6	8.0	2
7.7	3		MDW 0770NHGS3	30.1	41.6	95.6	1.6	8.0	1
	5	●	0770NHGS5	54.1	65.6	119.6	1.6	8.0	1
	10		0770NHGS10	102.1	113.6	167.6	1.6	8.0	2
7.8	3	●	MDW 0780NHGS3	29.9	41.6	95.6	1.6	8.0	1
	5	●	0780NHGS5	53.9	65.6	119.6	1.6	8.0	1
	10	●	0780NHGS10	101.9	113.6	167.6	1.6	8.0	2
7.9	3		MDW 0790NHGS3	29.8	41.6	95.6	1.6	8.0	1
	5	●	0790NHGS5	53.8	65.6	119.6	1.6	8.0	1
	10		0790NHGS10	101.8	113.6	167.6	1.6	8.0	2
8.0	3	●	MDW 0800NHGS3	29.7	41.7	95.7	1.7	8.0	1
	5	●	0800NHGS5	53.7	65.7	119.7	1.7	8.0	1
	10	●	0800NHGS10	101.7	113.7	167.7	1.7	8.0	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
8.1	3		MDW 0810NHGS3	32.1	44.2	101.7	1.7	9.0	1
	5	●	0810NHGS5	57.6	69.7	128.7	1.7	9.0	1
	10		0810NHGS10	108.6	120.7	182.7	1.7	9.0	2
8.2	3		MDW 0820NHGS3	31.9	44.2	101.7	1.7	9.0	1
	5	●	0820NHGS5	57.4	69.7	128.7	1.7	9.0	1
	10		0820NHGS10	108.4	120.7	182.7	1.7	9.0	2
8.3	3		MDW 0830NHGS3	31.8	44.2	101.7	1.7	9.0	1
	5	●	0830NHGS5	57.3	69.7	128.7	1.7	9.0	1
	10		0830NHGS10	108.3	120.7	182.7	1.7	9.0	2
8.4	3		MDW 0840NHGS3	31.6	44.2	101.7	1.7	9.0	1
	5	●	0840NHGS5	57.1	69.7	128.7	1.7	9.0	1
	10		0840NHGS10	108.1	120.7	182.7	1.7	9.0	2
8.5	3	●	MDW 0850NHGS3	31.6	44.3	101.8	1.8	9.0	1
	5	●	0850NHGS5	57.1	69.8	128.8	1.8	9.0	1
	10	●	0850NHGS10	108.1	120.8	182.8	1.8	9.0	2
8.6	3	●	MDW 0860NHGS3	33.9	46.8	101.8	1.8	9.0	1
	5	●	0860NHGS5	60.9	73.8	128.8	1.8	9.0	1
	10		0860NHGS10	114.9	127.8	182.8	1.8	9.0	2
8.7	3		MDW 0870NHGS3	33.8	46.8	101.8	1.8	9.0	1
	5	●	0870NHGS5	60.8	73.8	128.8	1.8	9.0	1
	10		0870NHGS10	114.8	127.8	182.8	1.8	9.0	2
8.8	3	●	MDW 0880NHGS3	33.6	46.8	101.8	1.8	9.0	1
	5	●	0880NHGS5	60.6	73.8	128.8	1.8	9.0	1
	10		0880NHGS10	114.6	127.8	182.8	1.8	9.0	2
8.9	3		MDW 0890NHGS3	33.5	46.8	101.8	1.8	9.0	1
	5	●	0890NHGS5	60.5	73.8	128.8	1.8	9.0	1
	10		0890NHGS10	114.5	127.8	182.8	1.8	9.0	2
9.0	3	●	MDW 0900NHGS3	33.4	46.9	101.9	1.9	9.0	1
	5	●	0900NHGS5	60.4	73.9	128.9	1.9	9.0	1
	10	●	0900NHGS10	114.4	127.9	182.9	1.9	9.0	2
9.1	3		MDW 0910NHGS3	35.8	49.4	107.9	1.9	10.0	1
	5	●	0910NHGS5	64.3	77.9	137.9	1.9	10.0	1
	10		0910NHGS10	121.3	134.9	197.9	1.9	10.0	2
9.2	3		MDW 0920NHGS3	35.6	49.4	107.9	1.9	10.0	1
	5	●	0920NHGS5	64.1	77.9	137.9	1.9	10.0	1
	10		0920NHGS10	121.1	134.9	197.9	1.9	10.0	2
9.21	3	●	MDW 0921NHGS3	35.6	49.4	107.9	1.9	10.0	1
	5	●	0921NHGS5	64.1	77.9	137.9	1.9	10.0	1
	10		0921NHGS10	121.1	134.9	197.9	1.9	10.0	2
9.3	3		MDW 0930NHGS3	35.5	49.4	107.9	1.9	10.0	1
	5	●	0930NHGS5	64.0	77.9	137.9	1.9	10.0	1
	10		0930NHGS10	121.0	134.9	197.9	1.9	10.0	2
9.4	3	●	MDW 0940NHGS3	35.3	49.4	107.9	1.9	10.0	1
	5	●	0940NHGS5	63.8	77.9	137.9	1.9	10.0	1
	10		0940NHGS10	120.8	134.9	197.9	1.9	10.0	2
9.5	3	●	MDW 0950NHGS3	35.3	49.5	108.0	2.0	10.0	1
	5	●	0950NHGS5	63.8	78.0	138.0	2.0	10.0	1
	10	●	0950NHGS10	120.8	135.0	198.0	2.0	10.0	2
9.6	3		MDW 0960NHGS3	37.6	52.0	108.0	2.0	10.0	1
	5	●	0960NHGS5	67.6	82.0	138.0	2.0	10.0	1
	10		0960NHGS10	127.6	142.0	198.0	2.0	10.0	2
9.7	3		MDW 0970NHGS3	37.5	52.0	108.0	2.0	10.0	1
	5	●	0970NHGS5	67.5	82.0	138.0	2.0	10.0	1
	10		0970NHGS10	127.5	142.0	198.0	2.0	10.0	2

Grade: DL1300

NHGS series (Internal Coolant Supply)

Aluminum Alloy | Copper Alloy

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

*Refer to N36 for the tolerance of h6

Fig 1 (NHGS3/5 type, ø3.0 to 16.0mm)

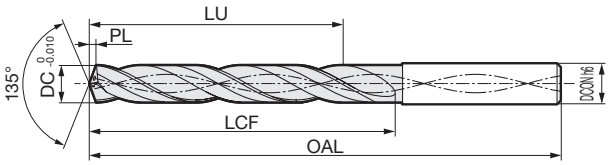
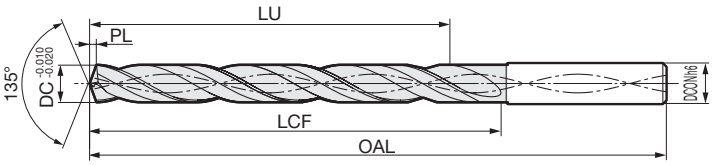


Fig 2 (NHGS10 type, ø3.0 to 16.0mm)



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
	3		MDW 0980NHGS3	37.3	52.0	108.0	2.0	10.0	1
9.8	5	●	0980NHGS5	67.3	82.0	138.0	2.0	10.0	1
	10	●	0980NHGS10	127.3	142.0	198.0	2.0	10.0	2
	3		MDW 0990NHGS3	37.2	52.0	108.0	2.0	10.0	1
9.9	5	●	0990NHGS5	67.2	82.0	138.0	2.0	10.0	1
	10		0990NHGS10	127.2	142.0	198.0	2.0	10.0	2
	3	●	MDW 1000NHGS3	37.1	52.1	108.1	2.1	10.0	1
10.0	5	●	1000NHGS5	67.1	82.1	138.1	2.1	10.0	1
	10	●	1000NHGS10	127.1	142.1	198.1	2.1	10.0	2
	3	●	MDW 1010NHGS3	39.5	54.6	118.1	2.1	11.0	1
10.1	5		1010NHGS5	71.0	86.1	151.1	2.1	11.0	1
	10		1010NHGS10	134.0	149.1	217.1	2.1	11.0	2
	3		MDW 1020NHGS3	39.3	54.6	118.1	2.1	11.0	1
10.2	5		1020NHGS5	70.8	86.1	151.1	2.1	11.0	1
	10		1020NHGS10	133.8	149.1	217.1	2.1	11.0	2
	3	●	MDW 1030NHGS3	39.2	54.6	118.1	2.1	11.0	1
10.3	5	●	1030NHGS5	70.7	86.1	151.1	2.1	11.0	1
	10		1030NHGS10	133.7	149.1	217.1	2.1	11.0	2
	3		MDW 1040NHGS3	39.1	54.7	118.2	2.2	11.0	1
10.4	5	●	1040NHGS5	70.6	86.2	151.2	2.2	11.0	1
	10		1040NHGS10	133.6	149.2	217.2	2.2	11.0	2
	3	●	MDW 1050NHGS3	39.0	54.7	118.2	2.2	11.0	1
10.5	5	●	1050NHGS5	70.5	86.2	151.2	2.2	11.0	1
	10	●	1050NHGS10	133.5	149.2	217.2	2.2	11.0	2
	3	●	MDW 1060NHGS3	41.3	57.2	118.2	2.2	11.0	1
10.6	5	●	1060NHGS5	74.3	90.2	151.2	2.2	11.0	1
	10		1060NHGS10	140.3	156.2	217.2	2.2	11.0	2
	3		MDW 1070NHGS3	41.2	57.2	118.2	2.2	11.0	1
10.7	5		1070NHGS5	74.2	90.2	151.2	2.2	11.0	1
	10		1070NHGS10	140.2	156.2	217.2	2.2	11.0	2
	3		MDW 1080NHGS3	41.0	57.2	118.2	2.2	11.0	1
10.8	5		1080NHGS5	74.0	90.2	151.2	2.2	11.0	1
	10		1080NHGS10	140.0	156.2	217.2	2.2	11.0	2
	3		MDW 1090NHGS3	41.0	57.3	118.3	2.3	11.0	1
10.9	5		1090NHGS5	74.0	90.3	151.3	2.3	11.0	1
	10		1090NHGS10	140.0	156.3	217.3	2.3	11.0	2
	3	●	MDW 1100NHGS3	40.8	57.3	118.3	2.3	11.0	1
11.0	5	●	1100NHGS5	73.8	90.3	151.3	2.3	11.0	1
	10	●	1100NHGS10	139.8	156.3	217.3	2.3	11.0	2
	3	●	MDW 1108NHGS3	43.2	59.8	124.3	2.3	12.0	1
11.08	5	●	1108NHGS5	77.7	94.3	160.3	2.3	12.0	1
	10		1108NHGS10	146.7	163.3	232.3	2.3	12.0	2
	3	●	MDW 1110NHGS3	43.2	59.8	124.3	2.3	12.0	1
11.1	5	●	1110NHGS5	77.7	94.3	160.3	2.3	12.0	1
	10		1110NHGS10	146.7	163.3	232.3	2.3	12.0	2
	3	●	MDW 1120NHGS3	43.0	59.8	124.3	2.3	12.0	1
11.2	5	●	1120NHGS5	77.5	94.3	160.3	2.3	12.0	1
	10		1120NHGS10	146.5	163.3	232.3	2.3	12.0	2
	3		MDW 1130NHGS3	42.9	59.8	124.3	2.3	12.0	1
11.3	5		1130NHGS5	77.4	94.3	160.3	2.3	12.0	1
	10		1130NHGS10	146.4	163.3	232.3	2.3	12.0	2
	3	●	MDW 1140NHGS3	42.8	59.9	124.4	2.4	12.0	1
11.4	5	●	1140NHGS5	77.3	94.4	160.4	2.4	12.0	1
	10		1140NHGS10	146.3	163.4	232.4	2.4	12.0	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
	3	●	MDW 1150NHGS3	42.7	59.9	124.4	2.4	12.0	1
11.5	5	●	1150NHGS5	77.2	94.4	160.4	2.4	12.0	1
	10	●	1150NHGS10	146.2	163.4	232.4	2.4	12.0	2
	3		MDW 1160NHGS3	45.0	62.4	124.4	2.4	12.0	1
11.6	5		1160NHGS5	81.0	98.4	160.4	2.4	12.0	1
	10		1160NHGS10	153.0	170.4	232.4	2.4	12.0	2
	3		MDW 1170NHGS3	44.9	62.4	124.4	2.4	12.0	1
11.7	5		1170NHGS5	80.9	98.4	160.4	2.4	12.0	1
	10		1170NHGS10	152.9	170.4	232.4	2.4	12.0	2
	3		MDW 1180NHGS3	44.7	62.4	124.4	2.4	12.0	1
11.8	5		1180NHGS5	80.7	98.4	160.4	2.4	12.0	1
	10		1180NHGS10	152.7	170.4	232.4	2.4	12.0	2
	3		MDW 1190NHGS3	44.7	62.5	124.5	2.5	12.0	1
11.9	5		1190NHGS5	80.7	98.5	160.5	2.5	12.0	1
	10		1190NHGS10	152.7	170.5	232.5	2.5	12.0	2
	3	●	MDW 1200NHGS3	44.5	62.5	124.5	2.5	12.0	1
12.0	5	●	1200NHGS5	80.5	98.5	160.5	2.5	12.0	1
	10	●	1200NHGS10	152.5	170.5	232.5	2.5	12.0	2
	3	●	MDW 1210NHGS3	46.9	65.0	130.5	2.5	13.0	1
12.1	5	●	1210NHGS5	84.4	102.5	169.5	2.5	13.0	1
	10		1210NHGS10	159.4	177.5	247.5	2.5	13.0	2
	3		MDW 1220NHGS3	46.7	65.0	130.5	2.5	13.0	1
12.2	5		1220NHGS5	84.2	102.5	169.5	2.5	13.0	1
	10		1220NHGS10	159.2	177.5	247.5	2.5	13.0	2
	3	●	MDW 1230NHGS3	46.6	65.0	130.5	2.5	13.0	1
12.3	5	●	1230NHGS5	84.1	102.5	169.5	2.5	13.0	1
	10		1230NHGS10	159.1	177.5	247.5	2.5	13.0	2
	3		MDW 1240NHGS3	46.5	65.1	130.6	2.6	13.0	1
12.4	5		1240NHGS5	84.0	102.6	169.6	2.6	13.0	1
	10		1240NHGS10	159.0	177.6	247.6	2.6	13.0	2
	3	●	MDW 1250NHGS3	46.4	65.1	130.6	2.6	13.0	1
12.5	5	●	1250NHGS5	83.9	102.6	169.6	2.6	13.0	1
	10	●	1250NHGS10	158.9	177.6	247.6	2.6	13.0	2
	3		MDW 1260NHGS3	48.7	67.6	130.6	2.6	13.0	1
12.6	5		1260NHGS5	87.7	106.6	169.6	2.6	13.0	1
	10		1260NHGS10	165.7	184.6	247.6	2.6	13.0	2
	3		MDW 1270NHGS3	48.6	67.6	130.6	2.6	13.0	1
12.7	5		1270NHGS5	87.6	106.6	169.6	2.6	13.0	1
	10		1270NHGS10	165.6	184.6	247.6	2.6	13.0	2
	3		MDW 1280NHGS3	48.4	67.6	130.6	2.6	13.0	1
12.8	5		1280NHGS5	87.4	106.6	169.6	2.6	13.0	1
	10		1280NHGS10	165.4	184.6	247.6	2.6	13.0	2
	3		MDW 1290NHGS3	48.4	67.7	130.7	2.7	13.0	1
12.9	5		1290NHGS5	87.4	106.7	169.7	2.7	13.0	1
	10		1290NHGS10	165.4	184.7	247.7	2.7	13.0	2
	3	●	MDW 1296NHGS3	48.3	67.7	130.7	2.7	13.0	1
12.96	5	●	1296NHGS5	87.3	106.7	169.7	2.7	13.0	1
	10		1296NHGS10	165.3	184.7	247.7	2.7	13.0	2
	3	●	MDW 1300NHGS3	48.2	67.7	130.7	2.7	13.0	1
13.0	5	●	1300NHGS5	87.2	106.7	169.7	2.7	13.0	1
	10	●	1300NHGS10	165.2	184.7	247.7	2.7	13.0	2
	3		MDW 1310NHGS3	50.6	70.2	136.7	2.7	14.0	1
13.1	5		1310NHGS5	91.1	110.7	178.7	2.7	14.0	1
	10		1310NHGS10	172.1	191.7	262.7	2.7	14.0	2

Grade: DL1300

Super MULTIDRILL

NHGS series (Internal Coolant Supply)

Aluminum Alloy | Copper Alloy

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

*Refer to N36 for the tolerance of h6

Fig 1 (NHGS3/5 type, ø3.0 to 16.0mm)

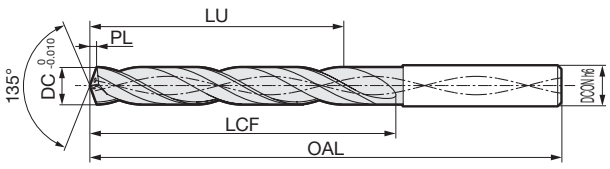
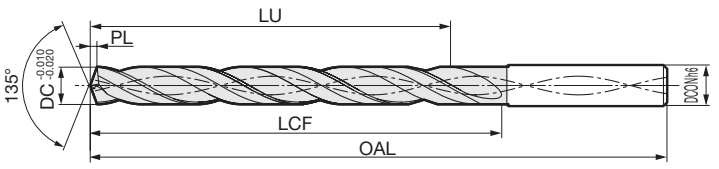


Fig 2 (NHGS10 type, ø3.0 to 16.0mm)



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	2.7	14.0	1
13.2	5		**1320NHGS5**	90.9	110.7	178.7	2.7	14.0	1
	10		**1320NHGS10**	171.9	191.7	262.7	2.7	14.0	2
	3		**MDW 1330NHGS3**	50.4	70.3	136.8	2.8	14.0	1
13.3	5		**1330NHGS5**	90.9	110.8	178.8	2.8	14.0	1
	10		**1330NHGS10**	171.9	191.8	262.8	2.8	14.0	2
	3		**MDW 1340NHGS3**	50.2	70.3	136.8	2.8	14.0	1
13.4	5		**1340NHGS5**	90.7	110.8	178.8	2.8	14.0	1
	10		**1340NHGS10**	171.7	191.8	262.8	2.8	14.0	2
	3	●	**MDW 1350NHGS3**	50.1	70.3	136.8	2.8	14.0	1
13.5	5	●	**1350NHGS5**	90.6	110.8	178.8	2.8	14.0	1
	10		**1350NHGS10**	171.6	191.8	262.8	2.8	14.0	2
	3		**MDW 1360NHGS3**	52.4	72.8	136.8	2.8	14.0	1
13.6	5		**1360NHGS5**	94.4	114.8	178.8	2.8	14.0	1
	10		**1360NHGS10**	178.4	198.8	262.8	2.8	14.0	2
	3		**MDW 1370NHGS3**	52.3	72.8	136.8	2.8	14.0	1
13.7	5		**1370NHGS5**	94.3	114.8	178.8	2.8	14.0	1
	10		**1370NHGS10**	178.3	198.8	262.8	2.8	14.0	2
	3		**MDW 1380NHGS3**	52.2	72.9	136.9	2.9	14.0	1
13.8	5		**1380NHGS5**	94.2	114.9	178.9	2.9	14.0	1
	10		**1380NHGS10**	178.2	198.9	262.9	2.9	14.0	2
	3		**MDW 1390NHGS3**	52.1	72.9	136.9	2.9	14.0	1
13.9	5		**1390NHGS5**	94.1	114.9	178.9	2.9	14.0	1
	10		**1390NHGS10**	178.1	198.9	262.9	2.9	14.0	2
	3	●	**MDW 1400NHGS3**	51.9	72.9	136.9	2.9	14.0	1
14.0	5	●	**1400NHGS5**	93.9	114.9	178.9	2.9	14.0	1
	10		**1400NHGS10**	177.9	198.9	262.9	2.9	14.0	2
	3	●	**MDW 1410NHGS3**	54.3	75.4	142.9	2.9	15.0	1
14.1	5	●	**1410NHGS5**	97.8	118.9	187.9	2.9	15.0	1
	10		**1410NHGS10**	184.8	205.9	277.9	2.9	15.0	2
	3		**MDW 1420NHGS3**	54.1	75.4	142.9	2.9	15.0	1
14.2	5		**1420NHGS5**	97.6	118.9	187.9	2.9	15.0	1
	10		**1420NHGS10**	184.6	205.9	277.9	2.9	15.0	2
	3		**MDW 1430NHGS3**	54.1	75.5	143.0	3.0	15.0	1
14.3	5		**1430NHGS5**	97.6	119.0	188.0	3.0	15.0	1
	10		**1430NHGS10**	184.6	206.0	278.0	3.0	15.0	2
	3		**MDW 1440NHGS3**	53.9	75.5	143.0	3.0	15.0	1
14.4	5		**1440NHGS5**	97.4	119.0	188.0	3.0	15.0	1
	10		**1440NHGS10**	184.4	206.0	278.0	3.0	15.0	2
	3	●	**MDW 1450NHGS3**	53.8	75.5	143.0	3.0	15.0	1
14.5	5	●	**1450NHGS5**	97.3	119.0	188.0	3.0	15.0	1
	10		**1450NHGS10**	184.3	206.0	278.0	3.0	15.0	2
	3		**MDW 1460NHGS3**	56.1	78.0	143.0	3.0	15.0	1
14.6	5		**1460NHGS5**	101.1	123.0	188.0	3.0	15.0	1
	10		**1460NHGS10**	191.1	213.0	278.0	3.0	15.0	2
	3		**MDW 1470NHGS3**	56.0	78.0	143.0	3.0	15.0	1
14.7	5		**1470NHGS5**	101.0	123.0	188.0	3.0	15.0	1
	10		**1470NHGS10**	191.0	213.0	278.0	3.0	15.0	2
	3		**MDW 1480NHGS3**	55.9	78.1	143.1	3.1	15.0	1
14.8	5		**1480NHGS5**	100.9	123.1	188.1	3.1	15.0	1
	10		**1480NHGS10**	190.9	213.1	278.1	3.1	15.0	2
	3	●	**MDW 1490NHGS3**	55.8	78.1	143.1	3.1	15.0	1
14.9	5	●	**1490NHGS5**	100.8	123.1	188.1	3.1	15.0	1
	10		**1490NHGS10**	190.8	213.1	278.1	3.1	15.0	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	3.1	15.0	1
14.96	5	●	**1496NHGS5**	100.7	123.1	188.1	3.1	15.0	1
	10		**1496NHGS10**	190.7	213.1	278.1	3.1	15.0	2
	3	●	**MDW 1500NHGS3**	55.6	78.1	143.1	3.1	15.0	1
15.0	5	●	**1500NHGS5**	100.6	123.1	188.1	3.1	15.0	1
	10		**1500NHGS10**	190.6	213.1	278.1	3.1	15.0	2
	3		**MDW 1510NHGS3**	58.0	80.6	149.1	3.1	16.0	1
15.1	5		**1510NHGS5**	104.5	127.1	197.1	3.1	16.0	1
	10		**1510NHGS10**	197.5	220.1	293.1	3.1	16.0	2
	3		**MDW 1520NHGS3**	57.8	80.6	149.1	3.1	16.0	1
15.2	5		**1520NHGS5**	104.3	127.1	197.1	3.1	16.0	1
	10		**1520NHGS10**	197.3	220.1	293.1	3.1	16.0	2
	3		**MDW 1530NHGS3**	57.8	80.7	149.2	3.2	16.0	1
15.3	5		**1530NHGS5**	104.3	127.2	197.2	3.2	16.0	1
	10		**1530NHGS10**	197.3	220.2	293.2	3.2	16.0	2
	3		**MDW 1540NHGS3**	57.6	80.7	149.2	3.2	16.0	1
15.4	5		**1540NHGS5**	104.1	127.2	197.2	3.2	16.0	1
	10		**1540NHGS10**	197.1	220.2	293.2	3.2	16.0	2
	3	●	**MDW 1550NHGS3**	57.5	80.7	149.2	3.2	16.0	1
15.5	5	●	**1550NHGS5**	104.0	127.2	197.2	3.2	16.0	1
	10		**1550NHGS10**	197.0	220.2	293.2	3.2	16.0	2
	3		**MDW 1560NHGS3**	59.8	83.2	149.2	3.2	16.0	1
15.6	5		**1560NHGS5**	107.8	131.2	197.2	3.2	16.0	1
	10		**1560NHGS10**	203.8	227.2	293.2	3.2	16.0	2
	3		**MDW 1570NHGS3**	59.7	83.2	149.2	3.2	16.0	1
15.7	5		**1570NHGS5**	107.7	131.2	197.2	3.2	16.0	1
	10		**1570NHGS10**	203.7	227.2	293.2	3.2	16.0	2
	3		**MDW 1580NHGS3**	59.6	83.3	149.3	3.3	16.0	1
15.8	5		**1580NHGS5**	107.6	131.3	197.3	3.3	16.0	1
	10		**1580NHGS10**	203.6	227.3	293.3	3.3	16.0	2
	3		**MDW 1590NHGS3**	59.5	83.3	149.3	3.3	16.0	1
15.9	5		**1590NHGS5**	107.5	131.3	197.3	3.3	16.0	1
	10		**1590NHGS10**	203.5	227.3	293.3	3.3	16.0	2
	3	●	**MDW 1600NHGS3**	59.3	83.3	149.3	3.3	16.0	1
16.0	5	●	**1600NHGS5**	107.3	131.3	197.3	3.3	16.0	1
	10		**1600NHGS10**	203.3	227.3	293.3	3.3	16.0	2

Grade: DL1300

Recommended Cutting Conditions

(n: Spindle Speed min^{-1} vc: 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	n	7,400	6,400
	vc	80 - **140** - 200	80 - **120** - 200
	f	0.2 - **0.4** - 0.6	0.2 - **0.3** - 0.4
ø10.0	n	5,700	4,800
	vc	100 - **180** - 250	100 - **150** - 250
	f	0.4 - **0.6** - 0.8	0.2 - **0.35** - 0.5
ø16.0	n	4,000	3,600
	vc	120 - **200** - 250	120 - **180** - 250
	f	0.4 - **0.7** - 1.0	0.3 - **0.45** - 0.6

Min. - **Optimum** - Max.

SDC series (External Coolant Supply)

Aluminum Alloy | Composite CFRP

■ General Features

SUMIDIA Coat SDC series drills for carbon fibre reinforced plastic (CFRP) employ our proprietary multi-stepped point angle.
Combined with a diamond coating, improved drilled hole quality and long tool life can be achieved.

■ 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°	

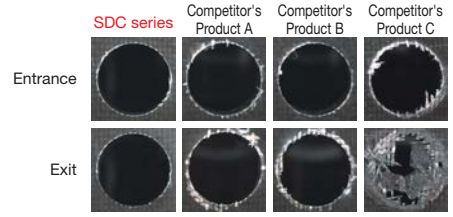
■ Features and Applications

- 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

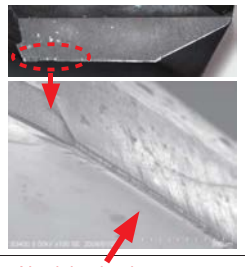
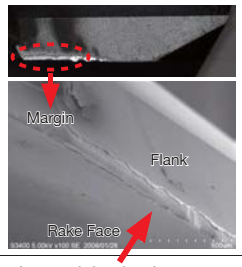
Excellent drilled hole surface quality
Prevents Delamination and Burrs



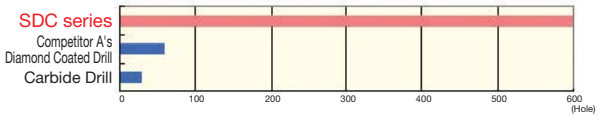
Tool : SUMIDIA Coat Drill SDC series ø6.35
Work Material : CFRP
Cutting Conditions : n =6,000min^{-1}, f =0.1mm/rev, H =28mm (through)
Dry

Tool Life Comparison

Effects of Diamond Coating

SDC series (After Drilling 600 Holes)	Competitor's Product (After Drilling 50 Holes)
	
No delamination Minimal flank wear	Large delamination from cutting edge to flank

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 N36 for the tolerance of h6 and h8

Fig 1 (Diameter ø2.0 to 4.0mm)

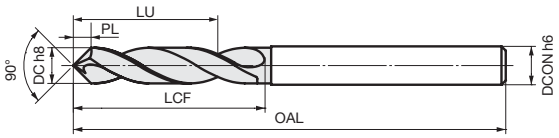
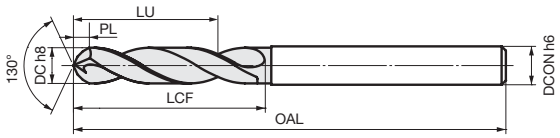


Fig 2 (Diameter ø4.851 to 10.0mm)



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

(n: Spindle Speed min^{-1} vc: Cutting Speed m/min f: Feed Rate mm/rev)

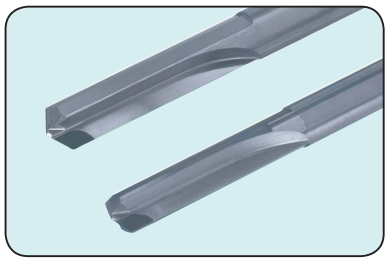
Diameter DC (mm)	Cutting Conditions	CFRP Only (Dry Drilling)	Stacked Sheets of CFRP and Aluminum Alloys (Dry Drilling)
ø6.0	n	6,400	3,200
	vc	80 - **120** - 150	40 - **60** - 80
	f	0.05 - **0.08** - 0.10	0.03 - **0.05** - 0.10
ø12.0	n	2,700	1,600
	vc	80 - **100** - 120	40 - **60** - 80
	f	0.05 - **0.08** - 0.10	0.03 - **0.05** - 0.10

Min. - **Optimum** - Max.

DAL/DDL series

Aluminum Alloy | Composite CFRP

PCD 3D



From General to High Precision Drilling of Aluminum Alloys

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

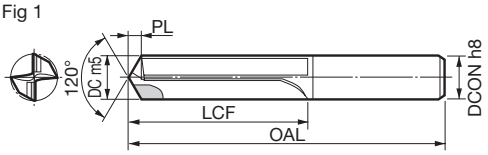
DAL series

*Refer to N36 for the tolerance of m5, h8 Dimensions (mm)

Grade Classification		SUMIDIA
Process	High-speed/Light Cutting	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.

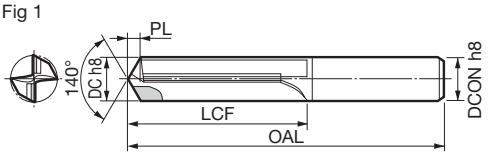
DDL series

*Refer to N36 for the tolerance of h8 Dimensions (mm)

Grade Classification		SUMIDIA
Process	High-speed/Light Cutting	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

(n: Spindle Speed min^{-1} vc: Cutting Speed m/min f: Feed Rate mm/rev)

Diameter DC (mm)	Cutting Conditions	DAL series	DDL series	Depth of Cut	Oil
ø8.0	n	4,000	8,000	L/D= Below 3	Emulsion type
	vc	80 - **100** - 150	150 - **200** - 250		
	f	0.05 - **0.1** - 0.15	0.1 - **0.15** - 0.25		
ø12.0	n	2,700	5,300		
	vc	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 series 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

■ Features

Micro Long Drills are oil-hole drills for high-efficiency drilling developed for drilling deep, small-diameter holes. Featuring improved drill strength, often a problem area with small drills.

● Deep hole drilling
Flute shape ensures good drill rigidity and chip evacuation.
High-efficiency drilling to depths of over 20 times the diameter at over vf = 500mm/min
(equivalent to blade diameter ø1.3 SUS416).
Optimal thinning and edge balance for stable chip control.

● Long tool life
Special coating provides long tool life with a wide variety of work materials.
Improved chip evacuation makes it possible to reduce spindle load fluctuation, ensuring stable tool life.

■ 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 Hole	MLDH□□□□P	ø0.8 to 2.0	up to 2	41 items in stock

■ Recommended Cutting Conditions

MLDH-P type / MLDH-L5 type

(n: Spindle Speed min^{-1} vc: 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	n	16,000	16,000	16,000	9,500	16,000	19,000	3,200
	vc	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	n	11,000	11,000	11,000	6,400	11,000	13,000	2,100
	vc	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	n	8,000	8,000	8,000	4,800	8,000	9,500	1,600
	vc	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	n	16,000	16,000	16,000	9,500	16,000	19,000	3,200
	vc	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	n	11,000	11,000	11,000	6,400	11,000	13,000	2,100
	vc	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	n	8,000	8,000	8,000	4,800	8,000	9,500	1,600
	vc	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

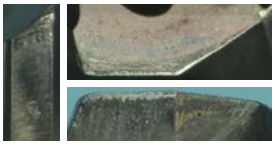
Min. - **Optimum** - Max.

* If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available. In this case, the tool life may be shortened.

■ 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 : vc = 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: vc = 60m/min, f = 0.10mm/rev, H = 27mm
Tool life : 600 units (18m)

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)

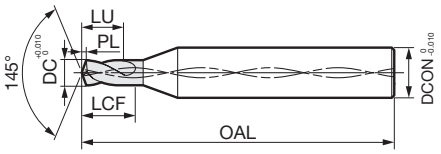
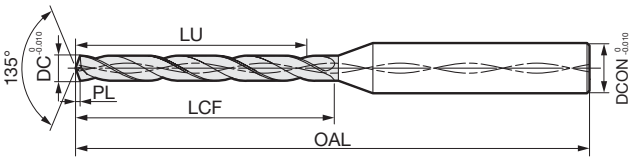


Fig 2 (MLDH-L type)



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	3.0	1
	5	●	**0800L5**	6.8	8	50.0	0.2	3.0	2
0.80	12	●	**0800L12**	12.8	14	55	0.2	3.0	2
	20	●	**0800L20**	17.8	19	60	0.2	3.0	2
	30	●	**0800L30**	26.8	28	70	0.2	3.0	2
	2	●	**MLDH 0810P**	2.0	3.2	45	0.1	3.0	1
	5	●	**0810L5**	7.8	9	50.0	0.2	3.0	2
0.81	12	●	**0810L12**	12.8	14	55	0.2	3.0	2
	20	●	**0810L20**	17.8	19	60	0.2	3.0	2
	30	●	**0810L30**	26.8	28	70	0.2	3.0	2
	2	●	**MLDH 0820P**	2.1	3.3	45	0.1	3.0	1
	5	●	**0820L5**	7.8	9	50.0	0.2	3.0	2
0.82	12	●	**0820L12**	12.8	14	55	0.2	3.0	2
	20	●	**0820L20**	18.8	20	60	0.2	3.0	2
	30	●	**0820L30**	26.8	28	70	0.2	3.0	2
	2	●	**MLDH 0830P**	2.1	3.3	45	0.1	3.0	1
	5	●	**0830L5**	7.8	9	50.0	0.2	3.0	2
0.83	12	●	**0830L12**	12.8	14	55	0.2	3.0	2
	20	●	**0830L20**	18.8	20	60	0.2	3.0	2
	30	●	**0830L30**	26.8	28	70	0.2	3.0	2
	2	●	**MLDH 0840P**	2.1	3.4	45	0.1	3.0	1
	5	●	**0840L5**	7.7	9	50.0	0.2	3.0	2
0.84	12	●	**0840L12**	12.7	14	55	0.2	3.0	2
	20	●	**0840L20**	18.7	20	60	0.2	3.0	2
	30	●	**0840L30**	27.7	29	70	0.2	3.0	2
	2	●	**MLDH 0850P**	2.1	3.4	45	0.1	3.0	1
	5	●	**0850L5**	7.7	9	50.0	0.2	3.0	2
0.85	12	●	**0850L12**	12.7	14	55	0.2	3.0	2
	20	●	**0850L20**	18.7	20	60	0.2	3.0	2
	30	●	**0850L30**	27.7	29	70	0.2	3.0	2
	2	●	**MLDH 0860P**	2.1	3.4	45	0.1	3.0	1
	5	●	**0860L5**	7.7	9	50.0	0.2	3.0	2
0.86	12	●	**0860L12**	13.7	15	55	0.2	3.0	2
	20	●	**0860L20**	19.7	21	65	0.2	3.0	2
	30	●	**0860L30**	27.7	29	70	0.2	3.0	2
	2	●	**MLDH 0870P**	2.2	3.5	45	0.1	3.0	1
	5	●	**0870L5**	7.7	9	50.0	0.2	3.0	2
0.87	12	●	**0870L12**	13.7	15	55	0.2	3.0	2
	20	●	**0870L20**	19.7	21	65	0.2	3.0	2
	30	●	**0870L30**	28.7	30	70	0.2	3.0	2
	2	●	**MLDH 0880P**	2.2	3.5	45	0.1	3.0	1
	5	●	**0880L5**	7.7	9	50.0	0.2	3.0	2
0.88	12	●	**0880L12**	13.7	15	55	0.2	3.0	2
	20	●	**0880L20**	19.7	21	65	0.2	3.0	2
	30	●	**0880L30**	28.7	30	70	0.2	3.0	2
	2	●	**MLDH 0890P**	2.3	3.6	45	0.1	3.0	1
	5	●	**0890L5**	7.7	9	50.0	0.2	3.0	2
0.89	12	●	**0890L12**	13.7	15	55	0.2	3.0	2
	20	●	**0890L20**	19.7	21	65	0.2	3.0	2
	30	●	**0890L30**	28.7	30	70	0.2	3.0	2
	2	●	**MLDH 0900P**	2.3	3.6	45	0.1	3.0	1
	5	●	**0900L5**	7.7	10	50.0	0.2	3.0	2
0.90	12	●	**0900L12**	13.7	15	55	0.2	3.0	2
	20	●	**0900L20**	20.7	22	65	0.2	3.0	2
	30	●	**0900L30**	29.7	31	75	0.2	3.0	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	3.0	1
	5	●	**0910L5**	8.6	10	50.0	0.2	3.0	2
0.91	12	●	**0910L12**	13.6	15	55	0.2	3.0	2
	20	●	**0910L20**	20.6	22	65	0.2	3.0	2
	30	●	**0910L30**	29.6	31	75	0.2	3.0	2
	2	●	**MLDH 0920P**	2.3	3.7	45	0.1	3.0	1
	5	●	**0920L5**	8.6	10	50.0	0.2	3.0	2
0.92	12	●	**0920L12**	14.6	16	60	0.2	3.0	2
	20	●	**0920L20**	20.6	22	65	0.2	3.0	2
	30	●	**0920L30**	29.6	31	75	0.2	3.0	2
	2	●	**MLDH 0930P**	2.3	3.7	45	0.1	3.0	1
	5	●	**0930L5**	8.6	10	50.0	0.2	3.0	2
0.93	12	●	**0930L12**	14.6	16	60	0.2	3.0	2
	20	●	**0930L20**	20.6	22	65	0.2	3.0	2
	30	●	**0930L30**	30.6	32	75	0.2	3.0	2
	2	●	**MLDH 0940P**	2.4	3.8	45	0.1	3.0	1
	5	●	**0940L5**	8.6	10	50.0	0.2	3.0	2
0.94	12	●	**0940L12**	14.6	16	60	0.2	3.0	2
	20	●	**0940L20**	21.6	23	65	0.2	3.0	2
	30	●	**0940L30**	30.6	32	75	0.2	3.0	2
	2	●	**MLDH 0950P**	2.4	3.8	45	0.2	3.0	1
	5	●	**0950L5**	8.6	10	50.0	0.2	3.0	2
0.95	12	●	**0950L12**	14.6	16	60	0.2	3.0	2
	20	●	**0950L20**	21.6	23	65	0.2	3.0	2
	30	●	**0950L30**	30.6	32	75	0.2	3.0	2
	2	●	**MLDH 0960P**	2.4	3.8	45	0.2	3.0	1
	5	●	**0960L5**	8.6	10	50.0	0.2	3.0	2
0.96	12	●	**0960L12**	14.6	16	60	0.2	3.0	2
	20	●	**0960L20**	21.6	23	65	0.2	3.0	2
	30	●	**0960L30**	31.6	33	75	0.2	3.0	2
	2	●	**MLDH 0970P**	2.4	3.9	45	0.2	3.0	1
	5	●	**0970L5**	8.5	10	50.0	0.2	3.0	2
0.97	12	●	**0970L12**	14.5	16	60	0.2	3.0	2
	20	●	**0970L20**	21.5	23	65	0.2	3.0	2
	30	●	**0970L30**	31.5	33	75	0.2	3.0	2
	2	●	**MLDH 0980P**	2.4	3.9	45	0.2	3.0	1
	5	●	**0980L5**	8.5	10	50.0	0.2	3.0	2
0.98	12	●	**0980L12**	15.5	17	60	0.2	3.0	2
	20	●	**0980L20**	22.5	24	65	0.2	3.0	2
	30	●	**0980L30**	31.5	33	75	0.2	3.0	2
	2	●	**MLDH 0990P**	2.5	4	45	0.2	3.0	1
	5	●	**0990L5**	8.5	10	50.0	0.2	3.0	2
0.99	12	●	**0990L12**	15.5	17	60	0.2	3.0	2
	20	●	**0990L20**	22.5	24	65	0.2	3.0	2
	30	●	**0990L30**	32.5	34	75	0.2	3.0	2
	2	●	**MLDH 1000P**	2.5	4	45	0.2	3.0	1
	5	●	**1000L5**	8.5	10	50.0	0.2	3.0	2
1.00	12	●	**1000L12**	15.5	17	60	0.2	3.0	2
	20	●	**1000L20**	22.5	24	65	0.2	3.0	2
	30	●	**1000L30**	32.5	34	75	0.2	3.0	2
	2	●	**MLDH 1050P**	2.6	4.2	45	0.2	3.0	1
	5	●	**1050L5**	10.4	12	55.0	0.2	3.0	2
1.05	12	●	**1050L12**	16.4	18	60	0.2	3.0	2
	20	●	**1050L20**	23.4	25	65	0.2	3.0	2
	30	●	**1050L30**	34.4	36	80	0.2	3.0	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)

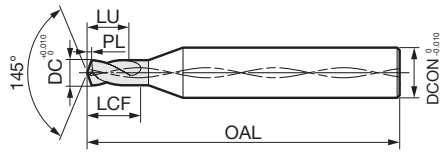
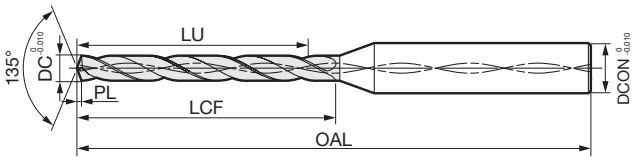


Fig 2 (MLDH-L type)



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
	2	●	**MLDH 1100P**	2.8	4.4	45	0.2	3.0	1
	5	●	**1100L5**	10.4	12	55.0	0.2	3.0	2
1.10	12	●	**1100L12**	17.4	19	60	0.2	3.0	2
	20	●	**1100L20**	24.4	26	70	0.2	3.0	2
	30	●	**1100L30**	35.4	37	80	0.2	3.0	2
	2	●	**MLDH 1150P**	2.9	4.5	45	0.2	3.0	1
	5	●	**1150L5**	10.3	12	55.0	0.2	3.0	2
1.15	12	●	**1150L12**	18.3	20	60	0.2	3.0	2
	20	●	**1150L20**	26.3	28	70	0.2	3.0	2
	30	●	**1150L30**	37.3	39	80	0.2	3.0	2
	2	●	**MLDH 1200P**	3.0	4.8	45	0.2	3.0	1
	5	●	**1200L5**	10.2	12	55.0	0.2	3.0	2
1.20	12	●	**1200L12**	18.2	20	60	0.2	3.0	2
	20	●	**1200L20**	27.2	29	70	0.2	3.0	2
	30	●	**1200L30**	39.2	41	85	0.2	3.0	2
	2	●	**MLDH 1250P**	3.1	8	45	0.2	3.0	1
	5	●	**1250L5**	12.1	14	55.0	0.3	3.0	2
1.25	12	●	**1250L12**	19.1	21	65	0.3	3.0	2
	20	●	**1250L20**	28.1	30	70	0.3	3.0	2
	30	●	**1250L30**	41.1	43	85	0.3	3.0	2
	2	●	**MLDH 1300P**	3.3	5.2	45	0.2	3.0	1
	5	●	**1300L5**	12.1	14	55.0	0.3	3.0	2
1.30	12	●	**1300L12**	20.1	22	65	0.3	3.0	2
	20	●	**1300L20**	29.1	31	75	0.3	3.0	2
	30	●	**1300L30**	42.1	44	85	0.3	3.0	2
	2	●	**MLDH 1350P**	3.4	5.4	45	0.2	3.0	1
	5	●	**1350L5**	12.0	14	55.0	0.3	3.0	2
1.35	12	●	**1350L12**	21.0	23	65	0.3	3.0	2
	20	●	**1350L20**	30.0	32	75	0.3	3.0	2
	30	●	**1350L30**	44.0	46	90	0.3	3.0	2
	2	●	**MLDH 1400P**	3.5	5.6	45	0.2	3.0	1
	5	●	**1400L5**	11.9	14	55.0	0.3	3.0	2
1.40	12	●	**1400L12**	21.9	24	65	0.3	3.0	2
	20	●	**1400L20**	31.9	34	75	0.3	3.0	2
	30	●	**1400L30**	45.9	48	90	0.3	3.0	2
	2	●	**MLDH 1450P**	3.6	5.8	45	0.2	3.0	1
	5	●	**1450L5**	13.8	16	55.0	0.3	3.0	2
1.45	12	●	**1450L12**	22.8	25	65	0.3	3.0	2
	20	●	**1450L20**	32.8	35	75	0.3	3.0	2
	30	●	**1450L30**	46.8	49	90	0.3	3.0	2
	2	●	**MLDH 1500P**	3.8	6	45	0.2	3.0	1
	5	●	**1500L5**	13.8	16	55.0	0.3	3.0	2
1.50	12	●	**1500L12**	23.8	26	65	0.3	3.0	2
	20	●	**1500L20**	33.8	36	75	0.3	3.0	2
	30	●	**1500L30**	48.8	51	90	0.3	3.0	2
	2	●	**MLDH 1550P**	3.9	6.2	45	0.2	3.0	1
	5	●	**1550L5**	13.7	16	55.0	0.3	3.0	2
1.55	12	●	**1550L12**	23.7	26	65	0.3	3.0	2
	20	●	**1550L20**	34.7	37	80	0.3	3.0	2
	30	●	**1550L30**	50.7	53	95	0.3	3.0	2
	2	●	**MLDH 1600P**	4.0	6.4	45	0.3	3.0	1
	5	●	**1600L5**	13.6	16	55.0	0.3	3.0	2
1.60	12	●	**1600L12**	24.6	27	70	0.3	3.0	2
	20	●	**1600L20**	35.6	38	80	0.3	3.0	2
	30	●	**1600L30**	51.6	54	95	0.3	3.0	2

Part Number Suffix - P: For Guide Hole
Grade: ACV70

Diameter ø1.65 to 2.00mm

Dimensions (mm)

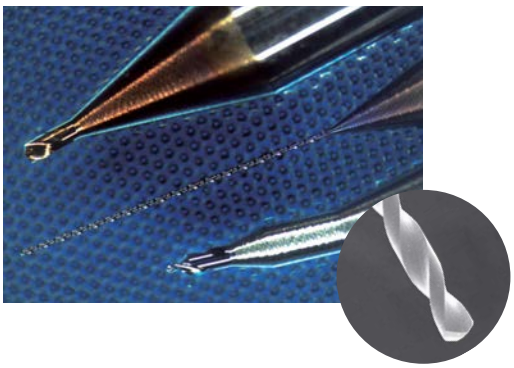
Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
	2	●	**MLDH 1650P**	4.1	6.6	50	0.3	3.0	1
	5	●	**1650L5**	15.5	18	60.0	0.3	3.0	2
1.65	12	●	**1650L12**	25.5	28	70	0.3	3.0	2
	20	●	**1650L20**	37.5	40	80	0.3	3.0	2
	30	●	**1650L30**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

Part Number Suffix - P: For Guide Hole
Grade: ACV70

MDUS series/MDUP series/MDSS series

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 seires ø0.03 to ø0.19mm

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

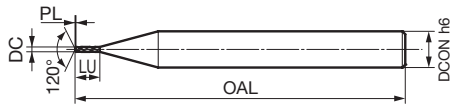
■ Micro Multi Pointing Drill MDUP seires ø0.03 to ø0.18mm

- For drilling guide hole for MDUS series drills

PVD Coat | Pilot 1D

*Refer to N36 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

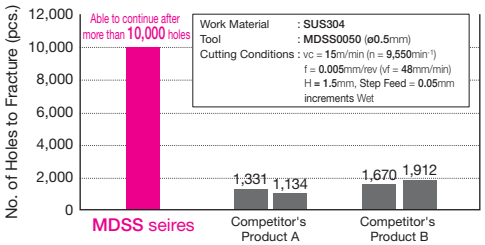
Micro Multi Pointing Drill MDUP seires Diameter ø0.03 to 0.18mm Dimensions (mm)

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-MULTIDRILL MDSS seires 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.



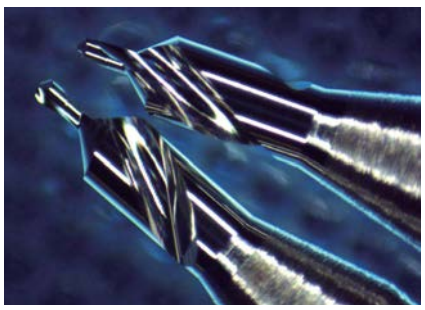
MDSS Recommended Cutting Conditions (Wet) (Inquire about cutting conditions for the MDUS series)

Work Material / Cutting Conditions	Alloy Steel, Pre-hardened Steel SCM,NAK			Die Steel, Tempered Steel (30 to 40HRC)			Stainless Steel SUS		
Dia. 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 recommended 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 3D (D=drill diameter).

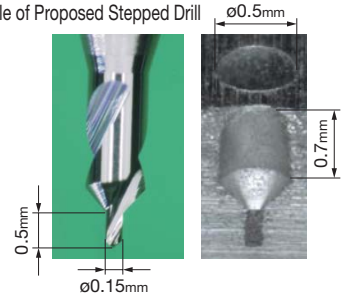
For Ceramics and Non-metals



■ 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 series/MDSS series (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 N36 for the tolerance of h6

Fig 1 (ø0.030 to 0.190mm)

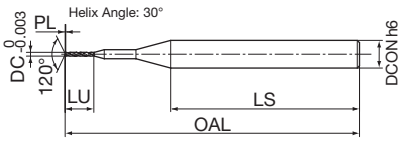


Fig 2 (ø0.20 to 0.34mm)

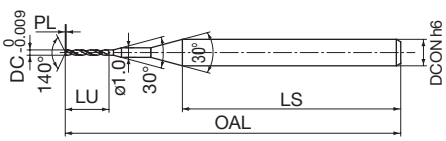
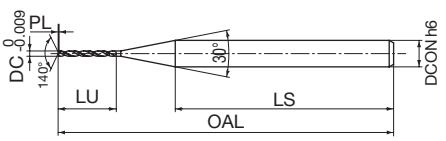


Fig 3 (ø0.35 to 1.00mm)



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		●	MDUS 0030-30C	0.26	38.0	0.01	28	3.0	1
0.035			0035-30C	0.35	38.0	0.01	28	3.0	1
0.040	10	●	0040-30C	0.34	38.0	0.01	28	3.0	1
0.045			0045-30C	0.46	38.0	0.01	28	3.0	1
0.050		●	0050-30C	0.45	38.0	0.01	28	3.0	1
0.055			MDUS 0055-30C	0.55	38.0	0.02	28	3.0	1
0.060			0060-30C	0.54	38.0	0.02	28	3.0	1
0.065			0065-30C	0.64	38.0	0.02	28	3.0	1
0.070	10		0070-30C	0.63	38.0	0.02	28	3.0	1
0.075			0075-30C	0.73	38.0	0.02	28	3.0	1
0.080		●	0080-30C	0.72	38.0	0.02	28	3.0	1
0.085			0085-30C	0.92	38.0	0.02	28	3.0	1
0.090			MDUS 0090-30C	0.91	38.0	0.03	28	3.0	1
0.095			0095-30C	0.91	38.0	0.03	28	3.0	1
0.100	10	●	0100-30C	0.90	38.0	0.03	28	3.0	1
0.110			0110-30C	1.09	38.0	0.03	28	3.0	1
0.120		●	0120-30C	1.08	38.0	0.03	28	3.0	1
0.130			MDUS 0130-30C	1.37	38.0	0.04	28	3.0	1
0.140	10		0140-30C	1.36	38.0	0.04	28	3.0	1
0.150		●	0150-30C	1.35	38.0	0.04	28	3.0	1
0.160			MDUS 0160-30C	1.64	38.0	0.05	28	3.0	1
0.170	10		0170-30C	1.63	38.0	0.05	28	3.0	1
0.180		●	0180-30C	1.62	38.0	0.05	28	3.0	1
0.190			0190-30C	1.71	38.0	0.05	28	3.0	1
0.20		●	MDSS 0020	2.25	38	0.04	28	3.0	2
0.21		●	0021	2.24	38	0.04	28	3.0	2
0.22	10	●	0022	2.23	38	0.04	28	3.0	2
0.23		●	0023	2.21	38	0.04	28	3.0	2
0.24		●	0024	2.20	38	0.04	28	3.0	2
0.25		●	MDSS 0025	2.19	38	0.05	28	3.0	2
0.26		●	0026	2.18	38	0.05	28	3.0	2
0.27	10	●	0027	2.16	38	0.05	28	3.0	2
0.28		●	0028	2.15	38	0.05	28	3.0	2
0.29		●	0029	2.14	38	0.05	28	3.0	2
0.30		●	0030	2.6	38	0.05	28	3.0	2
0.31		●	MDSS 0031	2.6	38	0.06	28	3.0	2
0.32		●	0032	2.6	38	0.06	28	3.0	2
0.33	10	●	0033	2.6	38	0.06	28	3.0	2
0.34		●	0034	2.6	38	0.06	28	3.0	2
0.35		●	0035	3.6	38	0.06	28	3.0	3
0.36		●	MDSS 0036	3.6	38	0.07	28	3.0	3
0.37		●	0037	3.5	38	0.07	28	3.0	3
0.38	10	●	0038	3.5	38	0.07	28	3.0	3
0.39		●	0039	3.5	38	0.07	28	3.0	3
0.40		●	0040	4.5	38	0.07	28	3.0	3
0.41		●	0041	4.5	38	0.07	28	3.0	3
0.42		●	MDSS 0042	4.5	38	0.08	28	3.0	3
0.43		●	0043	4.5	38	0.08	28	3.0	3
0.44	10	●	0044	4.5	38	0.08	28	3.0	3
0.45		●	0045	4.4	38	0.08	28	3.0	3
0.46		●	0046	4.4	38	0.08	28	3.0	3
0.47		●	MDSS 0047	4.4	38	0.09	28	3.0	3
0.48	10	●	0048	4.4	38	0.09	28	3.0	3
0.49		●	0049	4.4	38	0.09	28	3.0	3

Grade: MDUS series KP011 / MDSS series 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		●	MDSS 0050	5.4	38	0.09	27	3.0	3
0.51	10	●	0051	5.4	38	0.09	27	3.0	3
0.52		●	0052	5.4	38	0.09	27	3.0	3
0.53		●	MDSS 0053	5.3	38	0.10	27	3.0	3
0.54		●	0054	5.3	38	0.10	27	3.0	3
0.55	10	●	0055	5.3	38	0.10	27	3.0	3
0.56		●	0056	5.3	38	0.10	27	3.0	3
0.57		●	0057	5.3	38	0.10	27	3.0	3
0.58		●	MDSS 0058	5.3	38	0.11	27	3.0	3
0.59		●	0059	5.3	38	0.11	27	3.0	3
0.60	10	●	0060	6.3	38	0.11	26	3.0	3
0.61		●	0061	6.2	38	0.11	26	3.0	3
0.62		●	0062	6.2	38	0.11	26	3.0	3
0.63		●	0063	6.2	38	0.11	26	3.0	3
0.64		●	MDSS 0064	6.2	38	0.12	26	3.0	3
0.65		●	0065	6.2	38	0.12	26	3.0	3
0.66	10	●	0066	6.2	38	0.12	26	3.0	3
0.67		●	0067	6.2	38	0.12	26	3.0	3
0.68		●	0068	6.2	38	0.12	26	3.0	3
0.69		●	MDSS 0069	6.1	38	0.13	26	3.0	3
0.70		●	0070	8.1	38	0.13	24	3.0	3
0.71	10	●	0071	8.1	38	0.13	24	3.0	3
0.72		●	0072	8.1	38	0.13	24	3.0	3
0.73		●	0073	8.1	38	0.13	24	3.0	3
0.74		●	0074	8.1	38	0.13	24	3.0	3
0.75		●	MDSS 0075	8.1	38	0.14	24	3.0	3
0.76		●	0076	8.1	38	0.14	24	3.0	3
0.77	10	●	0077	8.0	38	0.14	24	3.0	3
0.78		●	0078	8.0	38	0.14	24	3.0	3
0.79		●	0079	8.0	38	0.14	24	3.0	3
0.80		●	MDSS 0080	9.0	38	0.15	23	3.0	3
0.81		●	0081	9.0	38	0.15	23	3.0	3
0.82	10	●	0082	9.0	38	0.15	23	3.0	3
0.83		●	0083	9.0	38	0.15	23	3.0	3
0.84		●	0084	9.0	38	0.15	23	3.0	3
0.85		●	0085	8.9	38	0.15	23	3.0	3
0.86		●	MDSS 0086	8.9	38	0.16	23	3.0	3
0.87		●	0087	8.9	38	0.16	23	3.0	3
0.88	10	●	0088	8.9	38	0.16	23	3.0	3
0.89		●	0089	8.9	38	0.16	23	3.0	3
0.90		●	0090	9.9	38	0.16	22	3.0	3
0.91		●	MDSS 0091	9.9	38	0.17	22	3.0	3
0.92		●	0092	9.9	38	0.17	22	3.0	3
0.93	10	●	0093	9.8	38	0.17	22	3.0	3
0.94		●	0094	9.8	38	0.17	22	3.0	3
0.95		●	0095	9.8	38	0.17	22	3.0	3
0.96		●	0096	9.8	38	0.17	22	3.0	3
0.97		●	MDSS 0097	9.8	38	0.18	22	3.0	3
0.98	10	●	0098	9.8	38	0.18	22	3.0	3
0.99		●	0099	9.8	38	0.18	22	3.0	3
1.00		●	0100	10.8	38	0.18	21	3.0	3

Grade: MDUS series KP011 / MDSS series ACF40B

SMD series

Features

Indexable head type drills which utilises an unique radial serration mounting 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

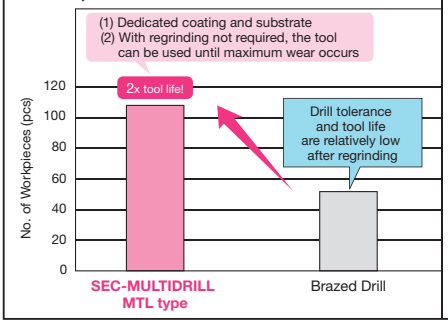
Product Range

Head	Applications	Holder (L/D)	DC Range
MTL type	General Steel	1.5D type / 1.5DF type (1.5D)	ø12.0 to ø30.8 M type / L type ø12.0 to ø42.5 D type ø13.5 to ø30.8
		M type / 3D type / 3DF type (3D)	
		L type / 5D type / 5DF type (5D)	
		D type / 8D type / 8DF type (8D)	
		12D type (12D)	
MSL type	SUS SS FC	1.5D type / 1.5DF type (1.5D)	ø12.0 to ø30.8 D type ø13.5 to ø30.8
		M type / 3D type / 3DF type (3D)	
		L type / 5D type / 5DF type (5D)	
		D type / 8D type / 8DF type (8D)	
		12D type (12D)	
MFS type	Flat Bottom Hole	1.5D type/1.5DF type	ø12.0 to ø30.0
MB type	Bridge	B3 type (3D)	ø24.5 to ø26.7

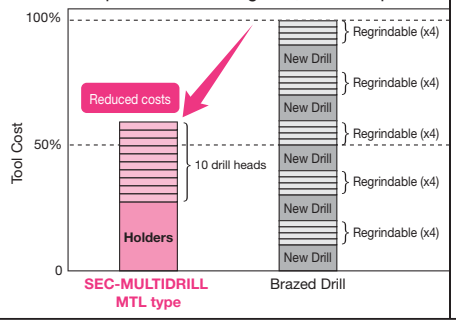
*MFS type can also be used with 3D, 5D, 8D, and 12D holders.

Tool Life and Cost

Comparison of Tool Life



Tool Comparison for Drilling of 1,000 Workpieces

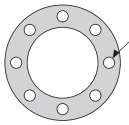


Results

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

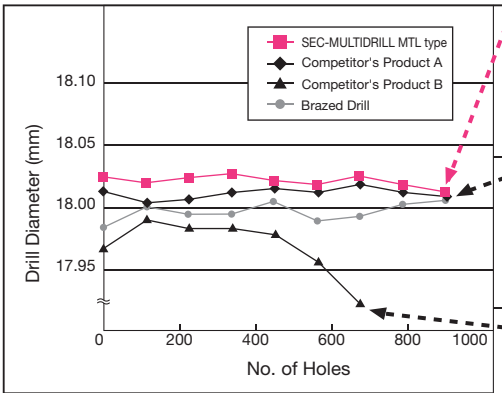
SEC-MULTIDRILL MTL type has **double the tool life of brazed drills!**
Shorter tool change time!

Workpiece Example and Cutting Conditions



SEC-MultiDrill MTL type
Head: SMDT1800MTL
Holder: SMDH180M
Work Material:
Machine Component (S50C)
Wet

Drilling Precision



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

After 900 holes (equivalent to 34m)

Comp's A: **Large wear**

After 900 holes (equivalent to 34m)

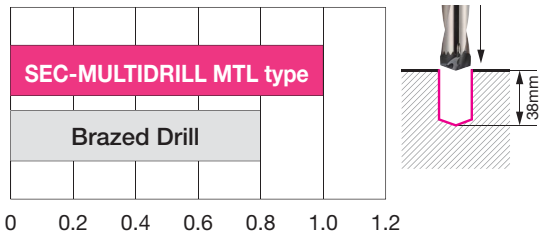
Comp's B: **Peripheral edge fracture**

After 670 holes (equivalent to 25m)

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

Tool Strength

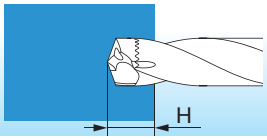
Durability Comparison



Work Material : S50C Diameter: ø16.0mm
Cutting Conditions : vc = 80m/min
Hole Depth: 38mm

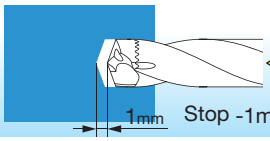
Recommended Drilling Method for 8D and 12D type: Use a hydro chuck, milling chuck or collet chuck to hold the 12D drill body

(1) Use a SMDHSSS-1.5D(F) type (1.5D holder) + MTL type, MSL type (head) to drill a guide hole
● Use a 1.5D drill body and a drill head with the same diameter (same Cat. No.) as the 8D or 12D drill when drilling a guide hole.



H = Drill diameter x 1 to 1.5 times the depth

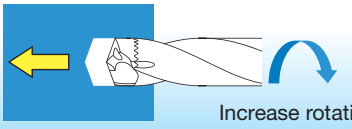
(2) Feed the 8D or 12D holder + MTL type, MSL type (head) through the guide hole at a low spindle speed
● Spindle speed: 500min^{-1} ● Feed rate: 1,000 to 2,000mm/min



* 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.

Stop -1mm away from the guide hole depth

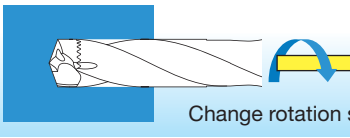
(3) Increase spindle speed until the set spindle speed is reached, then start drilling



* On some NC machine tools, 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.

Increase rotation speed

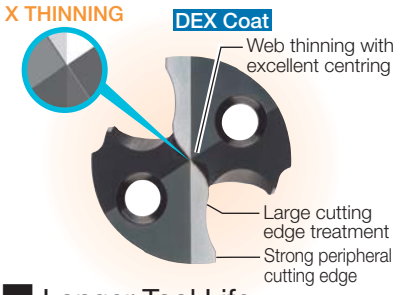
(4) After drilling, rotation speed is reduced and the drill is retracted from the work material
● Spindle speed: 500min^{-1} ● Feed rate: 1,000 to 2,000mm/min



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

Change rotation speed to 500min^{-1}

MTL type Suitable for high-efficiency drilling of general steel



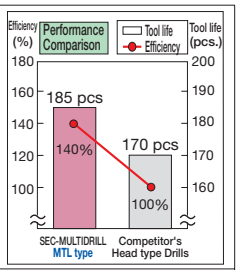
Excellent cutting edge strength
Large edge treatment is used to reduce fracture of the cutting edge.

Stable machined hole accuracy
X type thinning achieves excellent centring on drill entry and stable drilling.

Longer Tool Life

Improved tool life and efficiency

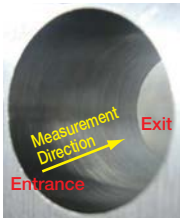
Work Material : S20C (Housing)
Tool : ø15×5D
Cutting Conditions : vc = 107m/min
f = 0.3mm/rev
Hole depth : 32mm×12 holes

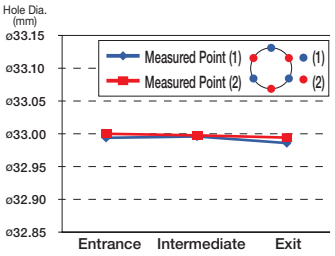


Drilling Precision

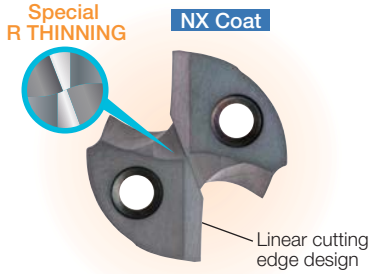
High drilling accuracy even with large diameters

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





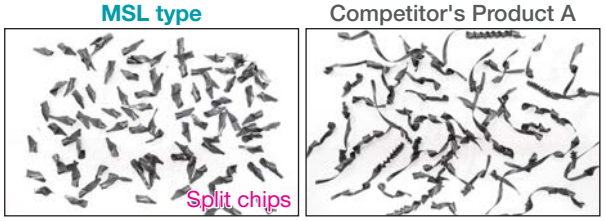
MSL type Stable drilling of mild steel, stainless steel, etc.



Exceptional cutting edge sharpness in mild steel and SUS drilling
Newly designed linear cutting edge and special R THINNING enable improved chip evacuation and stable drilling.

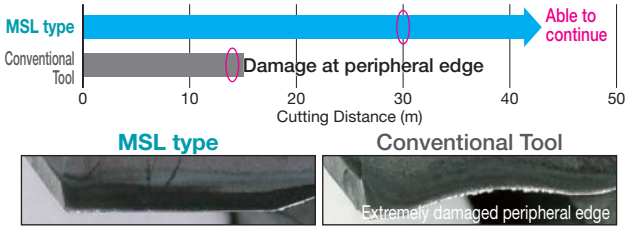
Stable long tool life
NX Coat based on ABSOTECH™ technology for improved fracture resistance and adhesion resistance.

Chip Evacuation



Equipment: Vertical Machining Centre BT50 Internal Coolant Supply 2MPa
Work Material: SS400 Tool: ø14 x 5D
Cutting Conditions: vc = 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: vc = 65m/min f = 0.15mm/rev H = 40mm

Recommended Cutting Conditions (MSL type/MTL type/MEL type)

(n: Spindle Speed min^{-1} vc: 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	MTL type	MSL type	MTL type	MSL type / MEL type	MTL type / MSL type	MTL type / MSL type	(Special Cutting Edge)*
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	n	2,000 (1,400)	2,000 (1,400)	2,000 (1,400)	1,200 (1,000)	1,200 (1,000)	1,400 (1,200)	1,200 (1,000)	4,800 (4,000)
	vc	80-**100**-120 (50-**70**-80)	70-**100**-120 (50-**70**-80)	70-**100**-120 (50-**70**-80)	40-**60**-90 (30-**50**-70)	30-**50**-80 (30-**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**-0.30	0.10-**0.15**-0.20	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	n	1,600 (1,100)	1,600 (1,100)	1,600 (1,100)	1,000 (800)	1,100 (950)	1,300 (1,100)	1,100 (950)	3,800 (3,200)
	vc	80-**100**-120 (50-**70**-80)	70-**100**-120 (50-**70**-80)	70-**100**-120 (50-**70**-80)	40-**60**-90 (30-**50**-70)	30-**60**-90 (30-**50**-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	0.20-**0.25**-0.35	0.15-**0.20**-0.25	0.15-**0.20**-0.25	0.10-**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	n	1,000 (700)	1,000 (700)	1,000 (700)	600 (500)	700 (600)	800 (700)	700 (600)	2,500 (2,000)
	vc	80-**100**-120 (50-**70**-80)	70-**100**-120 (50-**70**-80)	70-**100**-120 (50-**70**-80)	40-**60**-90 (30-**50**-70)	30-**60**-90 (30-**50**-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**-0.35	0.15-**0.20**-0.25	0.15-**0.20**-0.25	0.10-**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	n	650 (520)	650 (520)		380 (300)	450 (300)	520 (450)	450 (380)	1,800 (1,500)
	vc	70-**90**-120 (50-**70**-80)	70-**90**-120 (50-**70**-80)		40-**50**-80 (30-**40**-60)	40-**60**-80 (30-**40**-60)	60-**70**-100 (50-**60**-90)	50-**60**-90 (40-**50**-70)	200-**240**-260 (180-**200**-240)
	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: Adjustment of cutting feed f, etc., may be required depending on machine rigidity and workpiece rigidity.
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.
*The values in red above have been changed from the 2021-2022 General Catalogue.

* Inquire if you require special drill heads for aluminum alloy.

SMD series (Internal Coolant Supply)

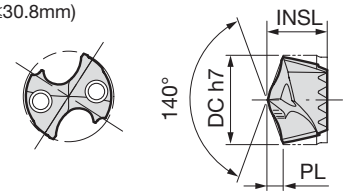
MTL | Carbon Steel/ Alloy Steel up to 0.25% | Carbon Steel/ Alloy Steel from 0.25% | Tempered Steel | Hardened Steel up to 45HRC | Cast Iron | Ductile Cast Iron

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

*Refer to N36 for the tolerance of h7

Indexable Head

Fig 1 (DC≤30.8mm)



Indexable Head MTL type Diameter ø12.0 to 17.3mm

Dimensions (mm)

Diameter DC	Stock	Cat. No.	Head Length INSL	Tip PL	Applicable Holder	Fig
12.0	●	SMDT 1200 MTL	9.1	2.2		1
12.1	●	1210 MTL	9.1	2.2		1
12.2	●	1220 MTL	9.1	2.2	SMDH120□	1
12.3	●	1230 MTL	9.1	2.2		1
12.4	●	1240 MTL	9.1	2.3		1
12.5	●	SMDT 1250 MTL	9.4	2.3		1
12.6	●	1260 MTL	9.4	2.3		1
12.7	●	1270 MTL	9.4	2.3	SMDH125□	1
12.8	●	1280 MTL	9.4	2.3		1
12.9	●	1290 MTL	9.4	2.3		1
13.0	●	SMDT 1300 MTL	9.7	2.4		1
13.1	●	1310 MTL	9.7	2.4		1
13.2	●	1320 MTL	9.7	2.4	SMDH130□	1
13.3	●	1330 MTL	9.7	2.4		1
13.4	●	1340 MTL	9.7	2.4		1
13.5	●	SMDT 1350 MTL	10.3	2.5		1
13.6	●	1360 MTL	10.3	2.5		1
13.7	●	1370 MTL	10.3	2.5		1
13.8	●	1380 MTL	10.3	2.5		1
13.9	●	1390 MTL	10.3	2.5		1
14.0	●	1400 MTL	10.3	2.5	SMDH140□	1
14.1	●	1410 MTL	10.3	2.6		1
14.2	●	1420 MTL	10.3	2.6		1
14.3	●	1430 MTL	10.3	2.6		1
14.4	●	1440 MTL	10.3	2.6		1
14.5	●	1450 MTL	10.3	2.6		1
14.6	●	SMDT 1460 MTL	11.0	2.7		1
14.7	●	1470 MTL	11.0	2.7		1
14.8	●	1480 MTL	11.0	2.7		1
14.9	●	1490 MTL	11.0	2.7		1
15.0	●	1500 MTL	11.0	2.7	SMDH150□	1
15.1	●	1510 MTL	11.0	2.7		1
15.2	●	1520 MTL	11.0	2.8		1
15.3	●	1530 MTL	11.0	2.8		1
15.4	●	1540 MTL	11.0	2.8		1
15.5	●	1550 MTL	11.0	2.8		1
15.6	●	SMDT 1560 MTL	11.6	2.8		1
15.7	●	1570 MTL	11.6	2.9		1
15.8	●	1580 MTL	11.6	2.9		1
15.9	●	1590 MTL	11.6	2.9		1
16.0	●	1600 MTL	11.6	2.9	SMDH160□	1
16.1	●	1610 MTL	11.6	2.9		1
16.2	●	1620 MTL	11.6	2.9		1
16.3	●	1630 MTL	11.6	3.0		1
16.4	●	1640 MTL	11.6	3.0		1
16.5	●	1650 MTL	11.6	3.0		1
16.6	●	SMDT 1660 MTL	12.2	3.0		1
16.7	●	1670 MTL	12.2	3.0		1
16.8	●	1680 MTL	12.2	3.1		1
16.9	●	1690 MTL	12.2	3.1		1
17.0	●	1700 MTL	12.2	3.1	SMDH170□	1
17.1	●	1710 MTL	12.2	3.1		1
17.2	●	1720 MTL	12.2	3.1		1
17.3	●	1730 MTL	12.2	3.1		1

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

Recommended Cutting Conditions J105 | Applicable Holders J112

Indexable Head MTL type Diameter ø17.4 to 22.7mm

Dimensions (mm)

Diameter DC	Stock	Cat. No.	Head Length INSL	Tip PL	Applicable Holder	Fig
17.4	●	SMDT 1740 MTL	12.2	3.2	SMDH170□	1
17.5	●	1750 MTL	12.2	3.2		1
17.6	●	SMDT 1760 MTL	12.9	3.2		1
17.7	●	1770 MTL	12.9	3.2		1
17.8	●	1780 MTL	12.9	3.2		1
17.9	●	1790 MTL	12.9	3.3		1
18.0	●	1800 MTL	12.9	3.3		1
18.1	●	1810 MTL	12.9	3.3	SMDH180□	1
18.2	●	1820 MTL	12.9	3.3		1
18.3	●	1830 MTL	12.9	3.3		1
18.4	●	1840 MTL	12.9	3.3		1
18.5	●	1850 MTL	12.9	3.4		1
18.6	●	SMDT 1860 MTL	13.5	3.4		1
18.7	●	1870 MTL	13.5	3.4		1
18.8	●	1880 MTL	13.5	3.4		1
18.9	●	1890 MTL	13.5	3.4		1
19.0	●	1900 MTL	13.5	3.5		1
19.1	●	1910 MTL	13.5	3.5	SMDH190□	1
19.2	●	1920 MTL	13.5	3.5		1
19.3	●	1930 MTL	13.5	3.5		1
19.4	●	1940 MTL	13.5	3.5		1
19.5	●	1950 MTL	13.5	3.5		1
19.6	●	SMDT 1960 MTL	14.1	3.6		1
19.7	●	1970 MTL	14.1	3.6		1
19.8	●	1980 MTL	14.1	3.6		1
19.9	●	1990 MTL	14.1	3.6		1
20.0	●	2000 MTL	14.1	3.6	SMDH200□	1
20.1	●	2010 MTL	14.1	3.7		1
20.2	●	2020 MTL	14.1	3.7		1
20.3	●	2030 MTL	14.1	3.7		1
20.4	●	2040 MTL	14.1	3.7		1
20.5	●	2050 MTL	14.1	3.7		1
20.6	●	SMDT 2060 MTL	14.8	3.7		1
20.7	●	2070 MTL	14.8	3.8		1
20.8	●	2080 MTL	14.8	3.8		1
20.9	●	2090 MTL	14.8	3.8		1
21.0	●	2100 MTL	14.8	3.8		1
21.1	●	2110 MTL	14.8	3.8	SMDH210□	1
21.2	●	2120 MTL	14.8	3.9		1
21.3	●	2130 MTL	14.8	3.9		1
21.4	●	2140 MTL	14.8	3.9		1
21.5	●	2150 MTL	14.8	3.9		1
21.6	●	SMDT 2160 MTL	15.0	3.9		1
21.7	●	2170 MTL	15.0	3.9		1
21.8	●	2180 MTL	15.0	4.0		1
21.9	●	2190 MTL	15.0	4.0		1
22.0	●	2200 MTL	15.0	4.0		1
22.1	●	2210 MTL	15.0	4.0	SMDH220□	1
22.2	●	2220 MTL	15.0	4.0		1
22.3	●	2230 MTL	15.0	4.1		1
22.4	●	2240 MTL	15.0	4.1		1
22.5	●	2250 MTL	15.0	4.1		1
22.6	●	2260 MTL	15.0	4.1		1
22.7	●	2270 MTL	15.0	4.1		1

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

Recommended Cutting Conditions J105 | Applicable Holders J112

SMD series (Internal Coolant Supply)

MTL | Carbon Steel/ Alloy Steel up to 0.26% | 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 N36 for the tolerance of h7

Indexable Head

Fig 1 (DC≤30.8mm)

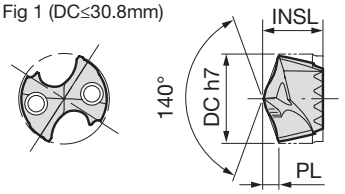
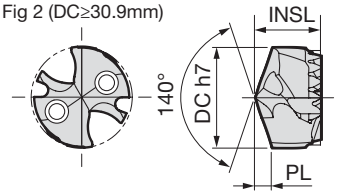


Fig 2 (DC≥30.9mm)



Indexable Head MTL type Diameter ø22.8 to 28.1mm

Dimensions (mm)

Diameter DC	Stock	Cat. No.	Head Length INSL	Tip PL	Applicable Holder	Fig
22.8	●	SMDT 2280 MTL	15.0	4.1	SMDH220□	1
22.9	●	SMDT 2290 MTL	15.1	4.2	SMDH230□	1
23.0	●	2300 MTL	15.1	4.2		1
23.1	●	2310 MTL	15.1	4.2		1
23.2	●	2320 MTL	15.1	4.2		1
23.3	●	2330 MTL	15.1	4.2		1
23.4	●	2340 MTL	15.1	4.3		1
23.5	●	2350 MTL	15.1	4.3		1
23.6	●	2360 MTL	15.1	4.3		1
23.7	●	2370 MTL	15.1	4.3		1
23.8	●	2380 MTL	15.1	4.3		1
23.9	●	SMDT 2390 MTL	15.4	4.3	SMDH240□	1
24.0	●	2400 MTL	15.4	4.4		1
24.1	●	2410 MTL	15.4	4.4		1
24.2	●	2420 MTL	15.4	4.4		1
24.3	●	2430 MTL	15.4	4.4		1
24.4	●	2440 MTL	15.4	4.4		1
24.5	●	2450 MTL	15.4	4.5		1
24.6	●	2460 MTL	15.4	4.5		1
24.7	●	2470 MTL	15.4	4.5		1
24.8	●	2480 MTL	15.4	4.5		1
24.9	●	SMDT 2490 MTL	15.8	4.5	SMDH250□	1
25.0	●	2500 MTL	15.8	4.5		1
25.1	●	2510 MTL	15.8	4.6		1
25.2	●	2520 MTL	15.8	4.6		1
25.3	●	2530 MTL	15.8	4.6		1
25.4	●	2540 MTL	15.8	4.6		1
25.5	●	2550 MTL	15.8	4.6		1
25.6	●	2560 MTL	15.8	4.7		1
25.7	●	2570 MTL	15.8	4.7		1
25.8	●	2580 MTL	15.8	4.7		1
25.9	●	SMDT 2590 MTL	16.4	4.7	SMDH260□	1
26.0	●	2600 MTL	16.4	4.7		1
26.1	●	2610 MTL	16.4	4.7		1
26.2	●	2620 MTL	16.4	4.8		1
26.3	●	2630 MTL	16.4	4.8		1
26.4	●	2640 MTL	16.4	4.8		1
26.5	●	2650 MTL	16.4	4.8		1
26.6	●	2660 MTL	16.4	4.8		1
26.7	●	2670 MTL	16.4	4.9		1
26.8	●	2680 MTL	16.4	4.9		1
26.9	●	SMDT 2690 MTL	17.1	4.9	SMDH270□	1
27.0	●	2700 MTL	17.1	4.9		1
27.1	●	2710 MTL	17.1	4.9		1
27.2	●	2720 MTL	17.1	4.9		1
27.3	●	2730 MTL	17.1	5.0		1
27.4	●	2740 MTL	17.1	5.0		1
27.5	●	2750 MTL	17.1	5.0		1
27.6	●	2760 MTL	17.1	5.0		1
27.7	●	2770 MTL	17.1	5.0		1
27.8	●	2780 MTL	17.1	5.1		1
27.9	●	SMDT 2790 MTL	17.7	5.1	SMDH280□	1
28.0	●	2800 MTL	17.7	5.1		1
28.1	●	2810 MTL	17.7	5.1		1

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

Recommended Cutting Conditions J105 | Applicable Holders J112

Indexable Head MTL type Diameter ø28.2 to 42.5mm

Dimensions (mm)

Diameter DC	Stock	Cat. No.	Head Length INSL	Tip PL	Applicable Holder	Fig
28.2	●	SMDT 2820 MTL	17.7	5.1	SMDH280□	1
28.3	●	2830 MTL	17.7	5.2		1
28.4	●	2840 MTL	17.7	5.2		1
28.5	●	2850 MTL	17.7	5.2		1
28.6	●	2860 MTL	17.7	5.2		1
28.7	●	2870 MTL	17.7	5.2		1
28.8	●	2880 MTL	17.7	5.2		1
28.9	●	SMDT 2890 MTL	18.3	5.3	SMDH290□	1
29.0	●	2900 MTL	18.3	5.3		1
29.1	●	2910 MTL	18.3	5.3		1
29.2	●	2920 MTL	18.3	5.3		1
29.3	●	2930 MTL	18.3	5.3		1
29.4	●	2940 MTL	18.3	5.4		1
29.5	●	2950 MTL	18.3	5.4		1
29.6	●	2960 MTL	18.3	5.4		1
29.7	●	2970 MTL	18.3	5.4		1
29.8	●	2980 MTL	18.3	5.4		1
29.9	●	SMDT 2990 MTL	19.0	5.4	SMDH300□	1
30.0	●	3000 MTL	19.0	5.5		1
30.1	●	3010 MTL	19.0	5.5		1
30.2	●	3020 MTL	19.0	5.5		1
30.3	●	3030 MTL	19.0	5.5		1
30.4	●	3040 MTL	19.0	5.5		1
30.5	●	3050 MTL	19.0	5.6		1
30.6	●	3060 MTL	19.0	5.6		1
30.7	●	3070 MTL	19.0	5.6		1
30.8	●	3080 MTL	19.0	5.6		1
31.0	●	SMDT 3100 MTL	21.0	5.6	SMDH320□	2
31.5		3150 MTL	21.0	5.7		2
32.0	●	3200 MTL	21.0	5.8		2
32.5		SMDT 3250 MTL	21.0	5.9	SMDH335□	2
33.0	●	3300 MTL	21.0	6.0		2
33.5		3350 MTL	21.0	6.1		2
34.0	●	SMDT 3400 MTL	23.0	6.2	SMDH350□	2
34.5		3450 MTL	23.0	6.3		2
35.0	●	3500 MTL	23.0	6.4		2
35.5		SMDT 3550 MTL	23.0	6.5	SMDH365□	2
36.0	●	3600 MTL	23.0	6.6		2
36.5		3650 MTL	23.0	6.6		2
37.0	●	SMDT 3700 MTL	25.0	6.7	SMDH380□	2
37.5	●	3750 MTL	25.0	6.8		2
38.0	●	3800 MTL	25.0	6.9		2
38.5		SMDT 3850 MTL	25.0	7.0	SMDH395□	2
39.0	●	3900 MTL	25.0	7.1		2
39.5		3950 MTL	25.0	7.2		2
40.0	●	SMDT 4000 MTL	27.0	7.3	SMDH410□	2
40.5	●	4050 MTL	27.0	7.4		2
41.0	●	4100 MTL	27.0	7.5		2
41.5		SMDT 4150 MTL	27.0	7.6	SMDH425□	2
42.0	●	4200 MTL	27.0	7.6		2
42.5		4250 MTL	27.0	7.7		2

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

Recommended Cutting Conditions J105 | Applicable Holders J112, J113

SMD series (Internal Coolant Supply)

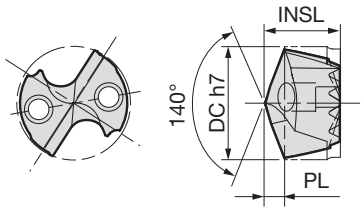
MSL | Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Stainless Steel | Ti Alloy | Heat-resistant Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

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

*Refer to N36 for the tolerance of h7

Indexable Head

Fig 1



Indexable Head MSL type Diameter ø12.0 to 17.3mm

Dimensions (mm)

Diameter DC	Stock	Cat. No.	Head Length INSL	Tip PL	Applicable Holder	Fig
12.0	●	SMDT 1200 MSL	9.1	2.2		1
12.1	●	1210 MSL	9.1	2.2		1
12.2	●	1220 MSL	9.1	2.2	SMDH120□	1
12.3	●	1230 MSL	9.1	2.2		1
12.4	●	1240 MSL	9.1	2.3		1
12.5	●	SMDT 1250 MSL	9.4	2.3		1
12.6	●	1260 MSL	9.4	2.3		1
12.7	●	1270 MSL	9.4	2.3	SMDH125□	1
12.8	●	1280 MSL	9.4	2.3		1
12.9	●	1290 MSL	9.4	2.3		1
13.0	●	SMDT 1300 MSL	9.7	2.4		1
13.1	●	1310 MSL	9.7	2.4		1
13.2	●	1320 MSL	9.7	2.4	SMDH130□	1
13.3	●	1330 MSL	9.7	2.4		1
13.4	●	1340 MSL	9.7	2.4		1
13.5	●	SMDT 1350 MSL	10.3	2.5		1
13.6	●	1360 MSL	10.3	2.5		1
13.7	●	1370 MSL	10.3	2.5		1
13.8	●	1380 MSL	10.3	2.5		1
13.9	●	1390 MSL	10.3	2.5		1
14.0	●	1400 MSL	10.3	2.5	SMDH140□	1
14.1	●	1410 MSL	10.3	2.6		1
14.2	●	1420 MSL	10.3	2.6		1
14.3	●	1430 MSL	10.3	2.6		1
14.4	●	1440 MSL	10.3	2.6		1
14.5	●	1450 MSL	10.3	2.6		1
14.6	●	SMDT 1460 MSL	11.0	2.7		1
14.7	●	1470 MSL	11.0	2.7		1
14.8	●	1480 MSL	11.0	2.7		1
14.9	●	1490 MSL	11.0	2.7		1
15.0	●	1500 MSL	11.0	2.7	SMDH150□	1
15.1	●	1510 MSL	11.0	2.7		1
15.2	●	1520 MSL	11.0	2.8		1
15.3	●	1530 MSL	11.0	2.8		1
15.4	●	1540 MSL	11.0	2.8		1
15.5	●	1550 MSL	11.0	2.8		1
15.6	●	SMDT 1560 MSL	11.6	2.8		1
15.7	●	1570 MSL	11.6	2.9		1
15.8	●	1580 MSL	11.6	2.9		1
15.9	●	1590 MSL	11.6	2.9		1
16.0	●	1600 MSL	11.6	2.9	SMDH160□	1
16.1	●	1610 MSL	11.6	2.9		1
16.2	●	1620 MSL	11.6	2.9		1
16.3	●	1630 MSL	11.6	3.0		1
16.4	●	1640 MSL	11.6	3.0		1
16.5	●	1650 MSL	11.6	3.0		1
16.6	●	SMDT 1660 MSL	12.2	3.0		1
16.7	●	1670 MSL	12.2	3.0		1
16.8	●	1680 MSL	12.2	3.1		1
16.9	●	1690 MSL	12.2	3.1		1
17.0	●	1700 MSL	12.2	3.1	SMDH170□	1
17.1	●	1710 MSL	12.2	3.1		1
17.2	●	1720 MSL	12.2	3.1		1
17.3	●	1730 MSL	12.2	3.1		1

Grade: ACT100

Recommended Cutting Conditions ☞ J105 Applicable Holders ☞ J112

Indexable Head MSL type Diameter ø17.4 to 22.7mm

Dimensions (mm)

Diameter DC	Stock	Cat. No.	Head Length INSL	Tip PL	Applicable Holder	Fig
17.4	●	SMDT 1740 MSL	12.2	3.2	SMDH170□	1
17.5	●	1750 MSL	12.2	3.2		1
17.6	●	SMDT 1760 MSL	12.9	3.2		1
17.7	●	1770 MSL	12.9	3.2		1
17.8	●	1780 MSL	12.9	3.2		1
17.9	●	1790 MSL	12.9	3.3		1
18.0	●	1800 MSL	12.9	3.3		1
18.1	●	1810 MSL	12.9	3.3	SMDH180□	1
18.2	●	1820 MSL	12.9	3.3		1
18.3	●	1830 MSL	12.9	3.3		1
18.4	●	1840 MSL	12.9	3.3		1
18.5	●	1850 MSL	12.9	3.4		1
18.6	●	SMDT 1860 MSL	13.5	3.4		1
18.7	●	1870 MSL	13.5	3.4		1
18.8	●	1880 MSL	13.5	3.4		1
18.9	●	1890 MSL	13.5	3.4		1
19.0	●	1900 MSL	13.5	3.5		1
19.1	●	1910 MSL	13.5	3.5	SMDH190□	1
19.2	●	1920 MSL	13.5	3.5		1
19.3	●	1930 MSL	13.5	3.5		1
19.4	●	1940 MSL	13.5	3.5		1
19.5	●	1950 MSL	13.5	3.5		1
19.6	●	SMDT 1960 MSL	14.1	3.6		1
19.7	●	1970 MSL	14.1	3.6		1
19.8	●	1980 MSL	14.1	3.6		1
19.9	●	1990 MSL	14.1	3.6		1
20.0	●	2000 MSL	14.1	3.6	SMDH200□	1
20.1	●	2010 MSL	14.1	3.7		1
20.2	●	2020 MSL	14.1	3.7		1
20.3	●	2030 MSL	14.1	3.7		1
20.4	●	2040 MSL	14.1	3.7		1
20.5	●	2050 MSL	14.1	3.7		1
20.6	●	SMDT 2060 MSL	14.8	3.7		1
20.7	●	2070 MSL	14.8	3.8		1
20.8	●	2080 MSL	14.8	3.8		1
20.9	●	2090 MSL	14.8	3.8		1
21.0	●	2100 MSL	14.8	3.8		1
21.1	●	2110 MSL	14.8	3.8	SMDH210□	1
21.2	●	2120 MSL	14.8	3.9		1
21.3	●	2130 MSL	14.8	3.9		1
21.4	●	2140 MSL	14.8	3.9		1
21.5	●	2150 MSL	14.8	3.9		1
21.6	●	SMDT 2160 MSL	15.0	3.9		1
21.7	●	2170 MSL	15.0	3.9		1
21.8	●	2180 MSL	15.0	4.0		1
21.9	●	2190 MSL	15.0	4.0		1
22.0	●	2200 MSL	15.0	4.0		1
22.1	●	2210 MSL	15.0	4.0	SMDH220□	1
22.2	●	2220 MSL	15.0	4.0		1
22.3	●	2230 MSL	15.0	4.1		1
22.4	●	2240 MSL	15.0	4.1		1
22.5	●	2250 MSL	15.0	4.1		1
22.6	●	2260 MSL	15.0	4.1		1
22.7	●	2270 MSL	15.0	4.1		1

Grade: ACT100

Recommended Cutting Conditions ☞ J105 Applicable Holders ☞ J112

SMD series (Internal Coolant Supply)

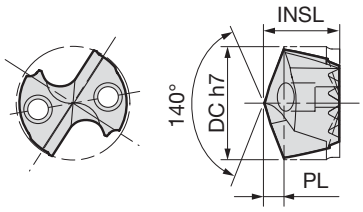
MSL | Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Stainless Steel | Ti Alloy | Heat-resistant Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

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

*Refer to N36 for the tolerance of h7

Indexable Head

Fig 1



Indexable Head MSL type Diameter ø22.8 to 28.1mm

Dimensions (mm)

Diameter DC	Stock	Cat. No.	Head Length INSL	Tip PL	Applicable Holder	Fig
22.8	●	SMDT 2280 MSL	15.0	4.1	SMDH220□	1
22.9	●	SMDT 2290 MSL	15.1	4.2	SMDH230□	1
23.0	●	2300 MSL	15.1	4.2		1
23.1	●	2310 MSL	15.1	4.2		1
23.2	●	2320 MSL	15.1	4.2		1
23.3	●	2330 MSL	15.1	4.2		1
23.4	●	2340 MSL	15.1	4.3		1
23.5	●	2350 MSL	15.1	4.3		1
23.6	●	2360 MSL	15.1	4.3		1
23.7	●	2370 MSL	15.1	4.3		1
23.8	●	2380 MSL	15.1	4.3		1
23.9	●	SMDT 2390 MSL	15.4	4.3	SMDH240□	1
24.0	●	2400 MSL	15.4	4.4		1
24.1	●	2410 MSL	15.4	4.4		1
24.2	●	2420 MSL	15.4	4.4		1
24.3	●	2430 MSL	15.4	4.4		1
24.4	●	2440 MSL	15.4	4.4		1
24.5	●	2450 MSL	15.4	4.5		1
24.6	●	2460 MSL	15.4	4.5		1
24.7	●	2470 MSL	15.4	4.5		1
24.8	●	2480 MSL	15.4	4.5		1
24.9	●	SMDT 2490 MSL	15.8	4.5	SMDH250□	1
25.0	●	2500 MSL	15.8	4.5		1
25.1	●	2510 MSL	15.8	4.6		1
25.2	●	2520 MSL	15.8	4.6		1
25.3	●	2530 MSL	15.8	4.6		1
25.4	●	2540 MSL	15.8	4.6		1
25.5	●	2550 MSL	15.8	4.6		1
25.6	●	2560 MSL	15.8	4.7		1
25.7	●	2570 MSL	15.8	4.7		1
25.8	●	2580 MSL	15.8	4.7		1
25.9	●	SMDT 2590 MSL	16.4	4.7	SMDH260□	1
26.0	●	2600 MSL	16.4	4.7		1
26.1	●	2610 MSL	16.4	4.7		1
26.2	●	2620 MSL	16.4	4.8		1
26.3	●	2630 MSL	16.4	4.8		1
26.4	●	2640 MSL	16.4	4.8		1
26.5	●	2650 MSL	16.4	4.8		1
26.6	●	2660 MSL	16.4	4.8		1
26.7	●	2670 MSL	16.4	4.9		1
26.8	●	2680 MSL	16.4	4.9		1
26.9	●	SMDT 2690 MSL	17.1	4.9	SMDH270□	1
27.0	●	2700 MSL	17.1	4.9		1
27.1	●	2710 MSL	17.1	4.9		1
27.2	●	2720 MSL	17.1	4.9		1
27.3	●	2730 MSL	17.1	5.0		1
27.4	●	2740 MSL	17.1	5.0		1
27.5	●	2750 MSL	17.1	5.0		1
27.6	●	2760 MSL	17.1	5.0		1
27.7	●	2770 MSL	17.1	5.0		1
27.8	●	2780 MSL	17.1	5.1		1
27.9	●	SMDT 2790 MSL	17.7	5.1	SMDH280□	1
28.0	●	2800 MSL	17.7	5.1		1
28.1	●	2810 MSL	17.7	5.1		1

Grade: ACT100

Recommended Cutting Conditions J105 | Applicable Holders J112

Indexable Head MSL type Diameter ø28.2 to 30.8mm

Dimensions (mm)

Diameter DC	Stock	Cat. No.	Head Length INSL	Tip PL	Applicable Holder	Fig
28.2	●	SMDT 2820 MSL	17.7	5.1	SMDH280□	1
28.3	●	2830 MSL	17.7	5.2		1
28.4	●	2840 MSL	17.7	5.2		1
28.5	●	2850 MSL	17.7	5.2		1
28.6	●	2860 MSL	17.7	5.2		1
28.7	●	2870 MSL	17.7	5.2		1
28.8	●	2880 MSL	17.7	5.2		1
28.9	●	SMDT 2890 MSL	18.3	5.3	SMDH290□	1
29.0	●	2900 MSL	18.3	5.3		1
29.1	●	2910 MSL	18.3	5.3		1
29.2	●	2920 MSL	18.3	5.3		1
29.3	●	2930 MSL	18.3	5.3		1
29.4	●	2940 MSL	18.3	5.4		1
29.5	●	2950 MSL	18.3	5.4		1
29.6	●	2960 MSL	18.3	5.4		1
29.7	●	2970 MSL	18.3	5.4		1
29.8	●	2980 MSL	18.3	5.4		1
29.9	●	SMDT 2990 MSL	19.0	5.4	SMDH300□	1
30.0	●	3000 MSL	19.0	5.5		1
30.1	●	3010 MSL	19.0	5.5		1
30.2	●	3020 MSL	19.0	5.5		1
30.3	●	3030 MSL	19.0	5.5		1
30.4	●	3040 MSL	19.0	5.5		1
30.5	●	3050 MSL	19.0	5.6		1
30.6	●	3060 MSL	19.0	5.6		1
30.7	●	3070 MSL	19.0	5.6		1
30.8	●	3080 MSL	19.0	5.6		1

Grade: ACT100

Recommended Cutting Conditions J105 | Applicable Holders J112, J113

SMD series (Internal Coolant Supply)

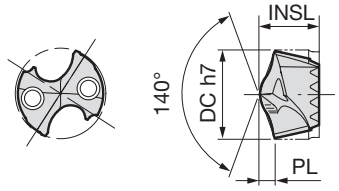
MEL | Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat-resistant Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

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

*Refer to N36 for the tolerance of h7

Indexable Head

Fig 1



Indexable Head MEL type Diameter ø12.0 to 17.3mm

Dimensions (mm)

Diameter DC	Stock	Cat. No.	Head Length INSL	Tip PL	Applicable Holder	Fig
12.0	▲	SMDT 1200 MEL	9.1	2.2		1
12.1	▲	1210 MEL	9.1	2.2		1
12.2	▲	1220 MEL	9.1	2.2	SMDH120□	1
12.3	▲	1230 MEL	9.1	2.2		1
12.4	▲	1240 MEL	9.1	2.3		1
12.5	▲	SMDT 1250 MEL	9.4	2.3		1
12.6	▲	1260 MEL	9.4	2.3		1
12.7	▲	1270 MEL	9.4	2.3	SMDH125□	1
12.8	▲	1280 MEL	9.4	2.3		1
12.9	▲	1290 MEL	9.4	2.3		1
13.0	▲	SMDT 1300 MEL	9.7	2.4		1
13.1	▲	1310 MEL	9.7	2.4		1
13.2	▲	1320 MEL	9.7	2.4	SMDH130□	1
13.3	▲	1330 MEL	9.7	2.4		1
13.4	▲	1340 MEL	9.7	2.4		1
13.5	▲	SMDT 1350 MEL	10.3	2.5		1
13.6	▲	1360 MEL	10.3	2.5		1
13.7	▲	1370 MEL	10.3	2.5		1
13.8	▲	1380 MEL	10.3	2.5		1
13.9	▲	1390 MEL	10.3	2.5		1
14.0	▲	1400 MEL	10.3	2.5	SMDH140□	1
14.1	▲	1410 MEL	10.3	2.6		1
14.2	▲	1420 MEL	10.3	2.6		1
14.3	▲	1430 MEL	10.3	2.6		1
14.4	▲	1440 MEL	10.3	2.6		1
14.5	▲	1450 MEL	10.3	2.6		1
14.6	▲	SMDT 1460 MEL	11.0	2.7		1
14.7	▲	1470 MEL	11.0	2.7		1
14.8	▲	1480 MEL	11.0	2.7		1
14.9	▲	1490 MEL	11.0	2.7		1
15.0	▲	1500 MEL	11.0	2.7	SMDH150□	1
15.1	▲	1510 MEL	11.0	2.7		1
15.2	▲	1520 MEL	11.0	2.8		1
15.3	▲	1530 MEL	11.0	2.8		1
15.4	▲	1540 MEL	11.0	2.8		1
15.5	▲	1550 MEL	11.0	2.8		1
15.6	▲	SMDT 1560 MEL	11.6	2.8		1
15.7	▲	1570 MEL	11.6	2.9		1
15.8	▲	1580 MEL	11.6	2.9		1
15.9	▲	1590 MEL	11.6	2.9		1
16.0	▲	1600 MEL	11.6	2.9	SMDH160□	1
16.1	▲	1610 MEL	11.6	2.9		1
16.2	▲	1620 MEL	11.6	2.9		1
16.3	▲	1630 MEL	11.6	3.0		1
16.4	▲	1640 MEL	11.6	3.0		1
16.5	▲	1650 MEL	11.6	3.0		1
16.6	▲	SMDT 1660 MEL	12.2	3.0		1
16.7	▲	1670 MEL	12.2	3.0		1
16.8	▲	1680 MEL	12.2	3.1		1
16.9	▲	1690 MEL	12.2	3.1		1
17.0	▲	1700 MEL	12.2	3.1	SMDH170□	1
17.1	▲	1710 MEL	12.2	3.1		1
17.2	▲	1720 MEL	12.2	3.1		1
17.3	▲	1730 MEL	12.2	3.1		1

Grade: ACX80

Recommended Cutting Conditions J105 | Applicable Holders J112

Indexable Head MEL type Diameter ø17.4 to 22.7mm

Dimensions (mm)

Diameter DC	Stock	Cat. No.	Head Length INSL	Tip PL	Applicable Holder	Fig
17.4	▲	SMDT 1740 MEL	12.2	3.2	SMDH170□	1
17.5	▲	1750 MEL	12.2	3.2		1
17.6	▲	SMDT 1760 MEL	12.9	3.2		1
17.7	▲	1770 MEL	12.9	3.2		1
17.8	▲	1780 MEL	12.9	3.2		1
17.9	▲	1790 MEL	12.9	3.3		1
18.0	▲	1800 MEL	12.9	3.3		1
18.1	▲	1810 MEL	12.9	3.3	SMDH180□	1
18.2	▲	1820 MEL	12.9	3.3		1
18.3	▲	1830 MEL	12.9	3.3		1
18.4	▲	1840 MEL	12.9	3.3		1
18.5	▲	1850 MEL	12.9	3.4		1
18.6	▲	SMDT 1860 MEL	13.5	3.4		1
18.7	▲	1870 MEL	13.5	3.4		1
18.8	▲	1880 MEL	13.5	3.4		1
18.9	▲	1890 MEL	13.5	3.4		1
19.0	▲	1900 MEL	13.5	3.5		1
19.1	▲	1910 MEL	13.5	3.5	SMDH190□	1
19.2	▲	1920 MEL	13.5	3.5		1
19.3	▲	1930 MEL	13.5	3.5		1
19.4	▲	1940 MEL	13.5	3.5		1
19.5	▲	1950 MEL	13.5	3.5		1
19.6	▲	SMDT 1960 MEL	14.1	3.6		1
19.7	▲	1970 MEL	14.1	3.6		1
19.8	▲	1980 MEL	14.1	3.6		1
19.9	▲	1990 MEL	14.1	3.6		1
20.0	▲	2000 MEL	14.1	3.6		1
20.1	▲	2010 MEL	14.1	3.7	SMDH200□	1
20.2	▲	2020 MEL	14.1	3.7		1
20.3	▲	2030 MEL	14.1	3.7		1
20.4	▲	2040 MEL	14.1	3.7		1
20.5	▲	2050 MEL	14.1	3.7		1
20.6	▲	SMDT 2060 MEL	14.8	3.7		1
20.7	▲	2070 MEL	14.8	3.8		1
20.8	▲	2080 MEL	14.8	3.8		1
20.9	▲	2090 MEL	14.8	3.8		1
21.0	▲	2100 MEL	14.8	3.8		1
21.1	▲	2110 MEL	14.8	3.8	SMDH210□	1
21.2	▲	2120 MEL	14.8	3.9		1
21.3	▲	2130 MEL	14.8	3.9		1
21.4	▲	2140 MEL	14.8	3.9		1
21.5	▲	2150 MEL	14.8	3.9		1
21.6	▲	SMDT 2160 MEL	15.0	3.9		1
21.7	▲	2170 MEL	15.0	3.9		1
21.8	▲	2180 MEL	15.0	4.0		1
21.9	▲	2190 MEL	15.0	4.0		1
22.0	▲	2200 MEL	15.0	4.0		1
22.1	▲	2210 MEL	15.0	4.0	SMDH220□	1
22.2	▲	2220 MEL	15.0	4.0		1
22.3	▲	2230 MEL	15.0	4.1		1
22.4	▲	2240 MEL	15.0	4.1		1
22.5	▲	2250 MEL	15.0	4.1		1
22.6	▲	2260 MEL	15.0	4.1		1
22.7	▲	2270 MEL	15.0	4.1		1

Grade: ACX80

Recommended Cutting Conditions J105 | Applicable Holders J112

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

SMD series (Internal Coolant Supply) MEL

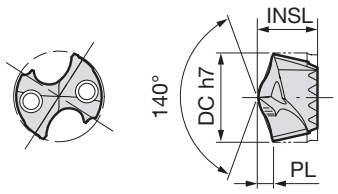
Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat-resistant Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

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

*Refer to N36 for the tolerance of h7

Indexable Head

Fig 1



Indexable Head MEL type Diameter ø22.8 to 28.1mm

Dimensions (mm)

Diameter DC	Stock	Cat. No.	Head Length INSL	Tip PL	Applicable Holder	Fig
22.8	▲	SMDT 2280 MEL	15.0	4.1	SMDH220□	1
22.9	▲	SMDT 2290 MEL	15.1	4.2	SMDH230□	1
23.0	▲	2300 MEL	15.1	4.2		1
23.1	▲	2310 MEL	15.1	4.2		1
23.2	▲	2320 MEL	15.1	4.2		1
23.3	▲	2330 MEL	15.1	4.2		1
23.4	▲	2340 MEL	15.1	4.3		1
23.5	▲	2350 MEL	15.1	4.3		1
23.6	▲	2360 MEL	15.1	4.3		1
23.7	▲	2370 MEL	15.1	4.3		1
23.8	▲	2380 MEL	15.1	4.3		1
23.9	▲	SMDT 2390 MEL	15.4	4.3	SMDH240□	1
24.0	▲	2400 MEL	15.4	4.4		1
24.1	▲	2410 MEL	15.4	4.4		1
24.2	▲	2420 MEL	15.4	4.4		1
24.3	▲	2430 MEL	15.4	4.4		1
24.4	▲	2440 MEL	15.4	4.4		1
24.5	▲	2450 MEL	15.4	4.5		1
24.6	▲	2460 MEL	15.4	4.5		1
24.7	▲	2470 MEL	15.4	4.5		1
24.8	▲	2480 MEL	15.4	4.5		1
24.9	▲	SMDT 2490 MEL	15.8	4.5	SMDH250□	1
25.0	▲	2500 MEL	15.8	4.5		1
25.1	▲	2510 MEL	15.8	4.6		1
25.2	▲	2520 MEL	15.8	4.6		1
25.3	▲	2530 MEL	15.8	4.6		1
25.4	▲	2540 MEL	15.8	4.6		1
25.5	▲	2550 MEL	15.8	4.6		1
25.6	▲	2560 MEL	15.8	4.7		1
25.7	▲	2570 MEL	15.8	4.7		1
25.8	▲	2580 MEL	15.8	4.7		1
25.9	▲	SMDT 2590 MEL	16.4	4.7	SMDH260□	1
26.0	▲	2600 MEL	16.4	4.7		1
26.1	▲	2610 MEL	16.4	4.7		1
26.2	▲	2620 MEL	16.4	4.8		1
26.3	▲	2630 MEL	16.4	4.8		1
26.4	▲	2640 MEL	16.4	4.8		1
26.5	▲	2650 MEL	16.4	4.8		1
26.6	▲	2660 MEL	16.4	4.8		1
26.7	▲	2670 MEL	16.4	4.9		1
26.8	▲	2680 MEL	16.4	4.9		1
26.9	▲	SMDT 2690 MEL	17.1	4.9	SMDH270□	1
27.0	▲	2700 MEL	17.1	4.9		1
27.1	▲	2710 MEL	17.1	4.9		1
27.2	▲	2720 MEL	17.1	4.9		1
27.3	▲	2730 MEL	17.1	5.0		1
27.4	▲	2740 MEL	17.1	5.0		1
27.5	▲	2750 MEL	17.1	5.0		1
27.6	▲	2760 MEL	17.1	5.0		1
27.7	▲	2770 MEL	17.1	5.0		1
27.8	▲	2780 MEL	17.1	5.1		1
27.9	▲	SMDT 2790 MEL	17.7	5.1	SMDH280□	1
28.0	▲	2800 MEL	17.7	5.1		1
28.1	▲	2810 MEL	17.7	5.1		1

Grade: ACX80

Recommended Cutting Conditions J105 | Applicable Holders J112

Indexable Head MEL type Diameter ø28.2 to 30.8mm

Dimensions (mm)

Diameter DC	Stock	Cat. No.	Head Length INSL	Tip PL	Applicable Holder	Fig
28.2	▲	SMDT 2820 MEL	17.7	5.1	SMDH280□	1
28.3	▲	2830 MEL	17.7	5.2		1
28.4	▲	2840 MEL	17.7	5.2		1
28.5	▲	2850 MEL	17.7	5.2		1
28.6	▲	2860 MEL	17.7	5.2		1
28.7	▲	2870 MEL	17.7	5.2		1
28.8	▲	2880 MEL	17.7	5.2		1
28.9	▲	SMDT 2890 MEL	18.3	5.3	SMDH290□	1
29.0	▲	2900 MEL	18.3	5.3		1
29.1	▲	2910 MEL	18.3	5.3		1
29.2	▲	2920 MEL	18.3	5.3		1
29.3	▲	2930 MEL	18.3	5.3		1
29.4	▲	2940 MEL	18.3	5.4		1
29.5	▲	2950 MEL	18.3	5.4		1
29.6	▲	2960 MEL	18.3	5.4		1
29.7	▲	2970 MEL	18.3	5.4		1
29.8	▲	2980 MEL	18.3	5.4		1
29.9	▲	SMDT 2990 MEL	19.0	5.4	SMDH300□	1
30.0	▲	3000 MEL	19.0	5.5		1
30.1	▲	3010 MEL	19.0	5.5		1
30.2	▲	3020 MEL	19.0	5.5		1
30.3	▲	3030 MEL	19.0	5.5		1
30.4	▲	3040 MEL	19.0	5.5		1
30.5	▲	3050 MEL	19.0	5.6		1
30.6	▲	3060 MEL	19.0	5.6		1
30.7	▲	3070 MEL	19.0	5.6		1
30.8	▲	3080 MEL	19.0	5.6		1

Grade: ACX80

Recommended Cutting Conditions J105 | Applicable Holders J112, J113

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

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

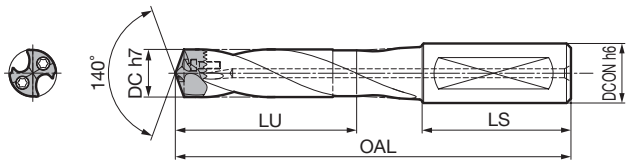
MTL: Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Cast Iron | Ductile Cast Iron
MSL: Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Stainless Steel | Ti Alloy | Heat-resistant Steel | Cast Iron | 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 | NX Coat | Indexable head MTL | Indexable head MSL | Indexable head MEL | Coolant Hole | Indexable | 3D | 5D | 8D

*Refer to N36 for the tolerance of h6 and h7

● Set Figure (MTL / MSL / 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	Cap Screw N·m	Wrench
12.0 ≤ D < 12.5	3	SMDH 120M	●	42.0	107.2	48	16	MTL/MSL	1	BXD02208IP	0.75 to 1.00	TRDR08IP
	5	120L	●	67.0	132.2	48	16	MEL	1			
12.5 ≤ D < 13.0	3	SMDH 125M	●	44.0	107.3	48	16	MTL/MSL	1	BXD02208IP	0.75 to 1.00	TRDR08IP
	5	125L	●	69.0	132.3	48	16	MEL	1			
13.0 ≤ D < 13.5	3	SMDH 130M	●	45.0	112.4	48	16	MTL/MSL	1	BXD02208IP	0.75 to 1.00	TRDR08IP
	5	130L	●	72.0	142.4	48	16	MEL	1			
13.5 ≤ D ≤ 14.5	3	SMDH 140M	●	51.0	119.0	48	16	MTL/MSL	1	BXD02208IP	0.75 to 1.00	TRDR08IP
	5	140L	●	80.0	149.0	48	16	MEL	1			
	8	140D	●	123.0	194.0	48	16		1			
14.5 < D ≤ 15.5	3	SMDH 150M	●	54.0	129.2	50	20	MTL/MSL	1	BXD02208IP	0.75 to 1.00	TRDR08IP
	5	150L	●	85.0	159.2	50	20	MEL	1			
	8	150D	●	131.0	204.2	50	20		1			
15.5 < D ≤ 16.5	3	SMDH 160M	●	57.0	134.4	50	20	MTL/MSL	1	BXD02509IP	0.93 to 1.24	TRDR10IP
	5	160L	●	90.0	169.4	50	20	MEL	1			
	8	160D	●	140.0	214.4	50	20		1			
16.5 < D ≤ 17.5	3	SMDH 170M	●	60.0	139.6	50	20	MTL/MSL	1	BXD02509IP	0.93 to 1.24	TRDR10IP
	5	170L	●	95.0	174.6	50	20	MEL	1			
	8	170D	●	148.0	224.6	50	20		1			
17.5 < D ≤ 18.5	3	SMDH 180M	●	63.0	144.8	50	20	MTL/MSL	1	BXD02509IP	0.93 to 1.24	TRDR10IP
	5	180L	●	100.0	179.8	50	20	MEL	1			
	8	180D	●	156.0	229.8	50	20		1			
18.5 < D ≤ 19.5	3	SMDH 190M	●	67.0	160.0	56	25	MTL/MSL	1	BXD03011IP	1.83 to 2.44	TRDR15IP
	5	190L	●	106.0	195.0	56	25	MEL	1			
	8	190D	●	164.0	255.0	56	25		1			
19.5 < D ≤ 20.5	3	SMDH 200M	●	70.0	160.1	56	25	MTL/MSL	1	BXD03011IP	1.83 to 2.44	TRDR15IP
	5	200L	●	111.0	200.1	56	25	MEL	1			
	8	200D	●	172.0	265.1	56	25		1			
20.5 < D ≤ 21.5	3	SMDH 210M	●	73.0	160.3	56	25	MTL/MSL	1	BXD03011IP	1.83 to 2.44	TRDR15IP
	5	210L	●	116.0	200.3	56	25	MEL	1			
	8	210D	●	180.0	270.3	56	25		1			
21.5 < D ≤ 22.8	3	SMDH 220M	●	77.0	165.1	56	25	MTL/MSL	1	BXD03512IP	2.79 to 3.72	TRDR15IP
	5	220L	●	123.0	205.1	56	25	MEL	1			
	8	220D	●	191.0	275.1	56	25		1			
22.8 < D ≤ 23.8	3	SMDH 230M	●	80.0	164.7	56	25	MTL/MSL	1	BXD03512IP	2.79 to 3.72	TRDR15IP
	5	230L	●	128.0	214.7	56	25	MEL	1			
	8	230D	●	199.0	284.7	56	25		1			
23.8 < D ≤ 24.8	3	SMDH 240M	●	83.0	174.6	60	32	MTL/MSL	1	BXD03512IP	2.79 to 3.72	TRDR15IP
	5	240L	●	133.0	224.6	60	32	MEL	1			
	8	240D	●	207.0	299.6	60	32		1			
24.8 < D ≤ 25.8	3	SMDH 250M	●	87.0	174.5	60	32	MTL/MSL	1	BXD04014IP	4.14 to 5.52	TRDR20IP
	5	250L	●	138.0	229.5	60	32	MEL	1			
	8	250D	●	216.0	304.5	60	32		1			
25.8 < D ≤ 26.8	3	SMDH 260M	●	90.0	179.7	60	32	MTL/MSL	1	BXD04014IP	4.14 to 5.52	TRDR20IP
	5	260L	●	143.0	234.7	60	32	MEL	1			
	8	260D	●	224.0	314.7	60	32		1			
26.8 < D ≤ 27.8	3	SMDH 270M	●	93.0	179.9	60	32	MTL/MSL	1	BXD04014IP	4.14 to 5.52	TRDR20IP
	5	270L	●	149.0	239.9	60	32	MEL	1			
	8	270D	●	232.0	324.9	60	32		1			
27.8 < D ≤ 28.8	3	SMDH 280M	●	96.0	185.1	60	32	MTL/MSL	1	BXD04515IP	4.98 to 6.64	TRDR25IP
	5	280L	●	154.0	245.1	60	32	MEL	1			
	8	280D	●	240.0	330.1	60	32		1			
28.8 < D ≤ 29.8	3	SMDH 290M	●	99.0	190.3	60	32	MTL/MSL	1	BXD04515IP	4.98 to 6.64	TRDR25IP
	5	290L	●	159.0	250.3	60	32	MEL	1			
	8	290D	●	248.0	340.3	60	32		1			

Recommended Cutting Conditions J105 | MTL type Heads J106, J107 | MSL type Heads J108, J109 | MEL type Heads J110, J111

* Because the calculation method has been changed, the dimensions above (red text) are different from those listed in the 2021-2022 General Catalogue, but the specifications have not changed.

N·m Recommended Tightening Torque (N·m)

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

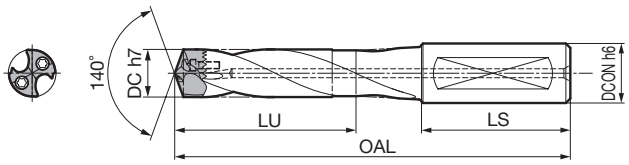
MTL: Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Cast Iron | Ductile Cast Iron
MSL: Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Stainless Steel | Ti Alloy | Heat-resistant Steel | Cast Iron | 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 | NX Coat | Indexable head MTL | Indexable head MSL | Indexable head MEL | Coolant Hole | Indexable | 3D | 5D | 8D

*Refer to N36 for the tolerance of h6 and h7

● Set Figure

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	●	103.0	190.5	60	32	MTL/MSL MEL	1	BXD04515IP	4.98 to 6.64	TRDR25IP
	5	300L	●	164.0	260.5	60	32		1			
	8	300D	●	257.0	350.5	60	32		1			
30.8 < D ≤ 32.0	3	SMDH 320M	●	106.0	200.7	60	32	MTL	1	BXD04515IP	4.98 to 6.64	TRDR25IP
	5	320L	●	170.0	265.8	60	32		1			
	8	320D	●	266.0	360.8	60	32		1			
32.0 < D ≤ 33.5	3	SMDH 335M	●	111.0	205.9	60	32	MTL	1	BXD04515IP	4.98 to 6.64	TRDR25IP
	5	335L	●	178.0	274.1	60	32		1			
	8	335D	●	279.0	376.1	60	32		1			
33.5 < D ≤ 35.0	3	SMDH 350M	●	116.0	221.2	70	40	MTL	1	BX0515	7.2	HD040
	5	350L	●	186.0	296.4	70	40		1			
	8	350D	●	291.0	401.4	70	40		1			
35.0 < D ≤ 36.5	3	SMDH 365M	●	121.0	226.4	70	40	MTL	1	BX0515	7.2	HD040
	5	365L	●	194.0	301.6	70	40		1			
	8	365D	●	303.0	411.6	70	40		1			
36.5 < D ≤ 38.0	3	SMDH 380M	●	125.0	231.7	70	40	MTL	1	BX0515	7.2	HD040
	5	380L	●	201.0	311.9	70	40		1			
	8	380D	●	315.0	426.9	70	40		1			
38.0 < D ≤ 39.5	3	SMDH 395M	●	130.0	237.0	70	40	MTL	1	BX0515	7.2	HD040
	5	395L	●	209.0	322.2	70	40		1			
	8	395D	●	328.0	437.2	70	40		1			
39.5 < D ≤ 41.0	3	SMDH 410M	●	135.0	252.2	70	40	MTL	1	BX0515	7.2	HD040
	5	410L	●	217.0	332.5	70	40		1			
	8	410D	●	340.0	457.5	70	40		1			
41.0 < D ≤ 42.5	3	SMDH 425M	●	140.0	257.5	70	40	MTL	1	BX0515	7.2	HD040
	5	425L	●	225.0	342.7	70	40		1			
	8	425D	●	352.0	467.7	70	40		1			

Recommended Cutting Conditions J105 | MTL type Head J107 | MSL type Head J109 | MEL type Head J111

* Because the calculation method has been changed, the dimensions above (red text) are different from those listed in the 2021-2022 General Catalogue, but the specifications have not changed.

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

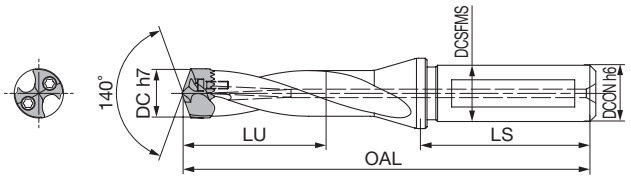
MTL: Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Cast Iron | Ductile Cast Iron
MSL: Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Stainless Steel | Ti Alloy | Heat-resistant Steel | Cast Iron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

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

*Refer to N36 for the tolerance of h6 and h7

● Set Figure

Fig 1



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	N·m	Wrench
12.0 ≤ D < 12.5	1.5	SMDH 120-1.5DF	●	23.0	90.5	48	20	16	MTL/MSL/MEL	1	BXD02208IPC	0.75 to 1.00	TRDR08IP
	3	120-3DF	●	42.0	107.2	48	20	16		1			
	5	120-5DF	●	67.0	132.2	48	20	16		1			
	8	120-8DF	●	98.0	164.4	48	20	16		1			
12.5 ≤ D < 13.0	1.5	SMDH 125-1.5DF	●	24.0	91.0	48	20	16	MTL/MSL/MEL	1	BXD02208IPC	0.75 to 1.00	TRDR08IP
	3	125-3DF	●	44.0	107.3	48	20	16		1			
	5	125-5DF	●	69.0	132.3	48	20	16		1			
	8	125-8DF	●	102.0	170.1	48	20	16		1			
13.0 ≤ D < 13.5	1.5	SMDH 130-1.5DF	●	25.0	92.2	48	20	16	MTL/MSL/MEL	1	BXD02208IPC	0.75 to 1.00	TRDR08IP
	3	130-3DF	●	45.0	112.4	48	20	16		1			
	5	130-5DF	●	72.0	142.4	48	20	16		1			
	8	130-8DF	●	106.0	178.4	48	20	16		1			
13.5 ≤ D ≤ 14.5	1.5	SMDH 140-1.5DF	●	29.0	96.3	48	20	16	MTL/MSL/MEL	1	BXD02208IPC	0.75 to 1.00	TRDR08IP
	3	140-3DF	●	51.0	119.0	48	20	16		1			
	5	140-5DF	●	80.0	149.0	48	20	16		1			
	8	140-8DF	●	123.0	194.0	48	20	16		1			
14.5 < D ≤ 15.5	1.5	SMDH 150-1.5DF	●	31.0	100.0	50	25	20	MTL/MSL/MEL	1	BXD02208IPC	0.75 to 1.00	TRDR08IP
	3	150-3DF	●	54.0	129.2	50	25	20		1			
	5	150-5DF	●	85.0	159.2	50	25	20		1			
	8	150-8DF	●	131.0	204.2	50	25	20		1			
15.5 < D ≤ 16.5	1.5	SMDH 160-1.5DF	●	32.0	102.7	50	25	20	MTL/MSL/MEL	1	BXD02509IPC	0.93 to 1.24	TRDR10IP
	3	160-3DF	●	57.0	134.4	50	25	20		1			
	5	160-5DF	●	90.0	169.4	50	25	20		1			
	8	160-8DF	●	140.0	214.4	50	25	20		1			
16.5 < D ≤ 17.5	1.5	SMDH 170-1.5DF	●	34.0	104.4	50	25	20	MTL/MSL/MEL	1	BXD02509IPC	0.93 to 1.24	TRDR10IP
	3	170-3DF	●	60.0	139.6	50	25	20		1			
	5	170-5DF	●	95.0	174.6	50	25	20		1			
	8	170-8DF	●	148.0	224.6	50	25	20		1			
17.5 < D ≤ 18.5	1.5	SMDH 180-1.5DF	●	36.0	107.1	50	25	20	MTL/MSL/MEL	1	BXD02509IPC	0.93 to 1.24	TRDR10IP
	3	180-3DF	●	63.0	144.8	50	25	20		1			
	5	180-5DF	●	100.0	179.8	50	25	20		1			
	8	180-8DF	●	156.0	229.8	50	25	20		1			
18.5 < D ≤ 19.5	1.5	SMDH 190-1.5DF	●	37.0	114.8	56	30	25	MTL/MSL/MEL	1	BXD03011IPC	1.83 to 2.44	TRDR15IP
	3	190-3DF	●	67.0	160.0	56	30	25		1			
	5	190-5DF	●	106.0	195.0	56	30	25		1			
	8	190-8DF	●	164.0	255.0	56	30	25		1			
19.5 < D ≤ 20.5	1.5	SMDH 200-1.5DF	●	39.0	117.4	56	30	25	MTL/MSL/MEL	1	BXD03011IPC	1.83 to 2.44	TRDR15IP
	3	200-3DF	●	70.0	160.1	56	30	25		1			
	5	200-5DF	●	111.0	200.1	56	30	25		1			
	8	200-8DF	●	172.0	265.1	56	30	25		1			
20.5 < D ≤ 21.5	1.5	SMDH 210-1.5DF	●	41.0	119.1	56	30	25	MTL/MSL/MEL	1	BXD03011IPC	1.83 to 2.44	TRDR15IP
	3	210-3DF	●	73.0	160.3	56	30	25		1			
	5	210-5DF	●	116.0	200.3	56	30	25		1			
	8	210-8DF	●	180.0	270.3	56	30	25		1			
21.5 < D ≤ 22.8	1.5	SMDH 220-1.5DF	●	43.0	120.9	56	30	25	MTL/MSL/MEL	1	BXD03512IPC	2.79 to 3.72	TRDR15IP
	3	220-3DF	●	77.0	165.1	56	30	25		1			
	5	220-5DF	●	123.0	205.1	56	30	25		1			
	8	220-8DF	●	191.0	275.1	56	30	25		1			
22.8 < D ≤ 23.8	1.5	SMDH 230-1.5DF	●	45.0	122.0	56	30	25	MTL/MSL/MEL	1	BXD03512IPC	2.79 to 3.72	TRDR15IP
	3	230-3DF	●	80.0	164.7	56	30	25		1			
	5	230-5DF	●	128.0	214.7	56	30	25		1			
	8	230-8DF	●	199.0	284.7	56	30	25		1			
23.8 < D ≤ 24.8	1.5	SMDH 240-1.5DF	●	46.0	128.4	60	37	32	MTL/MSL/MEL	1	BXD03512IPC	2.79 to 3.72	TRDR15IP
	3	240-3DF	●	83.0	174.6	60	37	32		1			
	5	240-5DF	●	133.0	224.6	60	37	32		1			
	8	240-8DF	●	207.0	299.6	60	37	32		1			

Recommended Cutting Conditions J105 | MTL type Heads J106, J107 | MSL type Heads J108, J109 | MEL type Heads J110, 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 (red text) are different from those listed in the 2021-2022 General Catalogue, but the specifications have not changed.

N·m Recommended Tightening Torque (N·m)

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

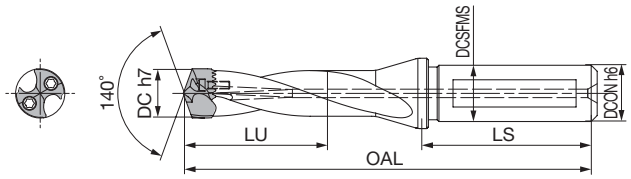
MTL: Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Cast Iron | Ductile Cast Iron
MSL: Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Stainless Steel | Ti Alloy | Heat-resistant Steel | Cast Iron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

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

*Refer to N36 for the tolerance of h6 and h7

● Set Figure

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	Cap Screw N·m	Wrench
24.8 < D ≤ 25.8	1.5	**SMDH 250-1.5DF**	●	48.0	128.8	60	37	32	MTL/ MSL MEL	1	BXD04014IPC	4.14 to 5.52	TRDR20IP
	3	**250-3DF**	●	87.0	174.5	60	37	32		1			
	5	**250-5DF**	●	138.0	229.5	60	37	32		1			
	8	**250-8DF**	●	216.0	304.5	60	37	32		1			
25.8 < D ≤ 26.8	1.5	**SMDH 260-1.5DF**	●	50.0	131.5	60	37	32	MTL/ MSL MEL	1	BXD04014IPC	4.14 to 5.52	TRDR20IP
	3	**260-3DF**	●	90.0	179.7	60	37	32		1			
	5	**260-5DF**	●	143.0	234.7	60	37	32		1			
	8	**260-8DF**	●	224.0	314.7	60	37	32		1			
26.8 < D ≤ 27.8	1.5	**SMDH 270-1.5DF**	●	51.0	132.2	60	37	32	MTL/ MSL MEL	1	BXD04014IPC	4.14 to 5.52	TRDR20IP
	3	**270-3DF**	●	93.0	179.9	60	37	32		1			
	5	**270-5DF**	●	149.0	239.9	60	37	32		1			
	8	**270-8DF**	●	232.0	324.9	60	37	32		1			
27.8 < D ≤ 28.8	1.5	**SMDH 280-1.5DF**	●	53.0	133.9	60	37	32	MTL/ MSL MEL	1	BXD04515IPC	4.98 to 6.64	TRDR25IP
	3	**280-3DF**	●	96.0	185.1	60	37	32		1			
	5	**280-5DF**	●	154.0	245.1	60	37	32		1			
	8	**280-8DF**	●	240.0	330.1	60	37	32		1			
28.8 < D ≤ 29.8	1.5	**SMDH 290-1.5DF**	●	55.0	135.6	60	37	32	MTL/ MSL MEL	1	BXD04515IPC	4.98 to 6.64	TRDR25IP
	3	**290-3DF**	●	99.0	190.3	60	37	32		1			
	5	**290-5DF**	●	159.0	250.3	60	37	32		1			
	8	**290-8DF**	●	248.0	340.3	60	37	32		1			
29.8 < D ≤ 30.8	1.5	**SMDH 300-1.5DF**	●	56.0	138.3	60	37	32	MTL/ MSL MEL	1	BXD04515IPC	4.98 to 6.64	TRDR25IP
	3	**300-3DF**	●	103.0	190.5	60	37	32		1			
	5	**300-5DF**	●	164.0	260.5	60	37	32		1			
	8	**300-8DF**	●	257.0	350.5	60	37	32		1			

Recommended Cutting Conditions J105 | MTL type Head J107 | MSL type Head J109 | MEL 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 (red text) are different from those listed in the 2021-2022 General Catalogue, but the specifications have not changed.

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

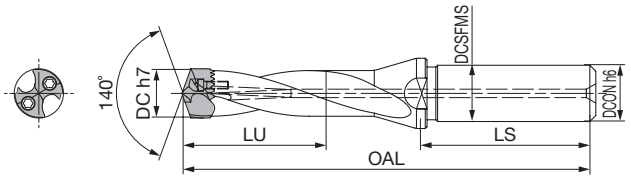
MTL: Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Cast Iron | Ductile Cast Iron
MSL: Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Stainless Steel | Ti Alloy | Heat-resistant Steel | Cast Iron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

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

*Refer to N36 for the tolerance of h6 and h7

● Set Figure

Fig 1



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	N·m	Wrench
12.0 ≤ D < 12.5	1.5	SMDH 120-1.5D	●	23.0	90.5	48	20	16	MTL/MSL MEL	1	BXD02208IPC	0.75 to 1.00	TRDR08IP
	3	120-3D	●	42.0	107.2	48	20	16		1			
	5	120-5D	●	67.0	132.2	48	20	16		1			
	8	120-8D	●	98.0	164.4	48	20	16		1			
	12	120-12D	●	146.0	213.3	48	20	16		1			
12.5 ≤ D < 13.0	1.5	SMDH 125-1.5D	●	24.0	91.0	48	20	16	MTL/MSL MEL	1	BXD02208IPC	0.75 to 1.00	TRDR08IP
	3	125-3D	●	44.0	107.3	48	20	16		1			
	5	125-5D	●	69.0	132.3	48	20	16		1			
	8	125-8D	●	102.0	170.1	48	20	16		1			
	12	125-12D	●	152.0	219.5	48	20	16		1			
13.0 ≤ D < 13.5	1.5	SMDH 130-1.5D	●	25.0	92.2	48	20	16	MTL/MSL MEL	1	BXD02208IPC	0.75 to 1.00	TRDR08IP
	3	130-3D	●	45.0	112.4	48	20	16		1			
	5	130-5D	●	72.0	142.4	48	20	16		1			
	8	130-8D	●	106.0	178.4	48	20	16		1			
	12	130-12D	●	158.0	225.7	48	20	16		1			
13.5 ≤ D ≤ 14.5	1.5	SMDH 140-1.5D	●	29.0	96.3	48	20	16	MTL/MSL MEL	1	BXD02208IPC	0.75 to 1.00	TRDR08IP
	3	140-3D	●	51.0	119.0	48	20	16		1			
	5	140-5D	●	80.0	149.0	48	20	16		1			
	8	140-8D	●	123.0	194.0	48	20	16		1			
	12	140-12D	●	170.0	238.5	48	20	16		1			
14.5 < D ≤ 15.5	1.5	SMDH 150-1.5D	●	31.0	100.0	50	25	20	MTL/MSL MEL	1	BXD02208IPC	0.75 to 1.00	TRDR08IP
	3	150-3D	●	54.0	129.2	50	25	20		1			
	5	150-5D	●	85.0	159.2	50	25	20		1			
	8	150-8D	●	131.0	204.2	50	25	20		1			
	12	150-12D	●	182.0	253.0	50	25	20		1			
15.5 < D ≤ 16.5	1.5	SMDH 160-1.5D	●	32.0	102.7	50	25	20	MTL/MSL MEL	1	BXD02509IPC	0.93 to 1.24	TRDR10IP
	3	160-3D	●	57.0	134.4	50	25	20		1			
	5	160-5D	●	90.0	169.4	50	25	20		1			
	8	160-8D	●	140.0	214.4	50	25	20		1			
	12	160-12D	●	194.0	265.5	50	25	20		1			
16.5 < D ≤ 17.5	1.5	SMDH 170-1.5D	●	34.0	104.4	50	25	20	MTL/MSL MEL	1	BXD02509IPC	0.93 to 1.24	TRDR10IP
	3	170-3D	●	60.0	139.6	50	25	20		1			
	5	170-5D	●	95.0	174.6	50	25	20		1			
	8	170-8D	●	148.0	224.6	50	25	20		1			
	12	170-12D	●	207.0	278.1	50	25	20		1			
17.5 < D ≤ 18.5	1.5	SMDH 180-1.5D	●	36.0	107.1	50	25	20	MTL/MSL MEL	1	BXD02509IPC	0.93 to 1.24	TRDR10IP
	3	180-3D	●	63.0	144.8	50	25	20		1			
	5	180-5D	●	100.0	179.8	50	25	20		1			
	8	180-8D	●	156.0	229.8	50	25	20		1			
	12	180-12D	●	219.0	290.5	50	25	20		1			
18.5 < D ≤ 19.5	1.5	SMDH 190-1.5D	●	37.0	114.8	56	30	25	MTL/MSL MEL	1	BXD03011IPC	1.83 to 2.44	TRDR15IP
	3	190-3D	●	67.0	160.0	56	30	25		1			
	5	190-5D	●	106.0	195.0	56	30	25		1			
	8	190-8D	●	164.0	255.0	56	30	25		1			
	12	190-12D	●	231.0	309.1	56	30	25		1			
19.5 < D ≤ 20.5	1.5	SMDH 200-1.5D	●	39.0	117.4	56	30	25	MTL/MSL MEL	1	BXD03011IPC	1.83 to 2.44	TRDR15IP
	3	200-3D	●	70.0	160.1	56	30	25		1			
	5	200-5D	●	111.0	200.1	56	30	25		1			
	8	200-8D	●	172.0	265.1	56	30	25		1			
	12	200-12D	●	243.0	321.4	56	30	25		1			
20.5 < D ≤ 21.5	1.5	SMDH 210-1.5D	●	41.0	119.1	56	30	25	MTL/MSL MEL	1	BXD03011IPC	1.83 to 2.44	TRDR15IP
	3	210-3D	●	73.0	160.3	56	30	25		1			
	5	210-5D	●	116.0	200.3	56	30	25		1			
	8	210-8D	●	180.0	270.3	56	30	25		1			
	12	210-12D	●	255.0	333.9	56	30	25		1			

Recommended Cutting Conditions J105 | MTL type Head J106 | MSL type Head J108 | MEL type Head J110

*Because the calculation method has been changed, the dimensions above (red text) are different from those listed in the 2021-2022 General Catalogue, but the specifications have not changed.

N·m Recommended Tightening Torque (N·m)

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

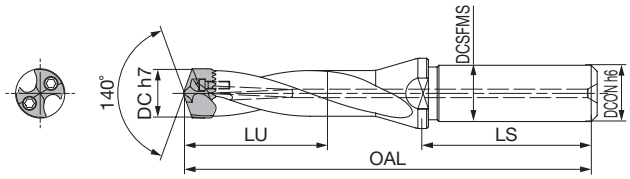
MTL: Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Cast Iron | Ductile Cast Iron
MSL: Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Stainless Steel | Ti Alloy | Heat-resistant Steel | Cast Iron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

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

*Refer to N36 for the tolerance of h6 and h7

● Set Figure

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	Cap Screw N·m	Wrench
21.5 < D ≤ 22.8	1.5	SMDH 220-1.5D	●	43.0	120.9	56	30	25	MTL/MSL MEL	1	BXD03512IPC	2.79 to 3.72	TRDR15IP
	3	220-3D	●	77.0	165.1	56	30	25		1			
	5	220-5D	●	123.0	205.1	56	30	25		1			
	8	220-8D	●	191.0	275.1	56	30	25		1			
	12	220-12D	●	268.0	347.0	56	30	25		1			
22.8 < D ≤ 23.8	1.5	SMDH 230-1.5D	●	45.0	122.0	56	30	25	MTL/MSL MEL	1	BXD03512IPC	2.79 to 3.72	TRDR15IP
	3	230-3D	●	80.0	164.7	56	30	25		1			
	5	230-5D	●	128.0	214.7	56	30	25		1			
	8	230-8D	●	199.0	284.7	56	30	25		1			
	12	230-12D	●	280.0	359.0	56	30	25		1			
23.8 < D ≤ 24.8	1.5	SMDH 240-1.5D	●	46.0	128.4	60	37	32	MTL/MSL MEL	1	BXD03512IPC	2.79 to 3.72	TRDR15IP
	3	240-3D	●	83.0	174.6	60	37	32		1			
	5	240-5D	●	133.0	224.6	60	37	32		1			
	8	240-8D	●	207.0	299.6	60	37	32		1			
	12	240-12D	●	292.0	376.1	60	37	32		1			
24.8 < D ≤ 25.8	1.5	SMDH 250-1.5D	●	48.0	128.8	60	37	32	MTL/MSL MEL	1	BXD04014IPC	4.14 to 5.52	TRDR20IP
	3	250-3D	●	87.0	174.5	60	37	32		1			
	5	250-5D	●	138.0	229.5	60	37	32		1			
	8	250-8D	●	216.0	304.5	60	37	32		1			
	12	250-12D	●	304.0	388.3	60	37	32		1			
25.8 < D ≤ 26.8	1.5	SMDH 260-1.5D	●	50.0	131.5	60	37	32	MTL/MSL MEL	1	BXD04014IPC	4.14 to 5.52	TRDR20IP
	3	260-3D	●	90.0	179.7	60	37	32		1			
	5	260-5D	●	143.0	234.7	60	37	32		1			
	8	260-8D	●	224.0	314.7	60	37	32		1			
	12	260-12D	●	316.0	400.8	60	37	32		1			
26.8 < D ≤ 27.8	1.5	SMDH 270-1.5D	●	51.0	132.2	60	37	32	MTL/MSL MEL	1	BXD04014IPC	4.14 to 5.52	TRDR20IP
	3	270-3D	●	93.0	179.9	60	37	32		1			
	5	270-5D	●	149.0	239.9	60	37	32		1			
	8	270-8D	●	232.0	324.9	60	37	32		1			
	12	270-12D	●	328.0	413.3	60	37	32		1			
27.8 < D ≤ 28.8	1.5	SMDH 280-1.5D	●	53.0	133.9	60	37	32	MTL/MSL MEL	1	BXD04515IPC	4.98 to 6.64	TRDR25IP
	3	280-3D	●	96.0	185.1	60	37	32		1			
	5	280-5D	●	154.0	245.1	60	37	32		1			
	8	280-8D	●	240.0	330.1	60	37	32		1			
	12	280-12D	●	341.0	425.8	60	37	32		1			
28.8 < D ≤ 29.8	1.5	SMDH 290-1.5D	●	55.0	135.6	60	37	32	MTL/MSL MEL	1	BXD04515IPC	4.98 to 6.64	TRDR25IP
	3	290-3D	●	99.0	190.3	60	37	32		1			
	5	290-5D	●	159.0	250.3	60	37	32		1			
	8	290-8D	●	248.0	340.3	60	37	32		1			
	12	290-12D	●	353.0	438.4	60	37	32		1			
29.8 < D ≤ 30.8	1.5	SMDH 300-1.5D	●	56.0	138.3	60	37	32	MTL/MSL MEL	1	BXD04515IPC	4.98 to 6.64	TRDR25IP
	3	300-3D	●	103.0	190.5	60	37	32		1			
	5	300-5D	●	164.0	260.5	60	37	32		1			
	8	300-8D	●	257.0	350.5	60	37	32		1			
	12	300-12D	●	365.0	450.8	60	37	32		1			

Recommended Cutting Conditions J105 | MTL type Heads J106, J107 | MSL type Heads J108, J109 | MEL type Heads J110, J111

*Because the calculation method has been changed, the dimensions above (red text) are different from those listed in the 2021-2022 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°

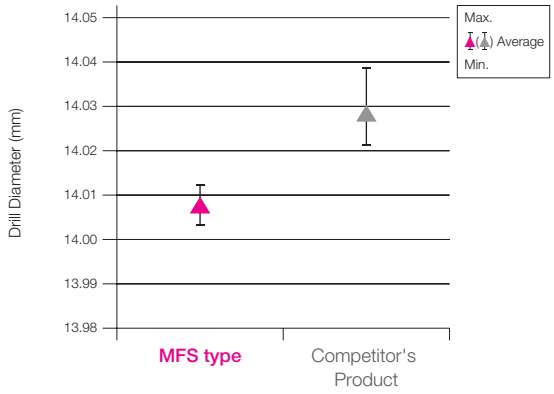
Supports high-efficiency flat bottom drilling, drilling on non-flat surfaces such as inclined and cylindrical surfaces, and interrupted drilling. Also reduces burrs at the hole exit.

Improved drilling stability

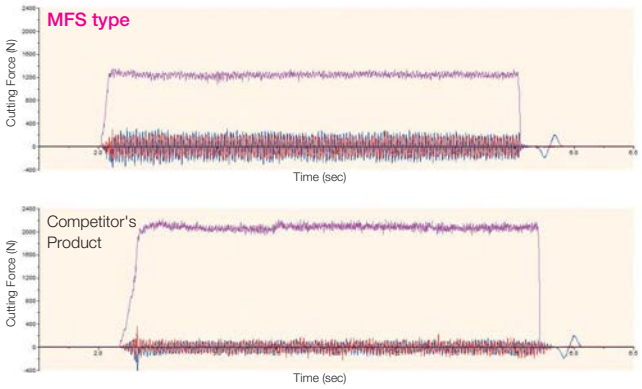
Achieves high rigidity by employing RS THINNING, which ensures thick web at the bottom.

■ Performance

Comparison of Hole Diameter Accuracy

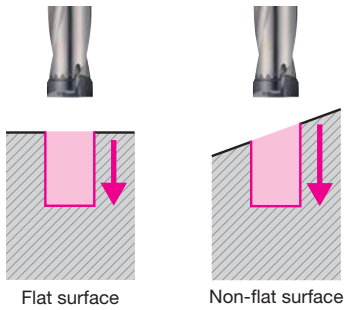
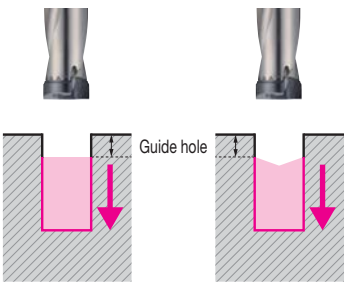
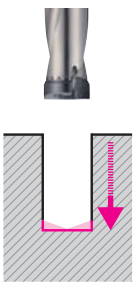


Comparison of Cutting Force



Tool : SMDH140-1.5DF + SMDT1400MFS
Work Material : S50C
Cutting Conditions : vc = 100mm/min f = 0.15mm/rev **Hole depth** 21mm Wet

■ Precautions when Using MFS type Heads

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

■ Recommended Cutting Conditions (MFS type)

(n: Spindle Speed min^{-1} vc: 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	n	2,000	2,000	1,200	1,200	1,400	1,200	4,800
	vc	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	n	1,600	1,600	1,000	1,100	1,300	1,100	3,800
	vc	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	n	1,000	1,000	600	700	800	700	2,500
	vc	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 special drill heads for aluminum alloy.

SMD series (Internal Coolant Supply)

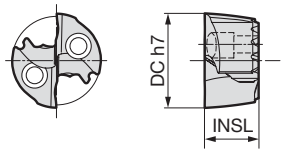
MFS | Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

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

*Refer to N36 for the tolerance of h7

Indexable Head

Fig 1



Indexable Head MFS type Diameter ø12.0 to 21.5mm

Dimensions (mm)

Diameter DC	Stock	Cat. No.	Head Length INSL	Applicable Holder	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	7.9		1
14.5	●	1450 MFS	7.9		1
15.0	●	SMDT 1500 MFS	8.3	SMDH150□	1
15.5	●	1550 MFS	8.3		1
16.0	●	SMDT 1600 MFS	8.8	SMDH160□	1
16.5	●	1650 MFS	8.8		1
17.0	●	SMDT 1700 MFS	9.3	SMDH170□	1
17.5	●	1750 MFS	9.3		1
18.0	●	SMDT 1800 MFS	9.8	SMDH180□	1
18.5	●	1850 MFS	9.8		1
19.0	●	SMDT 1900 MFS	10.2	SMDH190□	1
19.5	●	1950 MFS	10.2		1
20.0	●	SMDT 2000 MFS	10.7	SMDH200□	1
20.5	●	2050 MFS	10.7		1
21.0	●	SMDT 2100 MFS	11.2	SMDH210□	1
21.5	●	2150 MFS	11.2		1

Grade: ACX70

Recommended Cutting Conditions J118
Applicable Holders J120, J122, J124

Indexable Head MFS type Diameter ø22.0 to 30.0mm

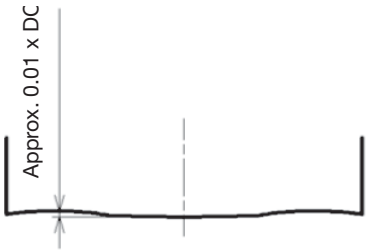
Dimensions (mm)

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

Grade: ACX70

Recommended Cutting Conditions J118
Applicable Holders J120 to J123, J125

Shape of Hole Bottom Drilled with MFS type



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

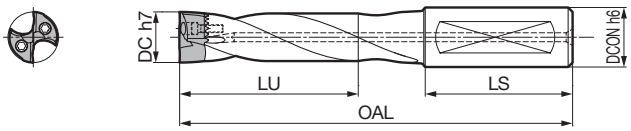
SMD series (Internal Coolant Supply) Side Lock Flat/No Flange

MFS | Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.28% | 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 N36 for the tolerance of h6 and h7

● Set Figure Fig 1



Holder ø12.0 to 29.8mm 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		Wrench
											N·m	
12.0 ≤ D < 12.5	3	SMDH 120M	●	40.0	105.2	48	16	MFS	1	BXD02208IP	0.75 to 1.00	TRDR08IP
	5	120L	●	65.0	130.2	48	16		1			
12.5 ≤ D < 13.0	3	SMDH 125M	●	41.0	105.1	48	16	MFS	1	BXD02208IP	0.75 to 1.00	TRDR08IP
	5	125L	●	67.0	130.1	48	16		1			
13.0 ≤ D < 13.5	3	SMDH 130M	●	43.0	110.2	48	16	MFS	1	BXD02208IP	0.75 to 1.00	TRDR08IP
	5	130L	●	70.0	140.2	48	16		1			
13.5 ≤ D ≤ 14.5	3	SMDH 140M	●	48.0	116.6	48	16	MFS	1	BXD02208IP	0.75 to 1.00	TRDR08IP
	5	140L	●	77.0	146.6	48	16		1			
	8	140D	●	121.0	191.6	48	16		1			
14.5 < D ≤ 15.5	3	SMDH 150M	●	51.0	126.6	50	20	MFS	1	BXD02208IP	0.75 to 1.00	TRDR08IP
	5	150L	●	82.0	156.6	50	20		1			
	8	150D	●	129.0	201.6	50	20		1			
15.5 < D ≤ 16.5	3	SMDH 160M	●	54.0	131.6	50	20	MFS	1	BXD02509IP	0.93 to 1.24	TRDR10IP
	5	160L	●	87.0	166.6	50	20		1			
	8	160D	●	137.0	211.6	50	20		1			
16.5 < D ≤ 17.5	3	SMDH 170M	●	57.0	136.6	50	20	MFS	1	BXD02509IP	0.93 to 1.24	TRDR10IP
	5	170L	●	92.0	171.6	50	20		1			
	8	170D	●	145.0	221.6	50	20		1			
17.5 < D ≤ 18.5	3	SMDH 180M	●	60.0	141.7	50	20	MFS	1	BXD02509IP	0.93 to 1.24	TRDR10IP
	5	180L	●	97.0	176.7	50	20		1			
	8	180D	●	153.0	226.7	50	20		1			
18.5 < D ≤ 19.5	3	SMDH 190M	●	63.0	156.6	56	25	MFS	1	BXD03011IP	1.83 to 2.44	TRDR15IP
	5	190L	●	102.0	191.6	56	25		1			
	8	190D	●	161.0	251.6	56	25		1			
19.5 < D ≤ 20.5	3	SMDH 200M	●	66.0	156.7	56	25	MFS	1	BXD03011IP	1.83 to 2.44	TRDR15IP
	5	200L	●	107.0	196.7	56	25		1			
	8	200D	●	169.0	261.7	56	25		1			
20.5 < D ≤ 21.5	3	SMDH 210M	●	69.0	156.7	56	25	MFS	1	BXD03011IP	1.83 to 2.44	TRDR15IP
	5	210L	●	112.0	196.7	56	25		1			
	8	210D	●	177.0	266.7	56	25		1			
21.5 < D ≤ 22.8	3	SMDH 220M	●	73.0	161.3	56	25	MFS	1	BXD03512IP	2.79 to 3.72	TRDR15IP
	5	220L	●	119.0	201.3	56	25		1			
	8	220D	●	187.0	271.3	56	25		1			
22.8 < D ≤ 23.8	3	SMDH 230M	●	76.0	160.7	56	25	MFS	1	BXD03512IP	2.79 to 3.72	TRDR15IP
	5	230L	●	124.0	210.7	56	25		1			
	8	230D	●	195.0	280.7	56	25		1			
23.8 < D ≤ 24.8	3	SMDH 240M	●	79.0	170.5	60	32	MFS	1	BXD03512IP	2.79 to 3.72	TRDR15IP
	5	240L	●	129.0	220.5	60	32		1			
	8	240D	●	203.0	295.5	60	32		1			
24.8 < D ≤ 25.8	3	SMDH 250M	●	82.0	170.4	60	32	MFS	1	BXD04014IP	4.14 to 5.52	TRDR20IP
	5	250L	●	134.0	225.4	60	32		1			
	8	250D	●	211.0	300.4	60	32		1			
25.8 < D ≤ 26.8	3	SMDH 260M	●	85.0	175.5	60	32	MFS	1	BXD04014IP	4.14 to 5.52	TRDR20IP
	5	260L	●	139.0	230.5	60	32		1			
	8	260D	●	219.0	310.5	60	32		1			
26.8 < D ≤ 27.8	3	SMDH 270M	●	88.0	175.5	60	32	MFS	1	BXD04014IP	4.14 to 5.52	TRDR20IP
	5	270L	●	144.0	235.5	60	32		1			
	8	270D	●	227.0	320.5	60	32		1			
27.8 < D ≤ 28.8	3	SMDH 280M	●	91.0	180.6	60	32	MFS	1	BXD04515IP	4.98 to 6.64	TRDR25IP
	5	280L	●	149.0	240.6	60	32		1			
	8	280D	●	235.0	325.6	60	32		1			
28.8 < D ≤ 29.8	3	SMDH 290M	●	94.0	185.4	60	32	MFS	1	BXD04515IP	4.98 to 6.64	TRDR25IP
	5	290L	●	154.0	245.4	60	32		1			
	8	290D	●	243.0	335.4	60	32		1			

*Because the calculation method has been changed, the dimensions above (red text) are different from those listed in the 2021-2022 General Catalogue, but the specifications have not changed.

Recommended Cutting Conditions J118
MFS type Head J119

N·m Recommended Tightening Torque (N·m)

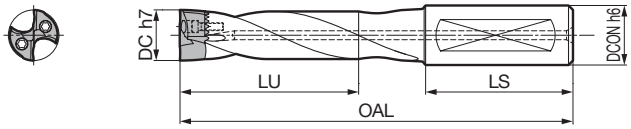
SMD series (Internal Coolant Supply) Side Lock Flat/No Flange

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 N36 for the tolerance of h6 and h7

● Set Figure 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		Wrench
											N·m	
29.8 < D ≤ 30.8	3	**SMDH 300M**	●	**97.0**	**185.6**	60	32	MFS	1	BXD04515IP	**4.98 to 6.64**	TRDR25IP
	5	**300L**	●	**159.0**	**255.6**	60	32		1			
	8	**300D**	●	**251.0**	**345.6**	60	32		1			

*Because the calculation method has been changed, the dimensions above (red text) are different from those listed in the 2021-2022 General Catalogue, but the specifications have not changed.

Recommended Cutting Conditions J118
MFS type Head J119

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

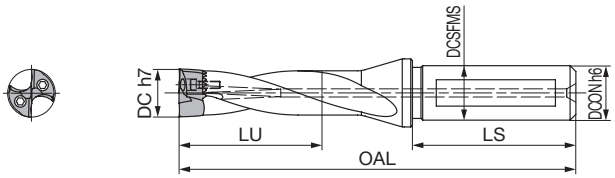
MFS | Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

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

*Refer to N36 for the tolerance of h6 and h7

● Set Figure

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		Wrench
												N·m	
12.0 ≤ D < 12.5	1.5	SMDH 120-1.5DF	●	21.0	88.5	48	20	16	MFS	1	BXD02208IPC	0.75 to 1.00	TRDR08IP
	3	120-3DF	●	40.0	105.2	48	20	16		1			
	5	120-5DF	●	65.0	130.2	48	20	16		1			
	8	120-8DF	●	96.0	162.4	48	20	16		1			
12.5 ≤ D < 13.0	1.5	SMDH 125-1.5DF	●	22.0	88.8	48	20	16	MFS	1	BXD02208IPC	0.75 to 1.00	TRDR08IP
	3	125-3DF	●	41.0	105.1	48	20	16		1			
	5	125-5DF	●	67.0	130.1	48	20	16		1			
	8	125-8DF	●	100.0	167.9	48	20	16		1			
13.0 ≤ D < 13.5	1.5	SMDH 130-1.5DF	●	23.0	90.0	48	20	16	MFS	1	BXD02208IPC	0.75 to 1.00	TRDR08IP
	3	130-3DF	●	43.0	110.2	48	20	16		1			
	5	130-5DF	●	70.0	140.2	48	20	16		1			
	8	130-8DF	●	104.0	176.2	48	20	16		1			
13.5 ≤ D ≤ 14.5	1.5	SMDH 140-1.5DF	●	26.0	93.9	48	20	16	MFS	1	BXD02208IPC	0.75 to 1.00	TRDR08IP
	3	140-3DF	●	48.0	116.6	48	20	16		1			
	5	140-5DF	●	77.0	146.6	48	20	16		1			
	8	140-8DF	●	121.0	191.6	48	20	16		1			
14.5 < D ≤ 15.5	1.5	SMDH 150-1.5DF	●	28.0	97.3	50	25	20	MFS	1	BXD02208IPC	0.75 to 1.00	TRDR08IP
	3	150-3DF	●	51.0	126.6	50	25	20		1			
	5	150-5DF	●	82.0	156.6	50	25	20		1			
	8	150-8DF	●	129.0	201.6	50	25	20		1			
15.5 < D ≤ 16.5	1.5	SMDH 160-1.5DF	●	29.0	99.9	50	25	20	MFS	1	BXD02509IPC	0.93 to 1.24	TRDR10IP
	3	160-3DF	●	54.0	131.6	50	25	20		1			
	5	160-5DF	●	87.0	166.6	50	25	20		1			
	8	160-8DF	●	137.0	211.6	50	25	20		1			
16.5 < D ≤ 17.5	1.5	SMDH 170-1.5DF	●	31.0	101.4	50	25	20	MFS	1	BXD02509IPC	0.93 to 1.24	TRDR10IP
	3	170-3DF	●	57.0	136.6	50	25	20		1			
	5	170-5DF	●	92.0	171.6	50	25	20		1			
	8	170-8DF	●	145.0	221.6	50	25	20		1			
17.5 < D ≤ 18.5	1.5	SMDH 180-1.5DF	●	32.0	104.0	50	25	20	MFS	1	BXD02509IPC	0.93 to 1.24	TRDR10IP
	3	180-3DF	●	60.0	141.7	50	25	20		1			
	5	180-5DF	●	97.0	176.7	50	25	20		1			
	8	180-8DF	●	153.0	226.7	50	25	20		1			
18.5 < D ≤ 19.5	1.5	SMDH 190-1.5DF	●	34.0	111.4	56	30	25	MFS	1	BXD03011IPC	1.83 to 2.44	TRDR15IP
	3	190-3DF	●	63.0	156.6	56	30	25		1			
	5	190-5DF	●	102.0	191.6	56	30	25		1			
	8	190-8DF	●	161.0	251.6	56	30	25		1			
19.5 < D ≤ 20.5	1.5	SMDH 200-1.5DF	●	35.0	114.0	56	30	25	MFS	1	BXD03011IPC	1.83 to 2.44	TRDR15IP
	3	200-3DF	●	66.0	156.7	56	30	25		1			
	5	200-5DF	●	107.0	196.7	56	30	25		1			
	8	200-8DF	●	169.0	261.7	56	30	25		1			
20.5 < D ≤ 21.5	1.5	SMDH 210-1.5DF	●	37.0	115.5	56	30	25	MFS	1	BXD03011IPC	1.83 to 2.44	TRDR15IP
	3	210-3DF	●	69.0	156.7	56	30	25		1			
	5	210-5DF	●	112.0	196.7	56	30	25		1			
	8	210-8DF	●	177.0	266.7	56	30	25		1			
21.5 < D ≤ 22.8	1.5	SMDH 220-1.5DF	●	39.0	117.1	56	30	25	MFS	1	BXD03512IPC	2.79 to 3.72	TRDR15IP
	3	220-3DF	●	73.0	161.3	56	30	25		1			
	5	220-5DF	●	119.0	201.3	56	30	25		1			
	8	220-8DF	●	187.0	271.3	56	30	25		1			
22.8 < D ≤ 23.8	1.5	SMDH 230-1.5DF	●	40.0	118.0	56	30	25	MFS	1	BXD03512IPC	2.79 to 3.72	TRDR15IP
	3	230-3DF	●	76.0	160.7	56	30	25		1			
	5	230-5DF	●	124.0	210.7	56	30	25		1			
	8	230-8DF	●	195.0	280.7	56	30	25		1			
23.8 < D ≤ 24.8	1.5	SMDH 240-1.5DF	●	42.0	124.3	60	37	32	MFS	1	BXD03512IPC	2.79 to 3.72	TRDR15IP
	3	240-3DF	●	79.0	170.5	60	37	32		1			
	5	240-5DF	●	129.0	220.5	60	37	32		1			
	8	240-8DF	●	203.0	295.5	60	37	32		1			

*The SMDHOOOS Holder Cat. No. has been changed to SMDHOOO-1.5DF. The specifications have not changed.
*Because the calculation method has been changed, the dimensions above (red text) are different from those listed in the 2021-2022 General Catalogue, but the specifications have not changed.

Recommended Cutting Conditions J118
MFS type Head J119

N·m Recommended Tightening Torque (N·m)

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

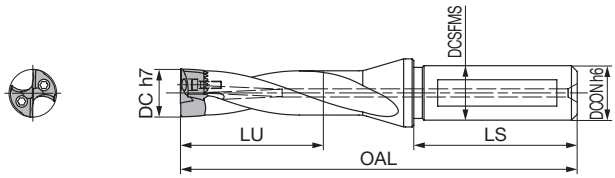
MFS | Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

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

*Refer to N36 for the tolerance of h6 and h7

● Set Figure

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	N·m	Wrench
24.8 < D ≤ 25.8	1.5	SMDH 250-1.5DF	●	43.0	124.7	60	37	32	MFS	1	BXD04014IPC	4.14 to 5.52	TRDR20IP
	3	250-3DF	●	82.0	170.4	60	37	32		1			
	5	250-5DF	●	134.0	225.4	60	37	32		1			
	8	250-8DF	●	211.0	300.4	60	37	32		1			
25.8 < D ≤ 26.8	1.5	SMDH 260-1.5DF	●	45.0	127.3	60	37	32	MFS	1	BXD04014IPC	4.14 to 5.52	TRDR20IP
	3	260-3DF	●	85.0	175.5	60	37	32		1			
	5	260-5DF	●	139.0	230.5	60	37	32		1			
	8	260-8DF	●	219.0	310.5	60	37	32		1			
26.8 < D ≤ 27.8	1.5	SMDH 270-1.5DF	●	46.0	127.8	60	37	32	MFS	1	BXD04014IPC	4.14 to 5.52	TRDR20IP
	3	270-3DF	●	88.0	175.5	60	37	32		1			
	5	270-5DF	●	144.0	235.5	60	37	32		1			
	8	270-8DF	●	227.0	320.5	60	37	32		1			
27.8 < D ≤ 28.8	1.5	SMDH 280-1.5DF	●	48.0	129.4	60	37	32	MFS	1	BXD04515IPC	4.98 to 6.64	TRDR25IP
	3	280-3DF	●	91.0	180.6	60	37	32		1			
	5	280-5DF	●	149.0	240.6	60	37	32		1			
	8	280-8DF	●	235.0	325.6	60	37	32		1			
28.8 < D ≤ 29.8	1.5	SMDH 290-1.5DF	●	49.0	130.8	60	37	32	MFS	1	BXD04515IPC	4.98 to 6.64	TRDR25IP
	3	290-3DF	●	94.0	185.4	60	37	32		1			
	5	290-5DF	●	154.0	245.4	60	37	32		1			
	8	290-8DF	●	243.0	335.4	60	37	32		1			
29.8 < D ≤ 30.8	1.5	SMDH 300-1.5DF	●	51.0	133.4	60	37	32	MFS	1	BXD04515IPC	4.98 to 6.64	TRDR25IP
	3	300-3DF	●	97.0	185.6	60	37	32		1			
	5	300-5DF	●	159.0	255.6	60	37	32		1			
	8	300-8DF	●	251.0	345.6	60	37	32		1			

*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 (red text) are different from those listed in the 2021-2022 General Catalogue, but the specifications have not changed.

Recommended Cutting Conditions J118
MFS type Head J119

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

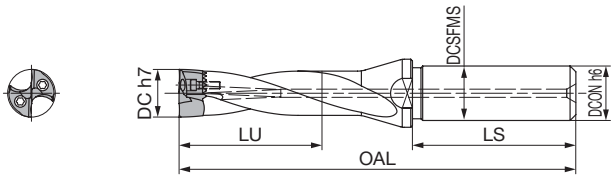
Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

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

*Refer to N36 for the tolerance of h6 and h7

● Set Figure

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	Cap Screw N·m	Wrench
12.0 ≤ D < 12.5	1.5	SMDH 120-1.5D	●	21.0	88.5	48	20	16	MFS	1	BXD02208IPC	0.75 to 1.00	TRDR08IP
	3	120-3D	●	40.0	105.2	48	20	16		1			
	5	120-5D	●	65.0	130.2	48	20	16		1			
	8	120-8D	●	96.0	162.4	48	20	16		1			
	12	120-12D	●	144.0	211.3	48	20	16		1			
12.5 ≤ D < 13.0	1.5	SMDH 125-1.5D	●	22.0	88.8	48	20	16	MFS	1	BXD02208IPC	0.75 to 1.00	TRDR08IP
	3	125-3D	●	41.0	105.1	48	20	16		1			
	5	125-5D	●	67.0	130.1	48	20	16		1			
	8	125-8D	●	100.0	167.9	48	20	16		1			
	12	125-12D	●	150.0	217.3	48	20	16		1			
13.0 ≤ D < 13.5	1.5	SMDH 130-1.5D	●	23.0	90.0	48	20	16	MFS	1	BXD02208IPC	0.75 to 1.00	TRDR08IP
	3	130-3D	●	43.0	110.2	48	20	16		1			
	5	130-5D	●	70.0	140.2	48	20	16		1			
	8	130-8D	●	104.0	176.2	48	20	16		1			
	12	130-12D	●	156.0	223.5	48	20	16		1			
13.5 ≤ D ≤ 14.5	1.5	SMDH 140-1.5D	●	26.0	93.9	48	20	16	MFS	1	BXD02208IPC	0.75 to 1.00	TRDR08IP
	3	140-3D	●	48.0	116.6	48	20	16		1			
	5	140-5D	●	77.0	146.6	48	20	16		1			
	8	140-8D	●	121.0	191.6	48	20	16		1			
	12	140-12D	●	168.0	236.1	48	20	16		1			
14.5 < D ≤ 15.5	1.5	SMDH 150-1.5D	●	28.0	97.3	50	25	20	MFS	1	BXD02208IPC	0.75 to 1.00	TRDR08IP
	3	150-3D	●	51.0	126.6	50	25	20		1			
	5	150-5D	●	82.0	156.6	50	25	20		1			
	8	150-8D	●	129.0	201.6	50	25	20		1			
	12	150-12D	●	180.0	250.4	50	25	20		1			
15.5 < D ≤ 16.5	1.5	SMDH 160-1.5D	●	29.0	99.9	50	25	20	MFS	1	BXD02509IPC	0.93 to 1.24	TRDR10IP
	3	160-3D	●	54.0	131.6	50	25	20		1			
	5	160-5D	●	87.0	166.6	50	25	20		1			
	8	160-8D	●	137.0	211.6	50	25	20		1			
	12	160-12D	●	192.0	262.7	50	25	20		1			
16.5 < D ≤ 17.5	1.5	SMDH 170-1.5D	●	31.0	101.4	50	25	20	MFS	1	BXD02509IPC	0.93 to 1.24	TRDR10IP
	3	170-3D	●	57.0	136.6	50	25	20		1			
	5	170-5D	●	92.0	171.6	50	25	20		1			
	8	170-8D	●	145.0	221.6	50	25	20		1			
	12	170-12D	●	204.0	275.1	50	25	20		1			
17.5 < D ≤ 18.5	1.5	SMDH 180-1.5D	●	32.0	104.0	50	25	20	MFS	1	BXD02509IPC	0.93 to 1.24	TRDR10IP
	3	180-3D	●	60.0	141.7	50	25	20		1			
	5	180-5D	●	97.0	176.7	50	25	20		1			
	8	180-8D	●	153.0	226.7	50	25	20		1			
	12	180-12D	●	216.0	287.4	50	25	20		1			
18.5 < D ≤ 19.5	1.5	SMDH 190-1.5D	●	34.0	111.4	56	30	25	MFS	1	BXD03011IPC	1.83 to 2.44	TRDR15IP
	3	190-3D	●	63.0	156.6	56	30	25		1			
	5	190-5D	●	102.0	191.6	56	30	25		1			
	8	190-8D	●	161.0	251.6	56	30	25		1			
	12	190-12D	●	228.0	305.7	56	30	25		1			
19.5 < D ≤ 20.5	1.5	SMDH 200-1.5D	●	35.0	114.0	56	30	25	MFS	1	BXD03011IPC	1.83 to 2.44	TRDR15IP
	3	200-3D	●	66.0	156.7	56	30	25		1			
	5	200-5D	●	107.0	196.7	56	30	25		1			
	8	200-8D	●	169.0	261.7	56	30	25		1			
	12	200-12D	●	240.0	318.0	56	30	25		1			
20.5 < D ≤ 21.5	1.5	SMDH 210-1.5D	●	37.0	115.5	56	30	25	MFS	1	BXD03011IPC	1.83 to 2.44	TRDR15IP
	3	210-3D	●	69.0	156.7	56	30	25		1			
	5	210-5D	●	112.0	196.7	56	30	25		1			
	8	210-8D	●	177.0	266.7	56	30	25		1			
	12	210-12D	●	252.0	330.3	56	30	25		1			

*Because the calculation method has been changed, the dimensions above (red text) are different from those listed in the 2021-2022 General Catalogue, but the specifications have not changed.

Recommended Cutting Conditions J118

MFS type Head J119

N·m Recommended Tightening Torque (N·m)

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

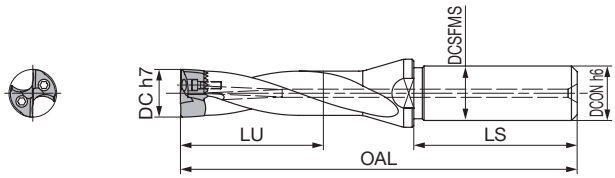
MFS | Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

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

*Refer to N36 for the tolerance of h6 and h7

● Set Figure

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	Cap Screw N·m	Wrench
21.5 < D ≤ 22.8	1.5	SMDH 220-1.5D	●	39.0	117.1	56	30	25	MFS	1	BXD03512IPC	2.79 to 3.72	TRDR15IP
	3	220-3D	●	73.0	161.3	56	30	25		1			
	5	220-5D	●	119.0	201.3	56	30	25		1			
	8	220-8D	●	187.0	271.3	56	30	25		1			
	12	220-12D	●	264.0	343.2	56	30	25		1			
22.8 < D ≤ 23.8	1.5	SMDH 230-1.5D	●	40.0	118.0	56	30	25	MFS	1	BXD03512IPC	2.79 to 3.72	TRDR15IP
	3	230-3D	●	76.0	160.7	56	30	25		1			
	5	230-5D	●	124.0	210.7	56	30	25		1			
	8	230-8D	●	195.0	280.7	56	30	25		1			
	12	230-12D	●	276.0	355.0	56	30	25		1			
23.8 < D ≤ 24.8	1.5	SMDH 240-1.5D	●	42.0	124.3	60	37	32	MFS	1	BXD03512IPC	2.79 to 3.72	TRDR15IP
	3	240-3D	●	79.0	170.5	60	37	32		1			
	5	240-5D	●	129.0	220.5	60	37	32		1			
	8	240-8D	●	203.0	295.5	60	37	32		1			
	12	240-12D	●	288.0	372.0	60	37	32		1			
24.8 < D ≤ 25.8	1.5	SMDH 250-1.5D	●	43.0	124.7	60	37	32	MFS	1	BXD04014IPC	4.14 to 5.52	TRDR20IP
	3	250-3D	●	82.0	170.4	60	37	32		1			
	5	250-5D	●	134.0	225.4	60	37	32		1			
	8	250-8D	●	211.0	300.4	60	37	32		1			
	12	250-12D	●	300.0	384.2	60	37	32		1			
25.8 < D ≤ 26.8	1.5	SMDH 260-1.5D	●	45.0	127.3	60	37	32	MFS	1	BXD04014IPC	4.14 to 5.52	TRDR20IP
	3	260-3D	●	85.0	175.5	60	37	32		1			
	5	260-5D	●	139.0	230.5	60	37	32		1			
	8	260-8D	●	219.0	310.5	60	37	32		1			
	12	260-12D	●	312.0	396.6	60	37	32		1			
26.8 < D ≤ 27.8	1.5	SMDH 270-1.5D	●	46.0	127.8	60	37	32	MFS	1	BXD04014IPC	4.14 to 5.52	TRDR20IP
	3	270-3D	●	88.0	175.5	60	37	32		1			
	5	270-5D	●	144.0	235.5	60	37	32		1			
	8	270-8D	●	227.0	320.5	60	37	32		1			
	12	270-12D	●	324.0	408.9	60	37	32		1			
27.8 < D ≤ 28.8	1.5	SMDH 280-1.5D	●	48.0	129.4	60	37	32	MFS	1	BXD04515IPC	4.98 to 6.64	TRDR25IP
	3	280-3D	●	91.0	180.6	60	37	32		1			
	5	280-5D	●	149.0	240.6	60	37	32		1			
	8	280-8D	●	235.0	325.6	60	37	32		1			
	12	280-12D	●	336.0	421.3	60	37	32		1			
28.8 < D ≤ 29.8	1.5	SMDH 290-1.5D	●	49.0	130.8	60	37	32	MFS	1	BXD04515IPC	4.98 to 6.64	TRDR25IP
	3	290-3D	●	94.0	185.4	60	37	32		1			
	5	290-5D	●	154.0	245.4	60	37	32		1			
	8	290-8D	●	243.0	335.4	60	37	32		1			
	12	290-12D	●	348.0	433.5	60	37	32		1			
29.8 < D ≤ 30.8	1.5	SMDH 300-1.5D	●	51.0	133.4	60	37	32	MFS	1	BXD04515IPC	4.98 to 6.64	TRDR25IP
	3	300-3D	●	97.0	185.6	60	37	32		1			
	5	300-5D	●	159.0	255.6	60	37	32		1			
	8	300-8D	●	251.0	345.6	60	37	32		1			
	12	300-12D	●	360.0	445.9	60	37	32		1			

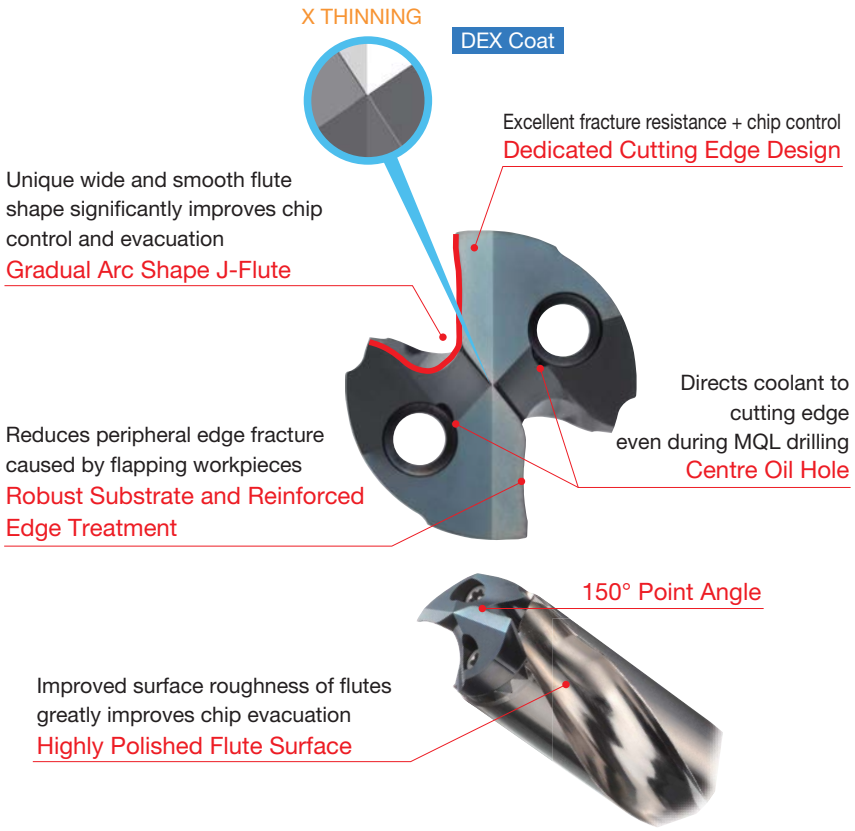
*Because the calculation method has been changed, the dimensions above (red text) are different from those listed in the 2021-2022 General Catalogue, but the specifications have not changed.

Recommended Cutting Conditions J118

MFS type Head J119

SMD-MB type for Bridge

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



Chip Control

MB type for Bridge — Good chip control

Work Material: SM490YB
Cutting Conditions: vc=87m/min, f=0.29mm/rev

Competitor's Product — Elongated chips

Work Material: SM490YB
Cutting Conditions: vc=87m/min, f=0.29mm/rev

Cutting Length Comparison for MB type

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

(n: Spindle Speed min^{-1} vc: 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.
ø24.7	n	900	840	700	700
	vc	60-**70**-80	55-**65**-75	45-**55**-65	45-**55**-65
	f	0.20-**0.30**-0.40	0.20-**0.30**-0.40	0.20-**0.25**-0.30	0.20-**0.25**-0.30
ø26.7	n	830	770	650	650
	vc	60-**70**-80	55-**65**-75	45-**55**-65	45-**55**-65
	f	0.20-**0.30**-0.40	0.20-**0.30**-0.40	0.20-**0.25**-0.30	0.20-**0.25**-0.30

SMD-MB type for Bridge (Internal Coolant Supply)

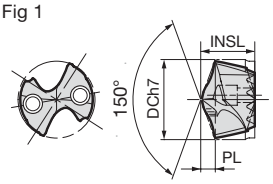
MB | Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29%

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

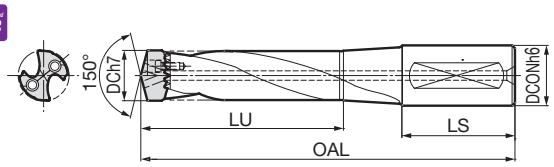
Only use the special MB type head with a B3 type holder.

*Refer to N36 for the tolerance of h6 and h7

Indexable Head Fig 1



● Set Figure Fig 2



Indexable Head MB type Diameter ø24.5/24.7mm

Dimensions (mm)

Diameter DC	Stock	Cat. No.	Head Length INSL	Tip PL	Applicable Holder	Fig
24.5	●	**SMDT 2450 MB**	14.1	3.3	**SMDH 240B3**	1
24.7	●	**SMDT 2470 MB**	14.1	3.3	**SMDH 240B3**	1

Grade: ACX80

Indexable Head MB type Diameter ø26.5/26.7mm

Dimensions (mm)

Diameter DC	Stock	Cat. No.	Head Length INSL	Tip PL	Applicable Holder	Fig
26.5	●	**SMDT 2650 MB**	15.3	3.6	**SMDH 260B3**	1
26.7	●	**SMDT 2670 MB**	15.3	3.6	**SMDH 260B3**	1

Grade: ACX80

*Because the calculation method has been changed, the dimensions above (red text) are different from those listed in the 2021-2022 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**	●	90.3	173.3	60	32	MB	2	BXD03512IP	2.79 to 3.72	TRDR15IP
25.8 < D ≤ 26.8	3	**SMDH 260B3**	●	95.6	178.6	60	32	MB	2	BXD04014IP	4.14 to 5.52	TRDR20IP

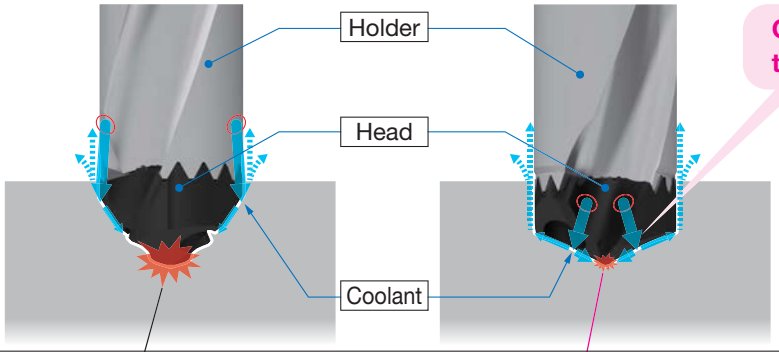
Inquire about production of holders not listed in stock.

*Because the calculation method has been changed, the dimensions above (red text) are different from those listed in the 2021-2022 General Catalogue, but the specifications have not changed.

Coolant Supply for Improved Lubricity

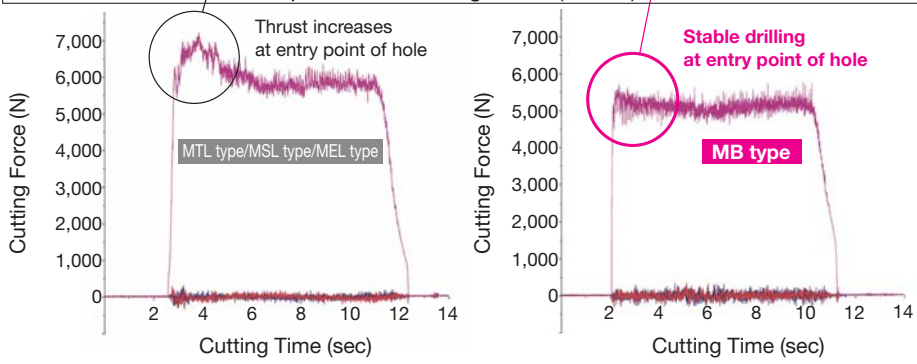
MTL type/MSL type/MEL type

MB type



Coolant supply to the drill tip has been improved.

Comparison of Cutting Force (Thrust)



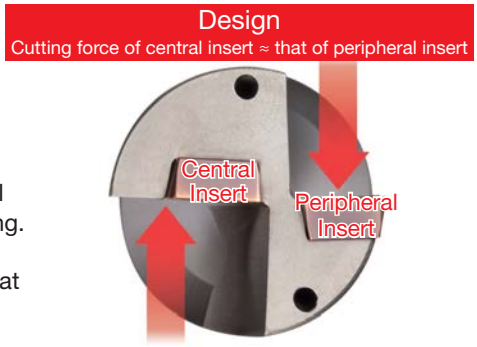
Work Material: SS400, Diameter: ø24.7mm, Cutting Conditions: vc = 70m/min, f = 0.35mm/rev, Coolant: MQL

*Due to the difference in oil hole positions and flute shapes, MTL type / MSL type / MEL type drill heads are not compatible to use with B3 type drill holders (for bridge) and similarly, MB type drill heads (for bridge) are not compatible for use with -1.5D(F) to -12D type/M type/L type/D type drill holders.

WDX series

■ General Features

The SumiDrill WDX series has excellent cutting balance that provides stable 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 evacuation and reduced cutting force for use in low-rigidity contexts.



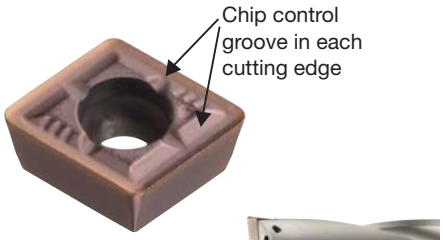
■ Features and Applications

● 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.

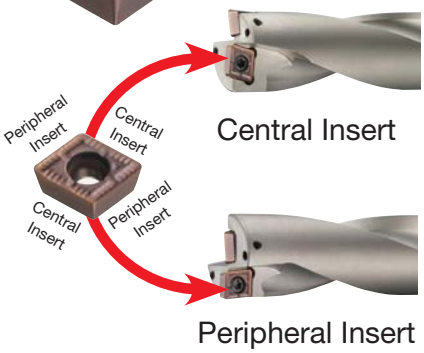
● Excellent Chip Control
The chip evacuation direction can be controlled with the chip control groove at the centre of the breaker, enabling good chip evacuation.

● Versatile Tool for a Variety of Drilling 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, flat bottom drilling, 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.



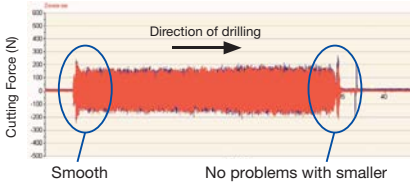
Type	L type	G type		H type	M type
Features	For Low Feed with Chip Evacuation	General-purpose	For Non-Ferrous Metal	Strong Edged	Dedicated for Stainless Steel
Appearance					
Cross Section					



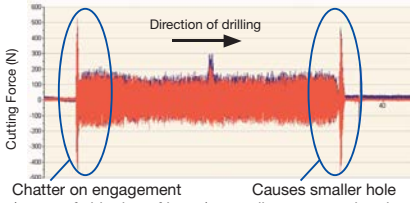
■ Cutting Performance

● Balanced Design (Comparison of Horizontal Component Values) Balance is maintained from the hole entry through to the hole exit for stable drilling.

WDX series



Conventional and Competitor's Products



● Improved chip control

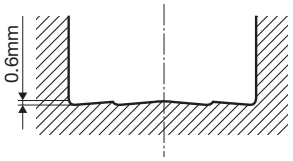
Tool : WDX 200D3S25 (ø20.0)
Work material : SUS304
Cutting Conditions: vc = 130m/min, f = 0.06mm/rev H = 50mm Wet

WDX series

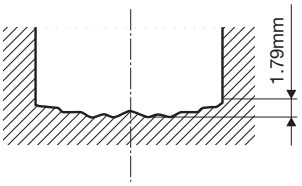
Conventional and Competitor's Products

● 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)



M type Chipbreaker Dedicated for Stainless Steel Drilling + ACM300 Grade

■ Features

Newly developed M type chipbreaker dedicated for stainless steel drilling achieves stable hole quality through chip control.

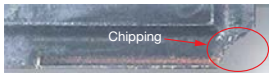
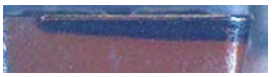
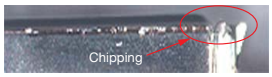
Tool	WDX series M type + ACM300	WDX series G type + ACP300	Competitor's Product Dedicated for Stainless Steel Drilling
Hole Quality			
Chip			

Tool: WDX200D3S25
Insert: WDXT063006-M (ACM300)
Work Material: SUS316L
Cutting Conditions: vc = 150m/min f = 0.08mm/rev
H = 60mm Wet

For High-speed Drilling of Steel and Cast Iron ACP100

■ Features

Our proprietary technology for "Super FF Coat", with its ultra-fine crystal grain structure and coating stress control technology, provides excellent wear resistance and high reliability.

		ACP100	Competitor's Product
Peripheral Insert	Rake Face		 Chipping
	Flank		 Chipping
Central Insert	Rake Face		 Chipping
	Flank		 Chipping

Tool: WDX250D3S25
Insert: WDXT063006-G (ACP100)
Work Material: S50C
Cutting Conditions: vc = 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 ø55.0mm)

■ Features

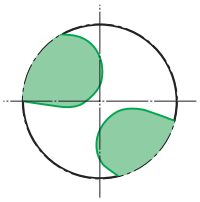
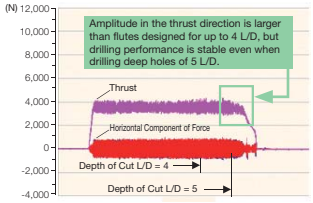
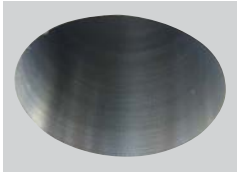
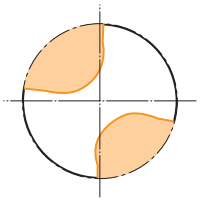
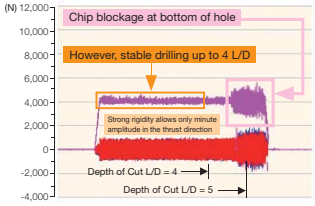
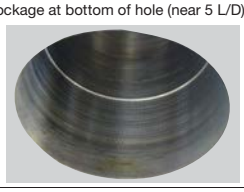
The SumiDrill WDX series for 5D drilling features a specially designed flute shape and large coolant hole for excellent chip evacuation even during deep hole drilling.

Large coolant hole

Coolant supply guide

Special Flute Shape for L/D=5

■ Performance

Tool Holder Features	Cross Section	Cutting Force	Drilled Hole 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 drilled hole surface down to end of hole 
Comparison Tool **Flute Shape for L/D=4** * 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 drilled hole surface due to chip blockage at bottom of hole (near 5 L/D) 

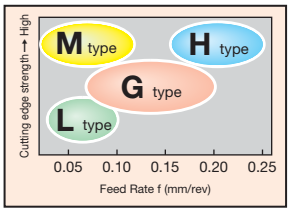
Work Material : SUS304 Tool: WDX260D5S32 Insert: WDXT 073506-G
Cutting Conditions : vc = 150m/min, f = 0.05mm/rev, H = 130mm (through hole) Wet

Insert Selection Guide —— The WDX insert series has a variety of options

5 grades

Work Material \ 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 Metals					○

4 types of chipbreakers

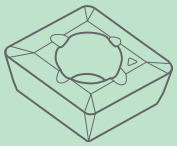


11 combinations are possible!

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		

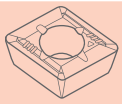
2nd Recommendation (P)

P Steel — For Low Feed with Chip Control — L type — ACP300



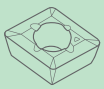
- For drilling of SS400, SCM415, SCM420, etc.
- High speed and low feed is recommended if there are issues with chip control
- Decrease the feed if vibration occurs due to burnt chips

P Steel — General-purpose — G type — ACP100



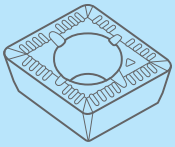
- For drilling of general steel and alloy steel, when prone to significantly large flank wear

P Steel — For Low Feed with Chip Control — L type — ACP100



- For low-feed conditions

P Steel — Strong Edged — H type — ACP300



- For drilling with interruptions (entry/exit) due to slanted entry, reduce the feed rate at the interrupted part (around f = 0.05mm/rev)
- For insufficient cutting edge strength due to drilling of hardened steel (heat treated)

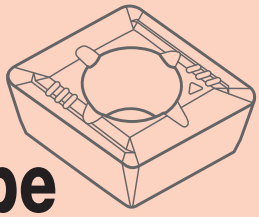
P Steel — Improved chip control (low carbon steel, etc.)

P Steel — Insufficient wear resistance

P Steel — Initial chipping measures (interruption, high hardness, etc.)

1st Recommendation (P M K N)

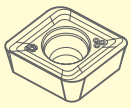
General-purpose — G type



- 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**



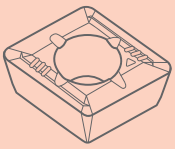
K Cast Iron — Insufficient wear resistance (high-speed drilling)

K Cast Iron — Initial chipping measures (interruption, high feed, etc.)

M Stainless Steel — Lack of chip evacuation (extension)

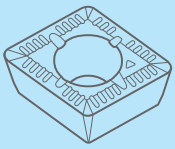
2nd Recommendation (M K)

K Cast Iron — General-purpose — G type — ACP100



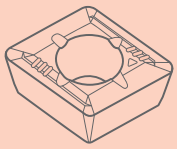
- When heavy flank wear occurs in cast iron drilling
- To limit wear in high-speed, low to medium feed conditions

K Cast Iron — Strong Edged — H type — ACK300



- When interrupted drilling is performed due to slanted entry, etc. as with steel drilling
- For insufficient cutting edge strength due to high-feed drilling

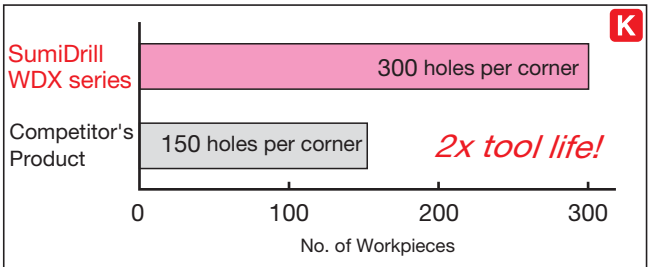
M Stainless Steel — General-purpose — G type — ACP300



- 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

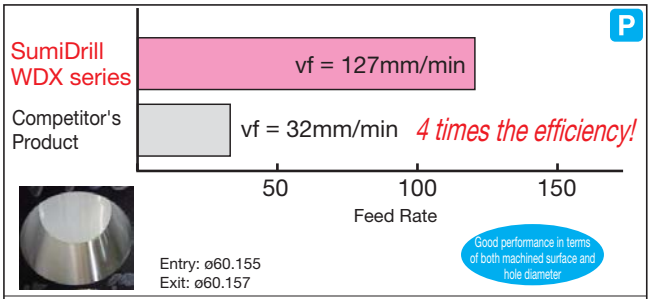


Work Material : Machine Component (FCD450)
Tool : WDX 205D3S25
Insert : WDXT 063006-G (ACK300)
Cutting Conditions : vc = 122m/min, f = 0.15mm/rev, H = 33mm Through Wet

· Significant increase in tool life: twice that of conventional tools.
· Stable drilling with minimal cutting force.

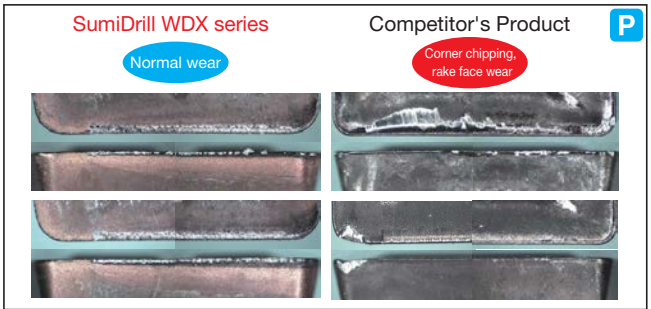
Work Material : Machine Component (SCM440)
Tool : WDX 200D3S25, Insert: WDXT 063006-G (ACP300)
Cutting Conditions : vc = 157m/min, f = 0.19mm/rev, H = 19mm, through, Wet
(Competitor's Product : vc = 157m/min, f = 0.15mm/rev, H = 19mm Through Wet)

Good chip control even in high-efficiency conditions. Good stability with low vibration during drilling. 25% greater efficiency and 20% longer tool life.



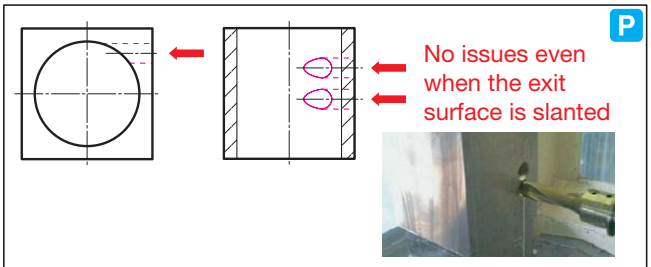
Work Material : Plate (S48C)
Tool : WDX 600D3S40
Insert : WDXT 186012-G (ACP300)
Cutting Conditions : vc = 150m/min, f = 0.16mm/rev, H = 60mm, through, Wet
(Conventional Tool : vc = 30m/min, f = 0.20mm/rev, H = 60mm Through Wet)

· Achieves steady drilling even at large diameters
· Achieves 4 times the efficiency of conventional tools



Work Material : Tractor Links (35MnBM)
Tool : WDX 205D5S25
Insert : WDXT 063006-G (ACP300)
Cutting Conditions : vc = 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

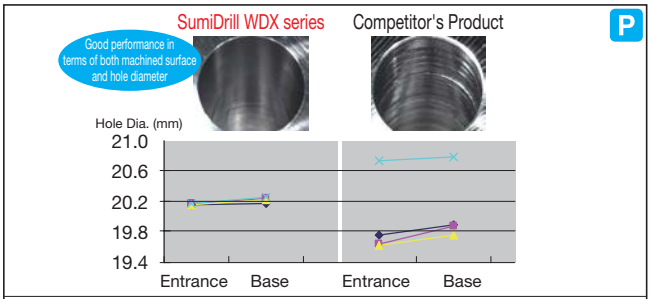


Work Material : Plate (S15C)
Tool : WDX 430D3S40, Insert: WDXT 125012-H (ACP300)
Cutting Conditions : vc = 136m/min, f = 0.15mm/rev, H = 60+50mm (Semicircle Area) Through Wet

· Enables stable drilling even in unstable cutting conditions (interrupted drilling at deepest point).
· Quieter drilling than conventional tools.

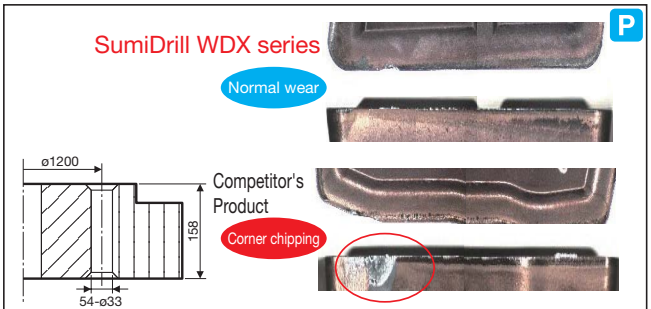
Work Material : Piping Component (SUS304)
Tool : WDX210D3S25 Insert: WDXT063006-M (ACM300)
Cutting Conditions : vc = 105mm/min, f = 0.08mm/rev, H = 34mm Wet

· Enables improved chip evacuation and stable drilling.



Work Material : Machine Component (SCM415)
Tool : WDX 200D5S25
Insert : WDXT 063006-G (ACP300)
Cutting Conditions : vc = 185m/min, f = 0.12mm/rev, H = 87mm, through, Wet

· Good machined surface
· Consistent drilled diameter



Work Material : Bearing for Wind Power Generator (42CrMo)
Tool : WDX330D5S40
Insert : WDXT094008-L (ACP300)
Cutting Conditions : vc = 146m/min, f = 0.10mm/rev, H = 158mm Through Wet

· Eliminates defects in workpieces caused by insert chipping

WDX series 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 Coat DLC | Coolant Hole | 2D | Indexable

Drilling tolerance: -0.05 to +0.15mm

*Refer to N36 for the tolerance of h7

Fig 1

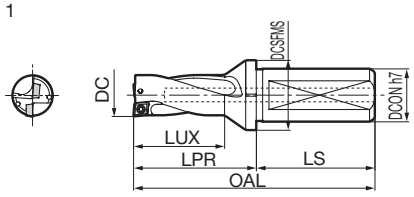


Fig 2

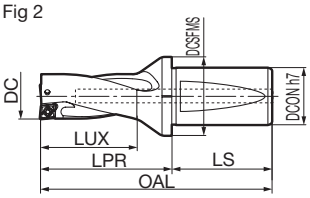
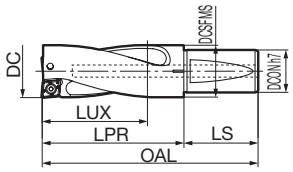


Fig 3



Diameter ø13.0 to 45.0mm

Dimensions (mm)

Dia. DC	Stock	Cat. No.	Neck Length LUX	Overhang Length LPR	Overall Length OAL	Shank LS	Flange Dia. DCSFMS	Shank Dia. DCON	Radial Offset Amount (Max)	Applicable Insert	Fig
13.0	●	WDX 130D2S20	29	44	88	44	28.0	20	0.35	WDXT 042004	1
13.5	●	135D2S20	30	45	89	44	28.0	20	0.30		1
14.0	●	140D2S20	31	46	90	44	28.0	20	0.25		1
14.5	●	145D2S20	32	47	91	44	28.0	20	0.20		1
15.0	●	150D2S20	33	48	92	44	28.0	20	0.15		1
15.5	●	WDX 155D2S20	34	49	93	44	30.0	20	0.40	WDXT 052504	1
16.0	●	160D2S20	35	50	94	44	30.0	20			1
16.5	●	165D2S20	36	51	95	44	30.0	20	0.35		1
17.0	●	170D2S20	37	52	96	44	30.0	20	0.30		1
17.5	●	WDX 175D2S25	38	53	109	56	32.0	25	0.25		1
18.0	●	180D2S25	39	54	110	56	32.0	25	0.20		1
18.5	●	WDX 185D2S25	40	55	111	56	33.0	25	0.50	WDXT 063006	1
19.0	●	190D2S25	41	56	112	56	33.0	25	0.45		1
19.5	●	195D2S25	42	57	113	56	33.0	25	0.40		1
20.0	●	200D2S25	43	58	114	56	33.0	25	0.30		1
20.5	●	205D2S25	44	59	115	56	33.0	25			1
21.0	●	210D2S25	45	60	116	56	33.0	25	0.20		1
21.5	●	215D2S25	46	61	117	56	33.0	25	0.15		1
22.0	●	220D2S25	47	62	118	56	33.0	25	0.10		1
22.5	●	225D2S25	48	63	119	56	33.0	25	0.05		1
23.0	●	WDX 230D2S25	49	67	123	56	37.0	25	0.70	WDXT 073506	1
23.5	●	235D2S25	50	68	124	56	37.0	25			1
24.0	●	240D2S25	51	69	125	56	37.0	25	0.60		1
24.5	●	245D2S25	52	70	126	56	37.0	25	0.50		1
25.0	●	250D2S25	53	71	127	56	37.0	25			1
25.5	●	WDX 255D2S32	54	74	134	60	41.0	32	0.45		2
26.0	●	260D2S32	55	75	135	60	41.0	32	0.40		2
26.5	●	265D2S32	56	76	136	60	41.0	32	0.35		2
27.0	●	270D2S32	57	77	137	60	41.0	32	0.25		2
27.5	●	275D2S32	58	78	138	60	41.0	32	0.20		2
28.0	●	280D2S32	59	79	139	60	41.0	32	0.15		2
28.5	●	285D2S32	60	80	140	60	41.0	32	0.10		2
29.0	●	WDX 290D2S32	62	83	143	60	50.0	32	1.00	WDXT 094008	2
29.5	●	295D2S32	63	84	144	60	50.0	32	0.95		2
30.0*	●	300D2S32	64	88	148	60	54.0	32	0.90		2
31.0*	●	310D2S32	66	90	150	60	54.0	32	0.80		2
32.0*	●	320D2S32	68	92	152	60	54.0	32	0.70		2
30.0*	●	WDX 300D2S40	64	88	158	70	54.0	40	0.90		2
31.0*	●	310D2S40	66	90	160	70	54.0	40	0.80		2
32.0*	●	320D2S40	68	92	162	70	54.0	40	0.70		2
33.0	●	330D2S40	70	94	164	70	54.0	40	0.55		2
34.0	●	340D2S40	72	96	166	70	54.0	40	0.45		2
35.0	●	350D2S40	74	98	168	70	54.0	40	0.35		2
36.0	●	360D2S40	76	100	170	70	54.0	40	0.20		2
37.0	●	WDX 370D2S40	79	109	179	70	49.5	40	1.00	WDXT 125012	2
38.0	●	380D2S40	81	111	181	70	49.5	40			2
39.0	●	390D2S40	83	113	183	70	49.5	40	0.90		2
40.0	●	400D2S40	85	115	185	70	49.5	40	0.80		2
41.0	●	410D2S40	87	117	187	70	49.5	40	0.70		2
42.0	●	420D2S40	89	119	189	70	49.5	40	0.60		2
43.0	●	430D2S40	91	121	191	70	49.5	40	0.50		2
44.0	●	440D2S40	93	123	193	70	49.5	40			2
45.0	●	450D2S40	95	125	195	70	49.5	40	0.40		2

*Diameters ø30, ø31, ø32 are in stock with shank diameters of ø32 and ø40.

Radial Offset Amount J140

Diameter ø46.0 to 68.0mm

Dimensions (mm)

Dia. DC	Stock	Cat. No.	Neck Length LUX	Overhang Length LPR	Overall Length OAL	Shank LS	Flange Dia. DCSFMS	Shank Dia. DCON	Radial Offset Amount (Max)	Applicable Insert	Fig
46.0	●	WDX 460D2S40	97	127	197	70	49.5	40	1.50	WDXT 156012	2
47.0	●	470D2S40	99	129	199	70	49.5	40	1.40		2
48.0	●	480D2S40	101	131	201	70	49.5	40	1.30		2
49.0	●	490D2S40	103	133	203	70	49.5	40	1.20		2
50.0	●	500D2S40	105	135	205	70	49.5	40	1.10		2
51.0	●	510D2S40	107	137	207	70	49.5	40	1.00		3
52.0	●	520D2S40	109	139	209	70	50.5	40	0.90		3
53.0	●	530D2S40	111	141	211	70	51.5	40	0.80		3
54.0	●	540D2S40	113	143	213	70	52.5	40	0.60		3
55.0	●	550D2S40	115	145	215	70	53.5	40	0.50		3
56.0	●	WDX 560D2S40	120	152	222	70	54.0	40	2.00	WDXT 186012	3
57.0	●	570D2S40	122	154	224	70	55.0	40	1.80		3
58.0	●	580D2S40	124	156	226	70	56.0	40	1.70		3
59.0	●	590D2S40	126	158	228	70	57.0	40	1.60		3
60.0	●	600D2S40	128	160	230	70	58.0	40	1.50		3
61.0	●	610D2S40	130	162	232	70	59.0	40	1.40		3
62.0	●	620D2S40	132	164	234	70	60.0	40	1.30		3
63.0	●	630D2S40	134	166	236	70	61.0	40	1.20		3
64.0	●	640D2S40	136	168	238	70	62.0	40	1.00		3
65.0	●	650D2S40	138	170	240	70	63.0	40	0.90		3
66.0	●	660D2S40	140	172	242	70	64.0	40	0.70		3
67.0	●	670D2S40	142	174	244	70	65.0	40	0.60		3
68.0	●	680D2S40	144	176	246	70	66.0	40	0.50		3

*Diameters ø30, ø31, ø32 are in stock with shank diameters of ø32 and ø40.

Parts

Applicable Holder	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

- WDX: Dia. DC (ø20.0)
- D2: Flute Length (L/D) (2D)
- S25: Shank Dia. DCON (ø25.0)

N·m Recommended Tightening Torque (N·m)

WDX series for 2D (Internal Coolant Supply)

Insert

Dimensions (mm)

Grade Classification		Coated Carbide										
Process	High-speed/Light Cutting	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	4.2	2.0	0.4	0.4	
042004-H		●	●		●		3	4.2	2.0	0.4	0.4	
042004-M				●			4	4.2	2.0	0.4	0.8	
WDXT 052504-L		●	●		●		1	5.0	2.5	0.4	0.4	WDX155D2S20 to WDX180D2S25
052504-G		●	●		●	●	2	5.0	2.5	0.4	0.4	
052504-H		●	●		●		3	5.0	2.5	0.4	0.4	
052504-M				●			4	5.0	2.5	0.4	1.0	
WDXT 063006-L		●	●		●		1	6.0	3.0	0.6	0.6	WDX185D2S25 to WDX225D2S25
063006-G		●	●		●	●	2	6.0	3.0	0.6	0.6	
063006-H		●	●		●		3	6.0	3.0	0.6	0.6	
063006-M				●			4	6.0	3.0	0.6	1.4	
WDXT 073506-L		●	●		●		1	7.5	3.5	0.6	0.6	WDX230D2S25 to WDX285D2S32
073506-G		●	●		●	●	2	7.5	3.5	0.6	0.6	
073506-H		●	●		●		3	7.5	3.5	0.6	0.6	
073506-M				●			4	7.5	3.5	0.6	1.6	
WDXT 094008-L		●	●		●		1	9.6	4.0	0.8	0.8	WDX290D2S32 to WDX360D2S40
094008-G		●	●		●	●	2	9.6	4.0	0.8	0.8	
094008-H		●	●		●		3	9.6	4.0	0.8	0.8	
094008-M				●			4	9.6	4.0	0.8	2.4	
WDXT 125012-L		●	●		●		1	12.4	5.0	1.2	1.2	WDX370D2S40 to WDX450D2S40
125012-G		●	●		●	●	2	12.4	5.0	1.2	1.2	
125012-H		●	●		●		3	12.4	5.0	1.2	1.2	
125012-M				●			4	12.4	5.0	1.2	3.2	
WDXT 156012-L		●	●		●		1	15.2	6.0	1.2	1.2	WDX460D2S40 to WDX550D2S40
156012-G		●	●		●	●	2	15.2	6.0	1.2	1.2	
156012-H		●	●		●		3	15.2	6.0	1.2	1.2	
WDXT 186012-L		●	●		●		1	18.0	6.0	1.2	1.2	WDX560D2S40 to WDX680D2S40
186012-G		●	●		●		2	18.0	6.0	1.2	1.2	
186012-H		●	●		●		3	18.0	6.0	1.2	1.2	

Fig 1 For low feed with chip control

L type

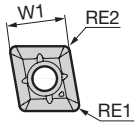


Fig 2 General-purpose

G type

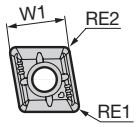


Fig 3 Strong edged

H type

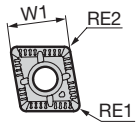
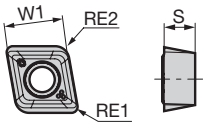


Fig 4 Dedicated for stainless steel

M type



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 2D)

		Work Material		Workpiece Hardness HB	Recommended Chipbreaker	Recommended Insert Grade	vc 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 vc to 130% and the feed rate f to 75% of the figures in the table above.

WDX series 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 Coat DLC | Coolant Hole | 3D | Indexable

Drilling tolerance: 0 to +0.20mm

*Refer to N36 for the tolerance of h7

Fig 1

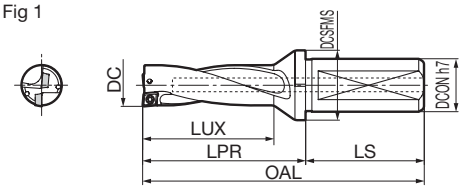


Fig 2

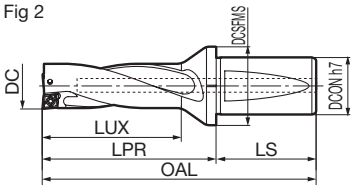
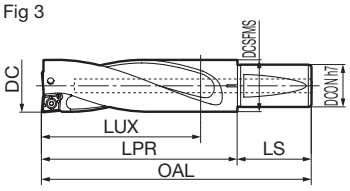


Fig 3



Diameter ø13.0 to 45.0mm

Dimensions (mm)

Dia. DC	Stock	Cat. No.	Neck Length LUX	Overhang Length LPR	Overall Length OAL	Shank LS	Flange Dia. 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	WDXT 042004	1
13.5	●	135D3S20	43.5	58.5	102.5	44	28.0	20	0.30		1
14.0	●	140D3S20	45.0	60.0	104.0	44	28.0	20	0.25		1
14.5	●	145D3S20	46.5	61.5	105.5	44	28.0	20	0.20		1
15.0	●	150D3S20	48.0	63.0	107.0	44	28.0	20	0.15		1
15.5	●	WDX 155D3S20	49.5	64.5	108.5	44	30.0	20	0.40	WDXT 052504	1
16.0	●	160D3S20	51.0	66.0	110.0	44	30.0	20			1
16.5	●	165D3S20	52.5	67.5	111.5	44	30.0	20	0.35		1
17.0	●	170D3S20	54.0	69.0	113.0	44	30.0	20	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	56	32.0	25	0.20		1
18.5	●	WDX 185D3S25	58.5	73.5	129.5	56	33.0	25	0.50	WDXT 063006	1
19.0	●	190D3S25	60.0	75.0	131.0	56	33.0	25	0.45		1
19.5	●	195D3S25	61.5	76.5	132.5	56	33.0	25	0.40		1
20.0	●	200D3S25	63.0	78.0	134.0	56	33.0	25	0.30		1
20.5	●	205D3S25	64.5	79.5	135.5	56	33.0	25			1
21.0	●	210D3S25	66.0	81.0	137.0	56	33.0	25	0.20		1
21.5	●	215D3S25	67.5	82.5	138.5	56	33.0	25	0.15		1
22.0	●	220D3S25	69.0	84.0	140.0	56	33.0	25	0.10		1
22.5	●	225D3S25	70.5	85.5	141.5	56	33.0	25	0.05		1
23.0	●	WDX 230D3S25	72.0	90.0	146.0	56	37.0	25	0.70	WDXT 073506	1
23.5	●	235D3S25	73.5	91.5	147.5	56	37.0	25			1
24.0	●	240D3S25	75.0	93.0	149.0	56	37.0	25	0.60		1
24.5	●	245D3S25	76.5	94.5	150.5	56	37.0	25	0.50		1
25.0	●	250D3S25	78.0	96.0	152.0	56	37.0	25			1
25.5	●	WDX 255D3S32	79.5	99.5	159.5	60	41.0	32	0.45		2
26.0	●	260D3S32	81.0	101.0	161.0	60	41.0	32	0.40		2
26.5	●	265D3S32	82.5	102.5	162.5	60	41.0	32	0.35		2
27.0	●	270D3S32	84.0	104.0	164.0	60	41.0	32	0.25		2
27.5	●	275D3S32	85.5	105.5	165.5	60	41.0	32	0.20		2
28.0	●	280D3S32	87.0	107.0	167.0	60	41.0	32	0.15		2
28.5	●	285D3S32	88.5	108.5	168.5	60	41.0	32	0.10		2
29.0	●	WDX 290D3S32	91.0	112.0	172.0	60	50.0	32	1.00	WDXT 094008	2
29.5	●	295D3S32	92.5	113.5	173.5	60	50.0	32	0.95		2
30.0*	●	300D3S32	94.0	118.0	178.0	60	54.0	32	0.90		2
31.0*	●	310D3S32	97.0	121.0	181.0	60	54.0	32	0.80		2
32.0*	●	320D3S32	100.0	124.0	184.0	60	54.0	32	0.70		2
30.0*	●	WDX 300D3S40	94.0	118.0	188.0	70	54.0	40	0.90		2
31.0*	●	310D3S40	97.0	121.0	191.0	70	54.0	40	0.80		2
32.0*	●	320D3S40	100.0	124.0	194.0	70	54.0	40	0.70		2
33.0	●	330D3S40	103.0	127.0	197.0	70	54.0	40	0.55		2
34.0	●	340D3S40	106.0	130.0	200.0	70	54.0	40	0.45		2
35.0	●	350D3S40	109.0	133.0	203.0	70	54.0	40	0.35		2
36.0	●	360D3S40	112.0	136.0	206.0	70	54.0	40	0.20		2
37.0	●	WDX 370D3S40	116.0	146.0	216.0	70	49.5	40	1.00	WDXT 125012	2
38.0	●	380D3S40	119.0	149.0	219.0	70	49.5	40			2
39.0	●	390D3S40	122.0	152.0	222.0	70	49.5	40	0.90		2
40.0	●	400D3S40	125.0	155.0	225.0	70	49.5	40	0.80		2
41.0	●	410D3S40	128.0	158.0	228.0	70	49.5	40	0.70		2
42.0	●	420D3S40	131.0	161.0	231.0	70	49.5	40	0.60		2
43.0	●	430D3S40	134.0	164.0	234.0	70	49.5	40	0.50		2
44.0	●	440D3S40	137.0	167.0	237.0	70	49.5	40			2
45.0	●	450D3S40	140.0	170.0	240.0	70	49.5	40	0.40		2

*Diameters ø30, ø31, ø32 are in stock with shank diameters of ø32 and ø40.

Radial Offset Amount J140

Diameter ø46.0 to 68.0mm

Dimensions (mm)

Dia. DC	Stock	Cat. No.	Neck Length LUX	Overhang Length LPR	Overall Length OAL	Shank LS	Flange Dia. 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	WDXT 156012	2
47.0	●	470D3S40	146.0	176.0	246.0	70	49.5	40	1.40		2
48.0	●	480D3S40	149.0	179.0	249.0	70	49.5	40	1.30		2
49.0	●	490D3S40	152.0	182.0	252.0	70	49.5	40	1.20		2
50.0	●	500D3S40	155.0	185.0	255.0	70	49.5	40	1.10		2
51.0	●	510D3S40	158.0	188.0	258.0	70	49.5	40	1.00		3
52.0	●	520D3S40	161.0	191.0	261.0	70	50.5	40	0.90		3
53.0	●	530D3S40	164.0	194.0	264.0	70	51.5	40	0.80		3
54.0	●	540D3S40	167.0	197.0	267.0	70	52.5	40	0.60		3
55.0	●	550D3S40	170.0	200.0	270.0	70	53.5	40	0.50		3
56.0	●	WDX 560D3S40	176.0	208.0	278.0	70	54.0	40	2.00	WDXT 186012	3
57.0	●	570D3S40	179.0	211.0	281.0	70	55.0	40	1.80		3
58.0	●	580D3S40	182.0	214.0	284.0	70	56.0	40	1.70		3
59.0	●	590D3S40	185.0	217.0	287.0	70	57.0	40	1.60		3
60.0	●	600D3S40	188.0	220.0	290.0	70	58.0	40	1.50		3
61.0	●	610D3S40	191.0	223.0	293.0	70	59.0	40	1.40		3
62.0	●	620D3S40	194.0	226.0	296.0	70	60.0	40	1.30		3
63.0	●	630D3S40	197.0	229.0	299.0	70	61.0	40	1.20		3
64.0	●	640D3S40	200.0	232.0	302.0	70	62.0	40	1.00		3
65.0	●	650D3S40	203.0	235.0	305.0	70	63.0	40	0.90		3
66.0	●	660D3S40	206.0	238.0	308.0	70	64.0	40	0.70		3
67.0	●	670D3S40	209.0	241.0	311.0	70	65.0	40	0.60		3
68.0	●	680D3S40	212.0	244.0	314.0	70	66.0	40	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

- 200: Dia. DC (ø20.0)
- D3: Flute Length (L/D) (3D)
- S25: Shank Dia. DCON (ø25.0)

N·m Recommended Tightening Torque (N·m)

WDX series for 3D (Internal Coolant Supply)

Insert

Dimensions (mm)

Grade Classification		Coated Carbide				
Process	High-speed/Light Cutting	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	4.2	2.0	0.4	0.4	
042004-H	●	●		●		3	4.2	2.0	0.4	0.4	
042004-M			●			4	4.2	2.0	0.4	0.8	
WDXT 052504-L	●	●		●		1	5.0	2.5	0.4	0.4	WDX155D3S20 to WDX180D3S25
052504-G	●	●		●	●	2	5.0	2.5	0.4	0.4	
052504-H	●	●		●		3	5.0	2.5	0.4	0.4	
052504-M			●			4	5.0	2.5	0.4	1.0	
WDXT 063006-L	●	●		●		1	6.0	3.0	0.6	0.6	WDX185D3S25 to WDX225D3S25
063006-G	●	●		●	●	2	6.0	3.0	0.6	0.6	
063006-H	●	●		●		3	6.0	3.0	0.6	0.6	
063006-M			●			4	6.0	3.0	0.6	1.4	
WDXT 073506-L	●	●		●		1	7.5	3.5	0.6	0.6	WDX230D3S25 to WDX285D3S32
073506-G	●	●		●	●	2	7.5	3.5	0.6	0.6	
073506-H	●	●		●		3	7.5	3.5	0.6	0.6	
073506-M			●			4	7.5	3.5	0.6	1.6	
WDXT 094008-L	●	●		●		1	9.6	4.0	0.8	0.8	WDX290D3S32 to WDX360D3S40
094008-G	●	●		●	●	2	9.6	4.0	0.8	0.8	
094008-H	●	●		●		3	9.6	4.0	0.8	0.8	
094008-M			●			4	9.6	4.0	0.8	2.4	
WDXT 125012-L	●	●		●		1	12.4	5.0	1.2	1.2	WDX370D3S40 to WDX450D3S40
125012-G	●	●		●	●	2	12.4	5.0	1.2	1.2	
125012-H	●	●		●		3	12.4	5.0	1.2	1.2	
125012-M			●			4	12.4	5.0	1.2	3.2	
WDXT 156012-L	●	●		●		1	15.2	6.0	1.2	1.2	WDX460D3S40 to WDX550D3S40
156012-G	●	●		●	●	2	15.2	6.0	1.2	1.2	
156012-H	●	●		●		3	15.2	6.0	1.2	1.2	
WDXT 186012-L	●	●		●		1	18.0	6.0	1.2	1.2	WDX560D3S40 to WDX680D3S40
186012-G	●	●		●		2	18.0	6.0	1.2	1.2	
186012-H	●	●		●		3	18.0	6.0	1.2	1.2	

Fig 1 For low feed with chip control

L type

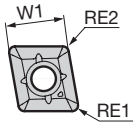


Fig 2 General-purpose

G type

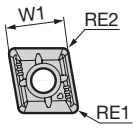


Fig 3 Strong edged

H type

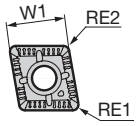
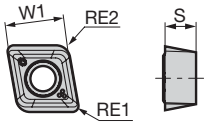


Fig 4 Dedicated for stainless steel

M type



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 3D)

		Work Material		Workpiece Hardness HB	Recommended Chipbreaker	Recommended Insert Grade	vc 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 vc to 130% and the feed rate f to 75% of the figures in the table above.

WDX series for 4D (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.25% | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

CVD Coat | PVD Coat | AURORA Coat DLC | Coolant Hole | 4D | Indexable

Drilling tolerance: 0 to +0.25mm

*Refer to N36 for the tolerance of h7

Fig 1

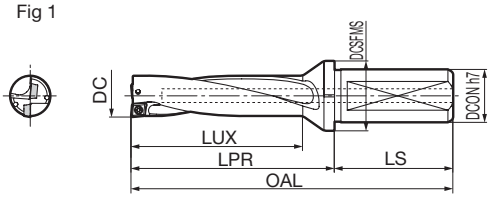


Fig 2

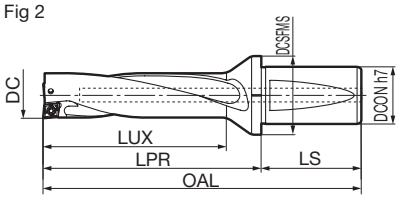
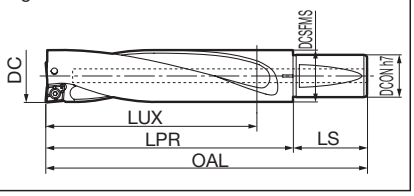


Fig 3



Diameter ø13.0 to 45.0mm

Dimensions (mm)

Dia. DC	Stock	Cat. No.	Neck Length LUX	Overhang Length LPR	Overall Length OAL	Shank LS	Flange Dia. DCSFMS	Shank Dia. DCON	Radial Offset Amount (Max)	Applicable Insert	Fig
13.0	●	WDX 130D4S20	55	70	114	44	28.0	20	0.35		1
13.5	●	135D4S20	57	72	116	44	28.0	20	0.30	WDXT 042004	1
14.0	●	140D4S20	59	74	118	44	28.0	20	0.25		1
14.5	●	145D4S20	61	76	120	44	28.0	20	0.20		1
15.0	●	150D4S20	63	78	122	44	28.0	20	0.15		1
15.5	●	WDX 155D4S20	65	80	124	44	30.0	20	0.40		1
16.0	●	160D4S20	67	82	126	44	30.0	20			1
16.5	●	165D4S20	69	84	128	44	30.0	20	0.35	WDXT 052504	1
17.0	●	170D4S20	71	86	130	44	30.0	20	0.30		1
17.5	●	WDX 175D4S25	73	88	144	56	32.0	25	0.25		1
18.0	●	180D4S25	75	90	146	56	32.0	25	0.20		1
18.5	●	WDX 185D4S25	77	92	148	56	33.0	25	0.50		1
19.0	●	190D4S25	79	94	150	56	33.0	25	0.45		1
19.5	●	195D4S25	81	96	152	56	33.0	25	0.40		1
20.0	●	200D4S25	83	98	154	56	33.0	25	0.30	WDXT 063006	1
20.5	●	205D4S25	85	100	156	56	33.0	25			1
21.0	●	210D4S25	87	102	158	56	33.0	25	0.20		1
21.5	●	215D4S25	89	104	160	56	33.0	25	0.15		1
22.0	●	220D4S25	91	106	162	56	33.0	25	0.10		1
22.5	●	225D4S25	93	108	164	56	33.0	25	0.05		1
23.0	●	WDX 230D4S25	95	113	169	56	37.0	25	0.70		1
23.5	●	235D4S25	97	115	171	56	37.0	25			1
24.0	●	240D4S25	99	117	173	56	37.0	25	0.60		1
24.5	●	245D4S25	101	119	175	56	37.0	25	0.50		1
25.0	●	250D4S25	103	121	177	56	37.0	25			1
25.5	●	WDX 255D4S32	105	125	185	60	41.0	32	0.45	WDXT 073506	2
26.0	●	260D4S32	107	127	187	60	41.0	32	0.40		2
26.5	●	265D4S32	109	129	189	60	41.0	32	0.35		2
27.0	●	270D4S32	111	131	191	60	41.0	32	0.25		2
27.5	●	275D4S32	113	133	193	60	41.0	32	0.20		2
28.0	●	280D4S32	115	135	195	60	41.0	32	0.15		2
28.5	●	285D4S32	117	137	197	60	41.0	32	0.10		2
29.0	●	WDX 290D4S32	120	141	201	60	50.0	32	1.00		2
29.5	●	295D4S32	122	143	203	60	50.0	32	0.95		2
30.0*	●	300D4S32	124	148	208	60	54.0	32	0.90		2
31.0*	●	310D4S32	128	152	212	60	54.0	32	0.80		2
32.0*	●	320D4S32	132	156	216	60	54.0	32	0.70		2
30.0*	●	WDX 300D4S40	124	148	218	70	54.0	40	0.90	WDXT 094008	2
31.0*	●	310D4S40	128	152	222	70	54.0	40	0.80		2
32.0*	●	320D4S40	132	156	226	70	54.0	40	0.70		2
33.0	●	330D4S40	136	160	230	70	54.0	40	0.55		2
34.0	●	340D4S40	140	164	234	70	54.0	40	0.45		2
35.0	●	350D4S40	144	168	238	70	54.0	40	0.35		2
36.0	●	360D4S40	148	172	242	70	54.0	40	0.20		2
37.0	●	WDX 370D4S40	153	183	253	70	49.5	40	1.00		2
38.0	●	380D4S40	157	187	257	70	49.5	40			2
39.0	●	390D4S40	161	191	261	70	49.5	40	0.90		2
40.0	●	400D4S40	165	195	265	70	49.5	40	0.80		2
41.0	●	410D4S40	169	199	269	70	49.5	40	0.70	WDXT 125012	2
42.0	●	420D4S40	173	203	273	70	49.5	40	0.60		2
43.0	●	430D4S40	177	207	277	70	49.5	40	0.50		2
44.0	●	440D4S40	181	211	281	70	49.5	40			2
45.0	●	450D4S40	185	215	285	70	49.5	40	0.40		2

*Diameters ø30, ø31, ø32 are in stock with shank diameters of ø32 and ø40.

Radial Offset Amount J140

Diameter ø46.0 to 63.0mm

Dimensions (mm)

Dia. DC	Stock	Cat. No.	Neck Length LUX	Overhang Length LPR	Overall Length OAL	Shank LS	Flange Dia. DCSFMS	Shank Dia. DCON	Radial Offset Amount (Max)	Applicable Insert	Fig
46.0	●	WDX 460D4S40	189	219	289	70	49.5	40	1.50		2
47.0	●	470D4S40	193	223	293	70	49.5	40	1.40		2
48.0	●	480D4S40	197	227	297	70	49.5	40	1.30		2
49.0	●	490D4S40	201	231	301	70	49.5	40	1.20		2
50.0	●	500D4S40	205	235	305	70	49.5	40	1.10	WDXT 156012	2
51.0	●	510D4S40	209	239	309	70	49.5	40	1.00		3
52.0	●	520D4S40	213	243	313	70	50.5	40	0.90		3
53.0	●	530D4S40	217	247	317	70	51.5	40	0.80		3
54.0	●	540D4S40	221	251	321	70	52.5	40	0.60		3
55.0	●	550D4S40	225	255	325	70	53.5	40	0.50		3
56.0	●	WDX 560D4S40	232	264	334	70	54.0	40	2.00		3
57.0	●	570D4S40	236	268	338	70	55.0	40	1.80		3
58.0	●	580D4S40	240	272	342	70	56.0	40	1.70		3
59.0	●	590D4S40	244	276	346	70	57.0	40	1.60	WDXT 186012	3
60.0	●	600D4S40	248	280	350	70	58.0	40	1.50		3
61.0	●	610D4S40	252	284	354	70	59.0	40	1.40		3
62.0	●	620D4S40	256	288	358	70	60.0	40	1.30		3
63.0	●	630D4S40	260	292	362	70	61.0	40	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

- WDX: Dia. DC (ø20.0)
- D4: Flute Length L/D (4D)
- S25: Shank Dia. DCON (ø25.0)

N·m Recommended Tightening Torque (N·m)

WDX series for 4D (Internal Coolant Supply)

Insert

Dimensions (mm)

Grade Classification		Coated Carbide				
Process	High-speed/Light Cutting	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	4.2	2.0	0.4	0.4	
042004-H	●	●		●		3	4.2	2.0	0.4	0.4	
042004-M			●			4	4.2	2.0	0.4	0.8	
WDXT 052504-L	●	●		●		1	5.0	2.5	0.4	0.4	WDX155D4S20 to WDX180D4S25
052504-G	●	●		●	●	2	5.0	2.5	0.4	0.4	
052504-H	●	●		●		3	5.0	2.5	0.4	0.4	
052504-M			●			4	5.0	2.5	0.4	1.0	
WDXT 063006-L	●	●		●		1	6.0	3.0	0.6	0.6	WDX185D4S25 to WDX225D4S25
063006-G	●	●		●	●	2	6.0	3.0	0.6	0.6	
063006-H	●	●		●		3	6.0	3.0	0.6	0.6	
063006-M			●			4	6.0	3.0	0.6	1.4	
WDXT 073506-L	●	●		●		1	7.5	3.5	0.6	0.6	WDX230D4S25 to WDX285D4S32
073506-G	●	●		●	●	2	7.5	3.5	0.6	0.6	
073506-H	●	●		●		3	7.5	3.5	0.6	0.6	
073506-M			●			4	7.5	3.5	0.6	1.6	
WDXT 094008-L	●	●		●		1	9.6	4.0	0.8	0.8	WDX290D4S32 to WDX360D4S40
094008-G	●	●		●	●	2	9.6	4.0	0.8	0.8	
094008-H	●	●		●		3	9.6	4.0	0.8	0.8	
094008-M			●			4	9.6	4.0	0.8	2.4	
WDXT 125012-L	●	●		●		1	12.4	5.0	1.2	1.2	WDX370D4S40 to WDX450D4S40
125012-G	●	●		●	●	2	12.4	5.0	1.2	1.2	
125012-H	●	●		●		3	12.4	5.0	1.2	1.2	
125012-M			●			4	12.4	5.0	1.2	3.2	
WDXT 156012-L	●	●		●		1	15.2	6.0	1.2	1.2	WDX460D4S40 to WDX550D4S40
156012-G	●	●		●	●	2	15.2	6.0	1.2	1.2	
156012-H	●	●		●		3	15.2	6.0	1.2	1.2	
WDXT 186012-L	●	●		●		1	18.0	6.0	1.2	1.2	WDX560D4S40 to WDX630D4S40
186012-G	●	●		●		2	18.0	6.0	1.2	1.2	
186012-H	●	●		●		3	18.0	6.0	1.2	1.2	

Fig 1 For low feed with chip control

L type

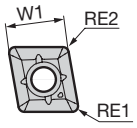


Fig 2 General-purpose

G type

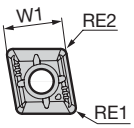


Fig 3 Strong edged

H type

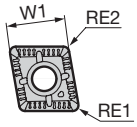
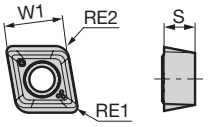


Fig 4 Dedicated for stainless steel

M type



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)

		Work Material		Workpiece Hardness HB	Recommended Chipbreaker	Recommended Insert Grade	vc 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
4D	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 vc to 130% and the feed rate f to 75% of the figures in the table above.

WDX series for 5D (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.25% | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

CVD Coat | PVD Coat | AURORA Coat DLC | Coolant Hole | 5D | Indexable

Drilling tolerance: 0 to +0.25mm

*Refer to N36 for the tolerance of h7

Fig 1

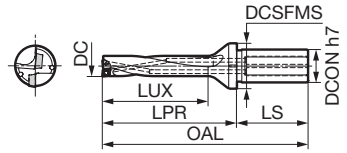


Fig 2

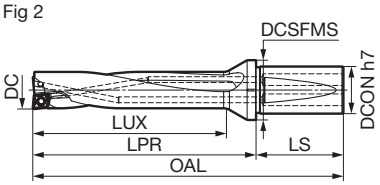
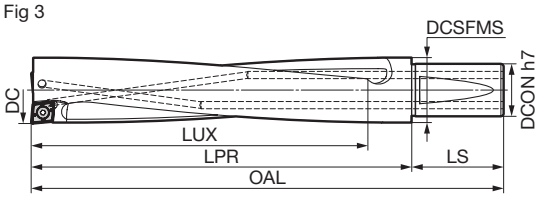


Fig 3



Diameter ø13.0 to 45.0mm

Dimensions (mm)

Dia. DC	Stock	Cat. No.	Neck Length LUX	Overhang Length LPR	Overall Length OAL	Shank LS	Flange Dia. 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	44	28.0	20.0	0.30		1
14.0	●	140D5S20	73.0	88.0	132.0	44	28.0	20.0	0.25		1
14.5	●	145D5S20	75.5	90.5	134.5	44	28.0	20.0	0.20		1
15.0	●	150D5S20	78.0	93.0	137.0	44	28.0	20.0	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	44	30.0	20.0			1
16.5	●	165D5S20	85.5	100.5	144.5	44	30.0	20.0	0.35		1
17.0	●	170D5S20	88.0	103.0	147.0	44	30.0	20.0	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	56	32.0	25.0	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	56	33.0	25.0	0.45		1
19.5	●	195D5S25	100.5	115.5	171.5	56	33.0	25.0	0.40		1
20.0	●	200D5S25	103.0	118.0	174.0	56	33.0	25.0	0.30		1
20.5	●	205D5S25	105.5	120.5	176.5	56	33.0	25.0			1
21.0	●	210D5S25	108.0	123.0	179.0	56	33.0	25.0	0.20		1
21.5	●	215D5S25	110.5	125.5	181.5	56	33.0	25.0	0.15		1
22.0	●	220D5S25	113.0	128.0	184.0	56	33.0	25.0	0.10		1
22.5	●	225D5S25	115.5	130.5	186.5	56	33.0	25.0	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	56	37.0	25.0			1
24.0	●	240D5S25	123.0	141.0	197.0	56	37.0	25.0	0.60		1
24.5	●	245D5S25	125.5	143.5	199.5	56	37.0	25.0	0.50		1
25.0	●	250D5S25	128.0	146.0	202.0	56	37.0	25.0			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	60	41.0	32.0	0.25		2
28.0	●	280D5S32	143.0	163.0	223.0	60	41.0	32.0	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	60	54.0	32.0	0.90		2
31.0*	●	310D5S32	159.0	183.0	243.0	60	54.0	32.0	0.80		2
32.0*	●	320D5S32	164.0	188.0	248.0	60	54.0	32.0	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	70	54.0	40.0	0.80		2
32.0*	●	320D5S40	164.0	188.0	258.0	70	54.0	40.0	0.70		2
33.0	●	330D5S40	169.0	193.0	263.0	70	54.0	40.0	0.55		2
34.0	●	340D5S40	174.0	198.0	268.0	70	54.0	40.0	0.45		2
35.0	●	350D5S40	179.0	203.0	273.0	70	54.0	40.0	0.35		2
36.0	●	360D5S40	184.0	208.0	278.0	70	54.0	40.0	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	70	49.5	40.0			2
39.0	●	390D5S40	200.0	230.0	300.0	70	49.5	40.0	0.90		2
40.0	●	400D5S40	205.0	235.0	305.0	70	49.5	40.0	0.80		2
41.0	●	410D5S40	210.0	240.0	310.0	70	49.5	40.0	0.70		2
42.0	●	420D5S40	215.0	245.0	315.0	70	49.5	40.0	0.60		2
43.0	●	430D5S40	220.0	250.0	320.0	70	49.5	40.0	0.50		2
44.0	●	440D5S40	225.0	255.0	325.0	70	49.5	40.0			2
45.0	●	450D5S40	230.0	260.0	330.0	70	49.5	40.0	0.40		2

*Diameters ø30, ø31, ø32 are in stock with shank diameters of ø32 and ø40.

Radial Offset Amount ☞J140

Diameter ø46.0 to 55.0mm

Dimensions (mm)

Dia. DC	Stock	Cat. No.	Neck Length LUX	Overhang Length LPR	Overall Length OAL	Shank LS	Flange Dia. 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	70	49.5	40.0	1.40		2
48.0	●	480D5S40	245.0	275.0	345.0	70	49.5	40.0	1.30		2
49.0	●	490D5S40	250.0	280.0	350.0	70	49.5	40.0	1.20		2
50.0	●	500D5S40	255.0	285.0	355.0	70	49.5	40.0	1.10		2
51.0	●	510D5S40	260.0	290.0	360.0	70	49.5	40.0	1.00		3
52.0	●	520D5S40	265.0	295.0	365.0	70	50.5	40.0	0.90		3
53.0	●	530D5S40	270.0	300.0	370.0	70	51.5	40.0	0.80		3
54.0	●	540D5S40	275.0	305.0	375.0	70	52.5	40.0	0.60		3
55.0	●	550D5S40	280.0	310.0	380.0	70	53.5	40.0	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
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

- 200: Dia. DC (ø20.0)
- D5: Flute Length (L/D) (5D)
- S25: Shank Dia. DCON (ø25.0)

N·m Recommended Tightening Torque (N·m)

WDX series for 5D (Internal Coolant Supply)

Insert

Dimensions (mm)

Grade Classification		Coated Carbide				
Process	High-speed/Light Cutting	PK				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	4.2	2.0	0.4	0.4	
042004-H	●	●		●		3	4.2	2.0	0.4	0.4	
042004-M			●			4	4.2	2.0	0.4	0.8	
WDXT 052504-L	●	●		●		1	5.0	2.5	0.4	0.4	WDX155D5S20 to WDX180D5S25
052504-G	●	●		●	●	2	5.0	2.5	0.4	0.4	
052504-H	●	●		●		3	5.0	2.5	0.4	0.4	
052504-M			●			4	5.0	2.5	0.4	1.0	
WDXT 063006-L	●	●		●		1	6.0	3.0	0.6	0.6	WDX185D5S25 to WDX225D5S25
063006-G	●	●		●	●	2	6.0	3.0	0.6	0.6	
063006-H	●	●		●		3	6.0	3.0	0.6	0.6	
063006-M			●			4	6.0	3.0	0.6	1.4	
WDXT 073506-L	●	●		●		1	7.5	3.5	0.6	0.6	WDX230D5S25 to WDX280D5S32
073506-G	●	●		●	●	2	7.5	3.5	0.6	0.6	
073506-H	●	●		●		3	7.5	3.5	0.6	0.6	
073506-M			●			4	7.5	3.5	0.6	1.6	
WDXT 094008-L	●	●		●		1	9.6	4.0	0.8	0.8	WDX290D5S32 to WDX360D5S40
094008-G	●	●		●	●	2	9.6	4.0	0.8	0.8	
094008-H	●	●		●		3	9.6	4.0	0.8	0.8	
094008-M			●			4	9.6	4.0	0.8	2.4	
WDXT 125012-L	●	●		●		1	12.4	5.0	1.2	1.2	WDX370D5S40 to WDX450D5S40
125012-G	●	●		●	●	2	12.4	5.0	1.2	1.2	
125012-H	●	●		●		3	12.4	5.0	1.2	1.2	
125012-M			●			4	12.4	5.0	1.2	3.2	
WDXT 156012-L	●	●		●		1	15.2	6.0	1.2	1.2	WDX460D5S40 to WDX550D5S40
156012-G	●	●		●	●	2	15.2	6.0	1.2	1.2	
156012-H	●	●		●		3	15.2	6.0	1.2	1.2	

Fig 1 For low feed with chip control

L type

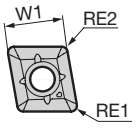


Fig 2 General-purpose

G type

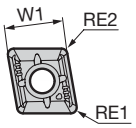


Fig 3 Strong edged

H type

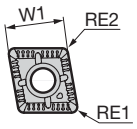
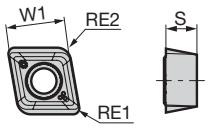


Fig 4 Dedicated for stainless steel

M type



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	vc 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 vc to 130% and the feed rate f to 75% of the figures in the table above.

■ Lathe Drilling Guidelines

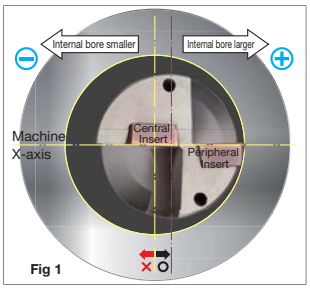


Fig 1


Fig 2

■ Drill Mounting

- Set the drill so that the peripheral insert is parallel to the X-axis of the machine. (See Fig 1)
- Press the end of the flange of the drill tightly against the face of the holder before tightening the bolt.

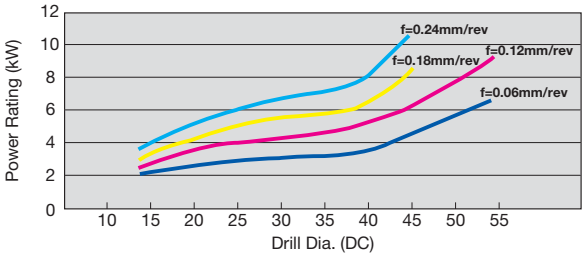
■ Adjusting Work Diameter (offset)

- 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. (Fig 1)
- The maximum allowable adjustment (offset) differs depending on the diameter. Refer to Radial Offset (Max) in the body dimension tables on pages J132 to J138.

■ Other Notes

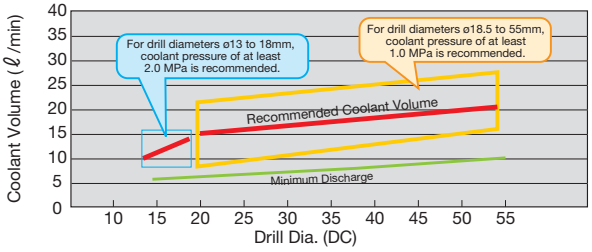
- When the drill is mounted on a lathe, the centre of the central insert is designed to be 0.15 to 0.2mm below the centre of the spindle.
- If the spindle deviates so far off centre that the centre of the central insert lies above the spindle centre, the central insert will break.
- Set the depth of cut for external turning or internal boring work to 1/5 or less of the drill diameter (max. 5mm or less). (Example: Set depth of cut to 4mm or less for diameter of ø20mm)
- 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: vc = 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. (ø18.0mm or smaller)
- Coolant volume is usually adjusted by changing the coolant pressure provided on most CNC machine tools.
- 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 surface using air or other means.
- When using the wrench, align it to the axis of the screw and press while turning. (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, A)
  Figure 4 shows a properly attached 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.

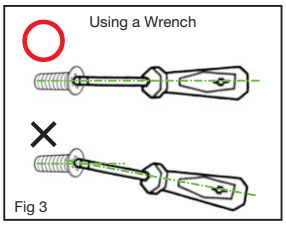


Fig 3

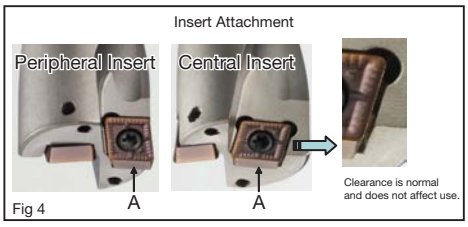


Fig 4

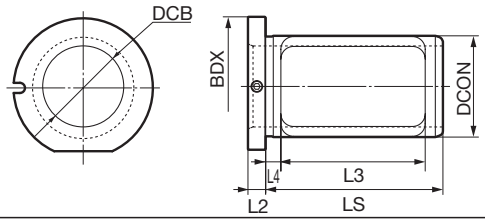
■ Troubleshooting

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 chipbreaker 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 chipbreaker 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 edged chipbreaker (H type).
	Breakage on peripheral Insert	· High cutting load in cutting edge	· Decrease the feed rate to decrease cutting load. · Use a strong edged chipbreaker (H type).

Eccentric Sleeve for WDX series

Indexable

Fig 1



Body (WAS type)

Parts

Dimensions (mm)

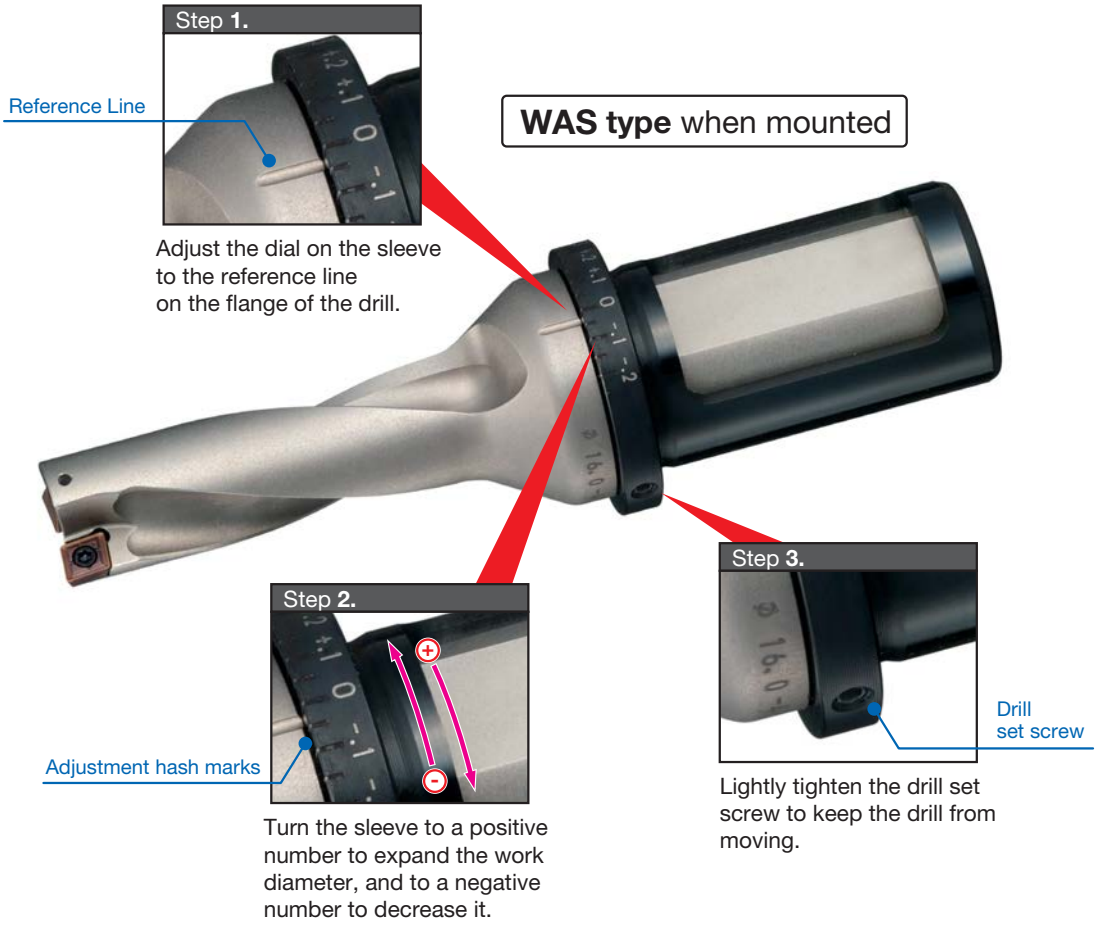
Cat. No.	Stock	Shank Dia. DCB	Shank Dia. DCON	Diameter BDX	Shank LS	Length L2	Length L3	Length L4	Diameter Adjustable Range	Fig	Screw	Wrench
WAS 2025-48	●	20	25	33	43	5	32	5	+0.3 to -0.2	1	BT0306	LH015
2532-60	●	25	32	42	60	7	46	6	+0.3 to -0.3	1	BT0406	LH020
3240-70	●	32	40	55	70	7	57	6	+0.3 to -0.3	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 series provides ±0.3mm 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)



PDL series/PCT series

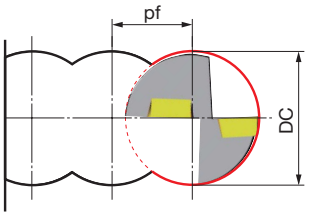
■ General Features

High efficiency and stable roughing can be achieved through Z-axis cutting feed, where tool rigidity is high, for machining deep profiles and pockets in applications where efficiency cannot be increased due to long tool overhang, such as in aerospace and die mold components.

■ Features

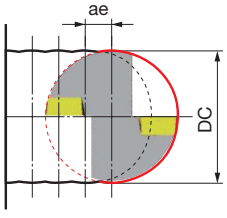
- The flat cutting edge design produces near-flat bottom profiles to reduce depth of cut variation for subsequent process.
- All sizes come with oil holes for internal coolant supply to improve chip evacuation performance.
- Durable body with special surface treatment offers improved tool life and reliability.
- Utilising SumiDrill WDX series inserts for handling a wide range of work materials, from steel to non-ferrous metals and exotic alloys.

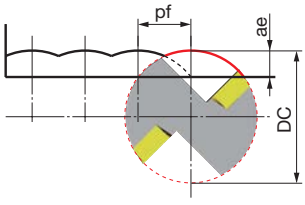
- The PDL series has a central insert, enabling radial depth of cut beyond the tool's radius, such as pick feed machining and drilling. (pocketing etc.)



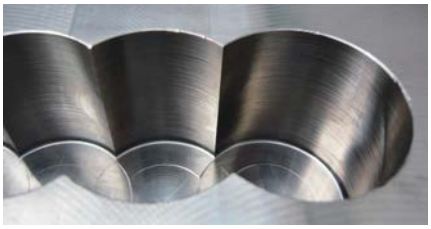
Keep the value of **pf** for PDL series tools to less than 70% of the tool diameter (**DC**).

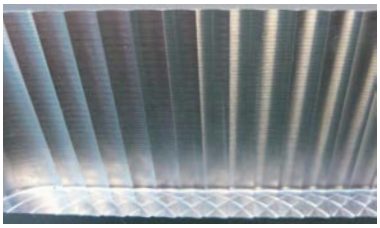
- Although the PCT series has limited radial depth of cut, the tool has a high effective number of teeth enabling it to perform high feed cutting. (Medium finishing of corners, hole expansion, deep grooving, etc.)





Keep the value of **pf** for PCT series tools to less than 50% of the tool diameter (**DC**).
For ae, refer to the dimension under "**ae** max" in the stock/dimensions table titled "Holders Max. Depth of Cut: 3D/5D".



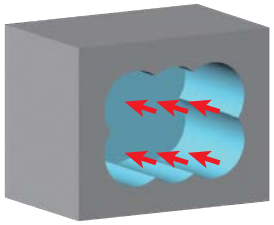


PDL series/PCT series

■ Application Examples

Pocketing PDL series

Work Material: Titanium alloy

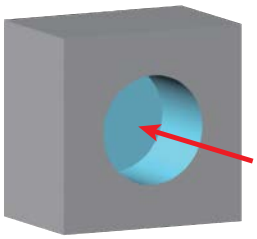


Tool : PDL 400D2S40 (ø40)
Insert : WDXT 125012-G
Grade : ACK300

Cutting Speed : vc = 40m/min
Feed Rate : f = 0.07mm/rev
(vf = 22.3mm/min)
Depth of Cut : ae (pf) = 25mm

Drilling PDL series

Work Material: SUS316

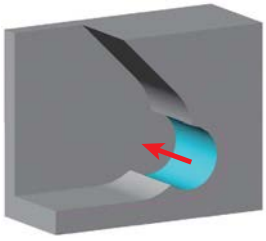


Tool : PDL 200D3S25 (ø20)
Insert : WDXT 063006-G
Grade : ACP300

Cutting Speed : vc = 180m/min
Feed Rate : f = 0.10mm/rev
(vf = 286mm/min)
Depth of Cut : ae (pf) = 20mm

Corner Fillet Removal PDL series

Work Material: SUS316

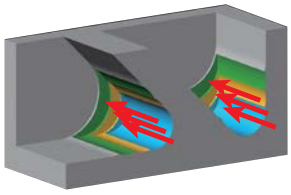


Tool : PDL 250D2S25 (ø25)
Insert : WDX T073506-G
Grade : ACP300

Cutting Speed : vc = 140m/min
Feed Rate : f = 0.10mm/rev
(vf = 178mm/min)
Depth of Cut : ae (pf) = 15mm

Corner Finishing PCT series

Work Material: Titanium alloy



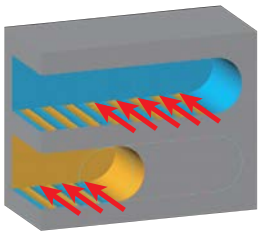
Tool:
PCT 320D3S32 (ø32)
PCT 250D3S25 (ø25)
PCT 200D3S20 (ø20)
Grade: ACK300

Insert:
WDXT 094008-G
WDXT 073506-G
WDXT 063006-G

Cutting Speed : vc = 50m/min
Feed Rate : fz = 0.04mm/t
(vf = 80 to 127mm/min)
Depth of Cut : ae(pf) = 3.2 to 6.5mm

Grooving PCT series

Work Material: Titanium alloy

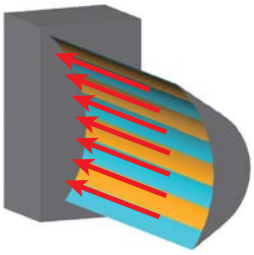


Tool : PCT 320D5S32 (ø32)
Insert : WDXT 094008-G
Grade : ACK300

Cutting Speed : vc = 40m/min
Feed Rate : fz = 0.035mm/t
(vf = 56mm/min)
Depth of Cut : ae (pf) = 5.0mm

Contouring PCT series

Work Material: SUS410

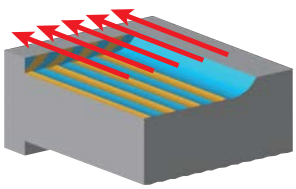


Tool : PCT 250D5S25 (ø25)
Insert : WDXT 073506-G
Grade : ACP300

Cutting Speed : vc = 150m/min
Feed Rate : fz = 0.05mm/t
(vf = 382mm/min)
Depth of Cut : ae = 3.0mm

Shoulder Plunging PCT series

Work Material: SUS304

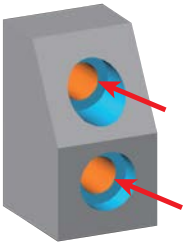


Tool : PCT 320D3S32 (ø32)
Insert : WDXT 094008-G
Grade : ACP300

Cutting Speed : vc = 180m/min
Feed Rate : fz = 0.075mm/t
(vf = 537mm/min)
Depth of Cut : ae = 7.0mm
pf = 5.0mm

Counterboring PCT series

Work Material: SCM435



Tool : PCT 200D5S20 (ø20)
Insert : WDXT 063006-G
Grade : ACP300

Cutting Speed : vc = 150m/min
Feed Rate : fz = 0.075mm/t
(vf = 716mm/min)
Depth of Cut : ae = 3.5mm

PDL series for 2D/3D (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.26% | 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

CVD Coat | PVD Coat | AURORA Coat DLC | Coolant Hole | 2D | 3D | Indexable

Fig 1

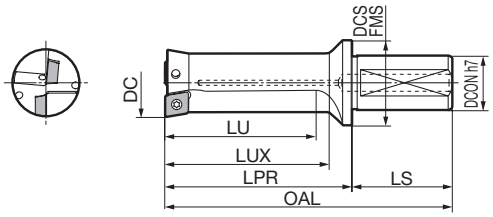
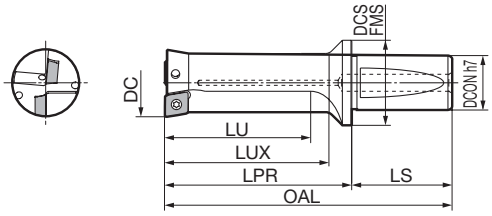


Fig 2



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 Inserts	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 Inserts	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

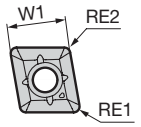
Dimensions (mm)

Grade Classification		Coated Carbide				
Process	High-speed/Light Cutting	PK				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 Holder	Fig
WDXT 052504-L	●	●		●		5.0	2.5	0.4	0.4	PDL160D2S20 / PDL160D3S20	1
052504-G	●	●		●	●	5.0	2.5	0.4			2
052504-H	●	●		●		5.0	2.5	0.4			3
052504-M			●			5.0	2.5	0.4	1.0		4
WDXT 063006-L	●	●		●		6.0	3.0	0.6	0.6	PDL200D2S25 / PDL200D3S25	1
063006-G	●	●		●	●	6.0	3.0	0.6			2
063006-H	●	●		●		6.0	3.0	0.6			3
063006-M			●			6.0	3.0	0.6	1.4		4
WDXT 073506-L	●	●		●		7.5	3.5	0.6	0.6	PDL250D2S25 / PDL250D3S25	1
073506-G	●	●		●	●	7.5	3.5	0.6			2
073506-H	●	●		●		7.5	3.5	0.6			3
073506-M			●			7.5	3.5	0.6	1.6		4
WDXT 094008-L	●	●		●		9.6	4.0	0.8	0.8	PDL320D2S40 / PDL320D3S40	1
094008-G	●	●		●	●	9.6	4.0	0.8			2
094008-H	●	●		●		9.6	4.0	0.8			3
094008-M			●			9.6	4.0	0.8	2.4		4
WDXT 125012-L	●	●		●		12.4	5.0	1.2	1.2	PDL400D2S40 / PDL400D3S40	1
125012-G	●	●		●	●	12.4	5.0	1.2			2
125012-H	●	●		●		12.4	5.0	1.2			3
125012-M			●			12.4	5.0	1.2	3.2		4

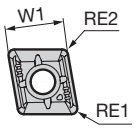
(Insert is the same as the WDX series)

Fig 1 L type



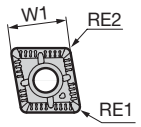
L type: For low feed with chip control

Fig 2 G type



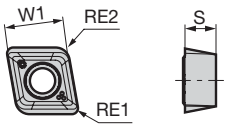
G type: General-purpose

Fig 3 H type



H type: Strong edged

Fig 4 M type



M type: Dedicated for stainless steel

Identification Code

PDL 250 D2 S25

- PDL: Dia. DC (ø25.0)
- D2: Flute Length (L/D) (2D)
- S25: Shank Dia. DCON (ø25.0)

WDXT 07 35 06 -G

- WDXT: Width across Flats (7.5)
- 35: Thickness x 10 (3.5)
- 06: Corner Radius x 10 (0.6)
- -G: Breaker type

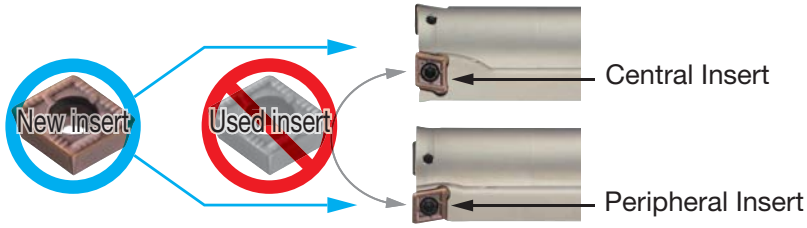
Parts

Applicable Holder	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

N·m Recommended Tightening Torque (N·m)

PDL series for 2D/3D (Internal Coolant Supply)

● Precautions for Mounting Inserts



PDL series: Inserts can be used on either the central or peripheral insert, but only 2 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 series)

		Work Material		Workpiece Hardness HB	Recommended Chipbreaker	Recommended Insert Grade	vc 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	ACM300	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	ACM300	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	ACM300	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 vc to 130% and the feed rate f to 75% of the figures in the table above.

Recommended Cutting Conditions (for 3D) (PDL series)

		Work Material		Workpiece Hardness HB	Recommended Chipbreaker	Recommended Insert Grade	vc 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	ACM300	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	ACM300	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	ACM300	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

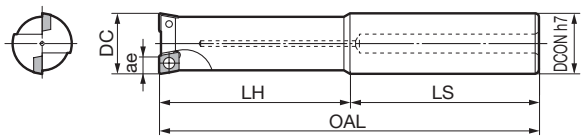
For the P and K grades for which ACP300 and ACK300 inserts are the first recommendation, ACP100 inserts are the second recommendation.
In that case, it is recommended to set the cutting speed vc to 130% and the feed rate f to 75% of the figures in the table above.

PCT series for 3D/5D (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.26% | 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

CVD Coat | PVD Coat | AURORA Coat DLC | 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.	ae max	Neck Length LH	Overall Length OAL	Shank LS	Shank Dia. DCON	Number of Flutes	Applicable Inserts	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.	ae max	Neck Length LH	Overall Length OAL	Shank LS	Shank Dia. DCON	Number of Flutes	Applicable Inserts	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

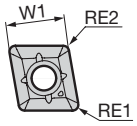
Insert

Dimensions (mm)

Grade Classification		Coated Carbide				
Process	High-speed/Light Cutting	PK				N
	General-purpose		P	M		
	Roughing		P		K	

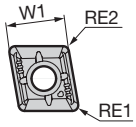
Cat. No.	ACP100	ACP300	ACM300	ACK300	DL1500	Width W1	Thickness S	Corner Radius RE1	Corner Radius RE2	Applicable Holder	Fig
WDXT 052504-L	●	●		●		5.0	2.5	0.4	0.4	PCT160D3S16 / PCT160D5S16	1
052504-G	●	●		●	●	5.0	2.5	0.4	0.4		2
052504-H	●	●		●		5.0	2.5	0.4	0.4		3
052504-M			●			5.0	2.5	0.4	1.0		4
WDXT 063006-L	●	●		●		6.0	3.0	0.6	0.6	PCT200D3S20 / PCT200D5S20	1
063006-G	●	●		●	●	6.0	3.0	0.6	0.6		2
063006-H	●	●		●		6.0	3.0	0.6	0.6		3
063006-M			●			6.0	3.0	0.6	1.4		4
WDXT 073506-L	●	●		●		7.5	3.5	0.6	0.6	PCT250D3S25 / PCT250D5S25	1
073506-G	●	●		●	●	7.5	3.5	0.6	0.6		2
073506-H	●	●		●		7.5	3.5	0.6	0.6		3
073506-M			●			7.5	3.5	0.6	1.6		4
WDXT 094008-L	●	●		●		9.6	4.0	0.8	0.8	PCT320D3S32 / PCT320D5S32	1
094008-G	●	●		●	●	9.6	4.0	0.8	0.8		2
094008-H	●	●		●		9.6	4.0	0.8	0.8		3
094008-M			●			9.6	4.0	0.8	2.4		4
WDXT 125012-L	●	●		●		12.4	5.0	1.2	1.2	PCT400D3S42 / PCT400D5S42	1
125012-G	●	●		●	●	12.4	5.0	1.2	1.2		2
125012-H	●	●		●		12.4	5.0	1.2	1.2		3
125012-M			●			12.4	5.0	1.2	3.2		4

Fig 1 L type



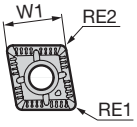
L type: For low feed with chip control

Fig 2 G type



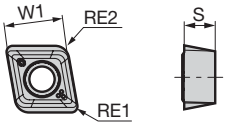
G type: General-purpose

Fig 3 H type



H type: Strong edged

Fig 4 M type



M type: Dedicated for Stainless Steel

PCT series: 2 corners can be used for the peripheral inserts only. When using the M type chipbreaker, the ae max is 20% shorter.
(Insert is the same as the WDX series)

Identification Code

PCT 250 D3 S25

- PCT
- 250 — Dia. DC (ø25.0)
- D3 — Flute Length (L/D) (3D)
- S25 — Shank Dia. DCON (ø25.0)

WDXT 07 35 06 -G

- WDXT
- 07 — Width across Flats (7.5)
- 35 — Thickness x 10 (3.5)
- 06 — Corner Radius x 10 (0.6)
- -G — Breaker type

Parts

Applicable Holder	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)

PCT series for 3D/5D (Internal Coolant Supply)

Recommended Cutting Conditions (for 3D) (PCT series)

		Work Material		Workpiece Hardness HB	Recommended Chipbreaker	Recommended Insert Grade	vc Cutting Speed (m/min)	fz (feed rate) (mm/t) (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	ACM300	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	ACM300	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	ACM300	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 vc to 130% and the feed rate fz to 75% of the figures in the table above.

Recommended Cutting Conditions (for 5D) (PCT series)

		Work Material		Workpiece Hardness HB	Recommended Chipbreaker	Recommended Insert Grade	vc Cutting Speed (m/min)	fz (feed rate) (mm/t) (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	ACM300	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	ACM300	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	ACM300	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

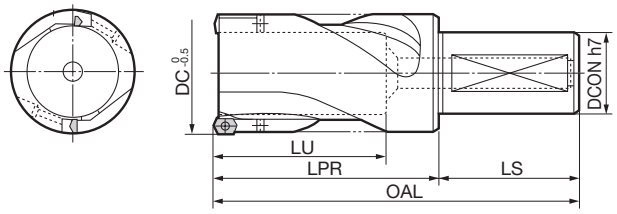
For the P and K grades for which ACP300 and ACK300 inserts are the first recommendation, ACP100 inserts are the second recommendation.
In that case, it is recommended to set the cutting speed vc to 130% and the feed rate fz to 75% of the figures in the table above.

TCS series

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 | Copper Alloy

Uncoated Carbide | Coated Carbide | 2D | Indexable

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 Cutting		
	General-purpose		P
	Roughing		

Cat. No.	AC325	A30N	Applicable Holder	Fig
WPG 10R			For outer blade	1
10L			For inner blade	1

Fig 1

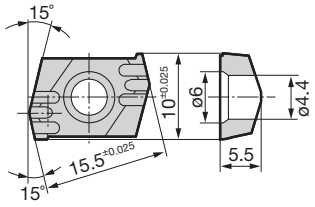


Figure shows WPG10R

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

(vc: 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	vc	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 series

■ Features

- High efficiency and high-precision reaming achieved through excellent cutting edge quality and gradual right-hand helix flutes
- Dedicated coating for reamers enables machining with long, stable tool life

● Stable Hole Diameter

· Optimised back taper reduces frictional resistance and hole diameter is stable due to machined finish

SSR series

Conventional Tool A

● Smooth Chip Evacuation

· A balanced design combining sharpness and cutting edge strength with gradual right-hand helix flutes

Work Material	: S50C Chips
Tool	: Diameter ø8mm
Cutting Conditions	: vc = 120m/min f = 1.2mm/rev ap = 0.1mm

Work Material	: S50C Chips
Tool	: Diameter ø8mm
Cutting Conditions	: vc = 20m/min f = 0.09mm/rev ap = 0.1mm

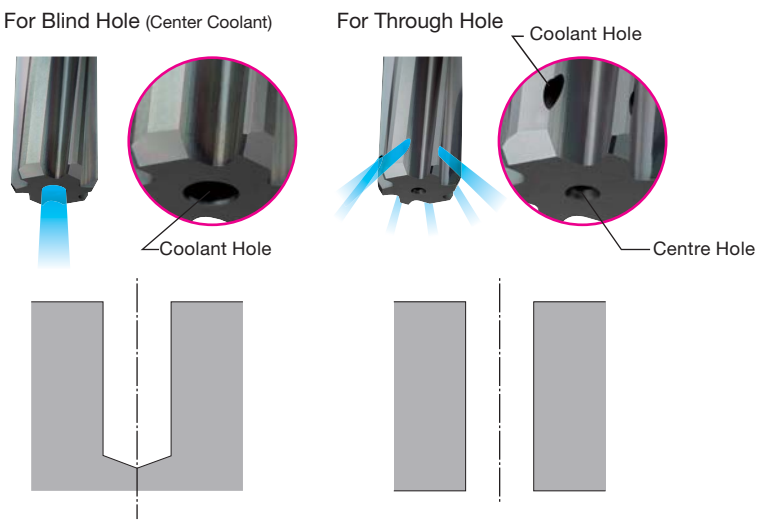
● High-precision Reaming

· Excellent cutting edge quality free of microchipping realizes good hole surface quality

● Long, Stable Tool Life: Dedicated Coating for Reamers

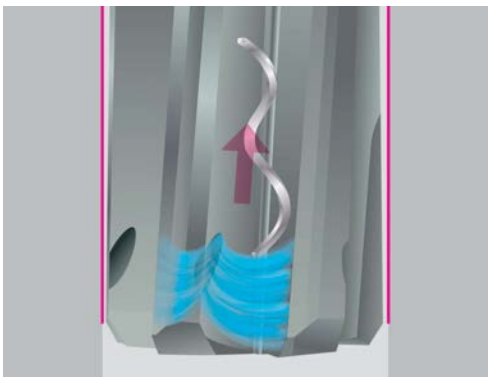
· High quality, high hardness and high strength coating layer for excellent wear resistance and thermal resistance

● Coolant Mechanism by Application



Unique coolant supply mechanism which does not hamper chip evacuation

(for through hole)

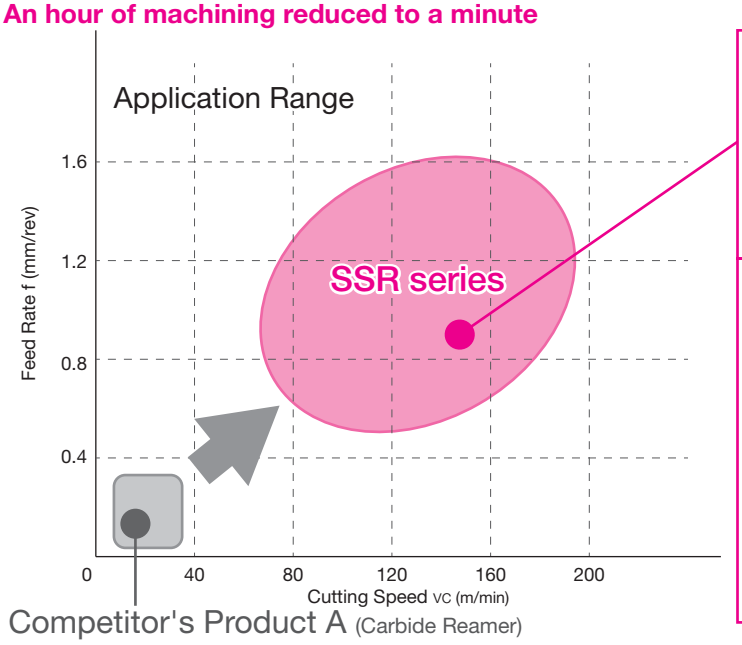


Coolant is supplied to the cutting edge from the flank side through the inner wall of the hole achieving smooth chip evacuation without obstruction

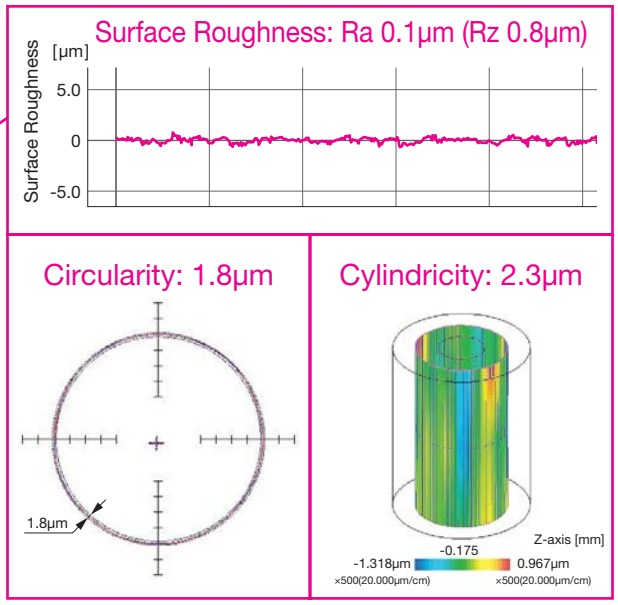
■ Cutting Performance

● Machining Efficiency Comparison

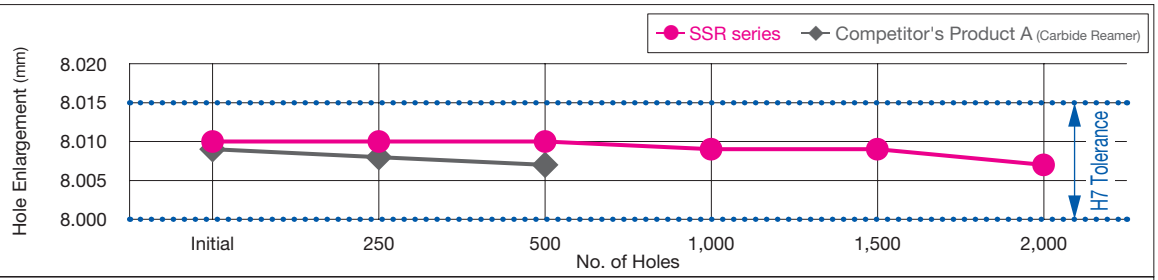
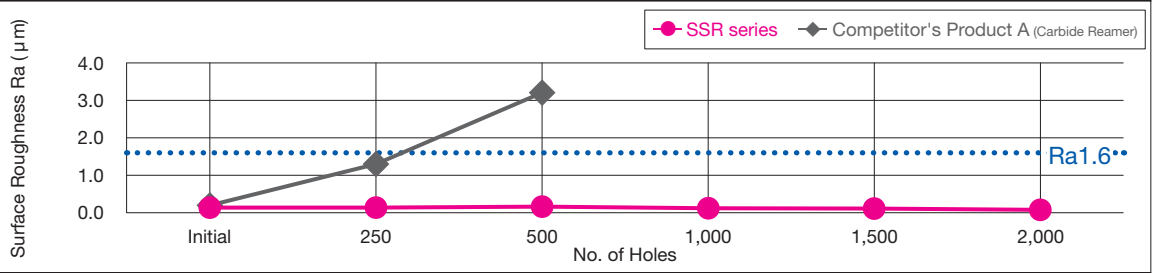
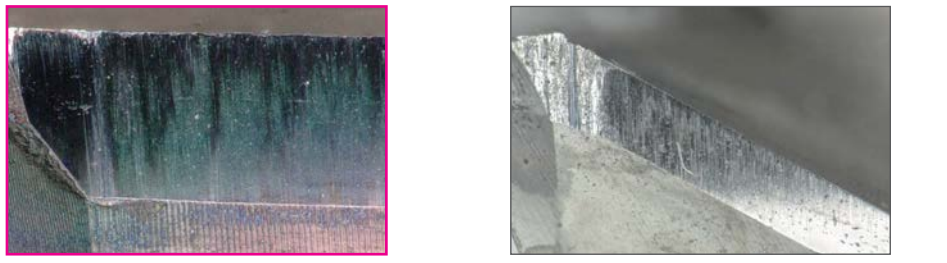
Realizes 60 times or higher machining efficiency
An hour of machining reduced to a minute



● Reaming Precision



● Tool Life Comparison

Hole Diameter Shift	
Surface Roughness Shift (Ra)	
Cutting Edge Failure	

After Reaming 2,000 Holes
Able to continue

After Reaming 500 Holes
Large Margin Wear

Machine : BT30 (Internal Coolant Supply) Work Material: S50C Tool: SSR08000H7S (ø8mm H7 tolerance hole) H = 16mm)
Cutting Conditions : SSR series vc = 150m/min f = 0.90mm/rev vf = 5,374mm/min ap = 0.1mm (Depth of Cut/Radius)
Competitor's Product A vc = 15m/min f = 0.15mm/rev vf = 89.6mm/min ap = 0.1mm (Depth of Cut/Radius)

SSR series For H7 Tolerance Hole (Through 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

PVD Coat | Coolant Hole

*Refer to N37 for the tolerance of h6 and N37 for H7

Fig 1

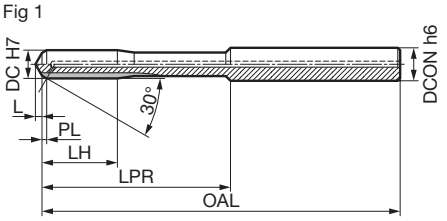
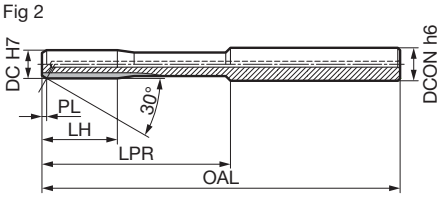


Fig 2



Diameter ø3.0 to 12.0mm

Dimensions (mm)

Dia. DC	Dia. Tolerance	Stock	Cat. No.	Overall Length OAL	Shank Dia. DCON	Neck Length LPR	Cutting Edge Length LH	Engagement Length PL	Tip L	Number of Flutes	Fig
3.0	+0.008 +0.004	●	**SSR 03000H7T**	68	4	40	12	0.5	0.7	4	1
3.5		●	**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	+0.010	●	**04500H7T**	76	5	40	12	0.5	1.2	4	1
5.0	+0.005	●	**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		●	**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	+0.012	●	**08000H7T**	101	9	65	19	1.0	—	6	2
8.5	+0.006	●	**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		●	**SSR 10500H7T**	130	11	85	22	1.0	—	6	2
11.0	+0.015	●	**11000H7T**	130	12	85	22	1.0	—	6	2
11.5	+0.008	●	**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 J156

Identification Code

SSR — Series Code

03500 — Dia.

H7T — Hole Tolerance for Through Hole

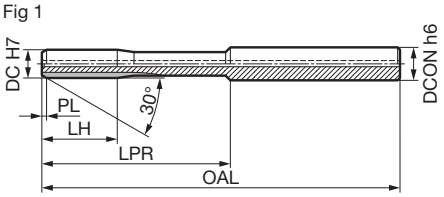
SSR series For H7 Tolerance Hole (Blind Hole)

Carbon Steel/ Alloy Steel up to 0.26% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Cast Iron | Ductile Cast Iron

PVD Coat | Coolant Hole

*Refer to N37 for the tolerance of h6 and N37 for H7

Fig 1



Diameter ø3.0 to 12.0mm

Dimensions (mm)

Dia. DC	Dia. Tolerance	Stock	Cat. No.	Overall Length OAL	Shank Dia. DCON	Neck Length LPR	Cutting Edge Length LH	Engagement Length PL	Number of Flutes	Fig
3.0	+0.008 +0.004	●	**SSR 03000H7S**	68	4	40	12	0.5	4	1
3.5		●	**SSR 03500H7S**	68	4	40	12	0.5	4	1
4.0		●	**04000H7S**	76	5	40	12	0.5	4	1
4.5	+0.010	●	**04500H7S**	76	5	40	12	0.5	4	1
5.0	+0.005	●	**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		●	**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	+0.012	●	**08000H7S**	101	9	65	19	1.0	6	1
8.5	+0.006	●	**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		●	**SSR 10500H7S**	130	11	85	22	1.0	6	1
11.0	+0.015	●	**11000H7S**	130	12	85	22	1.0	6	1
11.5	+0.008	●	**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 J156

Identification Code

SSR **03500** **H7S**

- SSR — Series Code
- 03500 — Dia.
- H7S — Hole Tolerance for Blind Hole

SSR series (Through 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

PVD Coat | Coolant Hole

*Refer to N36 for the tolerance of h6

Fig 1

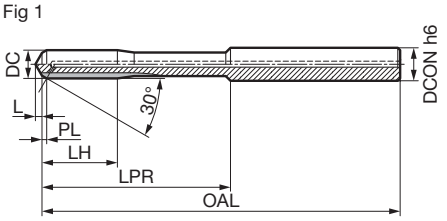
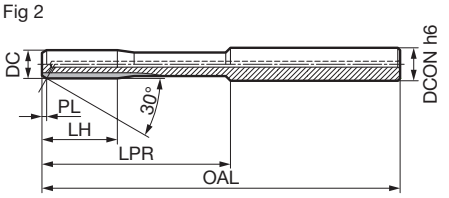


Fig 2



Diameter ø2.97 to 8.99mm

Dimensions (mm)

Dia. DC	Dia. Tolerance	Stock	Cat. No.	Overall Length OAL	Shank Dia. DCON	Neck Length LPR	Cutting Edge Length LH	Engagement Length PL	Tip L	Number of Flutes	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 J156

Diameter ø9.00 to 12.00mm

Dimensions (mm)

Dia. DC	Dia. Tolerance	Stock	Cat. No.	Overall Length OAL	Shank Dia. DCON	Neck Length LPR	Cutting Edge Length LH	Engagement Length PL	Tip L	Number of Flutes	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 J156

Identification Code

SSR 03000 **JT**

- SSR — Series Code
- 03000 — Dia.
- JT — For Through Hole

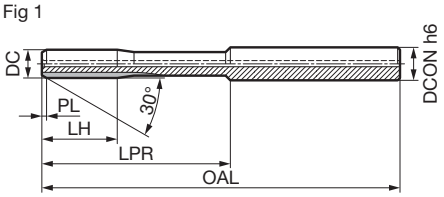
SSR series (Blind Hole)

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

PVD Coat | Coolant Hole

*Refer to N36 for the tolerance of h6

Fig 1



Diameter ø2.97 to 8.99mm

Dimensions (mm)

Dia. DC	Dia. Tolerance	Stock	Cat. No.	Overall Length OAL	Shank Dia. DCON	Neck Length LPR	Cutting Edge Length LH	Engagement Length PL	Number of Flutes	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 J156

Diameter ø9.00 to 12.00mm

Dimensions (mm)

Dia. DC	Dia. Tolerance	Stock	Cat. No.	Overall Length OAL	Shank Dia. DCON	Neck Length LPR	Cutting Edge Length LH	Engagement Length PL	Number of Flutes	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 J156

Identification Code

SSR 03000 **JS**

- SSR: Series Code
- 03000: Dia.
- JS: For Blind Hole

■ 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 ap (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 Flutes	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

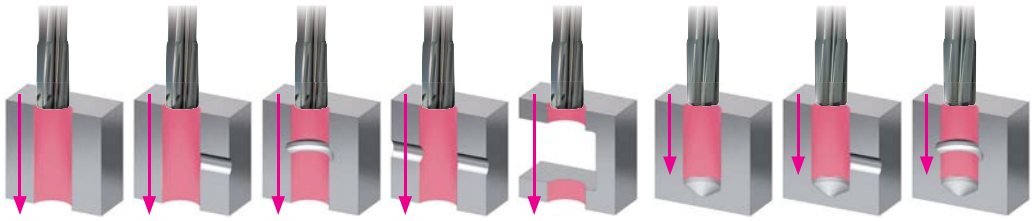
● Runout

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, holders with hydraulic chuck, shrink-fit, or runout adjustment mechanism are recommended.

● Applicable Hole Shapes



Through Hole | Blind Hole

*There is no bottom cutting edge, so bottom finishing is not possible.

● Coolant

Internal coolant supply is recommended.

We recommend coolant pressure of 1.5MPa or higher, for chip evacuation purposes.

Use of external coolant supply may reduce chip evacuation performance and damage machined surface quality.

● Pull-out Hole

When reaming blind holes connected to through holes, use through hole type reamers. (Not usable for blind holes)

Also check that the process does not create problems for 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, or 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, or runout adjustment mechanism) · Decrease cutting speed. · Reduce feed rate. · Review pre-reaming process. (Prepared hole deviation) · Review workpiece clamping method. · Compare hole diameters when the workpiece is clamped and unclamped. · Correct chip evacuation. (Increase coolant supply pressure) · Adjust coolant concentration.
Chatter marks on machined surface	· Reduce runout as much as possible. (Use holder with hydraulic chuck, shrink-fit, or 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 finished surface roughness	· Reduce runout as much as possible. (Use holder with hydraulic chuck, shrink-fit, or 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, or runout adjustment mechanism) · Check cutting edge for damage. · Reduce stock removal. · Decrease return rate after reaming.
Irregular 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	Diameter (mm)	7	7
	Number of Flutes	6	3
	vc (m/min)	110	50
	f (mm/rev)	0.55	0.36
	vf (mm/min)	2,752	819
	ap (mm)	0.05	0.15
	Coolant	Wet	Wet
	Results	3x or more machining efficiency, 4x tool life achieved	
Required Precision Hole Dia.: ø7 $^{+0.020}_{0}$ (Drilled hole depth: 23mm) Surface Roughness: Ra 1.0µm			

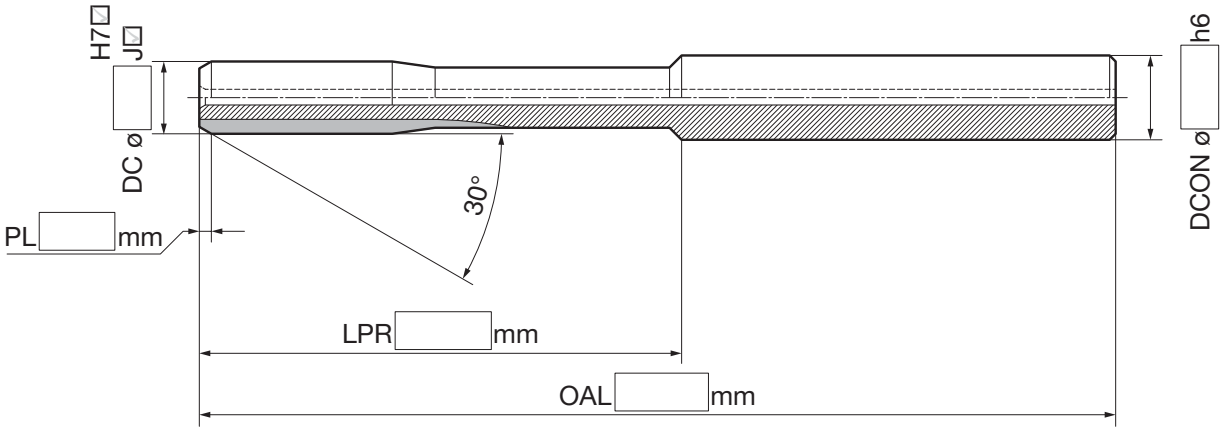
Cast Iron FCV420 Hydraulic Component		Sumitomo	Competitor's Product
Vertical Machining Centre	Diameter (mm)	11	11
	Number of Flutes	6	6
	vc (m/min)	110	15
	f (mm/rev)	0.66	0.12
	vf (mm/min)	2,101	52
	ap (mm)	0.1	0.1
	Coolant	Wet	Wet
	Results	40x or more machining efficiency, 2.3x tool life achieved Machining cycle time reduced from 17.3 seconds to 0.4 seconds	
Required Precision Hole Dia.: ø11 $^{+0.018}_{0}$ (Drilled hole depth: 15mm) Surface Roughness: Ra 1.6µm			

Steel S45C Automotive Component		Sumitomo	Competitor's Product
NC Lathe	Diameter (mm)	5.5	5.5
	Number of Flutes	4	4
	vc (m/min)	90	90
	f (mm/rev)	1.0	1.0
	vf (mm/min)	5,211	5,211
	ap (mm)	0.1	0.1
	Coolant	Wet	Wet
	Results	Tool life doubled	
Required Precision Hole Dia.: ø5.5 $^{+0.030}_{0}$ (Drilled hole depth: 35mm) Surface Roughness: Rz 6.3µm			

Steel SCM440 (45HRC) Automotive Component		Sumitomo	Competitor's Product
NC Lathe	Diameter (mm)	8	8
	Number of Flutes	6	6
	vc (m/min)	40	20
	f (mm/rev)	0.14	0.09
	vf (mm/min)	223	72
	ap (mm)	0.15	0.15
	Coolant	Wet	Wet
	Results	3x or more machining efficiency, 2.9x tool life achieved	
Required Precision Hole Dia.: ø8 $^{+0.030}_{0}$ (Drilled hole depth: 33mm) Surface Roughness: Ra 1.6µm			

*For diameters of ø12mm or larger, use the SumiReamer SR series.

SumiReamer SSR series 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 :

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

■ Current Tool

Number of Flutes :

Cutting Conditions : vc = m/min f = mm/rev ap = mm

Tool Life :

Tool Life Criteria :

■ Remarks

MEMO

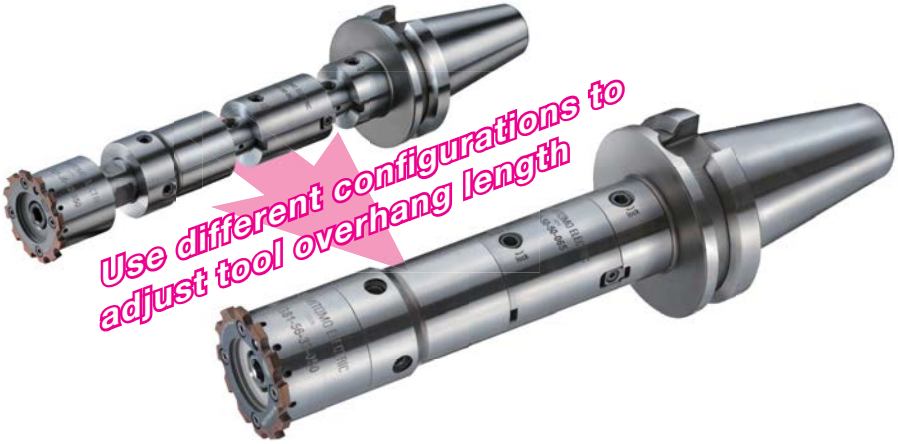
SR series

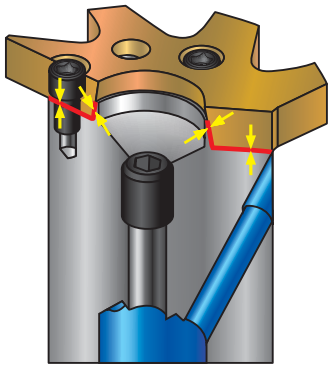
■ Features

- ● Achieving high efficiency with high speed and high feed capabilities! (vc=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 inconsistency in tool life of regrind tools
- · Cutting edge diameters from ø11.9 to ø140.6mm 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

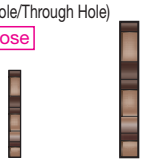
Workpiece	 Cylinder barrel	 Connecting rod	 Sliding yoke	 Front axle	 Special holder with guide pads Control valve
Work Material	FCD600	Forged S55C	S45C	Forged S58C	Forged S55C
Holder Cat. No. Insert Cat. No.	**SRD19-12-115** SRG17.0H7-A01-T1212R1	**SRD36-25-170** SRG29.0H7-A01-F0512R1	**SRD19-12-115** 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 Flutes	6	8	6	8	6
vc (m/min)	148	120	150	60	100
n (min^{-1})	2,772	1,318	2,982	682	2,230
fz (mm/t)	0.20	0.15	0.10	0.075	0.10
vf (m/min)	3,326	1,582	1,789	409	1,368
ap (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 series Configurations

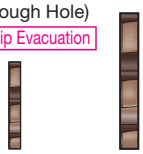
(1)

Insert
J162

● SRG type (Blind Hole/Through Hole)
General-purpose



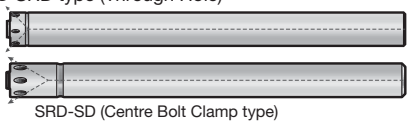
● SRL type (Through Hole)
Emphasis on Chip Evacuation



Diameter:ø11.900 to ø140.600mm

Holders
J164

● SRD type (Through Hole)



SRD-SD (Centre Bolt Clamp type)

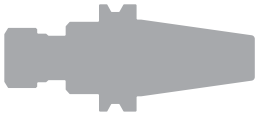
● SRB type (Blind Hole)

SRB-SD (Centre Bolt Clamp type)

Applicable insert diameter 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

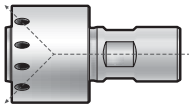
Use arbors available on the market that have runout adjustment mechanism.

(2)

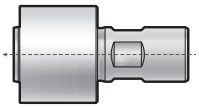
Insert Runout Adjustment Mechanism

Head
J166

● SRKG type (Through Hole)



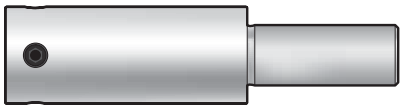
● SRKB type (Blind Hole)



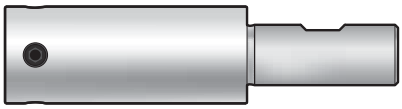
Applicable insert diameter range:
ø35.601 to ø140.600mm
Head length: 30 to 60mm

Shank
J166

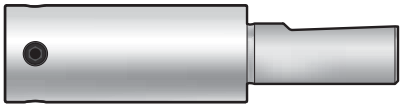
● SRA type



ZS (Cylindrical Shank) type: ZS-20/25/32/40



WD (Weldon Shank) type: WD-20/25/32/40

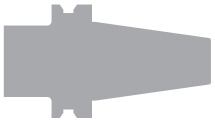


WN (Whistle Notch Shank) type: WN-20/25/32/40

Applicable insert diameter range : ø35.601 to ø140.600mm
Shank length : 80 to 160mm

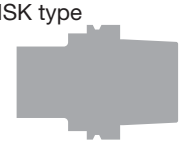
Arbor

● BT/A type



Taper Size: 40 to 50

● HSK type



Taper Size: 50 to 100

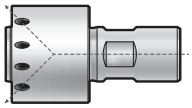
Use arbors available on the market.

(3)

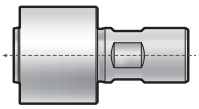
Insert Runout Adjustment Mechanism

Head
J166

● SRKG type (Through Hole)



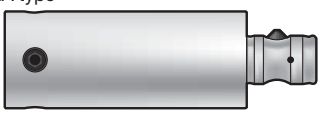
● SRKB type (Blind Hole)



Applicable insert diameter range:
ø35.601 to ø140.600mm
Head length: 30 to 60mm

Shank
J166

● SRA type



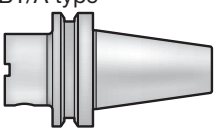
BM (Beta Module Shank) type: BM-32/40/50/63

Applicable insert diameter range : ø35.601 to ø140.600mm
Shank length : 55 to 160mm

⚠Check Sizes
When using a BM (Beta Module) type shank, choose a matching standard size.

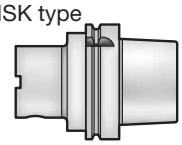
Arbor
J167

● BT/A type



Taper Size: 40 to 50

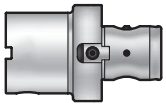
● HSK type



Taper Size: 50 to 100

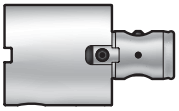
Extensions
J167

● B12 type



Shank Length: 45 to 75mm

● B13 type



Shank Length: 35 to 180mm

Multiple extensions can be connected together
When extending the overhang, it is recommended to reduce the number of extensions in consideration for rigidity.

Insert for SumiReamer SR series

● SRG type General-purpose Straight Flutes: Blind and Through Hole

Fig 1

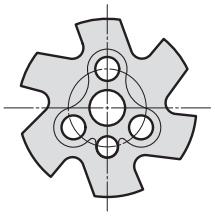
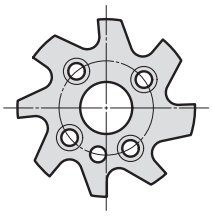
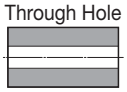
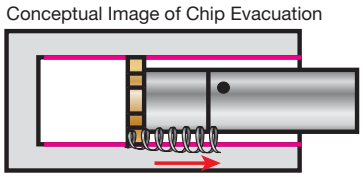


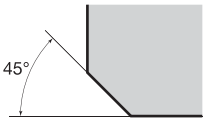
Fig 2





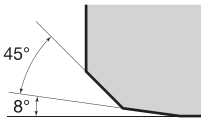


A01 type



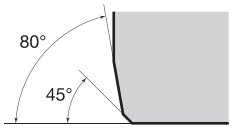
Standard type

C01 type



Surface Roughness Emphasised

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 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		4.3	6	1
14.0		●	14.0H7-A01-□□□12R1	●	14.0H7-C01-□□□12R1	●	14.0H7-S02-□□□12R1		4.3	6	1
15.0		●	15.0H7-A01-□□□12R1	●	15.0H7-C01-□□□12R1	●	15.0H7-S02-□□□12R1		4.3	6	1
16.0		●	16.0H7-A01-□□□12R1	●	16.0H7-C01-□□□12R1	●	16.0H7-S02-□□□12R1		4.3	6	1
17.0		●	17.0H7-A01-□□□12R1	●	17.0H7-C01-□□□12R1	●	17.0H7-S02-□□□12R1		4.3	6	1
18.0		●	18.0H7-A01-□□□12R1	●	18.0H7-C01-□□□12R1	●	18.0H7-S02-□□□12R1		4.3	6	1
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	4.3	6	1
20.0		●	20.0H7-A01-□□□12R1	●	20.0H7-C01-□□□12R1	●	20.0H7-S02-□□□12R1		4.3	6	1
21.0		●	21.0H7-A01-□□□12R1	●	21.0H7-C01-□□□12R1	●	21.0H7-S02-□□□12R1		4.3	6	1
22.0		●	22.0H7-A01-□□□12R1	●	22.0H7-C01-□□□12R1	●	22.0H7-S02-□□□12R1		4.3	6	1
23.0		●	23.0H7-A01-□□□12R1	●	23.0H7-C01-□□□12R1	●	23.0H7-S02-□□□12R1		4.3	6	1
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		4.3	8	2
26.0		●	26.0H7-A01-□□□12R1	●	26.0H7-C01-□□□12R1	●	26.0H7-S02-□□□12R1		4.3	8	2
27.0		●	27.0H7-A01-□□□12R1	●	27.0H7-C01-□□□12R1	●	27.0H7-S02-□□□12R1		4.3	8	2
28.0		●	28.0H7-A01-□□□12R1	●	28.0H7-C01-□□□12R1	●	28.0H7-S02-□□□12R1		4.3	8	2
29.0		●	29.0H7-A01-□□□12R1	●	29.0H7-C01-□□□12R1	●	29.0H7-S02-□□□12R1		4.3	8	2
30.0		●	30.0H7-A01-□□□12R1	●	30.0H7-C01-□□□12R1	●	30.0H7-S02-□□□12R1		4.3	8	2

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 series Insert Cat. No. Identification Code

Specifying Inserts Using Work Hole Diameter Tolerance
The actual desired diameter will be near the upper limit of the median work hole tolerance, and will differ depending on diameter, tolerance range and grade. Contact us for more details.

SR (1) G (2) 18.2 (3) + 20 - 10 (4) - A01 (5) - F05 (6) 12R 1 (7)

(1) SR series
(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 (1) L (2) 18.2 (3) Q + 3 - 3 (4) - A01 (5) - F05 (6) 12R 1 (7)

(1) SR series
(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 series

● SRL type Chip Evacuation Performance Emphasised type Left-hand Helix: For Through Hole

Fig 1

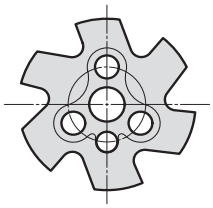
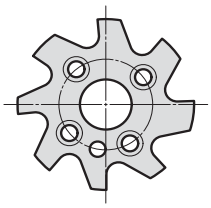
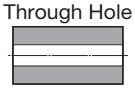


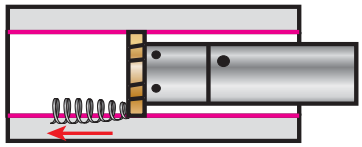
Fig 2



Through Hole

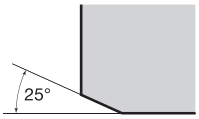


Conceptual Image of Chip Evacuation



Chips Evacuated Toward Back

B01 type



For Steel Through Hole

Insert (SRL type)

Dimensions (mm)

Diameter DC	Diameter Tolerance	Stock	Cat. No. (B01 type) F05,T12	Work 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		4.3	6	1
14.0		●	14.0H7-B01- □□□12R1		4.3	6	1
15.0		●	15.0H7-B01- □□□12R1		4.3	6	1
16.0		●	16.0H7-B01- □□□12R1		4.3	6	1
17.0		●	17.0H7-B01- □□□12R1		4.3	6	1
18.0		●	18.0H7-B01- □□□12R1		4.3	6	1
19.0	+0.019 +0.013	●	SRL 19.0H7-B01- □□□12R1	H7 +0.021 0	4.3	6	1
20.0		●	20.0H7-B01- □□□12R1		4.3	6	1
21.0		●	21.0H7-B01- □□□12R1		4.3	6	1
22.0		●	22.0H7-B01- □□□12R1		4.3	6	1
23.0		●	23.0H7-B01- □□□12R1		4.3	6	1
24.0		●	SRL 24.0H7-B01- □□□12R1		4.3	8	2
25.0		●	25.0H7-B01- □□□12R1		4.3	8	2
26.0		●	26.0H7-B01- □□□12R1		4.3	8	2
27.0		●	27.0H7-B01- □□□12R1		4.3	8	2
28.0		●	28.0H7-B01- □□□12R1		4.3	8	2
29.0		●	29.0H7-B01- □□□12R1		4.3	8	2
30.0		●	30.0H7-B01- □□□12R1		4.3	8	2

● Made-to-order items

Dimensions (mm)

Diameter DC	CW	Number of Teeth
ø11.900to ø15.600	4.3	6
ø15.601to ø18.600	4.3	6
ø18.601to ø23.600	4.3	6
ø23.601to ø28.600	4.3	8
ø28.601to ø35.600	4.3	8
ø35.601to ø43.600	4.3	8
ø43.601to ø51.600	4.3	10
ø51.601to ø60.600	4.3	10
ø60.601to ø80.600	4.3	12
ø80.601to ø100.600	4.3	12
ø100.601to ø120.600	5.3	12
ø120.601to ø140.600	5.3	12

SRG type (Special) and SRL type (Special) are made-to-order items.
When ordering, refer to "SR series Insert Cat. No. Identification Code" on page J162.
* 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.

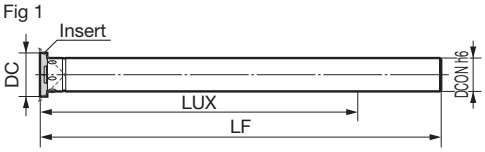
Recommended Cutting Conditions

ISO	Work Material	Insert	Grade	Grade Composition	Depth of Cut ap (mm/radius) Below ø20	ø20 to ø35	ø35 and above	Cutting Speed vc (m/min)	Feed Rate fz (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

*For fitting tolerances, refer to Chapter N References.

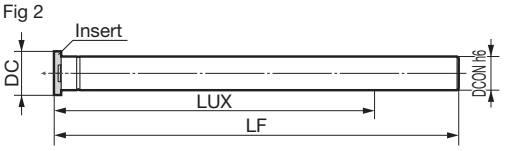
● SRD type (Through Hole)

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.	SRD Fig	SRB Stock	SRB Cat. No.	SRB 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
	ø15.601 to ø18.600	●	19-12-115	1	●	19-12-115	2	12	115	70	(1)	0.9
	ø18.601 to ø23.600	●	24-16-128	1	●	24-16-128	2	16	128	80	(2)	1.5
	ø23.601 to ø28.600	●	29-20-145	1	●	29-20-145	2	20	145	95	(2)	1.5
	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
	ø15.601 to ø18.600		19-12-185	1		19-12-185	2	12	185	140	(1)	0.9
	ø18.601 to ø23.600		24-16-208	1		24-16-208	2	16	208	160	(2)	1.5
	ø23.601 to ø28.600		29-20-240	1		29-20-240	2	20	240	190	(2)	1.5
	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 J165 for the catalogue numbers of cap screws and wrenches applicable for each product.

Carbide Shank Holder (ø11.900 to 35.600mm)

Dimensions (mm) Parts

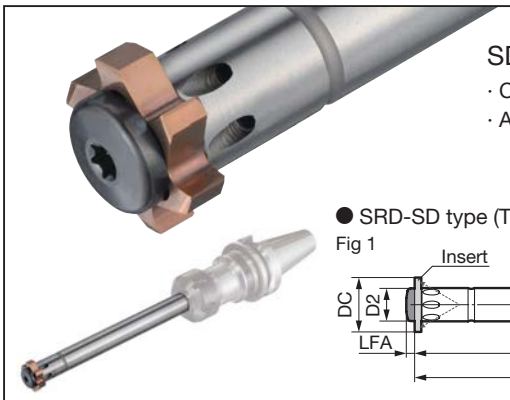
Diameter DC Range		Holder Cat. No. SRD Stock	SRD Cat. No.	SRD Fig	SRB Stock	SRB Cat. No.	SRB Fig	Shank Dia. DCON	Shoulder Length LF	Neck Length LUX	Group No.	N·m
Long	ø11.900 to ø15.600		SRD 16-10-160HM	1		SRB 16-10-160HM	2	10	160	120	(1)	0.9
	ø15.601 to ø18.600		19-12-185HM	1		19-12-185HM	2	12	185	140	(1)	0.9
	ø18.601 to ø23.600		24-16-208HM	1		24-16-208HM	2	16	208	160	(2)	1.5
	ø23.601 to ø28.600		29-20-240HM	1		29-20-240HM	2	20	240	190	(2)	1.5
	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 J165 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.

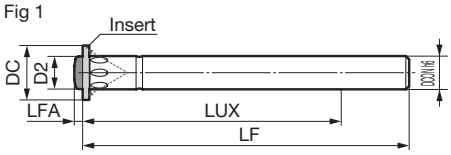
Precautions for Use J169



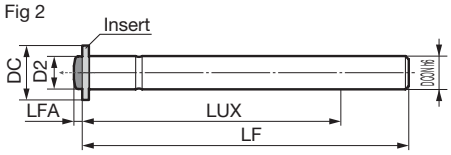
SD type (Centre Bolt Clamp type)

· Can be clamped using one centre bolt to improve work efficiency
· Applicable to high-torque (high-load) reaming

● 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. SRD type (Through Hole) Stock	Cat. No.	Fig	SRB type (Blind Hole) Stock	Cat. No.	Fig	Shank Dia. DCON	Shoulder Length LF	Neck Length LUX	Bolt D2	Bolt LFA	Group No. SRD	Group No. SRB	N·m
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 J165 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. SRD type (Through Hole) Stock	Cat. No.	Fig	SRB type (Blind Hole) Stock	Cat. No.	Fig	Shank Dia. DCON	Shoulder Length LF	Neck Length LUX	Bolt D2	Bolt LFA	Group No. SRD	Group No. SRB	N·m
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 J165 for the catalogue numbers of cap screws and wrenches applicable for each product.

Fig 1

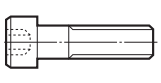


Fig 2

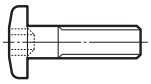


Fig 3

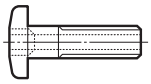


Fig 4

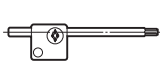


Fig 5

Torque Wrench

Wrench Cat. No.	Applicable Holder Cat. No.	Torx	Torque Setting
G00-40-11	SR□ 16 / SR□ 19	T 6	0.9N·m
G00-40-12	SR□ 24 - SR□ 61	T 8	1.5N·m
G00-40-13	SR□ 81 / SR□ 101	T 15	3.5N·m

All in stock.

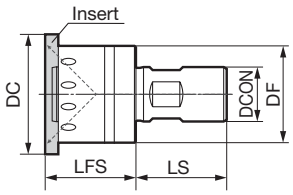
D,B,KG,A

Cap Screws and Wrench

Group No.	Cat. No. Cap Screw	Fig	Wrench	Fig	Torx	N·m
(1)	C00-90-00	1	G00-02-01	4	T 6	0.9
(2)	C00-90-01	1	G00-02-02	4	T 8	1.5
(3)	C00-90-22	2	G00-20-27	5	T15	4.0
(4)	C00-90-23	2	G00-20-28	5	T20	6.0
(5)	C00-90-24	2	G00-20-29	5	T30	16.0
(6)	C00-90-25	2	G00-20-29	5	T30	18.0
(7)	C00-90-23B	3	G00-20-28	5	T20	6.0
(8)	C00-90-24B	3	G00-20-29	5	T30	16.0
(9)	C00-90-25B	3	G00-20-29	5	T30	18.0

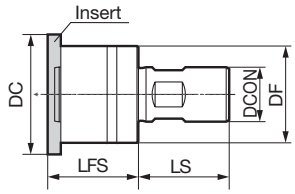
● SRKG type (Through Hole)

Fig 1



● SRKB type (Blind Hole)

Fig 2



Head (ø35.601 to 140.6mm)

Dimensions (mm) Parts

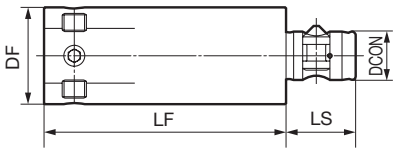
Diameter DC Range	Head Cat. No.						Diameter	Shank Dia.	Length	Shank	For mounting insert		For centre locking			
	Stock	SRKG	Fig	Stock	SRKB	Fig	DF	DCON	LFS	LS	Group No.	N·m	Group No. SRKG	N·m	Group No. SRKB	N·m
ø35.601 to ø43.600		SRKG 44-32-18-030	1		SRKB 44-32-18-030	2	32	18	30	30	(1)	1.5	(3)	35.0	(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 J167 for the catalogue numbers of cap screws and wrenches applicable for each product.

● SRA type

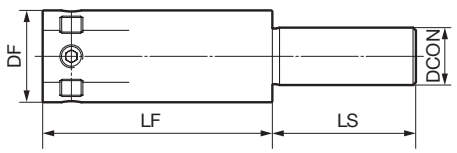
BM (Beta Module Shank) type

Fig 1



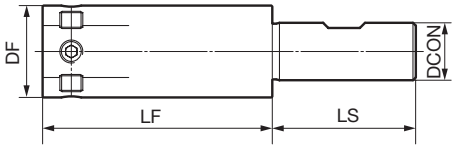
ZS (Cylindrical Shank) type

Fig 2



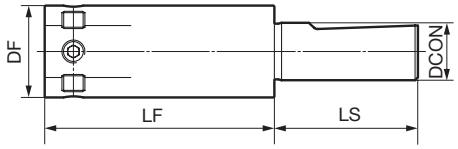
WD (Weldon Shank) type

Fig 3



WN (Whistle Notch Shank) type

Fig 4



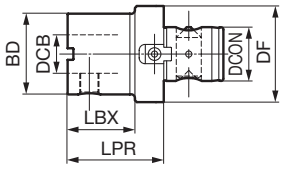
Shank (with Insert Runout Adjustment Mechanism)

Dimensions (mm) Parts

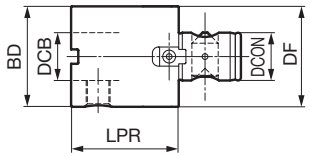
Shank type	Diameter DC Range	Shank Cat. No.		Diameter	Shank Dia.	Length	Shank	Fig	Cap Screw	Wrench	Clamp	Bolt
		Stock	SRA	DF	DCON	LF	LS					
BM	ø35.601 to ø43.600		SRA 44-32-BM32-055	32	BM-32	55	8.5	1	C00-90-08	G00-02-05	Z00-32-21	Z00-32-23
			44-32-BM32-080	32	BM-32	80	8.5	1				
	ø43.601 to ø51.600		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)

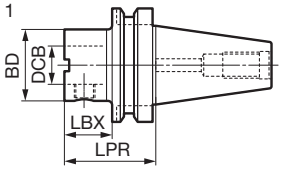
Cat. No.	Stock	Diameter BD	Drill Dia. DCB	Diameter DF	Shank Dia. DCON	Overhang Length LPR	Body LBX	Weight (kg)	Fig
B12-40-32-045		32	BM-32	42	BM-40	45	30	0.3	1
B12-50-40-050		42	BM-40	50	BM-50	50	35	0.5	1
B12-63-32-050		32	BM-32	63	BM-63	50	30	0.9	1
40-055		42	BM-40	63	BM-63	55	35	1.1	1
B12-80-40-060		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

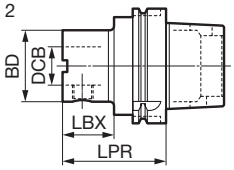
Dimensions (mm)

Cat. No.	Stock	Diameter BD	Drill 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	Drill 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	Drill 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

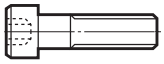


Fig 2

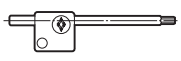
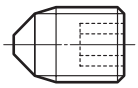


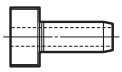
Fig 3

Group No.	Cat. No. Cap Screw	Fig	Cat. No. 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.

N·m Recommended Tightening Torque (N·m)

■ SR series 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 series 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.

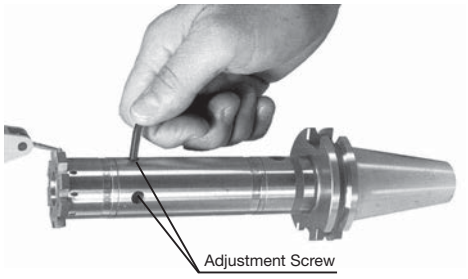
B. **Precise method for measuring runout (measure insert arc-shaped land)**
Measuring the land immediately after the outer diameter of the insert eliminates all mounting error.
This allows the most accurate runout measurement.

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.

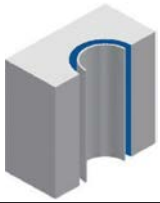
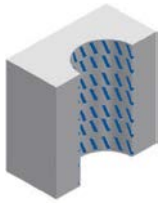
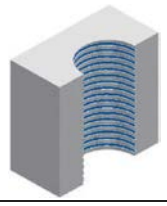


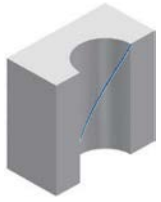
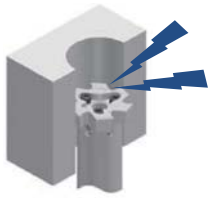
Recommended Tightening Torque for Centre Set Screw (N·m)

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

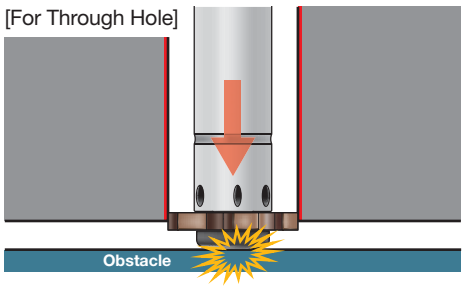
Failure	Countermeasures
Enlarged hole diameter 	· Reduce runout as much as possible. (use a holder with a diameter correction mechanism) · Decrease cutting speed. · Increase the feed rate. · Increase coolant concentration. · Reduce stock removal. · Check cutting edge for damage. (whether there are built-up edges) · Change insert 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-machining 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 finished surface 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.

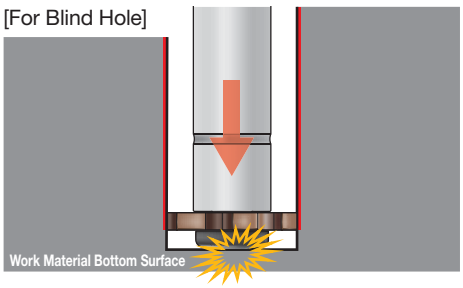
● Precautions for SD series (Centre Bolt Clamp type)

This product can be used for both through-hole and stop-hole reaming. 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]



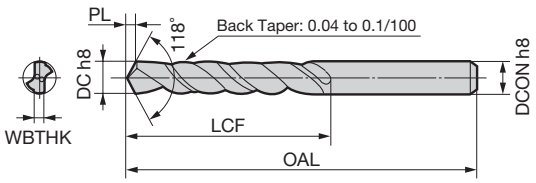
SD series

Cast Iron | Ductile Cast Iron | Aluminum Alloy

Uncoated Carbide | 6to15 D

*Refer to N36 for the tolerance of h8

Fig 1



Cat. No.	Stocked 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 series

(n: Spindle Speed min^{-1} vc: Cutting Speed m/min f: Feed Rate mm/rev)

Diameter DC (mm)	Cutting Conditions	Die Steel (About 250HB)	Cast Iron	Non-Ferrous Alloy
ø5.0	n	500	1,900	3,200
	vc	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	n	370	1,000	2,000
	vc	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.