OSG INDIA

shaping your dreams

OSG INDIA PRIVATE LIMITED

www.osg-india.com

Catalogue No. 3

Guide to (Tool Specification) Icons

1 Tool Materials

- XPM — High grade Powder Metallurgy HSS (XPM)
- HSS-Co — Cobalt HSS
- CPM — Powder Metallurgy HSS (CPM)
- HSSE — High Vanadium HSS
- CARBIDE — Tungsten Carbide
- HSS — HSS

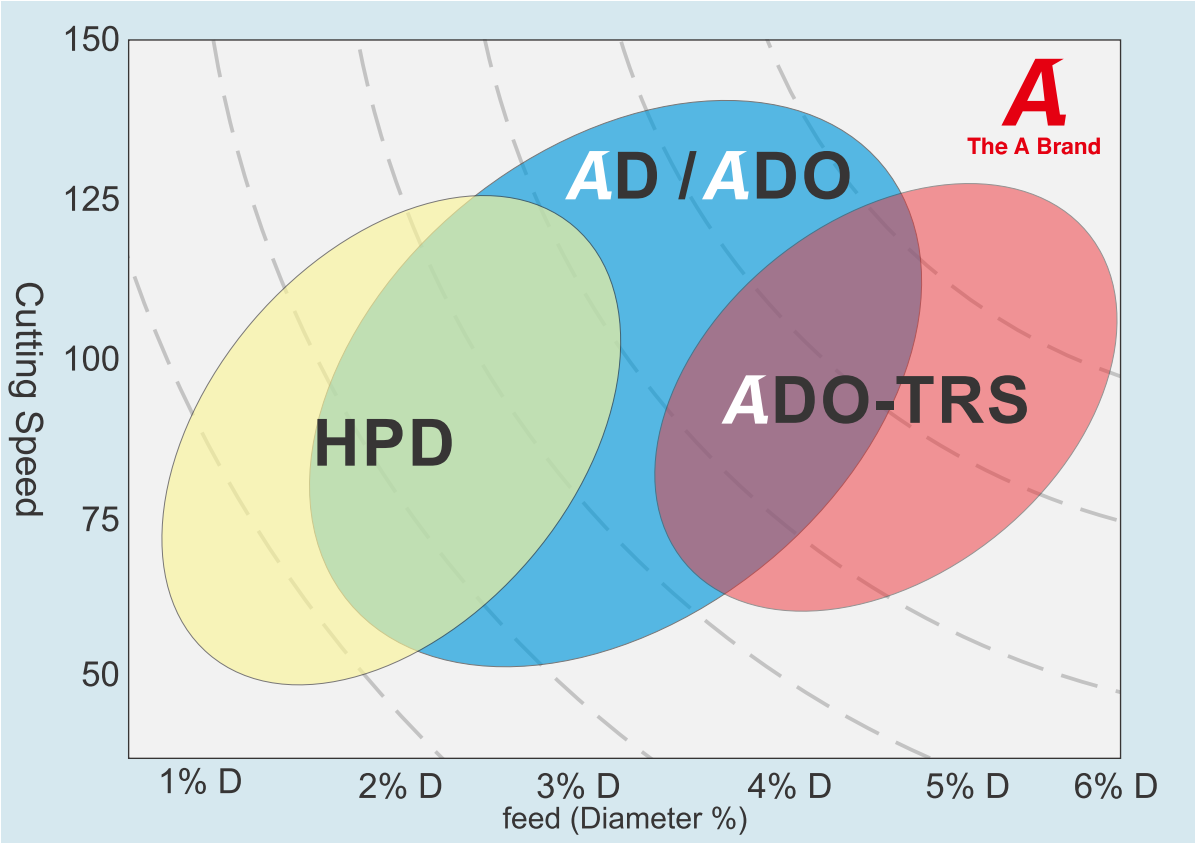
2 Surface Treatment

- EgiAs — EgiAs Coating
- IchAda — IchAda Coating
- DUR — DUARISE Coating
- DURAREY — DURAREY Coating
- WXL — WXL Coating
- HPL — HPL Coating
- WXS — WX Super Coating
- HPS — HP Super Coating
- V — V (composite multi-layered) Coating
- TiN — TiN Coating
- OX — Steam Oxide

★ Selection Chart according to work material

◎ Excellent ○ Good △ Can use

Page No.	Tool Abbreviation	Specification	Surface Treatment	Stocked Size	Low Carbon Steel Mild Steel C ~ 0.25%	Medium Carbon Steel C0.25 ~ 0.45%	High Carbon Steel C0.45% ~	Alloy Steel SCM	Hardened Steel ~ 35 HRC	Hardened Steel 35 ~ 45 HRC	Quenched and Tempered Steel 45 ~ 50 HRC
1.	2090	Chamfering Drill Point Angle 90°	-	ϕ3 ~ ϕ20	◎	◎	◎	◎	◎	△	
1.	2120	Chamfering Drill Point Angle 120°	-	ϕ3 ~ ϕ20	◎	◎	◎	◎	◎	△	
2.	2021 2022	Carbide Drill General Purpose, Jobber Drill	-	ϕ1 ~ ϕ12.7	○	○	○	○			
14.	AD-2D	Carbide Drill (2D type)	EgiAs	ϕ2 ~ ϕ20	◎	◎	◎	○	○		
5.	HPD-3D	3103 Carbide Drill (3D type)	WD1	ϕ1 ~ ϕ20	◎	◎	◎	◎	◎	○	○
5.	HO-HPD-3D	3113 Carbide Drill with Internal Coolant Supply (3D type)	WD1	ϕ3 ~ ϕ20	◎	◎	◎	◎	◎	○	○
20.	ADO-3D	Carbide Drill with Internal Coolant Supply (3D type)	EgiAs	ϕ2 ~ ϕ20	◎	◎	◎	◎	◎	○	○
35.	ADO-SUS-3D	Carbide Drill with Internal Coolant Supply (3D type)	WXL	ϕ2 ~ ϕ20	○	◎	◎	◎			
40.	ADO-TRS-3D	3Flutes Carbide Drill with Internal Coolant Supply (3D type)	EgiAs	ϕ3 ~ ϕ20	◎	◎	◎	◎	◎	○	○
17.	AD-4D	Carbide Drill (4D type)	EgiAs	ϕ2 ~ ϕ20	◎	◎	◎	○	○		
8.	HPD-5D	3105 Carbide Drill (5D type)	WD1	ϕ5.6 ~ ϕ20	◎	◎	◎	◎	◎	○	○
8.	HO-HPD-5D	3115 Carbide Drill with Internal Coolant Suppy (5D type)	WD1	ϕ5.6 ~ ϕ20	◎	◎	◎	◎	◎	○	○
23.	ADO-5D	Carbide Drill with Internal Coolant Suppy (5D type)	EgiAs	ϕ2 ~ ϕ20	◎	◎	◎	◎	◎	○	○
37.	ADO-SUS-5D	Carbide Drill with Internal Coolant Suppy (5D type)	WXL	ϕ2 ~ ϕ20	○	◎	◎	◎			
41.	ADO-TRS-5D	3Flutes Carbide Drill with Internal Coolant Supply (5D type)	EgiAs	ϕ3 ~ ϕ20	◎	◎	◎	◎	◎	○	
42.	WHO55-5D	Carbide Drill for High Hardened Steel with Internal Coolant Supply (~ 55HRC・ 5D type)	WXS	ϕ3.3 ~ ϕ12						◎	◎
43.	WH70-DRL	Carbide Drill for High Hardened Steel (~ 70HRC)	WXS	ϕ2 ~ ϕ12							
11.	HO-HPD-8D	3118 Carbide Drill with Internal Coolant Suppy (8D type)	WD1	ϕ3 ~ ϕ20	◎	◎	◎	◎	◎	○	○
26.	ADO-8D	Carbide Drill with Internal Coolant Suppy (8D type)	EgiAs	ϕ2 ~ ϕ16	◎	◎	◎	◎	◎	○	○
39.	ADO-SUS-8D	Carbide Drill with Internal Coolant Suppy (8D type)	WXL	ϕ2 ~ ϕ12	○	◎	◎	◎			
-	TRS-HO-10D	3Flutes Carbide Drill with Internal Coolant Supply (10D type)	WD1	ϕ5 ~ ϕ12	◎	◎	◎	◎			
32.	ADO-PLT	Pilot Drill for Extra Long Drill	EgiAs	ϕ3.03 ~ ϕ12.03	○	◎	◎	◎	◎	○	○
27.	ADO-10D	Carbide Drill with Internal Coolant Suppy (10D type)	EgiAs	ϕ2 ~ ϕ12.5	◎	◎	◎	◎	○		
28.	ADO-15D	Carbide Drill with Internal Coolant Suppy (15D type)	EgiAs	ϕ3 ~ ϕ12.5	◎	◎	◎	◎	○		
29.	ADO-20D	Carbide Drill with Internal Coolant Suppy (20D type)	EgiAs	ϕ3 ~ ϕ12.5	◎	◎	◎	◎	○		
30.	ADO-25D	Carbide Drill with Internal Coolant Suppy (25D type)	EgiAs	ϕ3 ~ ϕ12	◎	◎	◎	◎	○		
31.	ADO-30D	Carbide Drill with Internal Coolant Suppy (30D type)	EgiAs	ϕ3 ~ ϕ10		◎	◎	◎	◎	○	
44.	ADF-2D	Carbide Flat Drill (2D type)	EgiAs IchAda	ϕ0.2 ~ ϕ20	◎	◎	◎	◎	◎	○	
51.	ADFLS-2D	Carbide Flat Drill・ Long Shank (2D type)	EgiAs	ϕ3 ~ ϕ20	○	○	○	○	○	○	
50.	ADFO-3D	Carbide Flat Drill with Internal Coolant Suppy (3D type)	EgiAs	ϕ3 ~ ϕ20	◎	◎	◎	◎	◎	○	
52.	EX-SUS-GDS	HSSE Stub for Stainless and Mild Steels	TiN	ϕ0.5 ~ ϕ32	◎	○					
55.	EX-SUS-GDR	HSSE Regular for Stainless and Mild Steels	TiN	ϕ2 ~ ϕ32	◎	○					
58.	TDXL-10D	HSS Extra-Long Drill (10D type)	WXL	ϕ1.5 ~ ϕ12	○	◎	◎	◎			
59.	TDXL-15D	HSS Extra-Long (15D type)	WXL	ϕ1.5 ~ ϕ12	○	◎	◎	◎			
60.	TDXL-20D	HSS Extra-Long (20D type)	WXL	ϕ1.5 ~ ϕ12	○	◎	◎	◎			



★ **Selection Chart according to work material** ◎ **Excellent** ○ **Good** △ **Can use**

WORK MATERIAL										
Quenched and Tempered Steel	Quenched and Tempered Steel	Stainless Steel	Tool Steel	Cast Iron	Ductile Cast Iron	Copper Alloy	Aluminum	Aluminum Alloy Casting	Titanium Alloy	Inconel
50 ~ 62 HRC	62 ~ 70 HRC	SUS	SKD SKS	FC	FCD	Cu	AL	AC		
				◎	◎	○		○	△	△
				◎	◎	○		○	△	△
		○		○	○			○		
				◎	◎					
		○	○	◎	◎	○		○		
		○	○	◎	◎	○		○		
		○	○	◎	◎	○		○	○	○
		◎		○	○	◎		○	◎	◎
		○		◎	◎				○	
				◎	◎					
		○	○	◎	◎	○		○		
		○	○	◎	◎	○		○		
		○	○	◎	◎	○		○	○	
		◎		○	○	◎		○	◎	◎
		○		◎	◎					
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		○	○	◎	◎	○		○		
		○	○	◎	◎	○		○	○	
		◎		○	○	◎		○	◎	◎
				◎	◎					
		○	○	◎	◎			○		
		△	○	◎	◎					
		△	○	◎	◎					
		△	○	◎	◎					
		△	○	◎	◎					
			△	○	◎	◎				
		△		◎	◎		○	○		
				○	○		○	○		
		◎		◎	◎		○	○		
		◎				◎	◎	◎		
		◎				◎	◎	◎		
			○	◎	◎			◎		
			○	◎	◎			◎		
			○	◎	◎			◎		

Series 2090, 2120

Chamfering Drill Point Angle 90°/ 120°

SPOTTING CHAMFER | CARBIDE | 20°

2090 90°point	Drill Diameter	OAL	Flute Length	Shank Diameter
EDP No.	DC	OAL	LCF	DCON
20900300	3	35	8	3
20900400	4	40	10	4
20900600	6	50	16	6
20900800	8	60	23	8
20901000	10	70	24	10
20901200	12	70	25	12
20901600	16	80	33	16
20902000	20	100	35	20

2120 120°point	Drill Diameter	OAL	Flute Length	Shank Diameter
EDP No.	DC	OAL	LCF	DCON
21200300	3	35	8	3
21200400	4	40	10	4
21200600	6	50	16	6
21200800	8	60	23	8
21201000	10	70	24	10
21201200	12	70	25	12
21201600	16	80	33	16
21202000	20	100	35	20

SC-HO-HPD-3D

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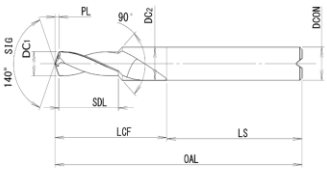

SPEED FEED P151-152 | CARBIDE | WDI | 30° | SHRINK FIT

EDP No.	TAP SIZE	L/D	DC	SDL	OAL	LCF	DCON	PL
SC311503351	M4 x 0.7	3	3.35	9.4	66	19	6	0.5
SC311504251	M5 x 0.8	3	4.25	12.2	66	24	6	0.6
SC311505501	M6 x 1 Forming	3	5.5	14.1	79	28	8	0.7
SC311505001	M6 x 1	3	5	14.1	79	28	8	0.7
SC311505101	M6 x 1	3	5.1	14.1	79	28	8	0.7
SC311506851	M8 x 1.25	3	6.85	19.8	89	37	10	1
SC311508501	M10 x 1.25	3	8.5	24.5	102	46	12	1.3
SC311508751	M10 x 1.25	3	8.75	24.5	102	46	12	1.3
SC311510251	M12 x 1.75	3	10.25	29.2	124	55	14	1.5

Work Matrial																
Chart applies to all series numbers on this page.	Aluminum		Cast Iron	Low Carbon Steel	Med.Carbon Steel	High Carbon Steel	Alloy Steel	Die Steels	Titanium	High Nickel Alloy	Stainless Steels			Die Steels		
	6061, 7075	Castings		1010, 1018	1035, 1045	1065	4140, 4340	20 HrC	6AL4V (30HrC)	20 HrC	300	400	17-4PH	-35 HrC	35-45 HrC	45-50 HrC
	○	○	◎	◎	◎	◎	◎	◎	△	△	○	○	○	○	△	

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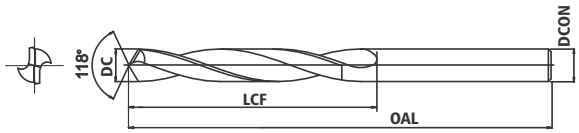
Series 2021

General Purpose Drill Point Angle 118°

CARBIDE 20°

Tolerance for cutter Diameter	
Dia 1mm-2.9 mm	0.000/-0.010



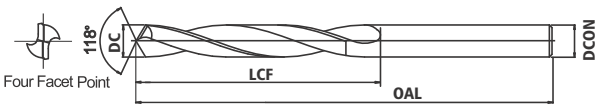
2021	Drill Diameter	OAL	Flute Length	Shank Diameter
EDP No.	DC	OAL	LCF	DCON
202101000	1	30	11	1
202101100	1.1	30	11	1.1
202101200	1.2	30	13	1.2
202101300	1.3	30	13	1.3
202101400	1.4	30	13	1.4
202101500	1.5	30	13	1.5
202101600	1.6	40	17.5	1.6
202101700	1.7	40	17.5	1.7
202101800	1.8	40	17.5	1.8
202101900	1.9	40	17.5	1.9
202102000	2	40	17.5	2
202102100	2.1	40	17.5	2.1
202102200	2.2	40	17.5	2.2
202102300	2.3	40	17.5	2.3
202102400	2.4	40	17.5	2.4
202102500	2.5	40	17.5	2.5
202102600	2.6	45	20	2.6
202102700	2.7	45	20	2.7
202102800	2.8	45	20	2.8
202102900	2.9	45	20	2.9

Series 2022

Standard Length Jobber Drill Point Angle 118°

JOBBER CARBIDE 20°

Tolerance for cutter Diameter	
Dia 3mm	+0.000/-0.010
Dia 3.1mm-6mm	+0.000/-0.012
Dia 6.1mm-12.7mm	+0.000/-0.015



2022	Drill Diameter	OAL	Flute Length	Shank Diameter
EDP No.	DC	OAL	LCF	DCON
202203000	3	61	33	3
202203100	3.1	65	36	3.1
202203200	3.2	65	36	3.2
202203300	3.3	65	36	3.3
202203400	3.4	70	39	3.4
202203500	3.5	70	39	3.5
202203600	3.6	70	39	3.6
202203700	3.7	70	39	3.7
202203800	3.8	75	43	3.8
202203900	3.9	75	43	3.9
202204000	4.	75	43	4
202204100	4.1	75	43	4.1
202204200	4.2	75	43	4.2
202204300	4.3	80	47	4.3
202204400	4.4	80	47	4.4
202204500	4.5	80	47	4.5
202204600	4.6	80	47	4.6
202204700	4.7	86	47	4.7
202204800	4.8	86	47	4.8
202204900	4.9	86	52	4.9
202205000	5	86	52	5
202205100	5.1	86	52	5.1
202205200	5.2	86	52	5.2
202205300	5.3	86	52	5.3
202205400	5.4	93	57	5.4
202205500	5.5	93	57	5.5
202205600	5.6	93	57	5.6
202205700	5.7	93	57	5.7
202205800	5.8	93	57	5.8
202205900	5.9	93	57	5.9
202206000	6	93	57	6
202206100	6.1	101	63	6.1
202206200	6.2	101	63	6.2
202206300	6.3	101	63	6.3
202206400	6.4	101	63	6.4
202206500	6.5	101	63	6.5
202206600	6.6	101	63	6.6
202206700	6.7	101	63	6.7
202206800	6.8	109	69	6.8
202206900	6.9	109	69	6.9
202207000	7	109	69	7
202207100	7.1	109	69	7.1
202207200	7.2	109	69	7.2
202207300	7.3	109	69	7.3
202207400	7.4	109	69	7.4
202207500	7.5	109	69	7.5
202207600	7.6	117	75	7.6
202207700	7.7	117	75	7.7
202207800	7.8	117	75	7.8
202207900	7.9	117	75	7.9

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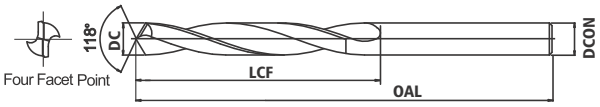
Series 2022

Standard Length Jobber Drill Point Angle 118°

JOBBER CARBIDE 20°

Tolerance for cutter Diameter	
Dia 3mm	+0.000/-0.010
Dia 3.1mm-6mm	+0.000/-0.012
Dia 6.1mm-12.7mm	+0.000/-0.015



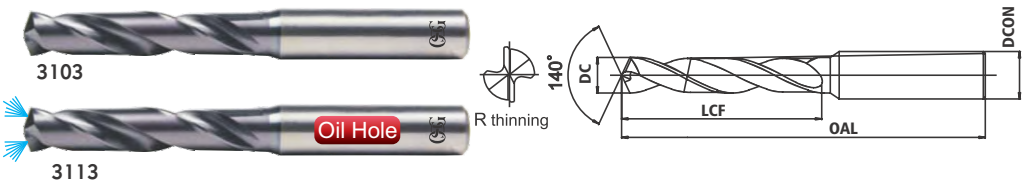
2022	Drill Diameter	OAL	Flute Length	Shank Diameter
EDP No.	DC	OAL	LCF	DCON
202208000	8	117	75	8
202208100	8.1	117	75	8.1
202208200	8.2	117	75	8.2
202208300	8.3	117	75	8.3
202208400	8.4	117	75	8.4
202208500	8.5	117	75	8.5
202208600	8.6	125	81	8.6
202208700	8.7	125	81	8.7
202208800	8.8	125	81	8.8
202208900	8.9	125	81	8.9
202209000	9	125	81	9
202209100	9.1	125	81	9.1
202209200	9.2	125	81	9.2
202209300	9.3	125	81	9.3
202209400	9.4	125	81	9.4
202209500	9.5	125	81	9.5
202209600	9.6	133	87	9.6
202209700	9.7	133	87	9.7
202209800	9.8	133	87	9.8
202209900	9.9	133	87	9.9
202210000	10	133	87	10
202210100	10.1	133	87	10.1
202210200	10.2	133	87	10.2
202210300	10.3	133	87	10.3
202210400	10.4	133	87	10.4
202210500	10.5	142	87	10.5
202210600	10.6	142	87	10.6
202210700	10.7	142	94	10.7
202210800	10.8	142	94	10.8
202210900	10.9	142	94	10.9
202211000	11	142	94	11
202211100	11.1	142	94	11.1
202211200	11.2	142	94	11.2
202211300	11.3	142	94	11.3
202211400	11.4	142	94	11.4
202211500	11.5	142	94	11.5
202211600	11.6	142	94	11.6
202211700	11.7	142	94	11.7
202211800	11.8	142	94	11.8
202211900	11.9	151	101	11.9
202212000	12	151	101	12
202212100	12.1	151	101	12.1
202212200	12.2	151	101	12.2
202212300	12.3	151	101	12.3
202212400	12.4	151	101	12.4
202212500	12.5	151	101	12.5
202212600	12.6	151	101	12.6
202212700	12.7	151	101	12.7

Series 3103, 3113

High Performance Drill HPD-3D, HO-HPD-3D

SPEED FEED P149-152 | CARBIDE | WDI | 30° | SHRINK FIT

Tolerance for cutter Diameter	
up to Dia 3mm	+0.012/+0.002
Dia 3.1mm-6mm	+0.016/+0.004
Dia 6.1mm-10mm	+0.021/+0.006
Dia 10.1mm-18mm	+0.025/+0.007
Dia 18.1mm-20mm	+0.029/+0.008



3103 HPD - 3D	3113 HO - HPD - 3D	Drill Diameter	OAL	Flute Length	Shank Diameter
EDP No.	EDP No.	DC	OAL	LCF	DCON
310301001	Not available this size.	1	35	7	3
310301101	Not available this size.	1.1	35	7	3
310301201	Not available this size.	1.2	35	8	3
310301301	Not available this size.	1.3	35	8	3
310301401	Not available this size.	1.4	35	9	3
310301501	Not available this size.	1.5	40	9	3
310301601	Not available this size.	1.6	40	10	3
310301701	Not available this size.	1.7	40	10	3
310301801	Not available this size.	1.8	40	11	3
310301901	Not available this size.	1.9	40	11	3
310302001	Not available this size.	2	45	13	3
310302101	Not available this size.	2.1	45	13	3
310302201	Not available this size.	2.2	45	13	3
310302301	Not available this size.	2.3	45	13	3
310302401	Not available this size.	2.4	45	15	3
310302501	Not available this size.	2.5	50	15	3
310302601	Not available this size.	2.6	50	15	3
310302701	Not available this size.	2.7	50	17	3
310302801	Not available this size.	2.8	50	17	3
310302901	Not available this size.	2.9	50	17	3
310303001	311303001	3	62	20	6
310303101	311303101	3.1	62	20	6
310303171	311303171	3.17 (1/8)	62	20	6
310303201	311303201	3.2	62	20	6
310303301	311303301	3.3	62	20	6
310303401	311303401	3.4	62	20	6
310303501	311303501	3.5	62	20	6
310303571	311303571	3.57 (9/64)	62	20	6
310303601	311303601	3.6	62	20	6
310303701	311303701	3.7	62	20	6
310303801	311303801	3.8	66	24	6
310303901	311303901	3.9	66	24	6
310303971	311303971	3.97 (5/32)	66	24	6
310304001	311304001	4	66	24	6
310304101	311304101	4.1	66	24	6
310304201	311304201	4.2	66	24	6
310304301	311304301	4.3	66	24	6
310304371	311304371	4.37 (11/64)	66	24	6
310304401	311304401	4.4	66	24	6
310304501	311304501	4.5	66	24	6
310304601	311304601	4.6	66	24	6
310304701	311304701	4.7	66	24	6
310304761	311304761	4.76 (3/16)	66	28	6
310304801	311304801	4.8	66	28	6
310304901	311304901	4.9	66	28	6
310305001	311305001	5	66	28	6
310305101	311305101	5.1	66	28	6
310305161	311305161	5.16 (13/64)	66	28	6
310305201	311305201	5.2	66	28	6
310305301	311305301	5.3	66	28	6
310305401	311305401	5.4	66	28	6
310305501	311305501	5.5	66	28	6

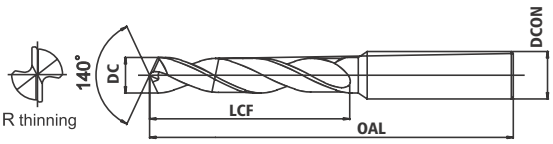
shaping your dreams

Series 3103, 3113

High Performance Drill HPD-3D, HO-HPD-3D

SPEED FEED P149-152 | CARBIDE | WDI | 30° | SHRINK FIT

Tolerance for cutter Diameter	
up to Dia 3mm	+0.012/+0.002
Dia 3.1mm-6mm	+0.016/+0.004
Dia 6.1mm-10mm	+0.021/+0.006
Dia 10.1mm-18mm	+0.025/+0.007
Dia 18.1mm-20mm	+0.029/+0.008



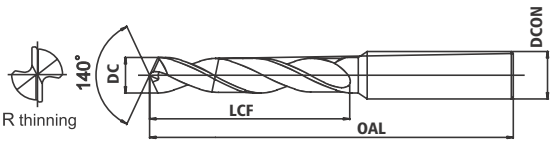
3103 HPD - 3D	3113 HO - HPD - 3D	Drill Diameter	OAL	Flute Length	Shank Diameter
EDP No.	EDP No.	DC	OAL	LCF	DCON
310305561	311305561	5.56 (7/32)	66	28	6
310305601	311305601	5.6	66	28	6
310305701	311305701	5.7	66	28	6
310305801	311305801	5.8	66	28	6
310305901	311305901	5.9	66	28	6
310305951	311305951	5.95 (15/64)	66	28	6
310306001	311306001	6	66	28	6
310306101	311306101	6.1	79	34	8
310306201	311306201	6.2	79	34	8
310306301	311306301	6.3	79	34	8
310306351	311306351	6.35 (1/4)	79	34	8
310306401	311306401	6.4	79	34	8
310306501	311306501	6.5	79	34	8
310306601	311306601	6.6	79	34	8
310306701	311306701	6.7	79	34	8
310306751	311306751	6.75 (17/64)	79	34	8
310306801	311306801	6.8	79	34	8
310306901	311306901	6.9	79	34	8
310307001	311307001	7	79	34	8
310307101	311307101	7.1	79	41	8
310307141	311307141	7.14 (9/32)	79	41	8
310307201	311307201	7.2	79	41	8
310307301	311307301	7.3	79	41	8
310307401	311307401	7.4	79	41	8
310307501	311307501	7.5	79	41	8
310307541	311307541	7.54 (19/64)	79	41	8
310307601	311307601	7.6	79	41	8
310307701	311307701	7.7	79	41	8
310307801	311307801	7.8	79	41	8
310307901	311307901	7.9	79	41	8
310307941	311307941	7.94 (5/16)	79	41	8
310308001	311308001	8	79	41	8
310308101	311308101	8.1	89	47	10
310308201	311308201	8.2	89	47	10
310308301	311308301	8.3	89	47	10
310308331	311308331	8.33 (21/64)	89	47	10
310308401	311308401	8.4	89	47	10
310308501	311308501	8.5	89	47	10
310308601	311308601	8.6	89	47	10
310308701	311308701	8.7	89	47	10
310308731	311308731	8.73 (11/32)	89	47	10
310308801	311308801	8.8	89	47	10
310308901	311308901	8.9	89	47	10
310309001	311309001	9	89	47	10
310309101	311309101	9.1	89	47	10
310309131	311309131	9.13 (23/64)	89	47	10
310309201	311309201	9.2	89	47	10
310309301	311309301	9.3	89	47	10
310309401	311309401	9.4	89	47	10
310309501	311309501	9.5	89	47	10
310309521	311309521	9.52 (3/8)	89	47	10

Series 3103, 3113

High Performance Drill HPD-3D, HO-HPD-3D

SPEED FEED P149-152 | CARBIDE | WDI | 30° | SHRINK FIT

Tolerance for cutter Diameter	
up to Dia 3mm	+0.012/+0.002
Dia 3.1mm-6mm	+0.016/+0.004
Dia 6.1mm-10mm	+0.021/+0.006
Dia 10.1mm-18mm	+0.025/+0.007
Dia 18.1mm-20mm	+0.029/+0.008



3103 HPD - 3D	3113 HO - HPD - 3D	Drill Diameter	OAL	Flute Length	Shank Diameter
EDP No.	EDP No.	DC	OAL	LCF	DCON
310309601	311309601	9.6	89	47	10
310309701	311309701	9.7	89	47	10
310309801	311309801	9.8	89	47	10
310309901	311309901	9.9	89	47	10
310309921	311309921	9.92 (25/64)	89	47	10
310310001	311310001	10	89	47	10
310310101	311310101	10.1	102	55	12
310310201	311310201	10.2	102	55	12
310310301	311310301	10.3	102	55	12
310310321	311310321	10.32 (13/32)	102	55	12
310310401	311310401	10.4	102	55	12
310310501	311310501	10.5	102	55	12
310310601	311310601	10.6	102	55	12
310310701	311310701	10.7	102	55	12
310310721	311310721	10.72 (27/64)	102	55	12
310310801	311310801	10.8	102	55	12
310310901	311310901	10.9	102	55	12
310311001	311311001	11	102	55	12
310311101	311311101	11.1	102	55	12
3103111111	311311111	11.11 (7/16)	102	55	12
310311201	311311201	11.2	102	55	12
310311301	311311301	11.3	102	55	12
310311401	311311401	11.4	102	55	12
310311501	311311501	11.5	102	55	12
310311511	311311511	11.51 (29/64)	102	55	12
310311601	311311601	11.6	102	55	12
310311701	311311701	11.7	102	55	12
310311801	311311801	11.8	102	55	12
310311901	311311901	11.9	102	55	12
310311911	311311911	11.91 (15/32)	102	55	12
310312001	311312001	12	102	55	12
310312301	311312301	12.30 (31/64)	107	60	14
310312501	311312501	12.5	107	60	14
310312701	311312701	12.70 (1/2)	107	60	14
310313001	311313001	13	107	60	14
310313501	311313501	13.5	107	60	14
310314001	311314001	14	107	60	14
310314291	311314291	14.29 (9/16)	115	65	16
310314501	311314501	14.5	115	65	16
310315001	311315001	15	115	65	16
310315501	311315501	15.5	115	65	16
310315871	311315871	15.87 (5/8)	115	65	16
310316001	311316001	16	115	65	16
310316501	311316501	16.5	123	73	18
310317001	311317001	17	123	73	18
310317501	311317501	17.5	123	73	18
310318001	311318001	18	123	73	18
310318501	311318501	18.5	131	79	20
310319001	311319001	19	131	79	20
310319051	311319051	19.05 (3/4)	131	79	20
310319501	311319501	19.5	131	79	20
310320001	311320001	20	131	79	20

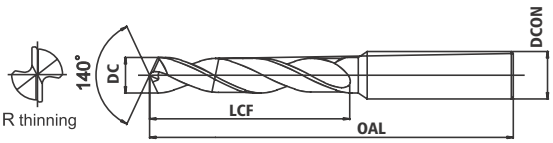
shaping your dreams

Series 3105, 3115

High Performance Drill HPD-5D, HO-HPD-5D

SPEED FEED P149-152 | CARBIDE | WDI | 30° | SHRINK FIT

Tolerance for cutter Diameter	
up to Dia 3mm	+0.012/+0.002
Dia 3.1mm-6mm	+0.016/+0.004
Dia 6.1mm-10mm	+0.021/+0.006
Dia 10.1mm-18mm	+0.025/+0.007
Dia 18.1mm-20mm	+0.029/+0.008



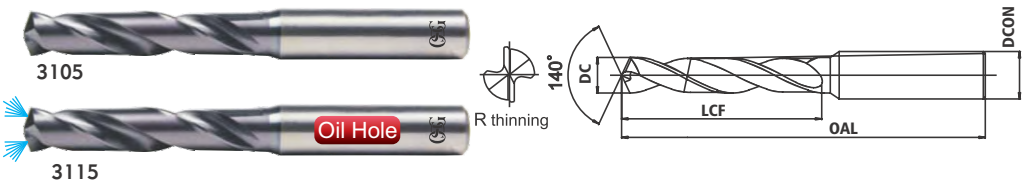
3105 HPD - 5D	3115 HO-HPD - 5D	Drill Diameter	OAL	Flute Length	Shank Diameter
EDP No.	EDP No.	DC	OAL	LCF	DCON
310501001	Not available this size.	1	38	9	3
310501101	Not available this size.	1.1	38	9	3
310501201	Not available this size.	1.2	38	11	3
310501301	Not available this size.	1.3	38	11	3
310501401	Not available this size.	1.4	38	12	3
310501501	Not available this size.	1.5	45	12	3
310501601	Not available this size.	1.6	45	14	3
310501701	Not available this size.	1.7	45	14	3
310501801	Not available this size.	1.8	45	16	3
310501901	Not available this size.	1.9	45	16	3
310502001	Not available this size.	2	52	18	3
310502101	Not available this size.	2.1	52	18	3
310502201	Not available this size.	2.2	52	20	3
310502301	Not available this size.	2.3	52	20	3
310502401	Not available this size.	2.4	52	22	3
310502501	Not available this size.	2.5	56	22	3
310502601	Not available this size.	2.6	56	22	3
310502701	Not available this size.	2.7	56	23	3
310502801	Not available this size.	2.8	56	23	3
310502901	Not available this size.	2.9	56	23	3
310503001	311503001	3	66	28	6
310503101	311503101	3.1	66	28	6
310503171	311503171	3.17 (1/8)	66	28	6
310503201	311503201	3.2	66	28	6
310503301	311503301	3.3	66	28	6
310503401	311503401	3.4	66	28	6
310503501	311503501	3.5	66	28	6
310503571	311503571	3.57 (9/64)	66	28	6
310503601	311503601	3.6	66	28	6
310503701	311503701	3.7	66	28	6
310503801	311503801	3.8	74	36	6
310503901	311503901	3.9	74	36	6
310503971	311503971	3.97 (5/32)	74	36	6
310504001	311504001	4	74	36	6
310504101	311504101	4.1	74	36	6
310504201	311504201	4.2	74	36	6
310504301	311504301	4.3	74	36	6
310504371	311504371	4.37 (11/64)	74	36	6
310504401	311504401	4.4	74	36	6
310504501	311504501	4.5	74	36	6
310504601	311504601	4.6	74	36	6
310504701	311504701	4.7	74	36	6
310504761	311504761	4.76 (3/16)	82	44	6
310504801	311504801	4.8	82	44	6
310504901	311504901	4.9	82	44	6
310505001	311505001	5	82	44	6
310505101	311505101	5.1	82	44	6
310505161	311505161	5.16 (13/64)	82	44	6
310505201	311505201	5.2	82	44	6
310505301	311505301	5.3	82	44	6
310505401	311505401	5.4	82	44	6
310505501	311505501	5.5	82	44	6
310505561	311505561	5.56 (7/32)	82	44	6

Series 3105, 3115

High Performance Drill HPD-5D, HO-HPD-5D

SPEED FEED P149-152 | CARBIDE | WDI | 30° | SHRINK FIT

Tolerance for cutter Diameter	
up to Dia 3mm	+0.012/+0.002
Dia 3.1mm-6mm	+0.016/+0.004
Dia 6.1mm-10mm	+0.021/+0.006
Dia 10.1mm-18mm	+0.025/+0.007
Dia 18.1mm-20mm	+0.029/+0.008



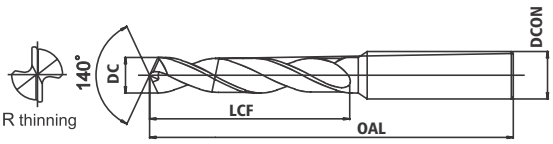
3105 HPD - 5D	3115 HO-HPD - 5D	Drill Diameter	OAL	Flute Length	Shank Diameter
EDP No.	EDP No.	DC	OAL	LCF	DCON
310505601	311505601	5.6	82	44	6
310505701	311505701	5.7	82	44	6
310505801	311505801	5.8	82	44	6
310505901	311505901	5.9	82	44	6
310505951	311505951	5.95 (15/64)	82	44	6
310506001	311506001	6	82	44	6
310506101	311506101	6.1	91	53	8
310506201	311506201	6.2	91	53	8
310506301	311506301	6.3	91	53	8
310506351	311506351	6.35 (1/4)	91	53	8
310506401	311506401	6.4	91	53	8
310506501	311506501	6.5	91	53	8
310506601	311506601	6.6	91	53	8
310506701	311506701	6.7	91	53	8
310506751	311506751	6.75 (17/64)	91	53	8
310506801	311506801	6.8	91	53	8
310506901	311506901	6.9	91	53	8
310507001	311507001	7	91	53	8
310507101	311507101	7.1	91	53	8
310507141	311507141	7.14 (9/32)	91	53	8
310507201	311507201	7.2	91	53	8
310507301	311507301	7.3	91	53	8
310507401	311507401	7.4	91	53	8
310507501	311507501	7.5	91	53	8
310507541	311507541	7.54 (19/64)	91	53	8
310507601	311507601	7.6	91	53	8
310507701	311507701	7.7	91	53	8
310507801	311507801	7.8	91	53	8
310507901	311507901	7.9	91	53	8
310507941	311507941	7.94 (5/16)	91	53	8
310508001	311508001	8	91	53	8
310508101	311508101	8.1	103	61	10
310508201	311508201	8.2	103	61	10
310508301	311508301	8.3	103	61	10
310508331	311508331	8.33 (21/64)	103	61	10
310508401	311508401	8.4	103	61	10
310508501	311508501	8.5	103	61	10
310508601	311508601	8.6	103	61	10
310508701	311508701	8.7	103	61	10
310508731	311508731	8.73 (11/32)	103	61	10
310508801	311508801	8.8	103	61	10
310508901	311508901	8.9	103	61	10
310509001	311509001	9	103	61	10
310509101	311509101	9.1	103	61	10
310509131	311509131	9.13 (23/64)	103	61	10
310509201	311509201	9.2	103	61	10
310509301	311509301	9.3	103	61	10
310509401	311509401	9.4	103	61	10
310509501	311509501	9.5	103	61	10
310509521	311509521	9.52 (3/8)	103	61	10
310509601	311509601	9.6	103	61	10
310509701	311509701	9.7	103	61	10
310509801	311509801	9.8	103	61	10

shaping your dreams

Series 3105, 3115

SPEED FEED P.149-152 | CARBIDE | WDI | 30° | SHRINK FIT

Tolerance for cutter Diameter	
up to Dia 3mm	+0.012/+0.002
Dia 3.1mm-6mm	+0.016/+0.004
Dia 6.1mm-10mm	+0.021/+0.006
Dia 10.1mm-18mm	+0.025/+0.007
Dia 18.1mm-20mm	+0.029/+0.008



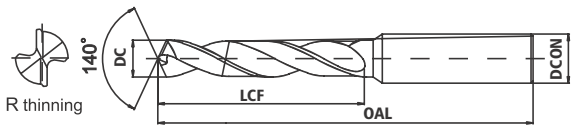
3105 HPD - 5D	3115 HO-HPD - 5D	Drill Diameter	OAL	Flute Length	Shank Diameter
EDP No.	EDP No.	DC	OAL	LCF	DCON
310509901	311509901	9.9	103	61	10
310509921	311509921	9.92 (25/64)	103	61	10
310510001	311510001	10	103	61	10
310510101	311510101	10.1	118	71	12
310510201	311510201	10.2	118	71	12
310510301	311510301	10.3	118	71	12
310510321	311510321	10.31 (13/32)	118	71	12
310510401	311510401	10.4	118	71	12
310510501	311510501	10.5	118	71	12
310510601	311510601	10.6	118	71	12
310510701	311510701	10.7	118	71	12
310510721	311510721	10.72 (27/64)	118	71	12
310510801	311510801	10.8	118	71	12
310510901	311510901	10.9	118	71	12
310511001	311511001	11	118	71	12
310511101	311511101	11.1	118	71	12
310511111	311511111	11.11 (7/16)	118	71	12
310511201	311511201	11.2	118	71	12
310511301	311511301	11.3	118	71	12
310511401	311511401	11.4	118	71	12
310511501	311511501	11.5	118	71	12
310511511	311511511	11.50 (29/64)	118	71	12
310511601	311511601	11.6	118	71	12
310511701	311511701	11.7	118	71	12
310511801	311511801	11.8	118	71	12
310511901	311511901	11.9	118	71	12
310511911	311511911	11.90 (15/32)	118	71	12
310512001	311512001	12	118	71	12
310512301	311512301	12.30 (31/64)	124	77	14
310512501	311512501	12.5	124	77	14
310512701	311512701	12.70 (1/2)	124	77	14
310513001	311513001	13	124	77	14
310513501	311513501	13.5	124	77	14
310514001	311514001	14	124	77	14
310514291	311514291	14.28 (9/16)	133	83	16
310514501	311514501	14.5	133	83	16
310515001	311515001	15	133	83	16
310515501	311515501	15.5	133	83	16
310515871	311515871	15.87 (5/8)	133	83	16
310516001	311516001	16	133	83	16
310516501	311516501	16.5	143	93	18
310517001	311517001	17	143	93	18
310517501	311517501	17.5	143	93	18
310518001	311518001	18	143	93	18
310518501	311518501	18.5	153	101	20
310519001	311519001	19	153	101	20
310519051	311519051	19.05 (3/4)	153	101	20
310519501	311519501	19.5	153	101	20
310520001	311520001	20	153	101	20

Series 3118

High Performance Drill , HO-HPD-8D

SPEED FEED P151-152 | CARBIDE | WDI | 30° | SHRINK FIT

3118



Tolerance for cutter Diameter	
up to Dia 3mm	+0.012/+0.002
Dia 3.1mm-6mm	+0.016/+0.004
Dia 6.1mm-10mm	+0.021/+0.006
Dia 10.1mm-18mm	+0.025/+0.007
Dia 18.1mm-20mm	+0.029/+0.008

3118 HO- HPD 8D	Drill Diameter	OAL	Flute Length	Shank Diameter	
EDP No.	DC	OAL	LCF	DCON	
311803001	3	72	34	4	
311803101	3.1	81	43	4	
311803171	3.17 (1/8)	81	43	4	
311803201	3.2	81	43	4	
311803301	3.3	81	43	4	
311803401	3.4	81	43	4	
311803501	3.5	81	43	4	
311803571	3.57 (9/64)	81	43	4	
311803601	3.6	81	43	4	
311803701	3.7	81	43	4	
311803801	3.8	81	43	4	
311803901	3.9	81	43	4	
311803971	3.97 (5/32)	81	43	4	
311804001	4	81	43	4	
311804091	4.09 (Wire Gauge 20)	90	50	6	
311804101	4.1	90	50	6	
311804201	4.2	90	50	6	
311804301	4.3	90	50	6	
311804371	4.37 (11/64)	90	50	6	
311804401	4.4	90	50	6	
311804501	4.5	90	50	6	
311804601	4.6	90	50	6	
311804701	4.7	90	50	6	
311804761	4.76 (3/16)	90	50	6	
311804801	4.8	90	50	6	
311804901	4.9	90	50	6	
311805001	5	90	50	6	
311805101	5.1	97	57	6	
311805161	5.16 (13/64)	97	57	6	
311805201	5.2	97	57	6	
311805301	5.3	97	57	6	
311805401	5.4	97	57	6	
311805411	5.41 (Wire Gauge 3)	97	57	6	
311805501	5.5	97	57	6	
311805561	5.56 (7/32)	97	57	6	
311805601	5.6	97	57	6	
311805701	5.7	97	57	6	
311805801	5.8	97	57	6	
311805901	5.9	97	57	6	
311805951	5.95 (15/64)	97	57	6	
311806001	6	97	57	6	
311806101	6.1	106	66	8	
311806201	6.2	106	66	8	
311806301	6.3	106	66	8	
311806351	6.35 (1/4 E)	106	66	8	
311806401	6.4	106	66	8	
311806501	6.5	106	66	8	
311806531	6.53 (F)	106	66	8	
311806601	6.6	106	66	8	
311806701	6.7	106	66	8	
311806751	6.75 (17/64)	106	66	8	
311806801	6.8	106	66	8	

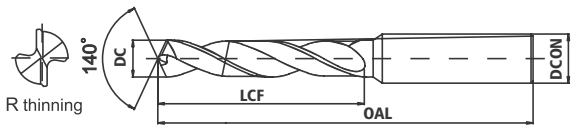
shaping your dreams

Series 3118

High Performance Drill , HO-HPD-8D

SPEED FEED P151-152 | CARBIDE | WDI | 30° | SHRINK FIT

3118



Tolerance for cutter Diameter	
up to Dia 3mm	+0.012/+0.002
Dia 3.1mm-6mm	+0.016/+0.004
Dia 6.1mm-10mm	+0.021/+0.006
Dia 10.1mm-18mm	+0.025/+0.007
Dia 18.1mm-20mm	+0.029/+0.008

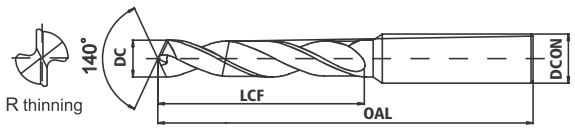
3118 HO- HPD 8D	Drill Diameter	OAL	Flute Length	Shank Diameter	
EDP No.	DC	OAL	LCF	DCON	
311806901	6.9	116	76	8	
311807001	7	116	76	8	
311807101	7.1	116	76	8	
311807141	7.14 (9/32)	116	76	8	
311807201	7.2	116	76	8	
311807301	7.3	116	76	8	
311807401	7.4	116	76	8	
311807501	7.5	116	76	8	
311807541	7.54 (19/64)	116	76	8	
311807601	7.6	116	76	8	
311807701	7.7	116	76	8	
311807801	7.8	116	76	8	
311807901	7.9	116	76	8	
311807941	7.94 (5/16)	116	76	8	
311808001	8	116	76	8	
311808101	8.1	131	87	10	
311808201	8.2	131	87	10	
311808301	8.3	131	87	10	
311808331	8.33 (21/64)	131	87	10	
311808401	8.4	131	87	10	
311808501	8.5	131	87	10	
311808601	8.6	131	87	10	
311808701	8.7	131	87	10	
311808731	8.73 (11/32)	131	87	10	
311808801	8.8	131	87	10	
311808901	8.9	131	87	10	
311809001	9	131	87	10	
311809101	9.1	139	95	10	
311809131	9.13 (23/64)	139	95	10	
311809201	9.2	139	95	10	
311809301	9.3	139	95	10	
311809401	9.4	139	95	10	
311809501	9.5	139	95	10	
311809521	9.52 (3/8)	139	95	10	
311809601	9.6	139	95	10	
311809701	9.7	139	95	10	
311809801	9.8	139	95	10	
311809901	9.9	139	95	10	
311809921	9.92 (25/64)	139	95	10	
311810001	10	139	95	10	
311810101	10.1	155	106	12	
311810201	10.2	155	106	12	
311810301	10.3	155	106	12	
311810321	10.32 (13/32)	155	106	12	
311810401	10.4	155	106	12	
311810501	10.5	155	106	12	
311810601	10.6	155	106	12	
311810701	10.7	155	106	12	
311810721	10.72	155	106	12	
311810801	10.8	155	106	12	
311810901	10.9	155	106	12	
311811001	11	155	106	12	
311811101	11.1 (27/64)	163	114	12	

Series 3118

High Performance Drill , HO-HPD-8D

SPEED FEED P151-152 | CARBIDE | WDI | 30° | SHRINK FIT

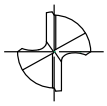
3118

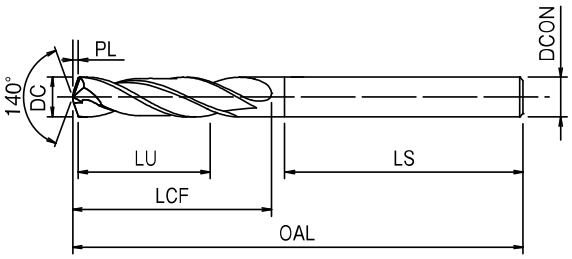


Tolerance for cutter Diameter	
up to Dia 3mm	+0.012/+0.002
Dia 3.1mm-6mm	+0.016/+0.004
Dia 6.1mm-10mm	+0.021/+0.006
Dia 10.1mm-18mm	+0.025/+0.007
Dia 18.1mm-20mm	+0.029/+0.008

3118 HO- HPD 8D	Drill Diameter		OAL	Flute Length	Shank Diameter	
EDP No.	DC		OAL	LCF	DCON	
311811111	11.11	(7/16)	163	114	12	
311811201	11.2		163	114	12	
311811301	11.3		163	114	12	
311811401	11.4		163	114	12	
311811501	11.5		163	114	12	
311811511	11.51	(29/64)	163	114	12	
311811601	11.6		163	114	12	
311811701	11.7		163	114	12	
311811801	11.8		163	114	12	
311811901	11.9		163	114	12	
311811911	11.91	(15/32)	163	114	12	
311812001	12		163	114	12	
311812301	12.3	(31/64)	182	133	14	
311812501	12.5		182	133	14	
311812701	12.7	(1/20)	182	133	14	
311813001	13		182	133	14	
311813101	13.1	(33/64)	182	133	14	
311813491	13.49	(17/32)	182	133	14	
311813501	13.5		182	133	14	
311814001	14		182	133	14	
311814291	14.29	(9/16)	204	152	16	
311814501	14.5		204	152	16	
311814681	14.68	(37/64)	204	152	16	
311815001	15		204	152	16	
311815081	15.08	(19/32)	204	152	16	
311815501	15.5		204	152	16	
311815701	15.7		204	152	16	
311815871	15.87	(5/8)	204	152	16	
311816001	16		204	152	16	
311816501	16.5		223	171	18	
311816671	16.67	(21/32)	223	171	18	
311817001	17		223	171	18	
311817501	17.5		223	171	18	
311818001	18		223	171	18	
311818501	18.5		244	190	20	
311819001	19		244	190	20	
311819051	19.05	(3/4)	244	190	20	
311819501	19.5		244	190	20	
311820001	20		244	190	20	

shaping your dreams



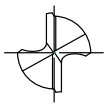


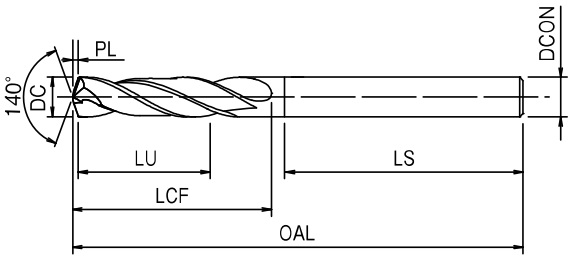
SPEED FEED P.153 | CARBIDE | EgiAs | h8 | 30° | SHRINK FIT

EDP No.	DC - DCON	LU	LCF	OAL	DCON	LS	PL
8675200	2 - 3	10	14	62	3	37.9	0.4
8670200	2				4	36	
8675210	2.1 - 3				3	37.9	
8670210	2.1				4	36	
8675220	2.2 - 3				3	37.9	
8670220	2.2				4	36	
8675230	2.3 - 3	9			3	37.9	
8670230	2.3				4	36	
8675240	2.4 - 3				3	37.9	
8670240	2.4				4	36	
8675250	2.5 - 3				3	37.9	0.5
8670250	2.5				4	36	
8675260	2.6 - 3				3	37.9	
8670260	2.6				4	36	
8675270	2.7 - 3				3	37.9	
8670270	2.7				4	36	
8670276	2.76						
8670278	2.78	8					
8675280	2.8 - 3				3	37.9	
8670280	2.8				4	36	
8675290	2.9 - 3				3	37.9	
8670290	2.9				4	36	
8675300	3 - 3	14	20	66	3	37.9	
8670300	3				4	36	
8670310	3.1						0.6
8670320	3.2						
8670330	3.3	13					
8670340	3.4						
8670350	3.5						
8670360	3.6						0.7
8670366	3.66						
8670368	3.68						
8670370	3.7						
8670380	3.8	16	24				
8670390	3.9						
8670400	4						
8675410	4.1 - 5				5	37.9	
8670410	4.1				6	36	
8675420	4.2 - 5				5	37.9	0.8
8670420	4.2				6	36	
8675430	4.3 - 5	15			5	37.9	
8670430	4.3				6	36	
8675440	4.4 - 5				5	37.9	
8670440	4.4				6	36	

EDP No.	DC - DCON	LU	LCF	OAL	DCON	LS	PL
8675450	4.5 - 5	15	24	66	5	37.9	0.8
8670450	4.5				6	36	
8675460	4.6 - 5				5	37.9	
8670460	4.6				6	36	
8670462	4.62						
8670464	4.64						
8675470	4.7 - 5				5	37.9	0.9
8670470	4.7				6	36	
8675480	4.8 - 5	18	28		5	37.9	
8670480	4.8				6	36	
8675490	4.9 - 5				5	37.9	
8670490	4.9				6	36	
8675500	5 - 5				5	37.9	
8670500	5				6	36	
8670510	5.1						
8670520	5.2						
8670530	5.3	17					1
8670540	5.4						
8670550	5.5						
8670552	5.52						
8670554	5.54						
8670560	5.6						
8670570	5.7						
8670580	5.8						
8670590	5.9	16					
8670600	6						
8675610	6.1 - 7	22	34	79	7	37.9	1.1
8670610	6.1				8	36	
8675620	6.2 - 7				7	37.9	
8670620	6.2				8	36	
8675630	6.3 - 7				7	37.9	
8670630	6.3				8	36	
8675640	6.4 - 7	21			7	37.9	1.2
8670640	6.4				8	36	
8675650	6.5 - 7				7	37.9	
8670650	6.5				8	36	
8675660	6.6 - 7				7	37.9	
8670660	6.6				8	36	
8675670	6.7 - 7				7	37.9	
8670670	6.7				8	36	
8675680	6.8 - 7				7	37.9	
8670680	6.8				8	36	
8675690	6.9 - 7	20			7	37.9	1.3
8670690	6.9				8	36	

Work Material / Abbreviation	Low Carbon Steel	Medium Carbon Steel	High Carbon Steel	Alloy Steel	Hardened Steel		Quenched and Tempered Steel			Stainless Steel	Tool Steel	Cast Iron	Ductile Cast Iron	Copper Alloy	Aluminum	Aluminum Alloy Casting	Titanium Alloy	Inconel®	CFRP Composite Material	Magnesium Alloy	(MMC) Metal Matrix Composites
	C ~ 0.25%	C0.25 ~ 0.45%	C0.45% ~	SCM	~ 35 HRC	35 ~ 45 HRC	45 ~ 50 HRC	50 ~ 62 HRC	62 ~ 70 HRC	SUS	SKD SKS	FC	FCD	Cu	AL	AC				AZ91D	
AD-2D	◎	◎	◎	○	○							◎	◎								



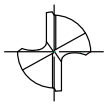


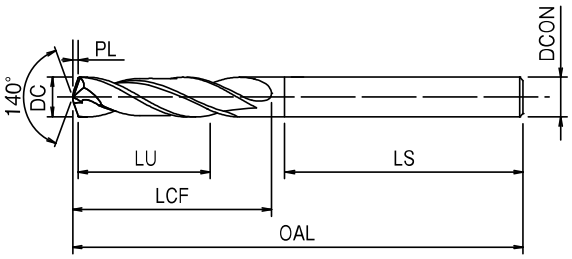
SPEED FEED P.153 | CARBIDE | EgiAs | h8 | 30° | SHRINK FIT

EDP No.	DC - DCON	LU	LCF	OAL	DCON	LS	PL
8675700	7 - 7	20	34	79	7	37.9	1.3
8670700	7		41		8	36	
8670710	7.1	27					
8670720	7.2						
8670730	7.3						
8670736	7.36	26					1.4
8670738	7.38						
8670740	7.4						
8670750	7.5						
8670752	7.52						
8670754	7.54						
8670760	7.6						
8670770	7.7						
8670780	7.8						
8670790	7.9	25					
8670800	8						1.5
8675810	8.1 - 9	31	47	89	9	41.9	
8670810	8.1				10	40	
8675820	8.2 - 9				9	41.9	
8670820	8.2				10	40	
8675830	8.3 - 9				9	41.9	
8670830	8.3				10	40	
8675840	8.4 - 9	30			9	41.9	
8670840	8.4				10	40	
8675850	8.5 - 9				9	41.9	
8670850	8.5				10	40	
8675860	8.6 - 9				9	41.9	1.6
8670860	8.6				10	40	
8675870	8.7 - 9				9	41.9	
8670870	8.7				10	40	
8675880	8.8 - 9				9	41.9	
8670880	8.8				10	40	
8675890	8.9 - 9	29			9	41.9	
8670890	8.9				10	40	
8675900	9 - 9				9	41.9	
8670900	9				10	40	
8670910	9.1						1.7
8670920	9.2						
8670984	9.24						
8670926	9.26						
8670930	9.3						
8670936	9.36	28					
8670938	9.38						

EDP No.	DC - DCON	LU	LCF	OAL	DCON	LS	PL
8670940	9.4	28	47	89	10	40	1.7
8670950	9.5						
8670952	9.52						
8670954	9.54						
8670960	9.6						
8670970	9.7						1.8
8670980	9.8						
8670990	9.9	27					
8671000	10						
8676010	10.1 - 11	35	55	102	11	46.9	
8671010	10.1				12	45	
8676020	10.2 - 11				11	46.9	1.9
8671020	10.2				12	45	
8676030	10.3 - 11				11	46.9	
8671030	10.3				12	45	
8676040	10.4 - 11	34			11	46.9	
8671040	10.4				12	45	
8676050	10.5 - 11				11	46.9	
8671050	10.5				12	45	
8676060	10.6 - 11				11	46.9	
8671060	10.6				12	45	
8676070	10.7 - 11				11	46.9	
8671070	10.7				12	45	
8670680	10.8 - 11				11	46.9	2
8670080	10.8				12	45	
8676090	10.9 - 11	33			11	46.9	
8671090	10.9				12	45	
8676100	11 - 11				11	46.9	
8671100	11				12	45	
8671110	11.1						
8671120	11.2						
8671122	11.22						
8671124	11.24						
8671130	11.3						2.1
8671136	11.36	32					
8671138	11.38						
8671140	11.4						
8671150	11.5						
8671160	11.6						
8671170	11.7						
8671180	11.8						
8671190	11.9	31					
8671200	12						

Work Material / Abbreviation	Low Carbon Steel	Medium Carbon Steel	High Carbon Steel	Alloy Steel	Hardened Steel		Quenched and Tempered Steel			Stainless Steel	Tool Steel	Cast Iron	Ductile Cast Iron	Copper Alloy	Aluminum	Aluminum Alloy Casting	Titanium Alloy	Inconel®	CFRP Composite Material	Magnesium Alloy	(MMC) Metal Matrix Composites
	C ~ 0.25%	C0.25 ~ 0.45%	C0.45% ~	SCM	~ 35 HRC	35 ~ 45 HRC	45 ~ 50 HRC	50 ~ 62 HRC	62 ~ 70 HRC	SUS	SKD SKS	FC	FCD	Cu	AL	AC				AZ91D	
AD-2D	◎	◎	◎	○	○							◎	◎								



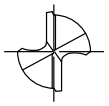


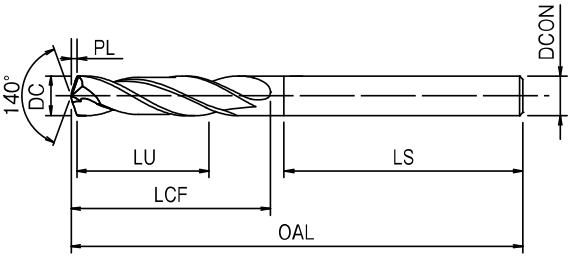
SPEED FEED P.153 | CARBIDE | EgiAs | h8 | 30° | SHRINK FIT

EDP No.	DC - DCON	LU	LCF	OAL	DCON	LS	PL
8671210	12.1	36	60	107	14	45	2.2
8671220	12.2						
8671230	12.3						
8671240	12.4	35					2.3
8671250	12.5						
8671260	12.6						
8671270	12.7						
8671280	12.8						
8671290	12.9	34					2.4
8671300	13						
8671310	13.1						
8671320	13.2						
8671330	13.3						
8671340	13.4	33					2.5
8671350	13.5						
8671360	13.6						
8671370	13.7						
8671380	13.8						
8671390	13.9	32					
8671400	14						
8671410	14.1	37	65	115	16	48	2.6
8671420	14.2						
8671430	14.3						
8671440	14.4	36					2.7
8671450	14.5						
8671460	14.6						
8671470	14.7						
8671480	14.8						
8671490	14.9	35					
8671500	15						
8671510	15.1						
8671520	15.2						2.8
8671530	15.3						
8671540	15.4	34					
8671550	15.5						
8671560	15.6						
8671570	15.7						2.9
8671580	15.8						
8671590	15.9	33					
8671600	16						

EDP No.	DC - DCON	LU	LCF	OAL	DCON	LS	PL
5560594920	16.1	41	73	123	18	48	2.9
5560594930	16.2						
5560594940	16.3						
5560594950	16.4	40					3
8671650	16.5						
5560594960	16.6						
5560594970	16.7						
5560594980	16.8						3.1
5560594990	16.9						
8671700	17	39					
5560595000	17.1						
5560595010	17.2						
5560595020	17.3						
5560595030	17.4						3.2
8671750	17.5	38					
5560595040	17.6						
5560595050	17.7						
5560595060	17.8						
5560595070	17.9						3.3
8671800	18	37					
5560595080	18.1	43	79	131	20	50	
5560595090	18.2						
5560595100	18.3						
5560595110	18.4						
8671850	18.5	42					3.4
5560595120	18.6						
5560595130	18.7						
5560595140	18.8						
5560595150	18.9						
8671900	19	41					
5560595160	19.1						3.5
5560595170	19.2						
5560595180	19.3						
5560595190	19.4						
8671950	19.5	40					
5560595200	19.6						
5560595210	19.7						3.6
5560595220	19.8						
5560595230	19.9						
8672000	20	39					

Work Material / Abbreviation	Low Carbon Steel	Medium Carbon Steel	High Carbon Steel	Alloy Steel	Hardened Steel		Quenched and Tempered Steel			Stainless Steel	Tool Steel	Cast Iron	Ductile Cast Iron	Copper Alloy	Aluminum	Aluminum Alloy Casting	Titanium Alloy	Inconel®	CFRP Composite Material	Magnesium Alloy	(MMC) Metal Matrix Composites
	C ~ 0.25%	C0.25 ~ 0.45%	C0.45% ~	SCM	~ 35 HRC	35 ~ 45 HRC	45 ~ 50 HRC	50 ~ 62 HRC	62 ~ 70 HRC	SUS	SKD SKS	FC	FCD	Cu	AL	AC				AZ91D	
AD-2D	◎	◎	◎	○	○							◎	◎								



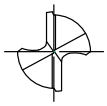


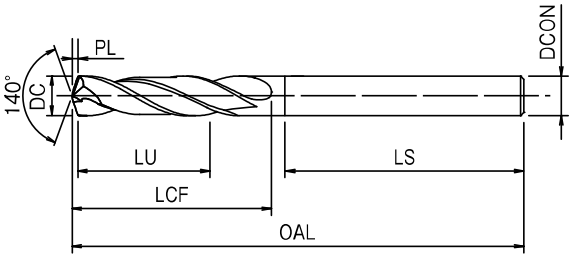
SPEED FEED P.153 | CARBIDE | EgiAs | h8 | 30° | SHRINK FIT

EDP No.	DC - DCON	LU	LCF	OAL	DCON	LS	PL
8677200	2 - 3	16	20	66	3	37.9	0.4
8672200	2				4	36	
8677210	2.1 - 3				3	37.9	
8672210	2.1				4	36	
8677220	2.2 - 3				3	37.9	
8672220	2.2				4	36	
8677230	2.3 - 3	15			3	37.9	
8672230	2.3				4	36	
8677240	2.4 - 3				3	37.9	
8672240	2.4				4	36	
8677250	2.5 - 3				3	37.9	0.5
8672250	2.5				4	36	
8677260	2.6 - 3				3	37.9	
8672260	2.6				4	36	
8677270	2.7 - 3				3	37.9	
8672270	2.7				4	36	
8677280	2.8 - 3	14			3	37.9	
8672280	2.8				4	36	
8677290	2.9 - 3				3	37.9	
8672290	2.9				4	36	
8677300	3 - 3	22	28	74	3	37.9	
8672300	3				4	36	
8672310	3.1						0.6
8672310	3.2						
8672330	3.3	21					
8672340	3.4						
8672350	3.5						
8672360	3.6						0.7
8672370	3.7						
8672380	3.8	28	36				
8672390	3.9						
8672400	4						
8677410	4.1 - 5				5	37.9	
8672410	4.1				6	36	
8677420	4.2 - 5				5	37.9	0.8
8672420	4.2				6	36	
8677430	4.3 - 5	27			5	37.9	
8672430	4.3				6	36	
8677440	4.4 - 5				5	37.9	
8672440	4.4				6	36	
8677450	4.5 - 5				5	37.9	
8672450	4.5				6	36	
8677460	4.6 - 5				5	37.9	
8672460	4.6				6	36	

EDP No.	DC - DCON	LU	LCF	OAL	DCON	LS	PL
8677470	4.7 - 5	27	36	74	5	37.9	0.9
8672470	4.7				6	36	
8677480	4.8 - 5	34	44	82	5	37.9	
8672480	4.8				6	36	
8677490	4.9 - 5				5	37.9	
8672490	4.9				6	36	
8677500	5 - 5				5	37.9	
8672500	5				6	36	
8672510	5.1						
8672520	5.2						
8672530	5.3	33					1
8672540	5.4						
8672550	5.5						
8672560	5.6						
8672570	5.7						
8672580	5.8						1.1
8672590	5.9	32					
8672600	6						
8677610	6.1 - 7	41	53	91	7	37.9	
8672610	6.1				8	36	
8677620	6.2 - 7				7	37.9	
8672620	6.2				8	36	
8677630	6.3 - 7				7	37.9	
8672630	6.3				8	36	
8677640	6.4 - 7	40			7	37.9	1.2
8672640	6.4				8	36	
8677650	6.5 - 7				7	37.9	
8672650	6.5				8	36	
8677660	6.6 - 7				7	37.9	
8672660	6.6				8	36	
8677670	6.7 - 7				7	37.9	
8672670	6.7				8	36	
8677680	6.8 - 7				7	37.9	
8672680	6.8				8	36	
8677690	6.9 - 7	39			7	37.9	1.3
8672690	6.9				8	36	
8677700	7 - 7				7	37.9	
8672700	7				8	36	
8672710	7.1						
8672720	7.2						
8672730	7.3						
8672740	7.4	38					1.4
8672750	7.5						
8672760	7.6						

Work Material / Abbreviation	Low Carbon Steel	Medium Carbon Steel	High Carbon Steel	Alloy Steel	Hardened Steel		Quenched and Tempered Steel			Stainless Steel	Tool Steel	Cast Iron	Ductile Cast Iron	Copper Alloy	Aluminum	Aluminum Alloy Casting	Titanium Alloy	Inconel®	CFRP Composite Material	Magnesium Alloy	(MMC) Metal Matrix Composites
	C ~ 0.25%	C0.25 ~ 0.45%	C0.45% ~	SCM	~ 35 HRC	35 ~ 45 HRC	45 ~ 50 HRC	50 ~ 62 HRC	62 ~ 70 HRC	SUS	SKD SKS	FC	FCD	Cu	AL	AC				AZ91D	
AD-4D	◎	◎	◎	○	○							◎	◎								



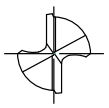


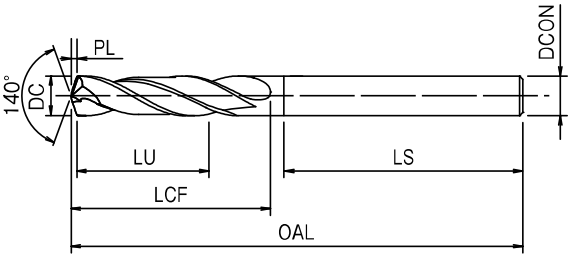
SPEED FEED P.153 | CARBIDE | EgiAs | h8 | 30° | SHRINK FIT

EDP No.	DC - DCON	LU	LCF	OAL	DCON	LS	PL
8672770	7.7	38	53	91	8	36	1.4
8672780	7.8						
8672790	7.9	37					
8672800	8						1.5
8677810	8.1 - 9	45	61	103	9	41.9	
8672810	8.1				10	40	
8677820	8.2 - 9				9	41.9	
8672820	8.2				10	40	
8677830	8.3 - 9				9	41.9	
8672830	8.3				10	40	
8677840	8.4 - 9	44			9	41.9	
8672840	8.4				10	40	
8677850	8.5 - 9				9	41.9	
8672850	8.5				10	40	
8677860	8.6 - 9				9	41.9	1.6
8672860	8.6				10	40	
8677870	8.7 - 9				9	41.9	
8672870	8.7				10	40	
8677880	8.8 - 9				9	41.9	
8672880	8.8				10	40	
8677890	8.9 - 9	43			9	41.9	
8672890	8.9				10	40	
8677900	9 - 9				9	41.9	
8672900	9				10	40	
8672910	9.1						1.7
8672920	9.2						
8672930	9.3						
8672940	9.4	42					
8672950	9.5						
8672960	9.6						
8672970	9.7						1.8
8672980	9.8						
8677990	9.9	41					
8673000	10						
8678010	10.1 - 11	51	71	118	11	46.9	
8673010	10.1				12	45	
8678020	10.2 - 11				11	46.9	1.9
8673020	10.2				12	45	
8678030	10.3 - 11				11	46.9	
8673030	10.3				12	45	
8678040	10.4 - 11	50			11	46.9	
8673040	10.4				12	45	

EDP No.	DC - DCON	LU	LCF	OAL	DCON	LS	PL
8678050	10.5 - 11	50	71	118	11	46.9	1.9
8673050	10.5				12	45	
8678060	10.6 - 11				11	46.9	
8673060	10.6				12	45	
8678070	10.7 - 11				11	46.9	
8673070	10.7				12	45	
8678080	10.8 - 11				11	46.9	2
8673080	10.8				12	45	
8678090	10.9 - 11	49			11	46.9	
8673090	10.9				12	45	
8678100	11 - 11				11	46.9	
8673100	11				12	45	
8673110	11.1						
8673120	11.2						
8673130	11.3						2.1
8673140	11.4	48					
8673150	11.5						
8673160	11.6						
8673170	11.7						
8673180	11.8						
8673190	11.9	47					2.2
8673200	12						
8678210	12.1 - 13	53	77	124	13	45	
8673210	12.1				14		
8678220	12.2 - 13				13		
8673220	12.2				14		
8678230	12.3 - 13				13		
8673230	12.3				14		
8678240	12.4 - 13	52			13		
8673240	12.4				14		
8678250	12.5 - 13				13		
8673250	12.5				14		
8678260	12.6 - 13				13		
8673260	12.6				14		2.3
8678270	12.7 - 13				13		
8673270	12.7				14		
8678280	12.8 - 13				13		
8673280	12.8				14		
8678290	12.9 - 13	51			13		
8673290	12.9				14		
8678300	13 - 13				13		2.4
8673300	13				14		

Work Material / Abbreviation	Low Carbon Steel	Medium Carbon Steel	High Carbon Steel	Alloy Steel	Hardened Steel		Quenched and Tempered Steel			Stainless Steel	Tool Steel	Cast Iron	Ductile Cast Iron	Copper Alloy	Aluminum	Aluminum Alloy Casting	Titanium Alloy	Inconel®	CFRP Composite Material	Magnesium Alloy	(MMC) Metal Matrix Composites
	C ~ 0.25%	C0.25 ~ 0.45%	C0.45% ~	SCM	~ 35 HRC	35 ~ 45 HRC	45 ~ 50 HRC	50 ~ 62 HRC	62 ~ 70 HRC	SUS	SKD SKS	FC	FCD	Cu	AL	AC				AZ91D	
AD-4D	◎	◎	◎	○	○							◎	◎								





SPEED FEED P.153 | CARBIDE | EgiAs | h8 | 30° | SHRINK FIT

EDP No.	DC - DCON	LU	LCF	OAL	DCON	LS	PL
8673310	13.1	51	77	124	14	45	2.4
8673320	13.2						
8673330	13.3						
8673340	13.4	50					2.5
8673350	13.5						
8673360	13.6						
8673370	13.7						
8673380	13.8						
8673390	13.9	49					
8673400	14						
8678410	14.1 - 15	55	83	133	15	48	2.6
8673410	14.1				16		
8678420	14.2 - 15				15		
8673420	14.2				16		
8678430	14.3 - 15				15		
8673430	14.3				16		
8678440	14.4 - 15	54			15		
8673440	14.4				16		
8678450	14.5 - 15				15		
8673450	14.5				16		
8678460	14.6 - 15				15		2.7
8673460	14.6				16		
8678470	14.7 - 15				15		
8673470	14.7				16		
8678480	14.8 - 15				15		
8673480	14.8				16		
8678490	14.9 - 15	53			15		
8673490	14.9				16		
8678500	15 - 15				15		
8673500	15				16		
8673510	15.1						
8673520	15.2						2.8
8673530	15.3						
8673540	15.4	52					
8673550	15.5						
8673560	15.6						
8673570	15.7						2.9
8673580	15.8						
8673590	15.9	51					
8673600	16						
5560595240	16.1	61	93	143	18		
5560595250	16.2						

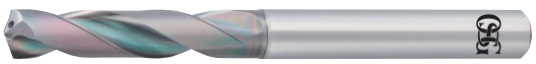
EDP No.	DC - DCON	LU	LCF	OAL	DCON	LS	PL
5560595260	16.3	61	93	143	18	48	3
5560595270	16.4	60					
8678650	16.5 - 17				17		
8673650	16.5				18		
5560595280	16.6						
5560595290	16.7						
5560595300	16.8						3.1
5560595310	16.9						
8678700	17 - 17	59			17		
8673700	17				18		
5560595320	17.1						
5560595330	17.2						
5560595340	17.3						
5560595350	17.4						3.2
8673750	17.5	58					
5560595360	17.6						
5560595370	17.7						
5560595380	17.8						
5560595390	17.9						3.3
8673800	18	57					
5560595400	18.1	65	101	153	20	50	
5560595410	18.2						
5560595420	18.3						
5560595430	18.4						
8678850	18.5 - 19	64			19		3.4
8673850	18.5				20		
5560595440	18.6						
5560595450	18.7						
5560595460	18.8						
5560595470	18.9						
8678900	19 - 19	63			19		3.5
8673900	19				20		
5560595480	19.1						
5560595490	19.2						
5560595500	19.3						
5560595510	19.4						
8673950	19.5	62					
5560595520	19.6						3.6
5560595530	19.7						
5560595540	19.8						
5560595550	19.9						
8674000	20	61					

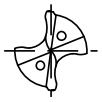
Work Material / Abbreviation	Low Carbon Steel	Medium Carbon Steel	High Carbon Steel	Alloy Steel	Hardened Steel		Quenched and Tempered Steel			Stainless Steel	Tool Steel	Cast Iron	Ductile Cast Iron	Copper Alloy	Aluminum	Aluminum Alloy Casting	Titanium Alloy	Inconel®	CFRP Composite Material	Magnesium Alloy	(MMC) Metal Matrix Composites
	C ~ 0.25%	C0.25 ~ 0.45%	C0.45% ~	SCM	~ 35 HRC	35 ~ 45 HRC	45 ~ 50 HRC	50 ~ 62 HRC	62 ~ 70 HRC	SUS	SKD SKS	FC	FCD	Cu	AL	AC				AZ91D	
AD-4D	◎	◎	◎	○	○							◎	◎								

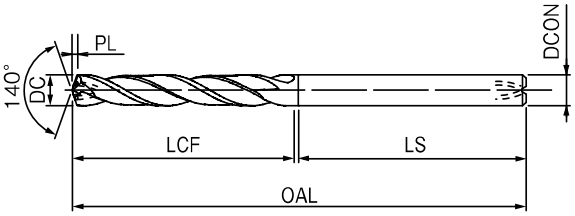
ADO-3D

Carbide Drill With Internal Coolant Supply, 3D Type

The A Brand







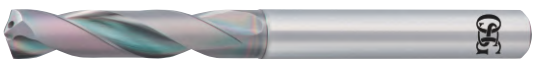
SPEED FEED P.153 | CARBIDE | EgiAs | h8 | 30° | SHRINK FIT

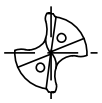
EDP No.	DC - DCON	LCF	OAL	DCON	LS	PL
8690200	2 - 3	12	66	3	51.2	0.4
8690210	2.1 - 3	13			50.3	
8690220	2.2 - 3	14			49.5	
8690230	2.3 - 3				49.7	
8690240	2.4 - 3	15			48.9	
8690250	2.5 - 3				49.1	0.5
8690260	2.6 - 3	16			48.3	
8690265	2.65 - 3					
8690270	2.7 - 3	17			47.4	
8690280	2.8 - 3				47.6	
8690290	2.9 - 3	18			46.8	
8690300	3 - 3				47	
8690310	3.1	19	74	4	52.3	0.6
8690315	3.15				52.4	
8690320	3.2	20			51.5	
8690330	3.3				51.7	
8690340	3.4	21			50.9	
8690350	3.5				51.1	
8690360	3.6	22			50.3	0.7
8690370	3.7	23			49.4	
8690375	3.75				49.5	
8690380	3.8				49.6	
8690390	3.9	24			48.8	
8690400	4				49	
8690410	4.1 - 5	25	80	5	52.3	
8700410	4.1			6	50.5	
8690420	4.2 - 5	26		5	51.5	0.8
8700420	4.2			6	49.6	
8690430	4.3 - 5			5	51.7	
8700430	4.3			6	49.8	
8690440	4.4 - 5	27		5	50.9	
8700440	4.4			6	49	
8690450	4.5 - 5			5	51.1	
8700450	4.5			6	49.2	
8690460	4.6 - 5	28		5	50.3	
8700460	4.6			6	48.4	
8690470	4.7 - 5	29		5	49.4	0.9
8700470	4.7			6	47.6	
8690480	4.8 - 5			5	49.6	
8700480	4.8			6	47.8	
8690490	4.9 - 5	30		5	48.8	
8700490	4.9			6	46.9	
8690500	5 - 5	25		5	54	
8700500	5			6	52.1	

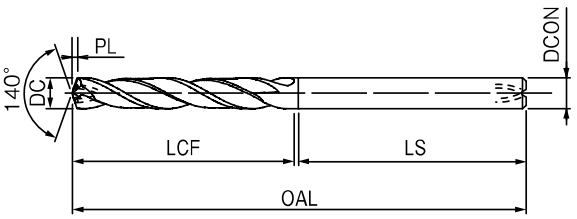
EDP No.	DC - DCON	LCF	OAL	DCON	LS	PL
8690510	5.1	26	82	6	53.3	0.9
8690520	5.2				53.5	
8690525	5.25	27			52.6	1
8690530	5.3				52.7	
8690540	5.4				52.9	
8690550	5.5	28			52.1	
8690560	5.6				52.3	
8690570	5.7	29			51.4	
8690580	5.8				51.6	1.1
8690590	5.9	30			50.8	
8690600	6				51	
8690610	6.1 - 7	31	88	7	56	
8700610	6.1			8	52.5	
8690620	6.2 - 7			7	56	
8700620	6.2			8	52.6	
8690625	6.25 - 7	32		7	55	
8690630	6.3 - 7					
8700630	6.3			8	51.8	
8690640	6.4 - 7			7	55	1.2
8700640	6.4			8	52	
8690650	6.5 - 7	33		7	54	
8700650	6.5			8	51.2	
8690660	6.6 - 7			7	54	
8700660	6.6			8	51.4	
8690670	6.7 - 7	34		7	53	
8700670	6.7			8	50.6	
8690675	6.75 - 7			7	53	
8690680	6.8 - 7					
8700680	6.8			8	50.8	
8690690	6.9 - 7	35		7	52	
8700690	6.9			8	49.9	
8690700	7 - 7			7	52	
8700700	7			8	50.1	
8690710	7.1	36	94		57	1.3
8690720	7.2					
8690725	7.25	37			56	
8690730	7.3					
8690740	7.4					
8690750	7.5	38			55	
8690760	7.6					
8690770	7.7	39			54	1.4
8690775	7.75					
8690780	7.8					
8690790	7.9	40			53	

Work Material / Abbreviation	Low Carbon Steel	Medium Carbon Steel	High Carbon Steel	Alloy Steel	Hardened Steel		Quenched and Tempered Steel			Stainless Steel	Tool Steel	Cast Iron	Ductile Cast Iron	Copper Alloy	Aluminum	Aluminum Alloy Casting	Titanium Alloy	Inconel®	CFRP Composite Material	Magnesium Alloy	(MMC) Metal Matrix Composites
	C ~ 0.25%	C0.25 ~ 0.45%	C0.45% ~	SCM	~ 35 HRC	35 ~ 45 HRC	45 ~ 50 HRC	50 ~ 62 HRC	62 ~ 70 HRC	SUS	SKD SKS	FC	FCD	Cu	AL	AC				AZ91D	
ADO-3D	◎	◎	◎	◎	◎	○	○			○	○	◎	◎	○		○	○	○		○	

shaping your dreams





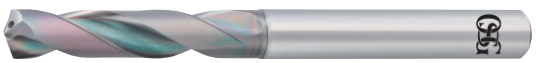


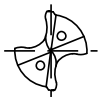
SPEED FEED P.153 | CARBIDE | EgiAs | h8 | 30° | SHRINK FIT

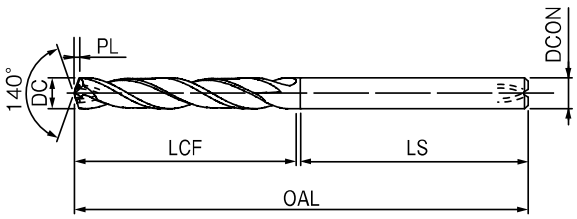
EDP No.	DC - DCON	LCF	OAL	DCON	LS	PL
8690800	8	40	94	8	53	1.5
8690810	8.1 - 9	41	101	9	59	
8700810	8.1			10	55.5	
8690820	8.2 - 9			9	59	
8700820	8.2			10	55.6	
8690825	8.25 - 9	42		9	58	
8690830	8.3 - 9			9		
8700830	8.3			10	54.8	
8690840	8.4 - 9			9	58	
8700840	8.4			10	55	
8690850	8.5 - 9	43		9	57	
8700850	8.5			10	54.2	
8690860	8.6 - 9			9	57	1.6
8700860	8.6			10	54.4	
8690870	8.7 - 9	44		9	56	
8700870	8.7			10	53.6	
8690875	8.75 - 9			9	56	
8690880	8.8 - 9					
8700880	8.8			10	53.8	
8690890	8.9 - 9	45		9	55	
8700890	8.9			10	52.9	
8690900	9 - 9			9	55	
8700900	9			10	53.1	
8690910	9.1	46	106		59	1.7
8690920	9.2					
8690925	9.25	47			58	
8690930	9.3					
8690940	9.4					
8690950	9.5	48			57	
8690960	9.6					
8690970	9.7	49			56	1.8
8690975	9.75					
8690980	9.8					
8690990	9.9	50			55	
8691000	10					
8691010	10.1 - 11	51	113	11	61	
8701010	10.1			12	57.5	
8691020	10.2 - 11			11	61	1.9
8701020	10.2			12	57.6	
8691025	10.25 - 11	52		11	60	
8691030	10.3 - 11					
8701030	10.3			12	56.8	
8691040	10.4 - 11			11	60	
8701040	10.4			12	57	

EDP No.	DC - DCON	LCF	OAL	DCON	LS	PL
8691050	10.5 - 11	53	113	11	59	1.9
8701050	10.5			12	56.2	
8691060	10.6 - 11			11	59	
8701060	10.6			12	56.4	
8691070	10.7 - 11	54		11	58	
8701070	10.7			12	55.6	
8691075	10.75 - 11			11	58	2
8691080	10.8 - 11			11	58	
8701080	10.8			12	55.8	
8691090	10.9 - 11	55		11	57	
8701090	10.9			12	54.9	
8691100	11 - 11			11	57	
8701100	11			12	55.1	
8691110	11.1	56	120		63	
8691120	11.2					
8691130	11.3	57			62	2.1
8691140	11.4					
8691150	11.5	58			61	
8691160	11.6				61	
8691170	11.7	59			60	
8691180	11.8				60	
8691190	11.9	60			59	2.2
8691200	12				59	
8691210	12.1 - 13	61	128	13	66	
8701210	12.1			14	62.5	
8691220	12.2 - 13			13	66	
8701220	12.2			14	62.6	
8691230	12.3 - 13	62		13	65	
8701230	12.3			14	61.8	
8691240	12.4 - 13			13	65	
8701240	12.4			14	62	
8691250	12.5 - 13	63		13	64	
8701250	12.5			14	61.2	
8691260	12.6 - 13			13	64	
8701260	12.6			14	61.4	
8691270	12.7 - 13	64		13	63	2.3
8701270	12.7			14	60.6	
8691275	12.75 - 13			13	63	
8691280	12.8 - 13					
8701280	12.8			14	60.8	
8691290	12.9 - 13	65		13	62	
8701290	12.9			14	59.9	
8691300	13 - 13			13	62	2.4
8701300	13			14	60.1	

Work Material / Abbreviation	Low Carbon Steel	Medium Carbon Steel	High Carbon Steel	Alloy Steel	Hardened Steel		Quenched and Tempered Steel			Stainless Steel	Tool Steel	Cast Iron	Ductile Cast Iron	Copper Alloy	Aluminum	Aluminum Alloy Casting	Titanium Alloy	Inconel®	CFRP Composite Material	Magnesium Alloy	(MMC) Metal Matrix Composites
	C ~ 0.25%	C0.25 ~ 0.45%	C0.45% ~	SCM	~ 35 HRC	35 ~ 45 HRC	45 ~ 50 HRC	50 ~ 62 HRC	62 ~ 70 HRC	SUS	SKD SKS	FC	FCD	Cu	AL	AC				AZ91D	
ADO-3D	◎	◎	◎	◎	◎	○	○			○	○	◎	◎	○		○	○	○		○	







SPEED FEED P.153 | CARBIDE | EgiAs | h8 | 30° | SHRINK FIT

EDP No.	DC - DCON	LCF	OAL	DCON	LS	PL
8691310	13.1	66	134	14	67	2.4
8691320	13.2					
8691330	13.3	67			66	
8691340	13.4					
8691350	13.5	68			65	2.5
8691360	13.6					
8691370	13.7	69			64	
8691380	13.8					
8691390	13.9	70			63	
8690400	14					
8691410	14.1 - 15	71	140	15	68	2.6
8701410	14.1			16	64.5	
8691420	14.2 - 15			15	68	
8701420	14.2			16	64.6	
8691430	14.3 - 15	72		15	67	
8701430	14.3			16	63.8	
8691440	14.4 - 15			15	67	
8701440	14.4			16	64	
8691450	14.5 - 15	73		15	66	
8701450	14.5			16	63.2	
8691460	14.6 - 15			15	66	2.7
8701460	14.6			16	63.4	
8691470	14.7 - 15	74		15	65	
8701470	14.7			16	62.6	
8691480	14.8 - 15			15	65	
8701480	14.8			16	62.8	
8691490	14.9 - 15	75		15	64	
8701490	14.9			16	61.9	
8691500	15 - 15			15	64	
8701500	15				62.1	
8691510	15.1	76	145	16	68	
8691520	15.2					2.8
8691530	15.3	77			67	
8691540	15.4					
8691550	15.5	78			66	
8691560	15.6					
8691570	15.7	79			65	2.9
8691580	15.8					
8691590	15.9	80			64	
8691600	16					
5560595560	16.1	81	150	18	64.5	
5560595570	16.2				64.7	

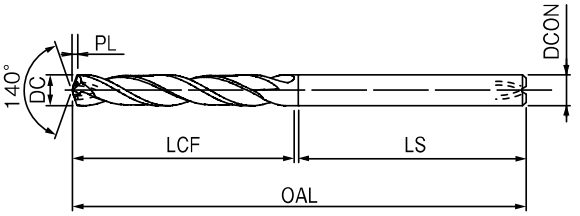
EDP No.	DC - DCON	LCF	OAL	DCON	LS	PL
5560595580	16.3	82	150	18	63.8	3
5560595590	16.4				64	
8691650	16.5 - 17	83		17	66	
8701650	16.5			18	63.2	
5560595600	16.6				63.4	
5560595610	16.7	84			62.6	
5560595620	16.8				62.8	3.1
5560595630	16.9	85			61.9	
8691700	17 - 17			17	64	
8701700	17			18	62.1	
5560595640	17.1	86	155		68	
5560595650	17.2					
5560595660	17.3	87			67	
5560595670	17.4					3.2
8691750	17.5	88			66	
5560595680	17.6					
5560595690	17.7	89			65	
5560595700	17.8					
5560595710	17.9	90			64	3.3
8691800	18					
5560595720	18.1	91	160	20	64.5	
5560595730	18.2				64.6	
5560595740	18.3	92			63.8	
5560595750	18.4				64	
8691850	18.5 - 19	93		19	66	3.4
8701850	18.5			20	63.2	
5560595760	18.6				63.4	
5560595770	18.7	94			62.6	
5560595780	18.8				62.8	
5560595790	18.9				61.9	
8691900	19 - 19	95		19	64	3.5
8701900	19			20	62.1	
5560595800	19.1	96	165		68	
5560595810	19.2					
5560595820	19.3	97			67	
5560595830	19.4					
8691950	19.5	98			66	
5560595840	19.6					3.6
5560595850	19.7	99			65	
5560595860	19.8					
5560595870	19.9	100			64	
8692000	20					

Work Material / Abbreviation	Low Carbon Steel	Medium Carbon Steel	High Carbon Steel	Alloy Steel	Hardened Steel		Quenched and Tempered Steel			Stainless Steel	Tool Steel	Cast Iron	Ductile Cast Iron	Copper Alloy	Aluminum	Aluminum Alloy Casting	Titanium Alloy	Inconel®	CFRP Composite Material	Magnesium Alloy	(MMC) Metal Matrix Composites
	C ~ 0.25%	C0.25 ~ 0.45%	C0.45% ~	SCM	~ 35 HRC	35 ~ 45 HRC	45 ~ 50 HRC	50 ~ 62 HRC	62 ~ 70 HRC	SUS	SKD SKS	FC	FCD	Cu	AL	AC				AZ91D	
ADO-3D	◎	◎	◎	◎	◎	○	○			○	○	◎	◎	○		○	○	○		○	

ADO-5D

Carbide Drill With Internal Coolant Supply, 5D Type

The A Brand



SPEED FEED P.153 | CARBIDE | EgiAs | h8 | 30° | SHRINK FIT

EDP No.	DC - DCON	LCF	OAL	DCON	LS	PL
8692200	2 - 3	18	70	3	49.2	0.4
8692210	2.1 - 3	19			48.3	
8692220	2.2 - 3	20			47.5	
8692230	2.3 - 3	21			46.7	
8692240	2.4 - 3	22			45.9	
8692250	2.5 - 3	23			45.1	0.5
8692260	2.6 - 3	24	78		52.3	
8692265	2.65 - 3					
8692270	2.7 - 3	25			51.4	
8692276	2.76 - 3				51.6	
8692278	2.78 - 3	26			50.6	
8692280	2.8 - 3					
8692290	2.9 - 3	27			49.8	
8692300	3 - 3				50	
8692310	3.1	28	86	4	55.3	0.6
8692315	3.15	29			54.4	
8692320	3.2				54.5	
8692330	3.3	30			53.7	
8692340	3.4	31			52.9	
8692350	3.5	32			52.1	
8692360	3.6	33			51.3	0.7
8692366	3.66				51.4	
8692368	3.68	34			50.4	
8692370	3.7					
8692375	3.75				50.5	
8692380	3.8	35			49.6	
8692390	3.9	36			48.8	
8692400	4				49	
8692410	4.1 - 5	37	95	5	55.3	
8702410	4.1			6	53.5	
8692420	4.2 - 5	38		5	54.5	0.8
8702420	4.2			6	52.6	
8692430	4.3 - 5	39		5	53.7	
8702430	4.3			6	51.8	
8692440	4.4 - 5	40		5	52.9	
8702440	4.4			6	51	
8692450	4.5 - 5	41		5	52.1	
8702450	4.5			6	50.2	
8692460	4.6 - 5	42		5	51.3	
8702460	4.6			6	49.4	
8692462	4.62 - 5			5	51.3	
8692464	4.64 - 5					
8692470	4.7 - 5	43			50.4	0.9
8702470	4.7			6	48.6	
8692480	4.8 - 5	44		5	49.6	
8702480	4.8			6	47.8	
8692490	4.9 - 5	45		5	48.8	
8702490	4.9			6	46.9	

EDP No.	DC - DCON	LCF	OAL	DCON	LS	PL
8692500	5 - 5	45	95	5	49	0.9
8702500	5			6	47.1	
8692510	5.1	41	100		56.3	
8692520	5.2	42			55.5	1
8692525	5.25				55.6	
8692530	5.3	43			54.7	
8692540	5.4	44			53.9	
8692550	5.5				54.1	
8692552	5.52	45			53.1	
8692554	5.54					
8692560	5.6				53.3	
8692570	5.7	46			52.4	
8692580	5.8	47			51.6	1.1
8692590	5.9	48			50.8	
8692600	6				51	
8692610	6.1 - 7	49	109	7	59	
8702610	6.1			8	55.5	
8692620	6.2 - 7	50		7	58	
8702620	6.2			8	54.6	
8692625	6.25 - 7			7	58	
8692630	6.3 - 7	51			57	
8702630	6.3			8	53.8	
8692640	6.4 - 7	52		7	56	
8702640	6.4			8	53	
8692650	6.5 - 7			7	56	
8702650	6.5			8	53.2	
8692660	6.6 - 7	53		7	55	1.2
8702660	6.6			8	52.4	
8692670	6.7 - 7	54		7	54	
8702670	6.7			8	51.6	
8692675	6.75 - 7			7	54	
8692680	6.8 - 7	55			53	
8702680	6.8			8	50.8	
8692690	6.9 - 7	56		7	52	
8702690	6.9			8	49.9	
8692700	7 - 7			7	52	
8702700	7			8	50.1	
8692710	7.1	57	118		60	1.3
8692720	7.2	58			59	
8692725	7.25					
8692730	7.3	59			58	
8692736	7.36					
8692738	7.38	60			57	
8692740	7.4					
8692750	7.5					1.4
8692752	7.52	61			56	
8692754	7.54					
8692760	7.6					

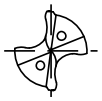
Work Material / Abbreviation	Low Carbon Steel	Medium Carbon Steel	High Carbon Steel	Alloy Steel	Hardened Steel		Quenched and Tempered Steel			Stainless Steel	Tool Steel	Cast Iron	Ductile Cast Iron	Copper Alloy	Aluminum	Aluminum Alloy Casting	Titanium Alloy	Inconel®	CFRP Composite Material	Magnesium Alloy	(MMC) Metal Matrix Composites
	C ~ 0.25%	C0.25 ~ 0.45%	C0.45% ~	SCM	~ 35 HRC	35 ~ 45 HRC	45 ~ 50 HRC	50 ~ 62 HRC	62 ~ 70 HRC	SUS	SKD SKS	FC	FCD	Cu	AL	AC				AZ91D	
ADO-5D	◎	◎	◎	◎	◎	○	○			○	○	◎	◎	○		○	○			○	

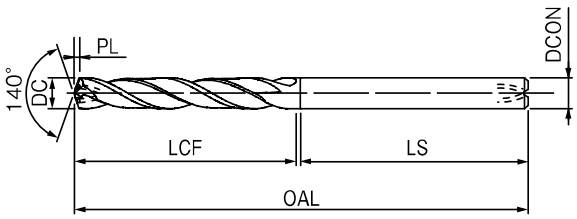
shaping your dreams

ADO-5D

Carbide Drill With Internal Coolant Supply, 5D Type

The A Brand





SPEED FEED P.153 | CARBIDE | EgiAs | h8 | 30° | SHRINK FIT

EDP No.	DC - DCON	LCF	OAL	DCON	LS	PL
8692770	7.7	62	118	8	55	1.4
8692775	7.75					
8692780	7.8	63			54	
8692790	7.9	64			53	
8692800	8		128			1.5
8692810	8.1 - 9	65		9	62	
8702810	8.1			10	58.5	
8692820	8.2 - 9	66		9	61	
8702820	8.2			10	57.6	
8692825	8.25 - 9			9	61	
8692830	8.3 - 9	67			60	
8702830	8.3			10	56.8	
8692840	8.4 - 9	68		9	59	
8702840	8.4			10	56	
8692850	8.5 - 9			9	59	
8702850	8.5			10	56.2	
8692860	8.6 - 9	69		9	58	1.6
8702860	8.6			10	55.4	
8692870	8.7 - 9	70		9	57	
8702870	8.7			10	54.6	
8692875	8.75 - 9			9	57	
8692880	8.8 - 9	71			56	
8702880	8.8			10	53.8	
8692890	8.9 - 9	72		9	55	
8702890	8.9			10	52.9	
8692900	9 - 9			9	55	
8702900	9				53.1	
8692910	9.1	73	136	10	62	1.7
8692920	9.2	74			61	
8692924	9.24					
8692925	9.25					
8692926	9.26	75			60	
8692930	9.3					
8692936	9.36					
8692938	9.38	76			59	
8692940	9.4					
8692950	9.5					
8692952	9.52	77			58	
8692954	9.54					
8692960	9.6					
8692970	9.7	78			57	1.8
8692975	9.75					
8692980	9.8	79			56	
8692990	9.9	80			55	
8693000	10					
8693010	10.1 - 11	81	146	11	64	
8703010	10.1			12	60.5	
8693020	10.2 - 11	82		11	63	1.9

EDP No.	DC - DCON	LCF	OAL	DCON	LS	PL
8703020	10.2	82	146	12	59.6	1.9
8693025	10.25 - 11			11	63	
8693030	10.3 - 11	83			62	
8703030	10.3			12	58.8	
8693040	10.4 - 11	84		11	61	
8703040	10.4			12	58	
8693050	10.5 - 11			11	61	
8703050	10.5			12	58.2	
8693060	10.6 - 11	85		11	60	
8703060	10.6			12	57.4	
8693070	10.7 - 11	86		11	59	
8703070	10.7			12	56.6	
8693075	10.75 - 11			11	59	2
8693080	10.8 - 11	87			58	
8703080	10.8			12	55.8	
8693090	10.9 - 11	88		11	57	
8703090	10.9			12	54.9	
8693100	11 - 11			11	57	
8703100	11			12	55.1	
8693110	11.1	89	156		66	
8693120	11.2	90			65	
8693122	11.22					
8693124	11.24					
8693130	11.3	91			64	2.1
8693136	11.36					
8693138	11.38	92			63	
8693140	11.4					
8693150	11.5					
8693160	11.6	93			62	
8693170	11.7	94			61	
8693180	11.8	95			60	
8693190	11.9	96			59	
8693200	12					
8693210	12.1 - 13	97	167	13	69	2.2
8703210	12.1			14	65.5	
8693220	12.2 - 13	98		13	68	
8703220	12.2			14	64.6	
8693230	12.3 - 13	99		13	67	
8703230	12.3			14	63.8	
8693240	12.4 - 13	100		13	66	2.3
8703240	12.4			14	63	
8693250	12.5 - 13			13	66	
8703250	12.5			14	63.2	
8693260	12.6 - 13	101		13	65	
8703260	12.6			14	62.4	
8693270	12.7 - 13	102		13	64	
8703270	12.7			14	61.6	
8693275	12.75 - 13	103		13	63	

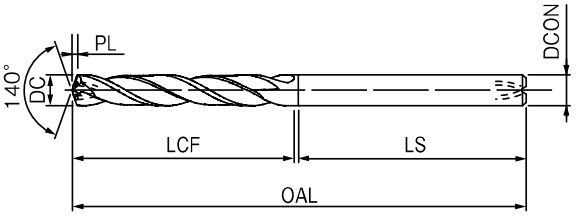
Work Material / Abbreviation	Low Carbon Steel	Medium Carbon Steel	High Carbon Steel	Alloy Steel	Hardened Steel		Quenched and Tempered Steel			Stainless Steel	Tool Steel	Cast Iron	Ductile Cast Iron	Copper Alloy	Aluminum	Aluminum Alloy Casting	Titanium Alloy	Inconel®	CFRP Composite Material	Magnesium Alloy	(MMC) Metal Matrix Composites
	C ~ 0.25%	C0.25 ~ 0.45%	C0.45% ~	SCM	~ 35 HRC	35 ~ 45 HRC	45 ~ 50 HRC	50 ~ 62 HRC	62 ~ 70 HRC	SUS	SKD SKS	FC	FCD	Cu	AL	AC				AZ91D	
ADO-5D	◎	◎	◎	◎	◎	○	○			○	○	◎	◎	○		○	○			○	

shaping your dreams

ADO-5D

Carbide Drill With Internal Coolant Supply, 5D Type

The A Brand



SPEED FEED P.153 | CARBIDE | EgiAs | h8 | 30° | SHRINK FIT

EDP No.	DC - DCON	LCF	OAL	DCON	LS	PL
8693280	12.8 - 13	103	167	13	63	2.3
8703280	12.8			14	60.8	
8693290	12.9 - 13	104		13	62	
8703290	12.9			14	59.9	
8693300	13 - 13			13	62	2.4
8703300	13		176	14	60.1	
8693310	13.1	105			70	
8693320	13.2	106			69	
8693325	13.25					
8693330	13.3	107			68	
8693340	13.4	108			67	
8693350	13.5					2.5
8693360	13.6	109			66	
8693370	13.7	110			65	
8693380	13.8	111			64	
8693390	13.9	112			63	
8693400	14					
8693410	14.1 - 15	113	185	15	71	2.6
8703410	14.1			16	67.5	
8693420	14.2 - 15	114		15	70	
8703420	14.2			16	66.6	
8693430	14.3 - 15	115		15	69	
8703430	14.3			16	65.8	
8693440	14.4 - 15	116		15	68	
8703440	14.4			16	65	
8693450	14.5 - 15			15	68	
8703450	14.5			16	65.2	
8693460	14.6 - 15	117		15	67	2.7
8703460	14.6			16	64.4	
8693470	14.7 - 15	118		15	66	
8703470	14.7			16	63.6	
8693480	14.8 - 15	119		15	65	
8703480	14.8			16	62.8	
8693490	14.9 - 15	120		15	64	
8703490	14.9			16	61.9	
8693500	15 - 15			15	64	
8703500	15			16	62.1	
8693510	15.1	121	193		71	
8693520	15.2	122			70	2.8
8693525	15.25					
8693530	15.3	123			69	
8693540	15.4	124			68	
8693550	15.5					
8693560	15.6	125			67	
8693570	15.7	126			66	2.9
8693580	15.8	127			65	

EDP No.	DC - DCON	LCF	OAL	DCON	LS	PL
8693590	15.9	128			64	2.9
8693600	16					
5560595880	16.1	129	201	18	67.5	
5560595890	16.2	130			66.6	
5560595900	16.3	131			65.8	3
5560595910	16.4				65	
8693650	16.5 - 17	132		17	68	
8703650	16.5			18	65.2	
5560595920	16.6	133			64.4	
5560595930	16.7	134			63.6	
5560595940	16.8	135			62.8	3.1
5560595950	16.9				61.9	
8693700	17 - 17	136		17	64	
8703700	17			18	62.1	
5560595960	17.1	137	209		71	
5560595970	17.2	138			70	
5560595980	17.3	139			69	
5560595990	17.4	140			68	
8693750	17.5					3.2
5560596000	17.6	141			67	
5560596010	17.7	142			66	
5560596020	17.8	143			65	
5560596030	17.9	144			64	
8693800	18					
5560596040	18.1	145	217	20	67.5	3.3
5560596050	18.2	146			66.6	
5560596060	18.3	147			65.8	
5560596070	18.4				65	
8693850	18.5 - 19	148		19	68	
8703850	18.5			20	65.2	
5560596080	18.6	149			64.4	3.4
5560596090	18.7	150			63.6	
5560596100	18.8	151			62.8	
5560596110	18.9				61.9	
8693900	19 - 19	152		19	64	
8703900	19			20	62.1	
5560596120	19.1	153	225		71	3.5
5560596130	19.2	154			70	
5560596140	19.3	155			69	
5560596150	19.4	156			68	
8693950	19.5					
5560596160	19.6	157			67	
5560596170	19.7	158			66	
5560596180	19.8	159			65	3.6
5560596190	19.9	160			64	
8694000	20					

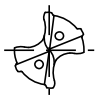
Work Material / Abbreviation	Low Carbon Steel	Medium Carbon Steel	High Carbon Steel	Alloy Steel	Hardened Steel		Quenched and Tempered Steel			Stainless Steel	Tool Steel	Cast Iron	Ductile Cast Iron	Copper Alloy	Aluminum	Aluminum Alloy Casting	Titanium Alloy	Inconel®	CFRP Composite Material	Magnesium Alloy	(MMC) Metal Matrix Composites
	C ~ 0.25%	C0.25 ~ 0.45%	C0.45% ~	SCM	~ 35 HRC	35 ~ 45 HRC	45 ~ 50 HRC	50 ~ 62 HRC	62 ~ 70 HRC	SUS	SKD SKS	FC	FCD	Cu	AL	AC				AZ91D	
ADO-5D	◎	◎	◎	◎	◎	○	○			○	○	◎	◎	○		○	○			○	

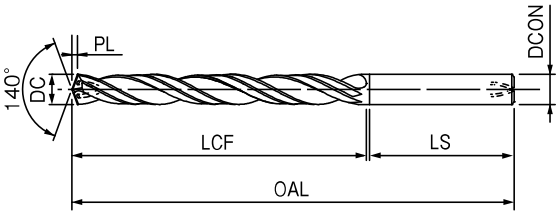
shaping your dreams

ADO-8D

Carbide Drill With Internal Coolant Supply, 8D Type

The A Brand





SPEED FEED P.153 | CARBIDE | EgiAs | h8 | 30° | SHRINK FIT

EDP No.	DC - DCON	LCF	OAL	DCON	LS	PL
8694200	2 - 3	22	75	3	50.1	0.4
8694210	2.1 - 3	24			48.3	
8694220	2.2 - 3	25			47.5	
8694230	2.3 - 3	26			46.7	
8694240	2.4 - 3	27			45.9	
8694250	2.5 - 3	28			45.1	0.5
8694260	2.6 - 3	29	80		49.3	
8694270	2.7 - 3	30			48.4	
8694280	2.8 - 3	31			47.6	
8694290	2.9 - 3	32			46.8	
8694300	3	33			46	
8694310	3.1	34	95	4	58.3	0.6
8694320	3.2	35			57.5	
8694330	3.3	36			56.7	
8694340	3.4	37			55.9	
8694350	3.5	39			55	
8694360	3.6	40			53.3	0.7
8694370	3.7	41			52.4	
8694380	3.8	42			51.6	
8694390	3.9	43			50.8	
8694400	4	44			50	
8694410	4.1 - 5	45	105	5	57.3	
8704410	4.1			6	55.5	
8694420	4.2 - 5	46		5	56.5	0.8
8704420	4.2			6	54.6	
8694430	4.3 - 5	47		5	55.7	
8704430	4.3			6	53.8	
8694440	4.4 - 5	48		5	54.9	
8704440	4.4			6	53	
8694450	4.5 - 5	50		5	54	
8704450	4.5			6	51.2	
8694460	4.6 - 5	51		5	52.3	
8704460	4.6			6	50.4	
8694470	4.7 - 5	52		5	51.4	0.9
8704470	4.7			6	49.6	
8694480	4.8 - 5	53		5	50.6	
8704480	4.8			6	48.8	
8694490	4.9 - 5	54		5	49.8	
8704490	4.9			6	47.9	
8694500	5 - 5	55		5	49	
8704500	5			6	47.1	
8704510	5.1	56	115		56.3	
8704520	5.2	57			55.5	
8704530	5.3	58			54.7	1
8704540	5.4	59			53.9	
8694550	5.5	61			52.1	
8704560	5.6	62			51.3	
8704570	5.7	63			50.4	
8704580	5.8	64			49.6	1.1
8704590	5.9	65			48.8	
8694600	6	66			48	
8694610	6.1 - 7	67	125	7	57	
8704610	6.1			8	53.5	
8694620	6.2 - 7	68		7	56	
8704620	6.2			8	52.6	
8694630	6.3 - 7	69		7	55	
8704630	6.3			8	51.8	
8694640	6.4 - 7	70		7	54	1.2
8704640	6.4			8	51	
8694650	6.5 - 7	72		7	52	
8704650	6.5			8	49.2	
8694660	6.6 - 7	73		7	51	

EDP No.	DC - DCON	LCF	OAL	DCON	LS	PL
8704660	6.6	73	125	8	48.4	1.2
8694670	6.7 - 7	74		7	50	
8704670	6.7			8	47.6	
8694680	6.8 - 7	75		7	49	
8704680	6.8			8	46.8	
8694690	6.9 - 7	76		7	48	1.3
8704690	6.9			8	45.9	
8694700	7 - 7	77		7	47	
8704700	7			8	45.1	
8704710	7.1	78	140		61	
8704720	7.2	79			60	
8704730	7.3	80			59	
8704740	7.4	81			58	
8694750	7.5	83			56	1.4
8704760	7.6	84			55	
8704770	7.7	85			54	
8704780	7.8	86			53	
8704790	7.9	87			52	
8694800	8	88			51	1.5
8694810	8.1 - 9	89	150	9	60	
8704810	8.1			10	56.5	
8694820	8.2 - 9	90		9	59	
8704820	8.2			10	55.6	
8694830	8.3 - 9	91		9	58	
8704830	8.3			10	54.8	
8694840	8.4 - 9	92		9	57	
8704840	8.4			10	54	
8694850	8.5 - 9	94		9	55	
8704850	8.5			10	52.2	
8694860	8.6 - 9	95		9	54	1.6
8704860	8.6			10	51.4	
8694870	8.7 - 9	96		9	53	
8704870	8.7			10	50.6	
8694880	8.8 - 9	97		9	52	
8704880	8.8			10	49.8	
8694890	8.9 - 9	98		9	51	
8704890	8.9			10	48.9	
8694900	9 - 9	99		9	50	
8704900	9				48.1	
8704910	9.1	100	160	10	59	1.7
8704920	9.2	101			58	
8704930	9.3	102			57	
8704940	9.4	103			56	
8704950	9.5	105			54	
8704960	9.6	106			53	
8704970	9.7	107			52	1.8
8704980	9.8	108			51	
8704990	9.9	109			50	
8695000	10	110			49	
8695010	10.1 - 11	111	182	11	70	
8705010	10.1			12	66.5	
8695020	10.2 - 11	112		11	69	
8705020	10.2			12	65.6	
8695030	10.3 - 11	113		11	68	
8705030	10.3			12	64.8	
8695040	10.4 - 11	114		11	67	1.9
8705040	10.4			12	64	
8695050	10.5 - 11	116		11	65	
8705050	10.5			12	62.2	
8695060	10.6 - 11	117		11	64	
8705060	10.6			12	61.4	
8695070	10.7 - 11	118		11	63	

EDP No.	DC - DCON	LCF	OAL	DCON	LS	PL
8705070	10.7	118	194	12	60.6	
8695080	10.8 - 11	119		11	62	2
8705080	10.8			12	59.8	
8695090	10.9 - 11	120		11	61	
8705090	10.9			12	58.9	
8695100	11 - 11	121		11	60	
8705100	11			12	58.1	
8705110	11.1	122			71	
8705120	11.2	123			70	
8705130	11.3	124			69	
8705140	11.4	125			68	
8705150	11.5	127			66	2.1
8705160	11.6	128			65	
8705170	11.7	129			64	
8705180	11.8	130			63	
8705190	11.9	131			62	
8695200	12	132			61	
8705210	12.1	133	206	14	68.5	2.2
8705220	12.2	134			67.6	
8705230	12.3	135			66.8	
8705240	12.4	136			66	
8695250	12.5 - 13	138		13	67	
8705250	12.5			14	64.2	
8705260	12.6	139			63.4	2.3
8705270	12.7	140			62.6	
8705280	12.8	141			61.8	
8705290	12.9	142			60.9	
8695300	13 - 13	143		13	62	
8705300	13			14	60.1	
8705310	13.1	144	218		73	2.4
8705320	13.2	145			72	
8705330	13.3	146			71	
8705340	13.4	147			70	
8705350	13.5	149			68	
8705360	13.6	150			67	
8705370	13.7	151			66	2.5
8705380	13.8	152			65	
8705390	13.9	153			64	
8705400	14	154			63	
8705410	14.1	155	230		70.5	
8705420	14.2	156			69.6	
8705430	14.3	157			68.8	2.6
8705440	14.4	158			68	
8705450	14.5	160			66.2	
8705460	14.6	161			65.4	
8705470	14.7	162			64.6	
8705480	14.8	163			63.8	2.7
8705490	14.9	164			62.9	
8705500	15	165			62.1	
8705510	15.1	166	241	16	74	
8705520	15.2	167			73	
8705530	15.3	168			72	
8705540	15.4	169			71	2.8
8705550	15.5	171			69	
8705560	15.6	172			68	
8705570	15.7	173			67	
8705580	15.8	174			66	2.9
8705590	15.9	175			65	
8705600	16	176			64	

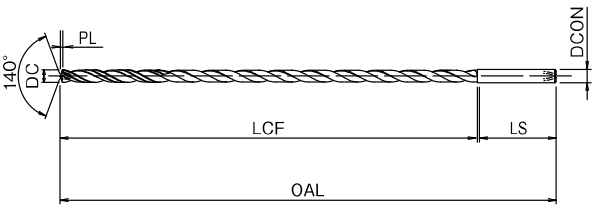
Work Material / Abbreviation	Low Carbon Steel	Medium Carbon Steel	High Carbon Steel	Alloy Steel	Hardened Steel		Quenched and Tempered Steel			Stainless Steel	Tool Steel	Cast Iron	Ductile Cast Iron	Copper Alloy	Aluminum	Aluminum Alloy Casting	Titanium Alloy	Inconel®	CFRP Composite Material	Magnesium Alloy	(MMC) Metal Matrix Composites
	C ~ 0.25%	C0.25 ~ 0.45%	C0.45% ~	SCM	~ 35 HRC	35 ~ 45 HRC	45 ~ 50 HRC	50 ~ 62 HRC	62 ~ 70 HRC	SUS	SKD SKS	FC	FCD	Cu	AL	AC				AZ91D	
ADO-8D	◎	◎	◎	◎	◎	○	○			○	○	◎	◎	○		○	○			○	

shaping your dreams

ADO-10D

Carbide Drill With Internal Coolant Supply, 10D Type

The A Brand



SPEED FEED P.154 | CARBIDE | EgiAs | e8 | 30° | SHRINK FIT

EDP No.	DC - DCON	LCF	OAL	DCON	LS	PL
8696200	2 - 3	26	75	3	40	0.4
8696210	2.1 - 3	33				
8696220	2.2 - 3					
8696230	2.3 - 3					
8696240	2.4 - 3					
8696250	2.5 - 3					0.5
8696260	2.6 - 3	40	90			
8696270	2.7 - 3					
8696280	2.8 - 3					
8696290	2.9 - 3					
8696300	3 - 3				50	
8696310	3.1	45	100	4		0.6
8696320	3.2					
8696330	3.3					
8696340	3.4	50			48	
8696350	3.5					
8696360	3.6					0.7
8696370	3.7					
8696380	3.8					
8696390	3.9					
8696400	4				50	
8696410	4.1 - 5	55	115	5	58	0.8
8710410	4.1			6	48.3	
8696420	4.2 - 5			5	58	
8710420	4.2			6	48.4	
8696430	4.3 - 5	60		5	53	
8710430	4.3			6	48.4	
8696440	4.4 - 5			5	53	
8710440	4.4			6	48.5	
8696450	4.5 - 5			5	53	
8710450	4.5			6	48.6	
8696460	4.6 - 5			5	53	
8710460	4.6			6	48.7	
8696470	4.7 - 5	65		5	48	0.9
8710470	4.7			6	46.8	
8696480	4.8 - 5			5	48	
8710480	4.8			6	46.9	
8696490	4.9 - 5			5	48	
8710490	4.9			6	47	
8696500	5 - 5			5	50	
8710500	5			6	47	
8710510	5.1	70	128		50	
8710520	5.2					
8710530	5.3					1
8710540	5.4	78			48	
8710550	5.5					
8710560	5.6					
8710570	5.7					
8710580	5.8					1.1
8710590	5.9					

EDP No.	DC - DCON	LCF	OAL	DCON	LS	PL
8696600	6	78	128		50	1.1
8696610	6.1 - 7	87	140	7	51	
8710610	6.1			8	48.2	
8696620	6.2 - 7			7	51	
8710620	6.2			8	48.3	
8696630	6.3 - 7			7	51	
8710630	6.3			8	48.4	
8696640	6.4 - 7			7	51	1.2
8710640	6.4			8	48.5	
8696650	6.5 - 7			7	51	
8710650	6.5			8	48.6	
8696660	6.6 - 7			7	51	
8710660	6.6			8	48.7	
8696670	6.7 - 7			7	51	
8710670	6.7			8	48.7	
8696680	6.8 - 7	90		7	48	
8710680	6.8			8	46.8	
8696690	6.9 - 7			7	48	1.3
8710690	6.9			8	46.9	
8696700	7 - 7			7	50	
8710700	7			8	47	
8710710	7.1	100	155		50	
8710720	7.2					
8710730	7.3					
8710740	7.4					
8710750	7.5				53	1.4
8710760	7.6	105			48	
8710770	7.7					
8710780	7.8					
8710790	7.9					
8696800	8				50	1.5
8696810	8.1 - 9	110	165	9	53	
8710810	8.1			10	48.2	
8696820	8.2 - 9			9	53	
8710820	8.2			10	48.3	
8696830	8.3 - 9			9	53	
8710830	8.3			10	48.4	
8696840	8.4 - 9			9	53	
8710840	8.4			10	48.4	
8696850	8.5 - 9			9	53	
8710850	8.5			10	48.5	
8710860	8.6 - 9	115		9	48	1.6
8710860	8.6			10	46.6	
8710870	8.7 - 9			9	48	
8710870	8.7			10	46.7	
8710880	8.8 - 9			9	48	
8710880	8.8			10	46.8	
8710890	8.9 - 9			9	48	
8710890	8.9			10	46.9	
8696900	9 - 9			9	50	

EDP No.	DC - DCON	LCF	OAL	DCON	LS	PL
8710900	9	115	165	10	47	1.6
8710910	9.1	125	190		60	1.7
8710920	9.2					
8710930	9.3					
8710940	9.4					
8696950	9.5				63	
8710960	9.6	130			58	1.8
8710970	9.7					
8710980	9.8					
8710990	9.9					
8697000	10				60	
8697010	10.1 - 11			11	63	1.8
8711010	10.1			12	58.2	
8697020	10.2 - 11			11	63	1.9
8711020	10.2			12	58.3	
8697030	10.3 - 11			11	63	
8711030	10.3			12	58.4	
8697040	10.4 - 11	140		11	63	
8711040	10.4			12	58.4	
8697050	10.5 - 11			11	63	
8711050	10.5		205	12	58.5	
8697060	10.6 - 11			11	63	
8711060	10.6			12	58.6	
8697070	10.7 - 11			11	63	
8711070	10.7			12	58.7	
8697080	10.8 - 11	145		11	58	2
8711080	10.8			12	56.8	
8697090	10.9 - 11			11	58	
8711090	10.9			12	56.9	
8697100	11 - 11			11	58	
8711100	11			12	57	
8711110	11.1	155	215		58	2.1
8711120	11.2					
8711130	11.3					
8711140	11.4					
8711150	11.5					
8711160	11.6					
8711170	11.7					
8711180	11.8					
8711190	11.9					2.2
8697200	12					
8711250	12.5			14	56.3	2.3

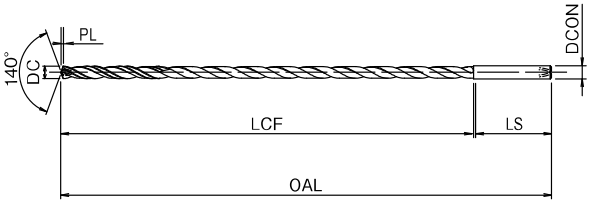
Work Material / Abbreviation	Low Carbon Steel	Medium Carbon Steel	High Carbon Steel	Alloy Steel	Hardened Steel		Quenched and Tempered Steel			Stainless Steel	Tool Steel	Cast Iron	Ductile Cast Iron	Copper Alloy	Aluminum	Aluminum Alloy Casting	Titanium Alloy	Inconel®	CFRP Composite Material	Magnesium Alloy	(MMC) Metal Matrix Composites
	C ~ 0.25%	C0.25 ~ 0.45%	C0.45% ~	SCM	~ 35 HRC	35 ~ 45 HRC	45 ~ 50 HRC	50 ~ 62 HRC	62 ~ 70 HRC	SUS	SKD SKS	FC	FCD	Cu	AL	AC				AZ91D	
ADO-10D	◎	◎	◎	◎	○					○ *		◎	◎								

shaping your dreams

ADO-15D

Carbide Drill With Internal Coolant Supply, 15D Type

The A Brand



SPEED FEED P.154 | CARBIDE | EgiAs | e8 | 30° | SHRINK FIT

EDP No.	DC - DCON	LCF	OAL	DCON	LS	PL
8698300	3 - 3	55	105	3	50	0.5
8698310	3.1	60	125	4	63	0.6
8698320	3.2					
8698330	3.3					
8698340	3.4	65			58	
8698350	3.5					
8698360	3.6					0.7
8698370	3.7					
8698380	3.8	75			48	
8698390	3.9					
8698400	4				50	
8698410	4.1 - 5		140	5	63	
8712410	4.1			6	45	
8698420	4.2 - 5			5	63	0.8
8712420	4.2			6	45	
8698430	4.3 - 5	85		5	53	
8712430	4.3			6	45	
8698440	4.4 - 5			5	53	
8712440	4.4			6	45	
8698450	4.5 - 5			5	53	
8712450	4.5			6	45	
8698460	4.6 - 5			5	53	
8712460	4.6			6	45	
8698470	4.7 - 5			5	53	0.9
8712470	4.7			6	45	
8698480	4.8 - 5	90		5	48	
8712480	4.8			6	45	
8698490	4.9 - 5			5	48	
8712490	4.9			6	45	
8698500	5 - 5			5	50	
8712500	5			6	45	
8712510	5.1	95	160		63	
8712520	5.2					
8712530	5.3					1
8712540	5.4	110			48	
8698550	5.5					
8712560	5.6					
8712570	5.7					
8712580	5.8					1.1
8712590	5.9					
8698600	6				50	
8698610	6.1 - 7	120	175	7	53	
8712610	6.1			8	45	
8698620	6.2 - 7			7	53	

EDP No.	DC - DCON	LCF	OAL	DCON	LS	PL
8712620	6.2	120	175	8	45	1.1
8698630	6.3 - 7			7	53	
8712630	6.3			8	45	
8698640	6.4 - 7			7	53	1.2
8712640	6.4			8	45	
8698650	6.5 - 7			7	53	
8712650	6.5			8	45	
8698660	6.6 - 7			7	53	
8712660	6.6			8	45	
8698670	6.7 - 7			7	53	
8712670	6.7			8	45	
8698680	6.8 - 7	125		7	48	
8712680	6.8			8	45	
8698690	6.9 - 7			7	48	1.3
8712690	6.9			8	45	
8698700	7 - 7			7	48	
8712700	7			8	45	
8712710	7.1	135	195		58	
8712720	7.2					
8712730	7.3					
8712740	7.4					
8698750	7.5					1.4
8712760	7.6	145			48	
8712770	7.7					
8712780	7.8					
8712790	7.9					
8698800	8				50	
8698810	8.1 - 9	155	210	9	53	1.5
8712810	8.1			10	45	
8698820	8.2 - 9			9	53	
8712820	8.2			10	45	
8698830	8.3 - 9			9	53	
8712830	8.3			10	45	
8698840	8.4 - 9			9	53	
8712840	8.4			10	45	
8698850	8.5 - 9			9	53	
8712850	8.5			10	45	
8698860	8.6 - 9	160		9	48	1.6
8712860	8.6			10	45	
8698870	8.7 - 9			9	48	
8712870	8.7			10	45	
8698880	8.8 - 9			9	48	
8712880	8.8			10	45	
8698890	8.9 - 9			9	48	

EDP No.	DC - DCON	LCF	OAL	DCON	LS	PL
8712890	8.9	160	210	10	45	1.6
8698900	9 - 9			9	48	
8712900	9			10	45	
8712910	9.1	170	240		68	1.7
8712920	9.2					
8712930	9.3					
8712940	9.4					
8698950	9.5					
8712960	9.6	180			58	
8712970	9.7					1.8
8712980	9.8					
8712990	9.9					
8699000	10				60	
8699010	10.1 - 11	190	260	11	68	
8713010	10.1			12	45	
8699020	10.2 - 11			11	68	1.9
8713020	10.2			12	45	
8699030	10.3 - 11			11	68	
8713030	10.3			12	45	
8699040	10.4 - 11			11	68	
8713040	10.4			12	45	
8699050	10.5 - 11			11	68	
8713050	10.5			12	45	
8699060	10.6 - 11			11	68	
8713060	10.6			12	45	
8699070	10.7 - 11	200		11	58	
8713070	10.7			12	45	
8699080	10.8 - 11			11	58	2
8713080	10.8			12	45	
8699090	10.9 - 11			11	58	
8713090	10.9			12	45	
8699100	11 - 11			11	58	
8713100	11				45	
8713110	11.1	210	280	12	68	
8713120	11.2					
8713130	11.3					2.1
8713140	11.4					
8713150	11.5					
8713160	11.6					
8713170	11.7					
8713180	11.8					
8713190	11.9	215			63	2.2
8699200	12					
8713250	12.5	225	290	14	61.3	2.3

Work Material / Abbreviation	Low Carbon Steel	Medium Carbon Steel	High Carbon Steel	Alloy Steel	Hardened Steel		Quenched and Tempered Steel			Stainless Steel	Tool Steel	Cast Iron	Ductile Cast Iron	Copper Alloy	Aluminum	Aluminum Alloy Casting	Titanium Alloy	Inconel®	CFRP Composite Material	Magnesium Alloy	(MMC) Metal Matrix Composites
	C ~ 0.25%	C0.25 ~ 0.45%	C0.45% ~	SCM	~ 35 HRC	35 ~ 45 HRC	45 ~ 50 HRC	50 ~ 62 HRC	62 ~ 70 HRC	SUS	SKD SKS	FC	FCD	Cu	AL	AC				AZ91D	
ADO-15D	◎	◎	◎	◎	○					○ *		◎	◎								

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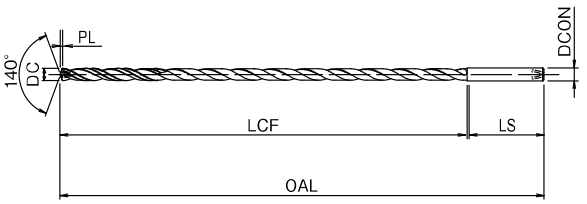
ADO-20D

Carbide Drill With Internal Coolant Supply, 20D Type

The A Brand



SPEED FEED P.154 | CARBIDE | EgiAs | e8 | 30° | SHRINK FIT

EDP No.	DC - DCON	LCF	OAL	DCON	LS	PL
8706300	3 - 3	70	120	3	48	0.5
8706310	3.1	80	140	4	58	0.6
8706320	3.2					
8706330	3.3					
8706340	3.4	85			53	
8706350	3.5					
8706360	3.6					0.7
8706370	3.7					
8706380	3.8	90			48	
8706390	3.9					
8706400	4				50	
8706410	4.1 - 5	100	165	5	63	
8714410	4.1			6	45	
8706420	4.2 - 5			5	63	0.8
8714420	4.2			6	45	
8706430	4.3 - 5	110		5	53	
8714430	4.3			6	45	
8706440	4.4 - 5			5	53	
8714440	4.4			6	45	
8706450	4.5 - 5			5	53	
8714450	4.5			6	45	
8706460	4.6 - 5			5	53	
8714460	4.6			6	45	
8706470	4.7 - 5			5	53	0.9
8714470	4.7			6	45	
8706480	4.8 - 5	115		5	48	
8714480	4.8			6	45	
8706490	4.9 - 5			5	48	
8714490	4.9			6	45	
8706500	5 - 5			5	50	
8714500	5			6	45	
8714510	5.1	120	190		68	
8714520	5.2					
8714530	5.3					1
8714540	5.4	140			48	
8706550	5.5					
8714560	5.6					
8714570	5.7					
8714580	5.8					1.1
8714590	5.9					
8706600	6				50	
8706610	6.1 - 7	155	210	7	53	
8714610	6.1			8	45	
8706620	6.2 - 7			7	53	

EDP No.	DC - DCON	LCF	OAL	DCON	LS	PL
8714620	6.2	155	210	8	45	1.1
8706630	6.3 - 7			7	53	
8714630	6.3			8	45	
8706640	6.4 - 7			7	53	1.2
8714640	6.4			8	45	
8706650	6.5 - 7			7	53	
8714650	6.5			8	45	
8706660	6.6 - 7			7	53	
8714660	6.6			8	45	
8706670	6.7 - 7			7	53	
8714670	6.7			8	45	
8706680	6.8 - 7	160		7	48	
8714680	6.8			8	45	
8706690	6.9 - 7			7	48	1.3
8714690	6.9			8	45	
8706700	7 - 7			7	48	
8714700	7			8	45	
8714710	7.1	170	230		58	
8714720	7.2					
8714730	7.3					
8714740	7.4					
8706750	7.5					1.4
8714760	7.6	180			48	
8714770	7.7					
8714780	7.8					
8714790	7.9					
8706800	8				50	
8706810	8.1 - 9	195	260	9	63	1.5
8714810	8.1			10	45	
8706820	8.2 - 9			9	63	
8714820	8.2			10	45	
8706830	8.3 - 9			9	63	
8714830	8.3			10	45	
8706840	8.4 - 9			9	63	
8714840	8.4			10	45	
8706850	8.5 - 9			9	63	
8714850	8.5			10	45	
8706860	8.6 - 9	210		9	48	1.6
8714860	8.6			10	45	
8706870	8.7 - 9			9	48	
8714870	8.7			10	45	
8706880	8.8 - 9			9	48	
8714880	8.8			10	45	
8706890	8.9 - 9			9	48	

EDP No.	DC - DCON	LCF	OAL	DCON	LS	PL
8714890	8.9	210	260	10	45	1.6
8706900	9 - 9			9	48	
8714900	9			10	45	
8714910	9.1	220	290		68	1.7
8714920	9.2					
8714930	9.3					
8714940	9.4					
8706950	9.5					
8714960	9.6	230			58	1.8
8714970	9.7					
8714980	9.8					
8714990	9.9					
8707000	10					
8707010	10.1 - 11	250	310	11		
8715010	10.1			12	45	
8707020	10.2 - 11			11	58	1.9
8715020	10.2			12	45	
8707030	10.3 - 11			11	58	
8715030	10.3			12	45	
8707040	10.4 - 11			11	58	
8715040	10.4			12	45	
8707050	10.5 - 11			11	58	
8715050	10.5			12	45	
8707060	10.6 - 11			11	58	
8715060	10.6			12	45	
8707070	10.7 - 11			11	58	
8715070	10.7			12	45	
8707080	10.8 - 11			11	58	2
8715080	10.8			12	45	
8707090	10.9 - 11			11	58	
8715090	10.9			12	45	
8707100	11 - 11			11	58	
8715100	11				45	
8715110	11.1	270	330	12	58	
8715120	11.2					
8715130	11.3					2.1
8715140	11.4					
8715150	11.5					
8715160	11.6					
8715170	11.7					
8715180	11.8					
8715190	11.9					2.2
8707200	12					
8715250	12.5	280		14	46.3	2.3

Work Material / Abbreviation	Low Carbon Steel	Medium Carbon Steel	High Carbon Steel	Alloy Steel	Hardened Steel		Quenched and Tempered Steel			Stainless Steel	Tool Steel	Cast Iron	Ductile Cast Iron	Copper Alloy	Aluminum	Aluminum Alloy Casting	Titanium Alloy	Inconel®	CFRP Composite Material	Magnesium Alloy	(MMC) Metal Matrix Composites
	C ~ 0.25%	C0.25 ~ 0.45%	C0.45% ~	SCM	~ 35 HRC	35 ~ 45 HRC	45 ~ 50 HRC	50 ~ 62 HRC	62 ~ 70 HRC	SUS	SKD SKS	FC	FCD	Cu	AL	AC				AZ91D	
ADO-20D	◎	◎	◎	◎	○					○*		◎	◎								

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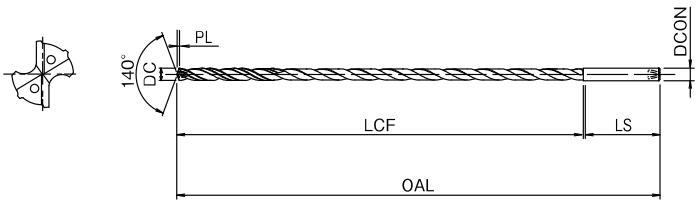
ADO-25D

Carbide Drill With Internal Coolant Supply, 25D Type

The A Brand



SPEED FEED P.154 | CARBIDE | EgiAs | e8 | 30° | SHRINK FIT

EDP No.	DC - DCON	LCF	OAL	DCON	LS	PL
8726300	3 - 3	85	135	3	48	0.5
8724310	3.1	95	165	4	68	0.6
8724320	3.2					
8724330	3.3					
8724340	3.4	105			58	
8724350	3.5					
8724360	3.6					0.7
8724370	3.7					
8724380	3.8	115			48	
8724390	3.9					
8724400	4					
8726410	4.1 - 5	120	190	5	68	
8724410	4.1			6	45	
8726420	4.2 - 5			5	68	0.8
8724420	4.2			6	45	
8726430	4.3 - 5	135		5	53	
8724430	4.3			6	45	
8726440	4.4 - 5			5	53	
8724440	4.4			6	45	
8726450	4.5 - 5			5	53	
8724450	4.5			6	45	
8726460	4.6 - 5			5	53	
8724460	4.6			6	45	
8726470	4.7 - 5			5	53	0.9
8724470	4.7			6	45	
8726480	4.8 - 5	140		5	48	
8724480	4.8			6	45	
8726490	4.9 - 5			5	48	
8724470	4.9			6	45	
8726500	5 - 5			5	48	
8724500	5			6	45	
8724510	5.1	150	220		68	
8724520	5.2					
8724530	5.3					1
8724540	5.4	170			48	
8724550	5.5					
8724560	5.6					
8724570	5.7					
8724580	5.8					
8724590	5.9					1.1
8724600	6					
8726610	6.1 - 7	190	250	7	58	
8724610	6.1			8	45	
8726620	6.2 - 7			7	58	

EDP No.	DC - DCON	LCF	OAL	DCON	LS	PL
8724620	6.2	190	250	8	45	1.1
8726630	6.3 - 7			7	58	
8724630	6.3			8	45	
8726640	6.4 - 7			7	58	1.2
8724640	6.4			8	45	
8726650	6.5 - 7			7	58	
8724650	6.5			8	45	
8726660	6.6 - 7			7	58	
8724660	6.6			8	45	
8726670	6.7 - 7			7	53	
8724670	6.7			8	45	
8726680	6.8 - 7	200		7	48	
8724680	6.8			8	45	
8726690	6.9 - 7			7	48	1.3
8724690	6.9			8	45	
8726700	7 - 7			7	48	
8724700	7			8	45	
8724710	7.1	210	275		63	
8724720	7.2					
8724730	7.3					
8724740	7.4					
8724750	7.5					1.4
8724760	7.6	225			48	
8724770	7.7					
8724780	7.8					
8724790	7.9					
8724800	8					1.5
8726810	8.1 - 9	240	305	9	63	
8724810	8.1			10	45	
8726820	8.2 - 9			9	63	
8724820	8.2			10	45	
8726830	8.3 - 9			9	63	
8724830	8.3			10	45	
8726840	8.4 - 9			9	63	
8724840	8.4			10	45	
8726850	8.5 - 9			9	63	
8724850	8.5			10	45	
8726860	8.6 - 9	255		9	48	1.6
8724860	8.6			10	45	
8726870	8.7 - 9			9	48	
8724870	8.7			10	45	
8726880	8.8 - 9			9	48	
8724880	8.8			10	45	
8726890	8.9 - 9			9	48	

EDP No.	DC - DCON	LCF	OAL	DCON	LS	PL
8724890	8.9	255	305	10	45	1.6
8726900	9 - 9			9	48	
8724900	9			10	45	
8724910	9.1	270	340		68	1.7
8724920	9.2					
8724930	9.3					
8724940	9.4					
8624950	9.5					
8724960	9.6	280			58	
8724970	9.7					1.8
8724980	9.8					
8724990	9.9					
8725000	10					
8727010	10.1 - 11	310	370	11		
2725010	10.1			12	45	
8727020	10.2 - 11			11	58	
8725020	10.2			12	45	
8727030	10.3 - 11			11	58	
8725030	10.3			12	45	
8727040	10.4 - 11			11	58	
8725040	10.4			12	45	1.9
8727050	10.5 - 11			11	58	
8725050	10.5			12	45	
8727060	10.6 - 11			11	58	
8725060	10.6			12	45	
8727070	10.7 - 11			11	58	
8725070	10.7			12	45	
8727080	10.8 - 11			11	58	
8725080	10.8			12	45	
8727090	10.9 - 11			11	58	
8725090	10.9			12	45	2
8727100	11 - 11			11	58	
8725100	11				45	
8725110	11.1	340	400	12	58	
8725120	11.2					
8725130	11.3					
8725140	11.4					2.1
8725150	11.5					
8725160	11.6					
8725170	11.7					
8725180	11.8					
8725190	11.9					2.2
8725200	12					

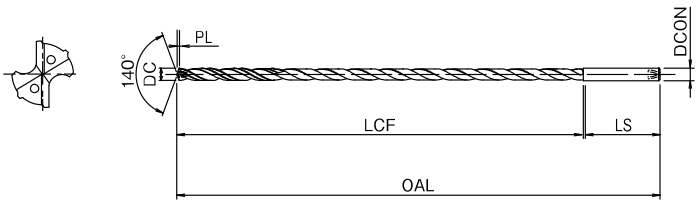
Work Material / Abbreviation	Low Carbon Steel	Medium Carbon Steel	High Carbon Steel	Alloy Steel	Hardened Steel		Quenched and Tempered Steel			Stainless Steel	Tool Steel	Cast Iron	Ductile Cast Iron	Copper Alloy	Aluminum	Aluminum Alloy Casting	Titanium Alloy	Inconel®	CFRP Composite Material	Magnesium Alloy	(MMC) Metal Matrix Composites
	C ~ 0.25%	C0.25 ~ 0.45%	C0.45% ~	SCM	~ 35 HRC	35 ~ 45 HRC	45 ~ 50 HRC	50 ~ 62 HRC	62 ~ 70 HRC	SUS	SKD SKS	FC	FCD	Cu	AL	AC				AZ91D	
ADO-25D	◎	◎	◎	◎	○					○*		◎	◎								

shaping your dreams

ADO-30D

Carbide Drill With Internal Coolant Supply, 30D Type

The A Brand



SPEED FEED P.154 | CARBIDE | EgiAs | e8 | 30° | SHRINK FIT

EDP No.	DC - DCON	LCF	OAL	DCON	LS	PL
8708300	3 - 3	100	150	3	50	0.5
8708310	3.1	102	185	4	63	0.6
8708320	3.2	105				
8708330	3.3	109				
8708340	3.4	112			58	
8708350	3.5	116				
8708360	3.6					0.7
8708370	3.7					
8708380	3.8	132			48	
8708390	3.9					
8708400	4				50	
8708410	4.1 - 5	140	215	5	63	
8716410	4.1			6	45	
8708420	4.2 - 5			5	63	0.8
8716420	4.2			6	45	
8708430	4.3 - 5	150		5	53	
8716430	4.3			6	45	
8708440	4.4 - 5			5	53	
8716440	4.4			6	45	
8708450	4.5 - 5			5	53	
8716450	4.5			6	45	
8708460	4.6 - 5			5	53	
8716460	4.6			6	45	
8708470	4.7 - 5			5	53	0.9
8716470	4.7			6	45	
8708480	4.8 - 5	165		5	48	
8716480	4.8			6	45	
8708490	4.9 - 5			5	48	
8716490	4.9			6	45	
8708500	5 - 5			5	50	
8716500	5			6	45	
8716510	5.1	180	250		63	
8716520	5.2					
8716530	5.3					1
8716540	5.4	200			48	
8708550	5.5					
8716560	5.6					
8716570	5.7					
8716580	5.8					1.1
8716590	5.9					
8708600	6				50	
8708610	6.1 - 7	215	280	7	63	
8716610	6.1			8	45	
8708620	6.2 - 7			7	63	
8716620	6.2			8	45	
8708630	6.3 - 7			7	63	
8716630	6.3			8	45	
8708640	6.4 - 7			7	63	1.2
8716640	6.4			8	45	
8708650	6.5 - 7			7	63	
8716650	6.5			8	45	

EDP No.	DC - DCON	LCF	OAL	DCON	LS	PL
8708660	6.6 - 7	215	280	7	63	1.2
8716660	6.6			8	45	
8708670	6.7 - 7			7	63	
8716670	6.7			8	45	
8708680	6.8 - 7	230		7	48	
8716680	6.8			8	45	
8708690	6.9 - 7			7	48	1.3
8716690	6.9			8	45	
8708700	7 - 7			7	48	
8716700	7			8	45	
8716710	7.1	250	315		63	
8716720	7.2					
8716730	7.3					
8716740	7.4					
8716750	7.5					1.4
8716760	7.6	265			48	
8716770	7.7					
8716780	7.8					
8716790	7.9					
8708800	8				50	1.5
8708810	8.1 - 9	280	350	9	68	
8716810	8.1			10	45	
8708820	8.2 - 9			9	68	
8716820	8.2			10	45	
8708830	8.3 - 9			9	68	
8716830	8.3			10	45	
8708840	8.4 - 9			9	68	
8716840	8.4			10	45	
8708850	8.5 - 9			9	68	
8716850	8.5			10	45	
8708860	8.6 - 9	300		9	48	1.6
8716860	8.6			10	45	
8708870	8.7 - 9			9	48	
8716870	8.7			10	45	
8708880	8.8 - 9			9	48	
8716880	8.8			10	45	
8708890	8.9 - 9			9	48	
8716890	8.9			10	45	
8708900	9 - 9			9	48	
8716900	9			10	45	
8716910	9.1	315	390		73	1.7
8716920	9.2					
8716930	9.3					
8716940	9.4					
8716950	9.5					
8716960	9.6	330			58	1.8
8716970	9.7					
8716980	9.8					
8716990	9.9					
8709000	10					

Work Material / Abbreviation	Low Carbon Steel	Medium Carbon Steel	High Carbon Steel	Alloy Steel	Hardened Steel		Quenched and Tempered Steel			Stainless Steel	Tool Steel	Cast Iron	Ductile Cast Iron	Copper Alloy	Aluminum	Aluminum Alloy Casting	Titanium Alloy	Inconel®	CFRP Composite Material	Magnesium Alloy	(MMC) Metal Matrix Composites
	C ~ 0.25%	C0.25 ~ 0.45%	C0.45% ~	SCM	~ 35 HRC	35 ~ 45 HRC	45 ~ 50 HRC	50 ~ 62 HRC	62 ~ 70 HRC	SUS	SKD SKS	FC	FCD	Cu	AL	AC				AZ91D	
ADO-30D	◎	◎	◎	◎	○					○ *		◎	◎								

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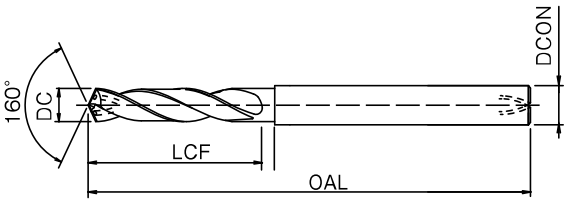
ADO-PLT

Pilot Drill For Extra Long Drill

The A Brand



SPEED FEED P.155 | CARBIDE | EgiAs | h8 | 30° | SHRINK FIT

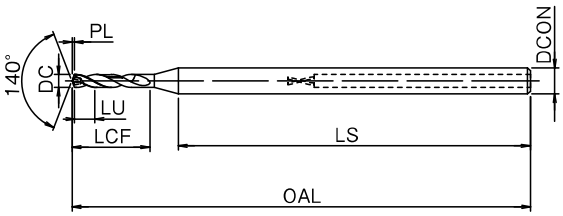
EDP No.	DC - DCON	LCF	OAL	DCON
8688903	3.03 - 3	15	65	3
8688923	3.53	18	70	4
8688904	4.03	20		
8688924	4.53 - 5	23	75	5
8888905	5.03 - 5	25		
8688925	5.53	28	80	6
8688906	6.03	30		
8688926	6.53 - 7	33	85	7

EDP No.	DC - DCON	LCF	OAL	DCON
8688907	7.03 - 7	35	85	7
8688908	8.03	40	90	8
8688928	8.53 - 9	43	95	9
8688909	9.03 - 9	45		
8688910	10.03	50	100	10
8688911	11.03 - 11	55	115	11
8688912	12.03	60	120	12

Work Material / Abbreviation	Low Carbon Steel	Medium Carbon Steel	High Carbon Steel	Alloy Steel	Hardened Steel		Quenched and Tempered Steel			Stainless Steel	Tool Steel	Cast Iron	Ductile Cast Iron	Copper Alloy	Aluminum	Aluminum Alloy Casting	Titanium Alloy	Inconel®	CFRP Composite Material	Magnesium Alloy	(MMC) Metal Matrix Composites
	C ~ 0.25%	C0.25 ~ 0.45%	C0.45% ~	SCM	~ 35 HRC	35 ~ 45 HRC	45 ~ 50 HRC	50 ~ 62 HRC	62 ~ 70 HRC	SUS	SKD SKS	FC	FCD	Cu	AL	AC				AZ91D	
ADO-PLT	○	◎	◎	◎	◎	○	○			○	○	◎	◎			○					

shaping your dreams

ADO-MICRO 2D



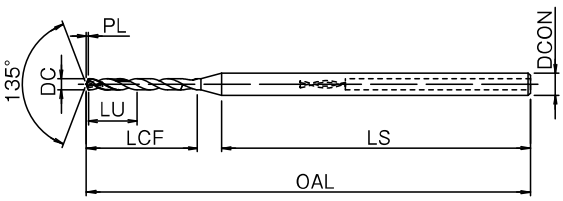
CARBIDE | IchAda | +0.001~+0.010 | 30° | SHRINK FIT | SPEED FEED P.156

Unit:mm

EDP No.	DC	LU	LCF	OAL	DCON	LS	PL
8732001	0.7	1.4	4.2	47	3	38.5	0.1
8732002	0.75	1.5	4.5	47	3	38.3	0.1
8732003	0.8	1.6	4.8	50	3	41.1	0.1
8732004	0.85	1.7	5.1	50	3	40.9	0.2
8732005	0.9	1.8	5.4	50	3	40.7	0.2
8732006	0.95	1.9	5.7	50	3	40.5	0.2
8732007	1	2	6	53	3	42.8	0.2
8732008	1.1	2.2	6.6	53	3	42.4	0.2
8732009	1.2	2.4	7.2	53	3	41.9	0.2

EDP No.	DC	LU	LCF	OAL	DCON	LS	PL
8732010	1.3	2.6	7.8	53	3	41.5	0.2
8732011	1.4	2.8	8.4	53	3	41.1	0.3
8732012	1.5	3	9	53	3	40.7	0.3
8732013	1.6	3.2	9.6	53	3	40.3	0.3
8732014	1.7	3.4	10.2	53	3	39.9	0.3
8732015	1.8	3.6	10.8	53	3	39.5	0.3
8732016	1.9	3.8	11.4	53	3	39	0.3
8732017	2	4	12	58	3	43.6	0.4

ADO-MICRO 5D



CARBIDE | IchAda | 0~-0.009 | 30° | SHRINK FIT

Unit:mm

EDP No.	DC	LU	LCF	OAL	DCON	LS	PL
8732018	0.7	3.5	7	47	3	35.7	0.1
8732019	0.75	3.8	7.5	47	3	35.3	0.2
8732020	0.8	4	8	50	3	37.9	0.2
8732021	0.85	4.3	8.5	50	3	37.5	0.2
8732022	0.9	4.5	9	50	3	37.1	0.2
8732023	0.95	4.8	9.5	50	3	36.7	0.2
8732024	1	5	10	55	3	40.8	0.2
8732025	1.1	5.5	11	55	3	40	0.2
8732026	1.2	6	12	60	3	44.1	0.2

EDP No.	DC	LU	LCF	OAL	DCON	LS	PL
8732027	1.3	6.5	13	60	3	43.3	0.3
8732028	1.4	7	14	60	3	42.5	0.3
8732029	1.5	7.5	15	60	3	41.7	0.3
8732030	1.6	8	16	60	3	40.9	0.3
8732031	1.7	8.5	17	60	3	40.1	0.4
8732032	1.8	9	18	65	3	44.3	0.4
8732033	1.9	9.5	19	65	3	43.4	0.4
8732034	2	10	20	65	3	42.6	0.4

ADO-MICRO 12D

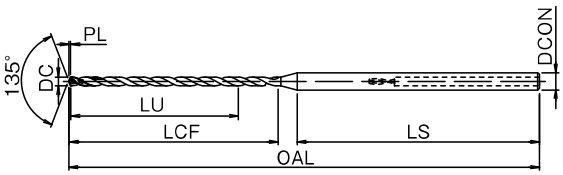
Unit:mm

EDP No.	DC	LU	LCF	OAL	DCON	LS	PL
8732035	1	12	17	60	3	38.8	0.2
8732036	1.1	13.2	18.7	65	3	42.3	0.2
8732037	1.2	14.4	20.4	65	3	40.7	0.2
8732038	1.3	15.6	22.1	65	3	39.2	0.3
8732039	1.4	16.8	23.8	70	3	42.7	0.3
8732040	1.5	18	25.5	70	3	41.2	0.3

EDP No.	DC	LU	LCF	OAL	DCON	LS	PL
8732041	1.6	19.2	27.2	70	3	39.7	0.3
8732042	1.7	20.4	28.9	73	3	41.2	0.4
8732043	1.8	21.6	30.6	73	3	39.7	0.4
8732044	1.9	22.8	32.3	73	3	38.1	0.4
8732045	2	24	34	77	3	40.6	0.4

· ADO-MICRO 2D is the recommended pilot hole drill.

ADO-MICRO 20D



CARBIDE | IchAda | 0~-0.009 | 30° | SHRINK FIT | SPEED FEED P.156

Unit:mm

EDP No.	DC	LU	LCF	OAL	DCON	LS	PL
8732046	1	20	24	68	3	39.8	0.2
8732047	1.1	22	26.4	75	3	44.6	0.2
8732048	1.2	24	28.8	75	3	42.3	0.2
8732049	1.3	26	31.2	75	3	40.1	0.3
8732050	1.4	28	33.6	81	3	43.9	0.3
8732051	1.5	30	36	81	3	41.7	0.3

EDP No.	DC	LU	LCF	OAL	DCON	LS	PL
8732052	1.6	32	38.4	81	3	39.5	0.3
8732053	1.7	34	40.8	88	3	44.3	0.4
8732054	1.8	36	43.2	88	3	42.1	0.4
8732055	1.9	38	45.6	88	3	39.8	0.4
8732056	2	40	48	95	3	44.6	0.4

ADO-MICRO 30D

Unit:mm

EDP No.	DC	LU	LCF	OAL	DCON	LS	PL
8732057	1	30	34	77	3	38.8	0.2
8732058	1.1	33	37.4	86	3	44.6	0.2
8732059	1.2	36	40.8	86	3	41.3	0.2
8732060	1.3	39	44.2	86	3	38.1	0.3
8732061	1.4	42	47.6	95	3	43.9	0.3
8732062	1.5	45	51	95	3	40.7	0.3

EDP No.	DC	LU	LCF	OAL	DCON	LS	PL
8732063	1.6	48	54.4	101	3	43.5	0.3
8732064	1.7	51	57.8	101	3	40.3	0.4
8732065	1.8	54	61.2	107	3	43.1	0.4
8732066	1.9	57	64.6	107	3	39.8	0.4
8732067	2	60	68	112	3	41.6	0.4

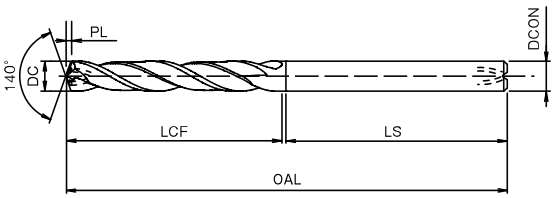
· ADO-MICRO 2D is the recommended pilot hole drill.

Work Material / Abbreviation	Low Carbon Steel	Medium Carbon Steel	High Carbon Steel	Alloy Steel	Hardened Steel		Quenched and Tempered Steel			Stainless Steel	Tool Steel	Cast Iron	Ductile Cast Iron	Copper Alloy	Aluminum	Aluminum Alloy Casting	Titanium Alloy	Inconel®	CFRP Composite Material	Magnesium Alloy	(MMC) Metal Matrix Composites
	C ~ 0.25%	C0.25 ~ 0.45%	C0.45% ~	SCM	~ 35 HRC	35 ~ 45 HRC	45 ~ 50 HRC	50 ~ 62 HRC	62 ~ 70 HRC	SUS	SKD SKS	FC	FCD	Cu	AL	AC				AZ91D	
ADO-MICRO 2D/5D	◎	◎	◎	◎	◎	○				◎	○	◎	◎	○	◎	◎	◎	◎			

ADO-SUS-3D

Carbide Drill With Internal Coolant Supply, 3D Type

The A Brand



SPEED FEED P.157 | CARBIDE | WXL | h8 | 30° | SHRINK FIT

EDP No.	DC - DCON	LCF	OAL	DCON	LS	PL
8665200	2 - 3	12	66	3	51.1	0.4
8665210	2.1 - 3	13			51.3	
8665220	2.2 - 3	14			49.5	
8665230	2.3 - 3				49.7	
8665240	2.4 - 3	15			48.9	
8665250	2.5 - 3				49.1	0.5
8665260	2.6 - 3	16			48.3	
8665270	2.7 - 3	17			47.4	
8665280	2.8 - 3				47.6	
8665283	2.83 - 3				47.7	
8665287	2.87 - 3	18			46.8	
8665290	2.9 - 3					
8665300	3 - 3				47	
8665310	3.1	19	74	4	52.3	0.6
8665315	3.15				52.4	
8665320	3.2	20			51.5	
8665326	3.26(#30)				51.6	
8665330	3.3				51.7	
8665340	3.4	21			50.9	
8665350	3.5				51.1	
8665360	3.6	22			50.3	0.7
8665370	3.7	23			49.4	
8665373	3.73				49.5	
8665375	3.75					
8665380	3.8				49.6	
8665390	3.9	24			48.8	
8665400	4				49	
8665410	4.1 - 5	25	80	5	52.3	
8680410	4.1			6	50.5	
8665420	4.2 - 5	26		5	51.5	0.8
8680420	4.2			6	49.6	
8665430	4.3 - 5			5	51.7	
8680430	4.3			6	49.8	
8665440	4.4 - 5	27		5	50.9	
8680440	4.4			6	49	
8680445	4.45				49.1	
8665450	4.5 - 5			5	51.1	
8680450	4.5			6	49.2	
8665460	4.6 - 5	28		5	50.3	
8680460	4.6			6	48.4	
8680465	4.65				48.5	
8665470	4.7 - 5	29		5	49.4	0.9
8680470	4.7			6	47.6	
8665480	4.8 - 5			5	49.6	
8680480	4.8			6	47.8	
8665485	4.85(#11)				47.9	
8665490	4.9 - 5	30		5	48.8	
8680490	4.9			6	46.9	
8665500	5 - 5	25		5	54	
8680500	5			6	52.1	
8665510	5.1	26	82		53.3	
8665520	5.2				53.5	
8665525	5.25	27			52.6	1
8665530	5.3				52.7	
8665540	5.4				52.9	
8665550	5.5	28			52.1	

EDP No.	DC - DCON	LCF	OAL	DCON	LS	PL
8680555	5.55	28	82	6	52.2	1
8665560	5.6				52.3	
8665570	5.7	29			51.4	
8665580	5.8				51.6	1.1
8665590	5.9	30			50.8	
8665600	6				51	
8665610	6.1 - 7	31		7	56	
8680610	6.1			8	52.5	
8665620	6.2 - 7			7	56	
8680620	6.2			8	52.6	
8665625	6.25 - 7	32		7	55	
8665630	6.3 - 7					
8680630	6.3			8	51.8	
8665635	6.35(1/4) - 6.35			6.35	55	1.2
8665640	6.4 - 7		88	7		
8680640	6.4			8	52	
8665650	6.5 - 7	33		7	54	
8680650	6.5			8	51.2	
8665660	6.6 - 7			7	54	
8680660	6.6			8	51.4	
8665670	6.7 - 7	34		7	53	
8680670	6.7			8	50.6	
8665675	6.75 - 7			7	53	
8665680	6.8 - 7					
8680680	6.8			8	50.8	
8665690	6.9 - 7	35		7	52	1.3
8680690	6.9			8	49.9	
8665700	7 - 7			7	52	
8680700	7			8	50.1	
8665710	7.1	36			57	
8665720	7.2					
8665725	7.25	37			56	
8665730	7.3					
8665740	7.4					
8680745	7.45	38	94		55	
8665750	7.5					
8680755	7.55					
8665760	7.6					1.4
8665770	7.7	39			54	
8665775	7.75					
8665780	7.8					
8665790	7.9	40			53	
8665800	8					
8665810	8.1 - 9	41		9	59	
8680810	8.1			10	55.5	
8665820	8.2 - 9			9	59	
8680820	8.2			10	55.6	
8665825	8.25 - 9	42		9	58	1.5
8665830	8.3 - 9					
8680830	8.3		101	10	54.8	
8665840	8.4 - 9			9	58	
8680840	8.4			10	55	
8665850	8.5 - 9	43		9	57	
8680850	8.5			10	54.2	
8665860	8.6 - 9			9	57	1.6
8680860	8.6			10	54.4	

EDP No.	DC - DCON	LCF	OAL	DCON	LS	PL
8665870	8.7 - 9	44	101	9	56	1.6
8680870	8.7			10	53.6	
8665875	8.75 - 9			9	56	
8665880	8.8 - 9					
8680880	8.8			10	53.8	
8665890	8.9 - 9	45		9	55	
8680890	8.9			10	52.9	
8665900	9 - 9			9	55	
8680900	9		106	10	53.1	
8665910	9.1	46			59	1.7
8665920	9.2					
8665925	9.25	47			58	
8665930	9.3					
8665940	9.4					
8665950	9.5	48			57	
8680955	9.55					
8665960	9.6					
8665970	9.7	49			56	1.8
8665975	9.75					
8665980	9.8					
8665990	9.9	50			55	
8666000	10					
8666010	10.1 - 11	51	113	11	61	
8681010	10.1			12	57.5	
8666020	10.2 - 11			11	61	
8681020	10.2			12	57.6	
8666025	10.25 - 11	52		11	60	
8666030	10.3 - 11					
8681030	10.3			12	56.8	
8666040	10.4 - 11			11	60	
8681040	10.4			12	57	1.9
8666050	10.5 - 11	53		11	59	
8681050	10.5			12	56.2	
8666060	10.6 - 11			11	59	
8681060	10.6			12	56.4	
8666070	10.7 - 11	54		11	58	
8681070	10.7			12	55.6	
8666075	10.75 - 11			11	58	
8666080	10.8 - 11					
8681080	10.8			12	55.8	
8666090	10.9 - 11	55		11	57	
8681090	10.9			12	54.9	2
8666100	11 - 11			11	57	
8681100	11			12	55.1	
8666110	11.1	56	120		63	
8666120	11.2					
8666130	11.3	57			62	
8666140	11.4					
8666150	11.5	58			61	2.1
8666160	11.6					
8666170	11.7	59			60	
8666180	11.8					
8666190	11.9	60			59	
8666200	12					2.2
8666210	12.1 - 13	61	128	13	66	
8681210	12.1			14	62.5	

Work Material / Abbreviation	Low Carbon Steel	Medium Carbon Steel	High Carbon Steel	Alloy Steel	Hardened Steel		Quenched and Tempered Steel			Stainless Steel	Tool Steel	Cast Iron	Ductile Cast Iron	Copper Alloy	Aluminum	Aluminum Alloy Casting	Titanium Alloy	Inconel®	CFRP Composite Material	Magnesium Alloy	(MMC) Metal Matrix Composites
	C ~ 0.25%	C0.25 ~ 0.45%	C0.45% ~	SCM	~ 35 HRC	35 ~ 45 HRC	45 ~ 50 HRC	50 ~ 62 HRC	62 ~ 70 HRC	SUS	SKD SKS	FC	FCD	Cu	AL	AC				AZ91D	
ADO-SUS-3D	○	◎	◎	◎						◎		○	○	◎		○	◎	◎		○	

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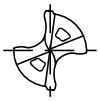
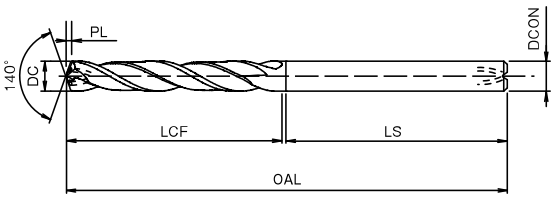
ADO-SUS-3D

Carbide Drill With Internal Coolant Supply, 3D Type

The A Brand





SPEED FEED P.157 | CARBIDE | WXL | h8 | 30° | SHRINK FIT

EDP No.	DC - DCON	LCF	OAL	DCON	LS	PL
8666220	12.2 - 13	61	128	13	66	2.2
8681220	12.2			14	62.6	
8666230	12.3 - 13	62		13	65	
8681230	12.3			14	61.8	
8666240	12.4 - 13			13	65	2.3
8681240	12.4			14	62	
8666250	12.5 - 13	63		13	64	
8681250	12.5			14	61.2	
8666260	12.6 - 13			13	64	
8681260	12.6			14	61.4	
8666270	12.7 - 13	64		13	63	
8681270	12.7			14	60.6	
8666275	12.75 - 13			13	63	
8666280	12.8 - 13					
8681280	12.8			14	60.8	
8666290	12.9 - 13	65		13	62	
8681290	12.9			14	59.9	
8666300	13 - 13			13	62	2.4
8681300	13			14	60.1	
8666310	13.1	66	134		67	
8666320	13.2					
8666330	13.3	67			66	
8666340	13.4					
8666343	13.43	68			65	2.5
8666350	13.5					
8666355	13.55					
8666360	13.6					
8666370	13.7	69			64	
8666380	13.8					
8666390	13.9	70			63	
8666400	14					
8666410	14.1 - 15	71	140	15	68	2.6
8681410	14.1			16	64.5	
8666420	14.2 - 15			15	68	
8681420	14.2			16	64.6	
8666430	14.3 - 15	72		15	67	
8681430	14.3			16	63.8	
8666440	14.4 - 15			15	67	
8681440	14.4			16	64	
8666450	14.5 - 15	73		15	66	
8681450	14.5			16	63.2	
8666460	14.6 - 15			15	66	2.7
8681460	14.6			16	63.4	
8666470	14.7 - 15	74		15	65	
8681470	14.7			16	62.6	
8666480	14.8 - 15			15	65	
8681480	14.8			16	62.8	
8666490	14.9 - 15	75		15	64	
8681490	14.9			16	61.9	
8666500	15 - 15			15	64	
8681500	15			16	62.1	
8666510	15.1	76	145		68	2.8
8666520	15.2					
8666530	15.3	77			67	
8666540	15.4					
8666550	15.5	78			66	

EDP No.	DC - DCON	LCF	OAL	DCON	LS	PL
8681555	15.55	78	145	16	66	2.8
8666560	15.6					
8666570	15.7	79			65	2.9
8666580	15.8					
8666590	15.9	80			64	
8666600	16					
5560842550	16.1	81	150	18	64.5	
5560842560	16.2				64.6	
5560842570	16.3	82			63.8	3
5560842580	16.4				64	
8666650	16.5 - 17	83		17	66	
8681650	16.5			18	63.2	
5560842590	16.6				63.4	
8681670	16.7	84			62.6	
5560842600	16.8				62.8	3.1
5560842610	16.9	85			61.9	
8666700	17 - 17			17	64	
8681700	17			18	62.1	
5560842620	17.1	86	155		68	
5560842630	17.2					
8681730	17.3	87			67	
5560842640	17.4					3.2
8666750	17.5	88			66	
8681755	17.55					
5560842650	17.6					
5560842660	17.7	89			65	
5560842670	17.8					
5560842680	17.9	90			64	
8666800	18					
5560842690	18.1	91	160	20	64.5	3.3
5560842700	18.2				64.6	
5560842710	18.3	92			63.8	
5560842720	18.4				64	
8666850	18.5 - 19	93			66	
8681850	18.5				63.2	3.4
5560842730	18.6				63.4	
8681870	18.7	94			62.6	
5560842740	18.8				62.8	
5560842750	18.9				61.9	
8666900	19 - 19	95		19	64	
8681900	19			20	62.1	
5560842760	19.1	96	165		68	3.5
5560842770	19.2					
8681930	19.3	97			67	
5560842780	19.4					
8666950	19.5	98			66	
8681955	19.55					3.6
5560842790	19.6					
5560842800	19.7	99			65	
5560842810	19.8					
5560842820	19.9	100			64	
8667000	20					

Work Material / Abbreviation	Low Carbon Steel	Medium Carbon Steel	High Carbon Steel	Alloy Steel	Hardened Steel		Quenched and Tempered Steel			Stainless Steel	Tool Steel	Cast Iron	Ductile Cast Iron	Copper Alloy	Aluminum	Aluminum Alloy Casting	Titanium Alloy	Inconel®	CFRP Composite Material	Magnesium Alloy	(MMC) Metal Matrix Composites
	C ~ 0.25%	C0.25 ~ 0.45%	C0.45% ~	SCM	~ 35 HRC	35 ~ 45 HRC	45 ~ 50 HRC	50 ~ 62 HRC	62 ~ 70 HRC	SUS	SKD SKS	FC	FCD	Cu	AL	AC				AZ91D	
ADO-SUS-3D	○	◎	◎	◎						◎		○	○	◎		○	◎	◎		○	

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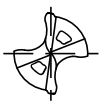
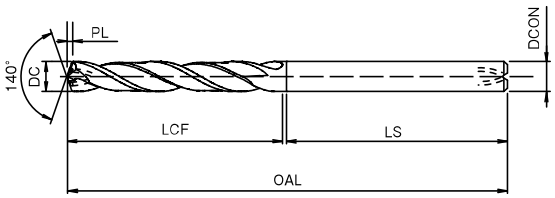
ADO-SUS-5D

Carbide Drill With Internal Coolant Supply, 5D Type

The A Brand





SPEED FEED P.157 | CARBIDE | WXL | h8 | 30° | SHRINK FIT

EDP No.	DC - DCON	LCF	OAL	DCON	LS	PL
8667200	2 - 3	18	70	3	49.1	0.4
8667210	2.1 - 3	19			48.3	
8667220	2.2 - 3	20			47.5	
8667230	2.3 - 3	21			46.7	
8667240	2.4 - 3	22			45.9	
8667250	2.5 - 3	23			45.1	0.5
8667260	2.6 - 3	24	78		52.3	
8667270	2.7 - 3	25			51.4	
8667276	2.76 - 3				51.6	
8667278	2.78 - 3	26			50.6	
8667280	2.8 - 3					
8667283	2.83 - 3				50.7	
8667287	2.87 - 3				50.8	
8667290	2.9 - 3	27			49.8	
8667300	3 - 3				50	
8667310	3.1	28	86	4	55.3	0.6
8667315	3.15	29			54.4	
8667320	3.2				54.5	
8667326	3.26(#30)				54.6	
8667330	3.3	30			53.7	
8667340	3.4	31			52.9	
8667350	3.5	32			52.1	0.7
8667360	3.6	33			51.3	
8667366	3.66				51.4	
8667368	3.68	34			50.4	
8667370	3.7					
8667373	3.73				50.5	
8667375	3.75					
8667380	3.8	35			49.6	
8667390	3.9	36			48.8	
8667400	4				49	
8667410	4.1 - 5	37	95	5	55.3	0.8
8682410	4.1			6	53.5	
8667420	4.2 - 5	38		5	54.5	
8682420	4.2			6	52.6	
8667430	4.3 - 5	39		5	53.7	
8682430	4.3			6	51.8	
8667440	4.4 - 5	40		5	52.9	
8682440	4.4			6	51	
8682445	4.45	41			50.1	
8667450	4.5 - 5			5	52.1	
8682450	4.5			6	50.2	
8667460	4.6 - 5	42		5	51.3	
8682460	4.6			6	49.4	
8667462	4.62 - 5			5	51.3	
8667464	4.64 - 5					
8682464	4.64			6	49.5	
8667470	4.7 - 5	43		5	50.4	0.9
8682470	4.7			6	48.6	
8667480	4.8 - 5	44		5	49.6	
8682480	4.8			6	47.8	
8667485	4.85(#11)				47.9	
8667490	4.9 - 5	45		5	48.8	
8682490	4.9			6	46.9	
8667500	5 - 5			5	49	
8682500	5			6	47.1	
8667510	5.1	41	100		56.3	
8667520	5.2	42			55.5	
8667525	5.25				55.6	1
8667530	5.3	43			54.7	

EDP No.	DC - DCON	LCF	OAL	DCON	LS	PL
8667540	5.4	44	100	6	53.9	1
8667550	5.5				54.1	
8667552	5.52	45			53.1	
8667554	5.54					
8667560	5.6				53.3	
8667570	5.7	46			52.4	
8667580	5.8	47			51.6	1.1
8667590	5.9	48			50.8	
8667600	6				51	
8667610	6.1 - 7	49		7	59	
8682610	6.1			8	55.5	
8667620	6.2 - 7	50		7	58	
8682620	6.2			8	54.6	
8667625	6.25 - 7			7	58	
8667630	6.3 - 7	51			57	
8682630	6.3			8	53.8	
8667635	6.35(1/4) - 6.35	52	109	6.35	56	1.2
8667640	6.4 - 7			7		
8682640	6.4			8	53	
8667650	6.5 - 7			7	56	
8682650	6.5			8	53.2	
8667660	6.6 - 7	53		7	55	
8682660	6.6			8	52.4	
8667670	6.7 - 7	54		7	54	
8682670	6.7			8	51.6	
8667675	6.75 - 7			7	54	
8667680	6.8 - 7	55			53	
8682680	6.8			8	50.8	
8667690	6.9 - 7	56		7	52	1.3
8682690	6.9			8	49.9	
8667700	7 - 7			7	52	
8682700	7			8	50.1	
8667710	7.1	57	118		60	
8667720	7.2	58			59	
8667725	7.25					
8667730	7.3	59			58	
8667736	7.36					
8667738	7.38	60			57	
8667740	7.4					
8682745	7.45					1.4
8667750	7.5					
8667752	7.52	61			56	
8667754	7.54					
8667760	7.6					
8667770	7.7	62			55	
8667775	7.75					
8667780	7.8	63			54	
8667790	7.9	64			53	
8667800	8					1.5
8667810	8.1 - 9	65	128	9	62	
8682810	8.1			10	58.5	
8667820	8.2 - 9	66		9	61	
8682820	8.2			10	57.6	
8667825	8.25 - 9			9	61	
8667830	8.3 - 9	67			60	
8682830	8.3			10	56.8	
8667840	8.4 - 9	68		9	59	
8682840	8.4			10	56	
8667850	8.5 - 9			9	59	
8682850	8.5			10	56.2	

EDP No.	DC - DCON	LCF	OAL	DCON	LS	PL
8667860	8.6 - 9	69	128	9	58	1.6
8682860	8.6			10	55.4	
8667870	8.7 - 9	70		9	57	
8682870	8.7			10	54.6	
8667875	8.75 - 9			9	57	
8667880	8.8 - 9	71			56	
8682880	8.8			10	53.8	
8667890	8.9 - 9	72		9	55	
8682890	8.9			10	52.9	
8667900	9 - 9			9	55	
8682900	9			10	53.1	
8667910	9.1	73	136		62	1.7
8667920	9.2	74			61	
8667924	9.24					
8667925	9.25					
8667926	9.26	75			60	
8667930	9.3					
8667936	9.36					
8667938	9.38	76			59	
8667940	9.4					
8667950	9.5					
8667952	9.52	77			58	
8667954	9.54					
8667960	9.6					
8667970	9.7	78			57	1.8
8667975	9.75					
8667980	9.8	79			56	
8667990	9.9	80			55	
8668000	10					
8668010	10.1 - 11	81	146	11	64	
8683010	10.1			12	60.5	
8668020	10.2 - 11	82		11	63	1.9
8683020	10.2			12	59.6	
8668025	10.25 - 11			11	63	
8668030	10.3 - 11	83			62	
8683030	10.3			12	58.8	
8668040	10.4 - 11	84		11	61	
8683040	10.4			12	58	
8668050	10.5 - 11			11	61	
8683050	10.5			12	58.2	
8668060	10.6 - 11	85		11	60	
8683060	10.6			12	57.4	
8668070	10.7 - 11	86		11	59	
8683070	10.7			12	56.6	
8668075	10.75 - 11			11	59	2
8668080	10.8 - 11	87			58	
8683080	10.8			12	55.8	
8668090	10.9 - 11	88		11	57	
8683090	10.9			12	54.9	
8668100	11 - 11			11	57	
8683100	11			12	55.1	
8668110	11.1	89	156		66	
8668120	11.2	90			65	
8668122	11.22					
8668124	11.24					
8668130	11.3	91			64	2.1
8668136	11.36					
8668138	11.38				63	
8668140	11.4	92				
8668150	11.5					

Work Material / Abbreviation	Low Carbon Steel	Medium Carbon Steel	High Carbon Steel	Alloy Steel	Hardened Steel		Quenched and Tempered Steel			Stainless Steel	Tool Steel	Cast Iron	Ductile Cast Iron	Copper Alloy	Aluminum	Aluminum Alloy Casting	Titanium Alloy	Inconel®	CFRP Composite Material	Magnesium Alloy	(MMC) Metal Matrix Composites
	C ~ 0.25%	C0.25 ~ 0.45%	C0.45% ~	SCM	~ 35 HRC	35 ~ 45 HRC	45 ~ 50 HRC	50 ~ 62 HRC	62 ~ 70 HRC	SUS	SKD SKS	FC	FCD	Cu	AL	AC				AZ91D	
ADO-SUS-5D	○	◎	◎	◎						◎		○	○	◎		○	◎	◎		○	

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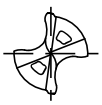
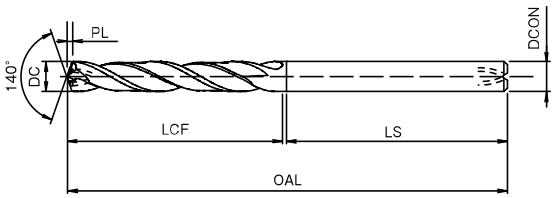
ADO-SUS-5D

Carbide Drill With Internal Coolant Supply, 5D Type

The A Brand





SPEED FEED P.157 | CARBIDE | WXL | h8 | 30° | SHRINK FIT

EDP No.	DC - DCON	LCF	OAL	DCON	LS	PL
8668160	11.6	93	156	12	62	2.1
8668170	11.7	94			61	
8668180	11.8	95			60	
8668190	11.9	96			59	2.2
8668200	12					
8668210	12.1 - 13	97	167	13	69	
8683210	12.1			14	65.5	
8668220	12.2 - 13	98		13	68	
8683220	12.2			14	64.6	
8668230	12.3 - 13	99		13	67	
8683230	12.3			14	63.8	
8668240	12.4 - 13	100		13	66	2.3
8683240	12.4			14	63	
8668250	12.5 - 13			13	66	
8683250	12.5			14	63.2	
8668260	12.6 - 13	101		13	65	
8683260	12.6			14	62.4	
8668270	12.7 - 13	102		13	64	
8683270	12.7			14	61.6	
8668275	12.75 - 13			13	64	
8668280	12.8 - 13	103			63	
8683280	12.8			14	60.8	
8668290	12.9 - 13	104		13	62	
8683290	12.9			14	59.9	
8668300	13 - 13			13	62	2.4
8683300	13			14	60.1	
8668310	13.1	105	176		70	
8668320	13.2	106			69	
8668325	13.25					
8668330	13.3	107			68	
8668340	13.4	108			67	
8668343	13.43					
8668350	13.5					2.5
8668355	13.55	109			66	
8668360	13.6					
8668370	13.7	110			65	
8668380	13.8	111			64	
8668390	13.9	112			63	
8668400	14					
8668410	14.1 - 15	113	185	15	71	2.6
8683410	14.1			16	67.5	
8668420	14.2 - 15	114		15	70	
8683420	14.2			16	66.6	
8668430	14.3 - 15	115		15	69	
8683430	14.3			16	65.8	
8668440	14.4 - 15	116		15	68	
8683440	14.4			16	65	
8668450	14.5 - 15			15	68	
8683450	14.5			16	65.2	
8668460	14.6 - 15	117		15	67	2.7
8683460	14.6			16	64.4	
8668470	14.7 - 15	118		15	66	
8683470	14.7			16	63.6	
8668480	14.8 - 15	119		15	65	
8683480	14.8			16	62.8	
8668490	14.9 - 15	120		15	64	
8683490	14.9			16	61.9	
8668500	15 - 15			15	64	
8683500	15			16	62.1	

EDP No.	DC - DCON	LCF	OAL	DCON	LS	PL
8668510	15.1	121	193	16	71	2.7
8668520	15.2	122			70	2.8
8668525	15.25					
8668530	15.3	123			69	
8668540	15.4	124			68	
8668550	15.5					
8668555	15.55	125			67	
8668560	15.6					2.9
8668570	15.7	126			66	
8668580	15.8	127			65	
8668590	15.9	128			64	
8668600	16					
5560842830	16.1	113	184	18	66.5	
5560842840	16.2	114			65.6	
5560842850	16.3	115			64.8	3
5560842860	16.4				65	
8668650	16.5 - 17	116		17	67	
8683650	16.5			18	64.2	
5560842870	16.6	117			63.4	
8683670	16.7				63.6	
5560842880	16.8	118			62.8	3.1
5560842890	16.9				61.9	
8668700	17 - 17	119		17	64	
8683700	17			18	62.1	
5560842900	17.1	120	191		70	
5560842910	17.2	121			69	
8683730	17.3	122			68	
5560842920	17.4					3.2
8668750	17.5	123			67	
8683755	17.55					
5560842930	17.6	124			66	
5560842940	17.7					
5560842950	17.8	125			65	
5560842960	17.9	126			64	3.3
8668800	18					
5560842970	18.1	127	198	20	66.5	
5560842980	18.2	128			65.6	
5560842990	18.3	129			64.8	
5560843000	18.4				65	
8668850	18.5 - 19	130		19	67	3.4
8683850	18.5			20	64.2	
5560843010	18.6	131			63.4	
8683870	18.7				63.6	
5560843020	18.8	132			62.8	
5560843030	18.9				61.9	
8668900	19 - 19	133		19	64	3.5
8683900	19			20	62.1	
5560843040	19.1	134	205		70	
5560843050	19.2	135			69	
8683930	19.3	136			68	
5560843060	19.4					
8668950	19.5	137			67	
8683955	19.55					3.6
5560843070	19.6	138			66	
5560843080	19.7					
5560843090	19.8	139			65	
5560843100	19.9	140			64	
8669000	20					

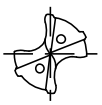
Work Material / Abbreviation	Low Carbon Steel	Medium Carbon Steel	High Carbon Steel	Alloy Steel	Hardened Steel		Quenched and Tempered Steel			Stainless Steel	Tool Steel	Cast Iron	Ductile Cast Iron	Copper Alloy	Aluminum	Aluminum Alloy Casting	Titanium Alloy	Inconel®	CFRP Composite Material	Magnesium Alloy	(MMC) Metal Matrix Composites
	C ~ 0.25%	C0.25 ~ 0.45%	C0.45% ~	SCM	~ 35 HRC	35 ~ 45 HRC	45 ~ 50 HRC	50 ~ 62 HRC	62 ~ 70 HRC	SUS	SKD SKS	FC	FCD	Cu	AL	AC				AZ91D	
ADO-SUS-5D	○	◎	◎	◎						◎		○	○	◎		○	◎	◎		○	

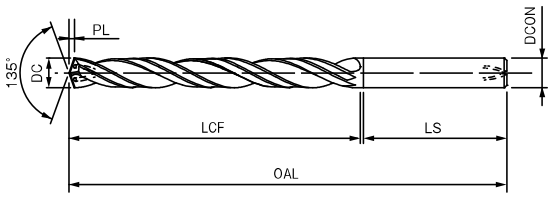
shaping your dreams

ADO-SUS-8D

Carbide Drill With Internal Coolant Supply, 8D Type

The A Brand





SPEED FEED P.157 | CARBIDE | WXL | h8 | 30° | SHRINK FIT

EDP No.	DC - DCON	LCF	OAL	DCON	LS	PL
8686200	2 - 3	22	75	3	50.1	0.4
8686210	2.1 - 3	24			48.3	
8686220	2.2 - 3	25			47.5	0.5
8686230	2.3 - 3	26			46.7	
8686240	2.4 - 3	27			45.9	
8686250	2.5 - 3	28			45.1	
8686260	2.6 - 3	29	80		49.3	
8686270	2.7 - 3	30			48.4	0.6
8686280	2.8 - 3	31			47.6	
8686290	2.9 - 3	32			46.8	
8686300	3 - 3	33			46	
8684310	3.1	34	95	4	58.3	
8684320	3.2	35			57.5	0.7
8684330	3.3	36			56.7	
8684340	3.4	37			55.9	
8684350	3.5	39			54.1	
8684360	3.6	40			53.3	
8684370	3.7	41			52.4	0.8
8684380	3.8	42			51.6	
8684390	3.9	43			50.8	
8684400	4	44			50	
8686410	4.1 - 5	45	105	5	57.3	
8684410	4.1			6	55.5	
8686420	4.2 - 5	46		5	56.5	0.9
8684420	4.2			6	54.6	
8686430	4.3 - 5	47		5	55.7	
8684430	4.3			6	53.8	
8686440	4.4 - 5	48		5	54.9	
8684440	4.4			6	53	
8686450	4.5 - 5	50		5	53.1	
8684450	4.5			6	51.2	
8686460	4.6 - 5	51		5	52.3	1
8684460	4.6			6	50.4	
8686470	4.7 - 5	52		5	51.4	
8684470	4.7			6	49.6	
8686480	4.8 - 5	53		5	50.6	
8684480	4.8			6	48.8	
8686490	4.9 - 5	54		5	49.8	
8684490	4.9			6	47.9	
8686500	5 - 5	55		5	49	
8684500	5			6	47.1	
8684510	5.1	56	115		56.3	
8684520	5.2	57			55.5	1.1
8684530	5.3	58			54.7	
8684540	5.4	59			53.9	
8684550	5.5	61			52.1	
8684560	5.6	62			51.3	1.2
8684570	5.7	63			50.4	
8684580	5.8	64			49.6	
8684590	5.9	65			48.8	

EDP No.	DC - DCON	LCF	OAL	DCON	LS	PL
8684600	6	66	115	6	48	1.2
8686610	6.1 - 7	67	125	7	57	1.3
8684610	6.1			8	53.5	
8686620	6.2 - 7	68		7	56	
8684620	6.2			8	52.6	
8686630	6.3 - 7	69		7	55	
8684630	6.3			8	51.8	
8686640	6.4 - 7	70		7	54	
8684640	6.4			8	51	
8686650	6.5 - 7	72		7	52	
8684650	6.5			8	49.2	
8686660	6.6 - 7	73		7	51	1.4
8684660	6.6			8	48.4	
8686670	6.7 - 7	74		7	50	
8684670	6.7			8	47.6	
8686680	6.8 - 7	75		7	49	
8684680	6.8			8	46.8	
8686690	6.9 - 7	76		7	48	
8684690	6.9			8	45.9	
8686700	7 - 7	77		7	47	
8684700	7			8	45.1	
8684710	7.1	78	140		61	1.5
8684720	7.2	79			60	
8684730	7.3	80			59	
8684740	7.4	81			58	
8684750	7.5	83			56	1.6
8684760	7.6	84			55	
8684770	7.7	85			54	
8684780	7.8	86			53	
8684790	7.9	87			52	
8684800	8	88			51	1.7
8686810	8.1 - 9	89	150	9	60	
8684810	8.1			10	56.5	
8686820	8.2 - 9	90		9	59	
8684820	8.2			10	55.6	
8686830	8.3 - 9	91		9	58	
8684830	8.3			10	54.8	
8686840	8.4 - 9	92		9	57	
8684840	8.4			10	54	
8686850	8.5 - 9	94		9	55	1.8
8684850	8.5			10	52.2	
8686860	8.6 - 9	95		9	54	
8684860	8.6			10	51.4	
8686870	8.7 - 9	96		9	53	
8684870	8.7			10	50.6	
8686880	8.8 - 9	97		9	52	
8684880	8.8			10	49.8	
8686890	8.9 - 9	98		9	51	
8684890	8.9			10	48.9	
8686900	9 - 9	99		9	50	1.9

EDP No.	DC - DCON	LCF	OAL	DCON	LS	PL
8684900	9	99	150	10	48.1	
8684910	9.1	100	160		59	
8684920	9.2	101			58	1.9
8684930	9.3	102			57	
8684940	9.4	103			56	
8684950	9.5	105			54	
8684960	9.6	106			53	2
8684970	9.7	107			52	
8684980	9.8	108			51	
8684990	9.9	109			50	
8685000	10	110			49	
8687010	10.1 - 11	111	182	11	70	
8685010	10.1			12	66.5	2.1
8687020	10.2 - 11	112		11	69	
8685020	10.2			12	65.6	
8687030	10.3 - 11	113		11	68	
8685030	10.3			12	64.8	
8687040	10.4 - 11	114		11	67	
8685040	10.4			12	64	
8687050	10.5 - 11	116		11	65	
8685050	10.5			12	62.2	
8687060	10.6 - 11	117		11	64	2.2
8685060	10.6			12	61.4	
8687070	10.7 - 11	118		11	63	
8685070	10.7			12	60.6	
8687080	10.8 - 11	119		11	62	
8685080	10.8			12	59.8	
8687090	10.9 - 11	120		11	61	
8685090	10.9			12	58.9	
8687100	11 - 11	121		11	60	
8685100	11			12	58.1	2.3
8685110	11.1	122	194		71	
8685120	11.2	123			70	
8685130	11.3	124			69	
8685140	11.4	125			68	
8685150	11.5	127			66	
8685160	11.6	128			65	2.4
8685170	11.7	129			64	
8685180	11.8	130			63	
8685190	11.9	131			62	2.5
8685200	12	132			61	

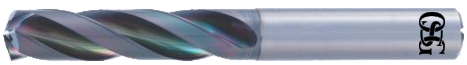
Work Material / Abbreviation	Low Carbon Steel	Medium Carbon Steel	High Carbon Steel	Alloy Steel	Hardened Steel		Quenched and Tempered Steel			Stainless Steel	Tool Steel	Cast Iron	Ductile Cast Iron	Copper Alloy	Aluminum	Aluminum Alloy Casting	Titanium Alloy	Inconel®	CFRP Composite Material	Magnesium Alloy	(MMC) Metal Matrix Composites
	C ~ 0.25%	C0.25 ~ 0.45%	C0.45% ~	SCM	~ 35 HRC	35 ~ 45 HRC	45 ~ 50 HRC	50 ~ 62 HRC	62 ~ 70 HRC	SUS	SKD SKS	FC	FCD	Cu	AL	AC				AZ91D	
ADO-SUS-8D	○	◎	◎	◎						◎		○	○	◎		○	◎	◎		○	

shaping your dreams

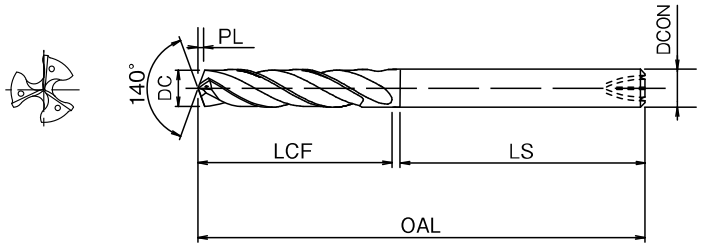
ADO-TRS-3D

Carbide Drill With Internal Coolant Supply, 3D Type

The A Brand



SPEED FEED P.158 | CARBIDE | EgiAs | h8 | 30° | SHRINK FIT



EDP No.	DC	LCF	OAL	DCON	LS	PL
8720300	3	18	66	3	47	0.5
8720330	3.3	20	74	4	51.7	0.6
8720350	3.5	21			51.1	
8720366	3.66	22			50.4	0.7
8720400	4	24			49	
8720420	4.2	26	80	6	49.6	0.8
8720450	4.5	27			49.2	
8720460	4.6	28			48.4	
8720500	5	25			52.1	0.9
8720510	5.1	26	82		53.3	
8720520	5.2				53.5	
8720530	5.3	27			52.7	1
8720540	5.4				52.9	
8720550	5.5	28			52.1	
8720560	5.6				52.3	
8720570	5.7	29			51.4	
8720580	5.8				51.6	1.1
8720590	5.9	30			50.8	
8720600	6				51	
8720610	6.1	31	88		52.5	
8720620	6.2				52.6	
8720630	6.3	32			51.8	
8720640	6.4				52	1.2
8720650	6.5	33			51.2	
8720660	6.6				51.4	
8720670	6.7	34			50.6	
8720680	6.8				50.8	
8720690	6.9	35			49.9	
8720700	7				50.1	
8720710	7.1	36	94	8	57	1.3
8720720	7.2					
8720730	7.3	37			56	
8720738	7.38					
8720740	7.4					
8720750	7.5	38			55	1.4
8720760	7.6					
8720770	7.7	39			54	
8720780	7.8					
8720790	7.9	40			53	
8720800	8					1.5
8720810	8.1	41	101		55.5	
8720820	8.2				55.6	
8720830	8.3	42			54.8	
8720840	8.4				55	
8720850	8.5	43			54.2	
8720860	8.6				54.4	1.6
8720870	8.7	44			53.6	
8720880	8.8			10	53.8	
8720890	8.9	45			52.9	
8720900	9				53.1	
8720910	9.1	46	106		59	1.7
8720920	9.2					
8720925	9.25	47			58	
8720930	9.3					
8720938	9.38					

EDP No.	DC	LCF	OAL	DCON	LS	PL
8720940	9.4	47	106	10	58	1.7
8720950	9.5	48			57	
8720960	9.6					
8720970	9.7	49			56	1.8
8720980	9.8					
8720990	9.9	50			55	
8721000	10					
8721010	10.1	51	113	12	57.5	
8721020	10.2				57.6	1.9
8721030	10.3	52			56.8	
8721040	10.4				57	
8721050	10.5	53			56.2	
8721060	10.6				56.4	
8721070	10.7	54			55.6	
8721080	10.8				55.8	2
8721090	10.9	55			54.9	
8721100	11				55.1	
8721110	11.1	56	120		63	
8721120	11.2					
8721125	11.25	57			62	2.1
8721130	11.3					
8721138	11.38					
8721140	11.4					
8721150	11.5	58			61	
8721160	11.6					
8721170	11.7	59			60	
8721180	11.8					
8721190	11.9	60			59	2.2
8721200	12					
8721250	12.5	63	128	14	61.2	2.3
8721300	13	65			60.1	2.4
8721325	13.25	67	134		66	
8721330	13.3					
8721338	13.38					
8721350	13.5	68			65	2.5
8721400	14	70			63	
8721410	14.1	71	140	16	64.5	2.6
8721420	14.2				64.6	
8721430	14.3	72			63.8	
8721450	14.5	73			63.2	
8721500	15	75			62.1	2.7
8721520	15.2	76	145		68	2.8
8721530	15.3	77			67	
8721550	15.5	78			66	
8721600	16	80			64	2.9
8721650	16.5	83	150	18	63.2	3
8721700	17	85			62.1	3.1
8721725	17.25	87	155		67	
8721750	17.5	88			66	3.2
8721800	18	90			64	3.3
8721850	18.5	93	160	20	63.2	3.4
8721900	19	95			62.1	3.5
8721925	19.25	97	165		67	
8721950	19.5	98			66	
8722000	20	100			64	3.6

Work Material / Abbreviation	Low Carbon Steel	Medium Carbon Steel	High Carbon Steel	Alloy Steel	Hardened Steel		Quenched and Tempered Steel			Stainless Steel	Tool Steel	Cast Iron	Ductile Cast Iron	Copper Alloy	Aluminum	Aluminum Alloy Casting	Titanium Alloy	Inconel®	CFRP Composite Material	Magnesium Alloy	(MMC) Metal Matrix Composites
	C ~ 0.25%	C0.25 ~ 0.45%	C0.45% ~	SCM	~ 35 HRC	35 ~ 45 HRC	45 ~ 50 HRC	50 ~ 62 HRC	62 ~ 70 HRC	SUS	SKD SKS	FC	FCD	Cu	AL	AC				AZ91D	
ADO-TRS-3D	○	◎	◎	◎						◎		○	○	◎		○	◎	◎		○	

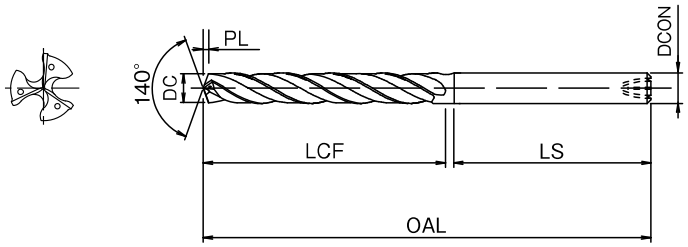
shaping your dreams

ADO-TRS-5D

Carbide Drill With Internal Coolant Supply, 5D Type

The A Brand

SPEED FEED P.158 | CARBIDE | EgiAs | h8 | 30° | SHRINK FIT



EDP No.	DC	LCF	OAL	DCON	LS	PL
8722300	3	27	78	3	50	0.5
8722330	3.3	30	86	4	53.7	0.6
8722350	3.5	32			52.1	
8722366	3.66	33			51.4	0.7
8722400	4	36			49	
8722420	4.2	38	95	6	52.6	0.8
8722450	4.5	41			50.2	
8722460	4.6	42			49.4	
8722500	5	45			47.1	0.9
8722510	5.1	41	100		56.3	
8722520	5.2	42			55.5	
8722530	5.3	43			54.7	1
8722540	5.4	44			53.9	
8722550	5.5				54.1	
8722560	5.6	45			53.3	
8722570	5.7	46			52.4	
8722580	5.8	47			51.6	1.1
8722590	5.9	48			50.8	
8722600	6				51	
8722610	6.1	49	109		55.5	
8722620	6.2	50			54.6	
8722630	6.3	51			53.8	
8722640	6.4	52			53	1.2
8722650	6.5				53.2	
8722660	6.6	53			52.4	
8722670	6.7	54			51.6	
8722680	6.8	55			50.8	
8722690	6.9	56			49.9	1.3
8722700	7				50.1	
8722710	7.1	57	118	8	60	
8722720	7.2	58			59	
8722730	7.3	59			58	
8722738	7.38	60			57	
8722740	7.4					
8722750	7.5					1.4
8722760	7.6	61			56	
8722770	7.7	62			55	
8722780	7.8	63			54	
8722790	7.9	64			53	
8722800	8					1.5
8722810	8.1	65	128	10	58.5	
8722820	8.2	66			57.6	
8722830	8.3	67			56.8	
8722840	8.4	68			56	
8722850	8.5				56.2	
8722860	8.6	69			55.4	1.6
8722870	8.7	70			54.6	
8722880	8.8	71			53.8	
8722890	8.9	72			52.9	
8722900	9				53.1	
8722910	9.1	73	136		62	1.7
8722920	9.2	74			61	
8722925	9.25					
8722930	9.3	75			60	
8722938	9.38	76			59	

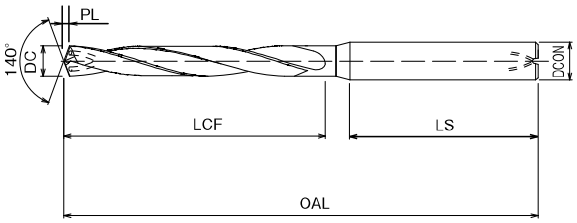
EDP No.	DC	LCF	OAL	DCON	LS	PL
8722940	9.4	76	136	10	59	1.7
8722950	9.5					
8722960	9.6	77			58	
8722970	9.7	78			57	1.8
8722980	9.8	79			56	
8722990	9.9	80			55	
8723000	10					
8723010	10.1	81	146	12	60.5	
8723020	10.2	82			59.6	1.9
8723030	10.3	83			58.8	
8723040	10.4	84			58	
8723050	10.5				58.2	
8723060	10.6	85			57.4	
8723070	10.7	86			56.6	
8723080	10.8	87			55.8	2
8723090	10.9	88			54.9	
8723100	11				55.1	
8723110	11.1	89	156		66	
8723120	11.2	90			65	
8723125	11.25					
8723130	11.3	91			64	2.1
8723138	11.38	92			63	
8723140	11.4					
8723150	11.5					
8723160	11.6	93			62	
8723170	11.7	94			61	
8723180	11.8	95			60	
8723190	11.9	96			59	2.2
8723200	12					
8723250	12.5	100	167	14	63.2	2.3
8723300	13	104			60.1	2.4
8723325	13.25	106	176		69	
8723330	13.3	107			68	
8723338	13.38	108			67	
8723350	13.5					2.5
8723400	14	112			63	
8723410	14.1	113	185	16	67.5	2.6
8723420	14.2	114			66.6	
8723430	14.3	115			65.8	
8723450	14.5	116			65.2	
8723500	15	120			62.1	2.7
8723520	15.2	122	193		70	2.8
8723530	15.3	123			69	
8723550	15.5	124			68	
8723600	16	128			64	2.9
8723650	16.5	132	201	18	65.2	3
8723700	17	136			62.1	3.1
8723725	17.25	138	209		70	
8723750	17.5	140			68	3.2
8723800	18	144			64	3.3
8723850	18.5	148	217	20	65.2	3.4
8723900	19	152			62.1	3.5
8723925	19.25	154	225		70	
8723950	19.5	156			68	
8724000	20	160			64	3.6

Work Material / Abbreviation	Low Carbon Steel	Medium Carbon Steel	High Carbon Steel	Alloy Steel	Hardened Steel		Quenched and Tempered Steel			Stainless Steel	Tool Steel	Cast Iron	Ductile Cast Iron	Copper Alloy	Aluminum	Aluminum Alloy Casting	Titanium Alloy	Inconel®	CFRP Composite Material	Magnesium Alloy	(MMC) Metal Matrix Composites
	C ~ 0.25%	C0.25 ~ 0.45%	C0.45% ~	SCM	~ 35 HRC	35 ~ 45 HRC	45 ~ 50 HRC	50 ~ 62 HRC	62 ~ 70 HRC	SUS	SKD SKS	FC	FCD	Cu	AL	AC				AZ91D	
ADO-TRS-5D	○	◎	◎	◎						◎		○	○	◎		○	◎	◎		○	

shaping your dreams

WHO55-5D

Carbide Drill With Internal Coolant Supply, 5D Type



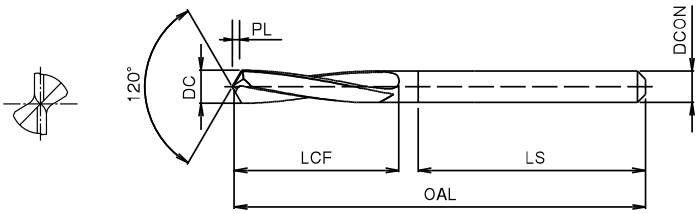
SPEED FEED P.159 | CARBIDE | WXS | h8 | 12°-20° | SHRINK FIT

EDP No.	DC	LCF	OAL	DCON	LS	PL
3316330	**3.3**	32	78	6	39	0.6
3316340	**3.4**				39.1	
3316349	**3.49**				39.3	
3316350	**3.5**					
3316360	**3.6**	34			37.5	0.7
3316370	**3.7**				37.7	
3316380	**3.8**	36			35.9	
3316390	**3.9**				36.1	
3316400	**4**				36.3	
3316410	**4.1**	38	88		44.5	
3316415	**4.15**					0.8
3316420	**4.2**				44.6	
3316430	**4.3**	41			41.8	
3316440	**4.4**				42	
3316450	**4.5**				42.2	
3316460	**4.6**	43			40.4	
3316470	**4.7**				40.6	0.9
3316480	**4.8**	45			38.8	
3316490	**4.9**				38.9	
3316500	**5**				39.1	
3316510	**5.1**	42	92		46.3	
3316520	**5.2**				46.5	
3316530	**5.3**	44			44.7	1
3316540	**5.4**				44.9	
3316550	**5.5**				45.1	
3316556	**5.56**	46			43.2	
3316560	**5.6**				43.3	
3316570	**5.7**				43.4	
3316580	**5.8**	48			42	1.1
3316590	**5.9**					
3316600	**6**					
3316650	**6.5**	52	102	8	45.2	1.2
3316680	**6.8**	56			41.8	
3316700	**7**				42.1	1.3
3316750	**7.5**	60	118		56	1.4
3316780	**7.8**	64			52	
3316800	**8**					1.5
3316850	**8.5**	68	128	10	58	
3316858	**8.58**	70			56	1.6
3316870	**8.7**					
3316880	**8.8**	72			54	
3316900	**9**					
3316950	**9.5**	76	136		58	1.7
3316980	**9.8**	80			54	1.8
3316997	**9.97**					
3317000	**10**					
3317030	**10.3**	84	146	12	60	1.9
3317050	**10.5**					
3317080	**10.8**	88			56	2
3317100	**11**					
3317150	**11.5**	92	156		62	2.1
3317156	**11.56**	94			60	
3317180	**11.8**	96			58	
3317200	**12**					2.2

Work Material / Abbreviation	Low Carbon Steel	Medium Carbon Steel	High Carbon Steel	Alloy Steel	Hardened Steel		Quenched and Tempered Steel			Stainless Steel	Tool Steel	Cast Iron	Ductile Cast Iron	Copper Alloy	Aluminum	Aluminum Alloy Casting	Titanium Alloy	Inconel®	CFRP Composite Material	Magnesium Alloy	(MMC) Metal Matrix Composites
	C ~ 0.25%	C0.25 ~ 0.45%	C0.45% ~	SCM	~ 35 HRC	35 ~ 45 HRC	45 ~ 50 HRC	50 ~ 62 HRC	62 ~ 70 HRC	SUS	SKD SKS	FC	FCD	Cu	AL	AC				AZ91D	
WHO55-5D						◎	◎	○										◎			

WH70-DRL

Carbide Drill



SPEED FEED P.159 | CARBIDE | WXS | h8 | 12° | SHRINK FIT

EDP No.	DC	LCF	OAL	DCON	LS	PL
3318200	2	12	42	3	27.1	0.6
3318210	2.1				27.3	
3318220	2.2	13	43		27.5	
3318230	2.3				27.7	0.7
3318240	2.4	14	44		27.9	
3318250	2.5				28.1	
3318260	2.6				28.3	0.8
3318270	2.7	16	46		28.4	
3318280	2.8				28.6	
3318290	2.9				28.8	
3318300	3				29	0.9
3318310	3.1	18	48	4	27.3	
3318320	3.2				27.5	
3318330	3.3				27.7	1
3318340	3.4	20	50		27.9	
3318350	3.5				28.1	
3318360	3.6				28.3	
3318370	3.7				28.4	1.1
3318380	3.8	22	52		28.6	
3318390	3.9				28.8	
3318400	4				29	1.2
3318410	4.1	25	68	5	39.3	
3318420	4.2				39.5	
3318430	4.3	28			36.7	1.3
3318440	4.4				36.9	
3318450	4.5				37.1	
3318460	4.6				37.3	
3318470	4.7				37.4	1.4
3318480	4.8	32			33.6	
3318490	4.9				33.8	
3318500	5				34	
3318510	5.1		74	6	38.3	1.5
3318520	5.2				38.5	
3318530	5.3				38.7	
3318540	5.4	35			35.9	1.6
3318550	5.5				36.1	
3318560	5.6				36.3	
3318570	5.7				36.4	
3318580	5.8				36.6	1.7
3318590	5.9				36.8	
3318600	6				37	
3318610	6.1	40	83	7	41	1.8
3318620	6.2					
3318630	6.3					
3318640	6.4					
3318650	6.5					1.9
3318660	6.6					
3318670	6.7					
3318680	6.8	45			36	2
3318690	6.9					
3318700	7					

EDP No.	DC	LCF	OAL	DCON	LS	PL
3318710	7.1	45	94	8	47	2
3318720	7.2					2.1
3318730	7.3					
3318740	7.4					
3318750	7.5					2.2
3318760	7.6	50			42	
3318770	7.7					
3318780	7.8					2.3
3318790	7.9					
3318800	8					
3318810	8.1		101	9	49	
3318820	8.2					2.4
3318830	8.3					
3318840	8.4					
3318850	8.5					2.5
3318860	8.6	57			42	
3318870	8.7					
3318880	8.8					
3318890	8.9					2.6
3318900	9					
3318910	9.1		106	10	47	
3318920	9.2					2.7
3318930	9.3					
3318940	9.4					
3318950	9.5					
3318960	9.6	63			41	2.8
3318970	9.7					
3318980	9.8					
3318990	9.9					2.9
3319000	10					
3319010	10.1		113	11	48	
3319020	10.2					3
3319030	10.3					
3319040	10.4					
3319050	10.5					3.1
3319060	10.6					
3319070	10.7	71			40	
3319080	10.8					
3319090	10.9					
3319100	11					3.2
3319110	11.1		120	12	47	
3319120	11.2					3.3
3319130	11.3					
3319140	11.4					
3319150	11.5					
3319160	11.6					3.4
3319170	11.7					
3319180	11.8					
3319190	11.9	76			42	
3319200	12					3.5

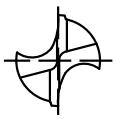
Work Material / Abbreviation	Low Carbon Steel	Medium Carbon Steel	High Carbon Steel	Alloy Steel	Hardened Steel		Quenched and Tempered Steel			Stainless Steel	Tool Steel	Cast Iron	Ductile Cast Iron	Copper Alloy	Aluminum	Aluminum Alloy Casting	Titanium Alloy	Inconel®	CFRP Composite Material	Magnesium Alloy	(MMC) Metal Matrix Composites
	C ~ 0.25%	C0.25 ~ 0.45%	C0.45% ~	SCM	~ 35 HRC	35 ~ 45 HRC	45 ~ 50 HRC	50 ~ 62 HRC	62 ~ 70 HRC	SUS	SKD SKS	FC	FCD	Cu	AL	AC				AZ91D	
WH70-DRL								◎	◎												

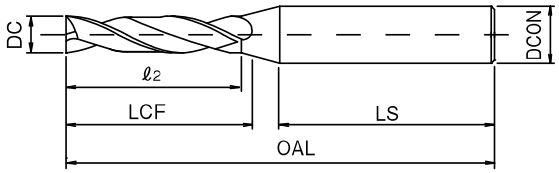
shaping your dreams

ADF-2D

SPEED FEED P.160 | CARBIDE | EgiAs 2≦DC | IchAda DC<2 | h8 | 20° | SHRINK FIT

Type 1





EDP No.	DC	LCF	OAL	DCON	LS	ℓ2	TYPE
3330020	0.2	0.6	40	3	34.1	0.7	1
3330025	0.25	0.8			34	0.9	
3330030	0.3	0.9				1	
3330035	0.35	1.1			33.9	1.2	
3330040	0.4	1.2				1.3	
3330045	0.45	1.4			33.7	1.5	
3330050	0.5	1.7			33.4	1.9	
3330055	0.55	1.9			33.3	2.1	
3330060	0.6	2.0				2.2	
3330065	0.65	2.2			33.2	2.4	
3330070	0.7	2.4			33.1	2.6	
3330071	0.71						
3330072	0.72				33.2		
3330074	0.74	2.5			33.1	2.7	
3330075	0.75	2.6			33	2.8	
3330080	0.8	2.7				2.9	
3330081	0.81	2.8			32.9	3	
3330085	0.85	2.9				3.1	
3330089	0.89	3.0				3.2	
3330090	0.9	3.1			32.8	3.3	
3330091	0.91						
3330092	0.92						
3330095	0.95	3.2				3.4	
3330100	1	4.0	45		37	4.3	
3330109	1.09	4.4			36.7	4.7	
3330110	1.1				36.8		
3330111	1.11						
3330112	1.12	4.5			36.7	4.8	
3330120	1.2	4.8			36.5	5.1	
3330125	1.25	5.0			36.4	5.3	
3330126	1.26				36.5		
3330127	1.27	5.1			36.4	5.4	
3330128	1.28						
3330129	1.29	5.2			36.3	5.5	
3330130	1.3						
3330135	1.35	5.4			36.2	5.7	
3330140	1.4	5.6			36.1	5.9	
3330144	1.44	5.8			36	6.1	
3330145	1.45						
3330146	1.46						
3330147	1.47	5.9			35.9	6.2	
3330148	1.48				36		
3330150	1.5	6.0			35.9	6.3	
3330153	1.53	6.1				6.4	
3330154	1.54	6.2			35.8	6.5	
3330155	1.55						
3330156	1.56						
3330157	1.57	6.3			35.7	6.6	
3330158	1.58				35.8		
3330160	1.6	6.4			35.7	6.7	
3330170	1.7	6.8			35.5	7.1	
3330175	1.75	7.0			35.4	7.3	
3330180	1.8	7.2			35.3	7.5	
3330182	1.82	7.3			35.2	7.6	
3330183	1.83						

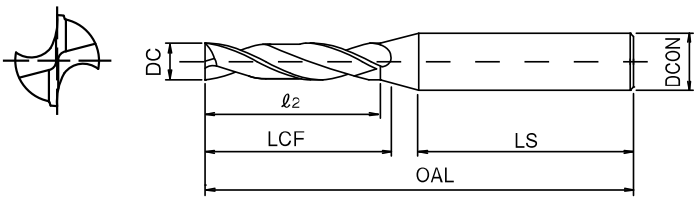
EDP No.	DC	LCF	OAL	DCON	LS	PL	TYPE
3330184	1.84	7.4	45	3	35.1	7.7	1
3330185	1.85				35.2		
3330186	1.86						
3330190	1.9	7.6			35.1	7.9	
3330195	1.95	7.8			34.9	8.1	
3330200	2	10	50	4	36	10.3	
5560586450	2.01						
5560586460	2.02						
5560586470	2.03						
5560586480	2.04						
5560586490	2.05					10.4	
5560586500	2.06						
5560586510	2.07						
5560586520	2.08						
5560586530	2.09						
3330210	2.1					10.5	
5560586540	2.11	11					
5560586550	2.12						
5560586560	2.13						
5560586570	2.14						
5560586580	2.15						
5560586590	2.16					10.6	
5560586600	2.17						
5560586610	2.18						
5560586620	2.19						
3330220	2.2					10.7	
5560586630	2.21						
5560586640	2.22						
5560586650	2.23						
5560586660	2.24						
5560586670	2.25						
5560586680	2.26					10.8	
5560586690	2.27						
5560586700	2.28						
5560586710	2.29						
3330230	2.3						
5560586720	2.31						
3330232	2.32					10.9	
5560586730	2.33						
5560586740	2.34						
5560586750	2.35	12					
5560586760	2.36						
5560586770	2.37					11	
5560586780	2.38						
5560586790	2.39						
3330240	2.4						
5560586800	2.41						
3330242	2.42					11.1	
5560586810	2.43						
5560586820	2.44						
5560586830	2.45						
5560586840	2.46						
5560586850	2.47						
5560586860	2.48					11.2	
5560586870	2.49						

EDP No.	DC	LCF	OAL	DCON	LS	PL	TYPE
3330250	2.5	12	50	4	36	11.2	1
5560586880	2.51						
5560586890	2.52						
5560586900	2.53					11.3	
3330254	2.54						
5560586910	2.55	13					
5560586920	2.56						
5560586930	2.57						
3330258	2.58					11.4	
5560586940	2.59						
3330260	2.6						
5560586950	2.61						
5560586960	2.62						
5560586970	2.63						
5560586980	2.64					11.5	
5560586990	2.65						
5560587000	2.66						
5560587010	2.67						
5560587020	2.68						
5560587030	2.69					11.6	
3330270	2.7						
5560587040	2.71	14					
5560587050	2.72						
5560587060	2.73						
5560587070	2.74						
5560587080	2.75					11.7	
3330276	2.76						
5560587090	2.77						
3330278	2.78						
5560587100	2.79						
3330280	2.8					11.8	
5560587110	2.81						
5560587120	2.82						
5560587130	2.83						
5560587140	2.84						
5560587150	2.85					11.9	
5560587160	2.86						
5560587170	2.87						
5560587180	2.88						
5560587190	2.89						
3330290	2.9						
5560587200	2.91	15	55	6	38	11.2	
5560587210	2.92					11.3	
5560587220	2.93						
5560587230	2.94						
5560587240	2.95						
5560587250	2.96						
5560587260	2.97						
5560587270	2.98					11.4	
5560587280	2.99						
3330300	3						
5560587290	3.01						
5560587300	3.02						
3330303	3.03					11.5	
5560587310	3.04						

Work Material / Abbreviation	Low Carbon Steel	Medium Carbon Steel	High Carbon Steel	Alloy Steel	Hardened Steel		Quenched and Tempered Steel			Stainless Steel	Tool Steel	Cast Iron	Ductile Cast Iron	Copper Alloy	Aluminum	Aluminum Alloy Casting	Titanium Alloy	Inconel®	CFRP Composite Material	Magnesium Alloy	(MMC) Metal Matrix Composites
	C ~ 0.25%	C0.25 ~ 0.45%	C0.45% ~	SCM	~ 35 HRC	35 ~ 45 HRC	45 ~ 50 HRC	50 ~ 62 HRC	62 ~ 70 HRC	SUS	SKD SKS	FC	FCD	Cu	AL	AC				AZ91D	
ADF-2D	◎	◎	◎	◎	◎	○	○					◎	◎		○	○					

SPEED FEED P.160 | CARBIDE | EgiAs 2≦DC | IchAda DC<2 | h8 | 20° | SHRINK FIT

Type 1



EDP No.	DC	LCF	OAL	DCON	LS	ℓ2	TYPE
5560587320	3.05	15	55	6	38	11.5	1
5560587330	3.06						
5560587340	3.07						
5560587350	3.08					11.6	
5560587360	3.09						
3330310	3.1						
5560587370	3.11						
5560587380	3.12						
5560587390	3.13						
5560587400	3.14					11.7	
3330315	3.15						
5560587410	3.16						
5560587420	3.17						
5560587430	3.18						
5560587440	3.19					11.8	
3330320	3.2						
5560587450	3.21						
5560587460	3.22						
5560587470	3.23						
5560587480	3.24						
5560587490	3.25					11.9	
5560587500	3.26						
5560587510	3.27						
5560587520	3.28						
5560587530	3.29						
3330330	3.3						
5560587540	3.31	16				12	
5560587550	3.32						
5560587560	3.33						
5560587570	3.34						
5560587580	3.35					12.1	
5560587590	3.36						
5560587600	3.37						
5560587610	3.38						
5560587620	3.39						
3330340	3.4						
5560587630	3.41					12.2	
5560587640	3.42						
5560587650	3.43						
5560587660	3.44						
5560587670	3.45						
5560587680	3.46					12.3	
5560587690	3.47						
5560587700	3.48						
5560587710	3.49						
3330350	3.5						
5560587720	3.51					12.4	
5560587730	3.52						
3330353	3.53						
5560587740	3.54						
5560587750	3.55						
5560587760	3.56					12.5	
5560587770	3.57						
5560587780	3.58						
5560587790	3.59						

EDP No.	DC	LCF	OAL	DCON	LS	ℓ2	TYPE
3330360	3.6	16	55	6	38	12.5	1
5560587800	3.61						
5560587810	3.62					12.6	
5560587820	3.63						
5560587830	3.64						
5560587840	3.65						
3330366	3.66						
5560587850	3.67					12.7	
3330368	3.68						
5560587860	3.69						
3330370	3.7						
5560587870	3.71	19	60			17.7	
5560587880	3.72						
5560587890	3.73						
5560587900	3.74					17.8	
5560587910	3.75						
5560587920	3.76						
5560587930	3.77						
5560587940	3.78					17.9	
5560587950	3.79						
3330380	3.8						
5560587960	3.81						
5560587970	3.82						
5560587980	3.83					18	
5560587990	3.84						
5560588000	3.85						
5560588010	3.86						
5560588020	3.87						
5560588030	3.88						
5560588040	3.89						
3330390	3.9					18.1	
5560588050	3.91						
5560588060	3.92						
5560588070	3.93						
5560588080	3.94					18.2	
5560588090	3.95						
5560588100	3.96						
5560588110	3.97						
5560588120	3.98						
5560588130	3.99						
3330400	4					18.3	
5560588140	4.01						
5560588150	4.02						
3330403	4.03						
5560588160	4.04						
5560588170	4.05					12.4	
5560588180	4.06						
5560588190	4.07						
5560588200	4.08						
5560588210	4.09						
3330410	4.1					12.5	
5560588220	4.11	21					
5560588230	4.12						
5560588240	4.13						
5560588250	4.14						

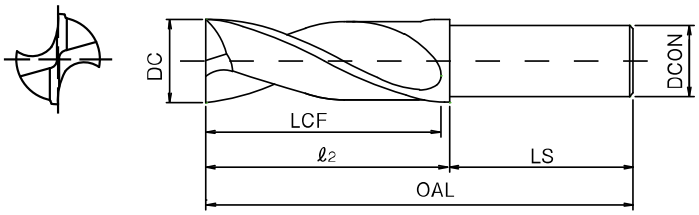
EDP No.	DC	LCF	OAL	DCON	LS	ℓ2	TYPE
5560588260	4.15	21	60	6	38	18.5	1
5560588270	4.16						
5560588280	4.17					18.6	
5560588290	4.18						
5560588300	4.19						
3330420	4.2						
5560588310	4.21					18.7	
5560588320	4.22						
5560588330	4.23						
5560588340	4.24						
5560588350	4.25						
5560588360	4.26					18.8	
5560588370	4.27						
5560588380	4.28						
5560588390	4.29						
3330430	4.3						
5560588400	4.31						
5560588410	4.32					18.9	
5560588420	4.33						
5560588430	4.34						
5560588440	4.35						
5560588450	4.36						
5560588460	4.37					19	
5560588470	4.38						
5560588480	4.39						
3330440	4.4						
5560588490	4.41						
5560588500	4.42						
5560588510	4.43						
5560588520	4.44					19.1	
5560588530	4.45						
5560588540	4.46						
5560588550	4.47						
5560588560	4.48						
5560588570	4.49					19.2	
3330450	4.5						
5560588580	4.51						
5560588590	4.52						
3330453	4.53						
5560588600	4.54						
5560588610	4.55					19.3	
5560588620	4.56						
5560588630	4.57						
5560588640	4.58						
5560588650	4.59						
3330460	4.6					19.4	
5560588660	4.61						
3330462	4.62						
5560588670	4.63						
3330464	4.64						
5560588680	4.65					19.5	
5560588690	4.66						
5560588700	4.67						
5560588710	4.68						
5560588720	4.69					19.6	

Work Material / Abbreviation	Low Carbon Steel	Medium Carbon Steel	High Carbon Steel	Alloy Steel	Hardened Steel		Quenched and Tempered Steel			Stainless Steel	Tool Steel	Cast Iron	Ductile Cast Iron	Copper Alloy	Aluminum	Aluminum Alloy Casting	Titanium Alloy	Inconel®	CFRP Composite Material	Magnesium Alloy	(MMC) Metal Matrix Composites
	C ~ 0.25%	C0.25 ~ 0.45%	C0.45% ~	SCM	~ 35 HRC	35 ~ 45 HRC	45 ~ 50 HRC	50 ~ 62 HRC	62 ~ 70 HRC	SUS	SKD SKS	FC	FCD	Cu	AL	AC				AZ91D	
ADF-2D	◎	◎	◎	◎	◎	○	○					◎	◎		○	○					

ADF-2D

SPEED FEED P.160 | CARBIDE | EgiAs 2≦DC | IchAda DC<2 | h8 | 20° | SHRINK FIT

Type 2



EDP No.	DC	LCF	OAL	DCON	LS	ℓ2	TYPE
3330470	4.7	21	60	6	38	19.6	1
5560588730	4.71	24	65			24.6	
5560588740	4.72						
5560588750	4.73						
5560588760	4.74						
5560588770	4.75					24.7	
5560588780	4.76						
5560588790	4.77						
5560588800	4.78						
5560588810	4.79						
3330480	4.8					24.8	
5560588820	4.81						
5560588830	4.82						
5560588840	4.83						
5560588850	4.84					24.9	
5560588860	4.85						
5560588870	4.86						
5560588880	4.87						
5560588890	4.88						
5560588900	4.89						
3330490	4.9					25	
5560588910	4.91						
5560588920	4.92						
5560588930	4.93						
5560588940	4.94						
5560588950	4.95						
5560588960	4.96					25.1	
5560588970	4.97						
5560588980	4.98						
5560588990	4.99						
3330500	5						
5560589000	5.01					25.2	
5560589010	5.02						
3330503	5.03						
5560589020	5.04						
5560589030	5.05						
5560589040	5.06						
5560589050	5.07					25.3	
5560589060	5.08						
5560589070	5.09						
3330510	5.1						
5560589080	5.11						
5560589090	5.12					25.4	
5560589100	5.13						
5560589110	5.14						
5560589120	5.15						
5560589130	5.16						
5560589140	5.17					25.5	
5560589150	5.18						
5560589160	5.19						
3330520	5.2						
5560589170	5.21						
5560589180	5.22						
5560589190	5.23					25.6	
5560589200	5.24						

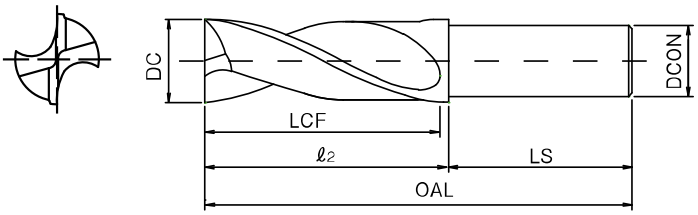
EDP No.	DC	LCF	OAL	DCON	LS	ℓ2	TYPE
5560589210	5.25	24	65	6	38	25.6	1
5560589220	5.26						
5560589230	5.27						
5560589240	5.28					25.7	
5560589250	5.29						
3330530	5.3						
5560589260	5.31	27					
5560589270	5.32						
5560589280	5.33						
5560589290	5.34					25.8	
5560589300	5.35						
5560589310	5.36						
5560589320	5.37						
5560589330	5.38					25.9	
5560589340	5.39						
3330540	5.4						
5560589350	5.41						
5560589360	5.42						
5560589370	5.43						
5560589380	5.44					26	
5560589390	5.45						
5560589400	5.46						
5560589410	5.47						
5560589420	5.48						
5560589430	5.49						
3330550	5.5					26.1	
5560589440	5.51						
3330552	5.52						
5560589450	5.53						
3330554	5.54						
5560589460	5.55					26.2	
5560589470	5.56						
5560589480	5.57						
5560589490	5.58						
5560589500	5.59						
3330560	5.6					26.3	
5560589510	5.61						
5560589520	5.62						
5560589530	5.63						
5560589540	5.64						
5560589550	5.65						
5560589560	5.66					26.4	
5560589570	5.67						
5560589580	5.68						
5560589590	5.69						
3330570	5.7					26.5	
5560589600	5.71						
5560589610	5.72						
5560589620	5.73						
5560589630	5.74						
5560589640	5.75					26.6	
5560589650	5.76						
5560589660	5.77						
5560589670	5.78						
5560589680	5.79						

EDP No.	DC	LCF	OAL	DCON	LS	ℓ2	TYPE
3330580	5.8	27	65	6	38	26.6	1
5560589690	5.81						
5560589700	5.82						
5560589710	5.83					26.7	
5560589720	5.84						
5560589730	5.85						
5560589740	5.86						
5560589750	5.87					26.8	
5560589760	5.88						
5560589770	5.89						
3330590	5.9						
5560589780	5.91						
5560589790	5.92					26.9	
5560589800	5.93						
5560589810	5.94						
5560589820	5.95						
5560589830	5.96						
5560589840	5.97						
5560589850	5.98					27	
5560589860	5.99						
3330600	6	30	70			32	2
5560589870	6.01						
5560589880	6.02						
3330603	6.03						
5560589890	6.04						
5560589900	6.05						
5560589910	6.06						
5560589920	6.07						
5560589930	6.08						
5560589940	6.09						
3330610	6.1						
5560589950	6.11						
5560589960	6.12						
5560589970	6.13						
5560589980	6.14						
5560589990	6.15						
5560590000	6.16						
5560590010	6.17						
5560590020	6.18						
5560590030	6.19						
3330620	6.2						
5560590040	6.21						
5560590050	6.22						
5560590060	6.23						
5560590070	6.24						
5560590080	6.25						
5560590090	6.26						
5560590100	6.27						
5560590110	6.28						
5560590120	6.29						
3330630	6.3						
5560590130	6.31						
5560590140	6.32						
5560590150	6.33						
5560590160	6.34						

Work Material / Abbreviation	Low Carbon Steel	Medium Carbon Steel	High Carbon Steel	Alloy Steel	Hardened Steel		Quenched and Tempered Steel			Stainless Steel	Tool Steel	Cast Iron	Ductile Cast Iron	Copper Alloy	Aluminum	Aluminum Alloy Casting	Titanium Alloy	Inconel®	CFRP Composite Material	Magnesium Alloy	(MMC) Metal Matrix Composites
	C ~ 0.25%	C0.25 ~ 0.45%	C0.45% ~	SCM	~ 35 HRC	35 ~ 45 HRC	45 ~ 50 HRC	50 ~ 62 HRC	62 ~ 70 HRC	SUS	SKD SKS	FC	FCD	Cu	AL	AC				AZ91D	
ADF-2D	◎	◎	◎	◎	◎	○	○					◎	◎		○	○					

SPEED FEED P.160 | CARBIDE | EgiAs 2≦DC | IchAda DC<2 | h8 | 20° | SHRINK FIT

Type 2



EDP No.	DC	LCF	OAL	DCON	LS	ℓ2	TYPE
5560590170	6.35						
5560590180	6.36						
5560590190	6.37						
5560590200	6.38						
5560590210	6.39						
3330640	6.4						
5560590220	6.41						
5560590230	6.42						
5560590240	6.43						
5560590250	6.44						
5560590260	6.45						
5560590270	6.46						
5560590280	6.47						
5560590290	6.48						
5560590300	6.49						
3330650	6.5						
5560590310	6.51						
5560590320	6.52						
3330653	6.53						
5560590330	6.54						
5560590340	6.55						
5560590350	6.56						
5560590360	6.57						
5560590370	6.58						
5560590380	6.59						
3330660	6.6						
5560590390	6.61						
5560590400	6.62	30	70	6	38	32	2
5560590410	6.63						
5560590420	6.64						
5560590430	6.65						
5560590440	6.66						
5560590450	6.67						
5560590460	6.68						
5560590470	6.69						
3330670	6.7						
5560590480	6.71						
5560590490	6.72						
5560590500	6.73						
5560590510	6.74						
5560590520	6.75						
5560590530	6.76						
5560590540	6.77						
5560590550	6.78						
5560590560	6.79						
3330680	6.8						
5560590570	6.81						
5560590580	6.82						
5560590590	6.83						
5560590600	6.84						
5560590610	6.85						
5560590620	6.86						
5560590630	6.87						
5560590640	6.88						
5560590650	6.89						

EDP No.	DC	LCF	OAL	DCON	LS	ℓ2	TYPE
3330690	6.9						
5560590660	6.91						
5560590670	6.92						
5560590680	6.93						
5560590690	6.94						
5560590700	6.95	30	70		38	32	
5560590710	6.96						
5560590720	6.97						
5560590730	6.98						
5560590740	6.99						
3330700	7						
5560590750	7.01						
5560590760	7.02						
3330700	7.03						
5560590770	7.04						
5560590780	7.05						
5560590790	7.06						
5560590800	7.07						
5560590810	7.08						
5560590820	7.09						
3330710	7.1						
5560590830	7.11						
5560590840	7.12						
5560590850	7.13						
5560590860	7.14						
5560590870	7.15						
5560590880	7.16						
5560590890	7.17			6			2
5560590900	7.18						
5560590910	7.19						
3330720	7.2						
5560590920	7.21						
5560590930	7.22	34	75		39	36	
5560590940	7.23						
5560590950	7.24						
5560590960	7.25						
5560590970	7.26						
5560590980	7.27						
5560590990	7.28						
5560591000	7.29						
3330730	7.3						
5560591010	7.31						
5560591020	7.32						
5560591030	7.33						
5560591040	7.34						
5560591050	7.35						
5560591060	7.36						
5560591070	7.37						
5560591080	7.38						
5560591090	7.39						
3330740	7.4						
5560591100	7.41						
5560591110	7.42						
5560591120	7.43						
5560591130	7.44						

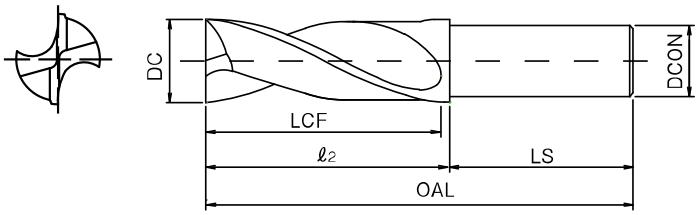
EDP No.	DC	LCF	OAL	DCON	LS	ℓ2	TYPE
5560591140	7.45						
5560591150	7.46						
5560591160	7.47						
5560591170	7.48						
5560591180	7.49						
3330750	7.5						
5560591190	7.51						
5560591200	7.52						
5560591210	7.53						
5560591220	7.54						
5560591230	7.55						
5560591240	7.56						
5560591250	7.57						
5560591260	7.58						
5560591270	7.59						
3330760	7.6						
5560591280	7.61						
5560591290	7.62						
5560591300	7.63						
5560591310	7.64						
5560591320	7.65						
5560591330	7.66						
5560591340	7.67						
5560591350	7.68						
5560591360	7.69						
3330770	7.7						
5560591370	7.71						
5560591380	7.72	34	75	6	39	36	2
5560591390	7.73						
5560591400	7.74						
5560591410	7.75						
5560591420	7.76						
5560591430	7.77						
5560591440	7.78						
5560591450	7.79						
3330780	7.8						
5560591460	7.81						
5560591470	7.82						
5560591480	7.83						
5560591490	7.84						
5560591500	7.85						
5560591510	7.86						
5560591520	7.87						
5560591530	7.88						
5560591540	7.89						
3330790	7.9						
5560591550	7.91						
5560591560	7.92						
5560591570	7.93						
5560591580	7.94						
5560591590	7.95						
5560591600	7.96						
5560591610	7.97						
5560591620	7.98						
5560591630	7.99						

Work Material / Abbreviation	Low Carbon Steel	Medium Carbon Steel	High Carbon Steel	Alloy Steel	Hardened Steel		Quenched and Tempered Steel			Stainless Steel	Tool Steel	Cast Iron	Ductile Cast Iron	Copper Alloy	Aluminum	Aluminum Alloy Casting	Titanium Alloy	Inconel®	CFRP Composite Material	Magnesium Alloy	(MMC) Metal Matrix Composites
	C ~ 0.25%	C0.25 ~ 0.45%	C0.45% ~	SCM	~ 35 HRC	35 ~ 45 HRC	45 ~ 50 HRC	50 ~ 62 HRC	62 ~ 70 HRC	SUS	SKD SKS	FC	FCD	Cu	AL	AC				AZ91D	
ADF-2D	◎	◎	◎	◎	◎	○	○					◎	◎		○	○					

ADF-2D

SPEED FEED P.160 | CARBIDE | EgiAs 2≦DC | IchAda DC<2 | h8 | 20° | SHRINK FIT

Type 2



EDP No.	DC	LCF	OAL	DCON	LS	ℓ2	TYPE
3330800	8	34	75		39	36	
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5560591650	8.02						
3330803	8.03						
5560591660	8.04						
5560591670	8.05						
5560591680	8.06						
5560591690	8.07						
5560591700	8.08						
5560591710	8.09						
3330810	8.1						
5560591720	8.11						
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5560591770	8.16						
5560591780	8.17						
5560591790	8.18						
5560591800	8.19						
3330820	8.2						
5560591810	8.21						
5560591820	8.22						
5560591830	8.23						
5560591840	8.24						
5560591850	8.25						
5560591860	8.26						
5560591870	8.27	38	80	8	40	40	2
5560591880	8.28						
5560591890	8.29						
3330830	8.3						
5560591900	8.31						
5560591910	8.32						
5560591920	8.33						
5560591930	8.34						
5560591940	8.35						
5560591950	8.36						
5560591960	8.37						
5560591970	8.38						
5560591980	8.39						
3330840	8.4						
5560591990	8.41						
5560592000	8.42						
5560592010	8.43						
5560592020	8.44						
5560592030	8.45						
5560592040	8.46						
5560592050	8.47						
5560592060	8.48						
5560592070	8.49						
3330850	8.5						
5560592080	8.51						
5560592090	8.52						
3330853	8.53						
5560592100	8.54						

EDP No.	DC	LCF	OAL	DCON	LS	ℓ2	TYPE
5560592110	8.55						
5560592120	8.56						
5560592130	8.57						
5560592140	8.58						
5560592150	8.59						
3330860	8.6						
5560592160	8.61						
5560592170	8.62						
5560592180	8.63						
5560592190	8.64						
5560592200	8.65						
5560592210	8.66						
5560592220	8.67						
5560592230	8.68						
5560592240	8.69						
3330870	8.7						
5560592250	8.71						
5560592260	8.72						
5560592270	8.73						
5560592280	8.74						
5560592290	8.75						
5560592300	8.76						
5560592310	8.77	38	80		40	40	
5560592320	8.78						
5560592330	8.79						
3330880	8.8						
5560592340	8.81						
5560592350	8.82			8			2
5560592360	8.83						
5560592370	8.84						
5560592380	8.85						
5560592390	8.86						
5560592400	8.87						
5560592410	8.88						
5560592420	8.89						
3330890	8.9						
5560592430	8.91						
5560592440	8.92						
5560592450	8.93						
5560592460	8.94						
5560592470	8.95						
5560592480	8.96						
5560592490	8.97						
5560592500	8.98						
5560592510	8.99						
3330900	9						
5560592520	9.01						
5560592530	9.02						
3330903	9.03						
5560592540	9.04						
5560592550	9.05	42	85		41	44	
5560592560	9.06						
5560592570	9.07						
5560592580	9.08						
5560592590	9.09						

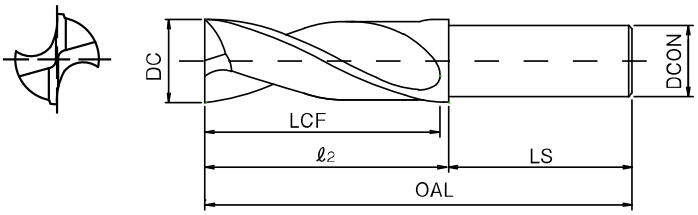
EDP No.	DC	LCF	OAL	DCON	LS	ℓ2	TYPE
3330910	9.1						
5560592600	9.11						
5560592610	9.12						
5560592620	9.13						
5560592630	9.14						
5560592640	9.15						
5560592650	9.16						
5560592660	9.17						
5560592670	9.18						
5560592680	9.19						
3330920	9.2						
5560592690	9.21						
5560592700	9.22						
5560592710	9.23						
5560592720	9.24						
5560592730	9.25						
5560592740	9.26						
5560592750	9.27						
5560592760	9.28						
5560592770	9.29						
3330930	9.3						
5560592780	9.31						
5560592790	9.32						
5560592800	9.33						
5560592810	9.34						
5560592820	9.35						
5560592830	9.36						
5560592840	9.37	42	85	8	41	44	2
5560592850	9.38						
5560592860	9.39						
3330940	9.4						
5560592870	9.41						
5560592880	9.42						
5560592890	9.43						
5560592900	9.44						
5560592910	9.45						
5560592920	9.46						
5560592930	9.47						
5560592940	9.48						
5560592950	9.49						
3330950	9.5						
5560592960	9.51						
5560592970	9.52						
5560592980	9.53						
5560592990	9.54						
5560593000	9.55						
5560593010	9.56						
5560593020	9.57						
5560593030	9.58						
5560593040	9.59						
3330960	9.6						
5560593050	9.61						
5560593060	9.62						
5560593070	9.63						
5560593080	9.64						

Work Material / Abbreviation	Low Carbon Steel	Medium Carbon Steel	High Carbon Steel	Alloy Steel	Hardened Steel		Quenched and Tempered Steel			Stainless Steel	Tool Steel	Cast Iron	Ductile Cast Iron	Copper Alloy	Aluminum	Aluminum Alloy Casting	Titanium Alloy	Inconel®	CFRP Composite Material	Magnesium Alloy	(MMC) Metal Matrix Composites
	C ~ 0.25%	C0.25 ~ 0.45%	C0.45% ~	SCM	~ 35 HRC	35 ~ 45 HRC	45 ~ 50 HRC	50 ~ 62 HRC	62 ~ 70 HRC	SUS	SKD SKS	FC	FCD	Cu	AL	AC				AZ91D	
ADF-2D	◎	◎	◎	◎	◎	○	○					◎	◎		○	○					

shaping your dreams

SPEED FEED P.160 | CARBIDE | EgiAs 2≦DC | IchAda DC<2 | h8 | 20° | SHRINK FIT

Type 2



EDP No.	DC	LCF	OAL	DCON	LS	ℓ2	TYPE
5560593090	9.65	42	85	8	41	44	2
5560593100	9.66						
5560593110	9.67						
5560593120	9.68						
5560593130	9.69						
3330970	9.7						
5560593140	9.71						
5560593150	9.72						
5560593160	9.73						
5560593170	9.74						
5560593180	9.75						
5560593190	9.76						
5560593200	9.77						
5560593210	9.78						
5560593220	9.79						
3330980	9.8						
5560593230	9.81						
5560593240	9.82						
5560593250	9.83						
5560593260	9.84						
5560593270	9.85						
5560593280	9.86						
5560593290	9.87						
5560593300	9.88						
5560593310	9.89						
3330990	9.9						
5560593320	9.91						
5560593330	9.92						
5560593340	9.93						
5560593350	9.94						
5560593360	9.95						
5560593370	9.96						
5560593380	9.97						
5560593390	9.98						
5560593400	9.99						
3331000	10						
3331003	10.03	46	90	10	42	48	
3331010	10.1						
3331020	10.2						
3331030	10.3						
3331040	10.4						
3331050	10.5						
3331060	10.6						
3331070	10.7						
3331080	10.8						
3331090	10.9						
3331100	11						

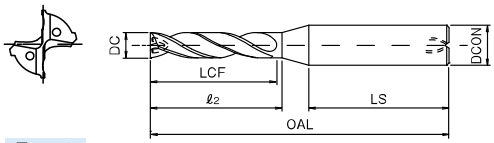
EDP No.	DC	LCF	OAL	DCON	LS	ℓ2	TYPE
3331103	11.03	50	95	10	43	52	2
3331110	11.1						
3331120	11.2						
3331130	11.3						
3331140	11.4						
3331150	11.5						
3331160	11.6						
3331170	11.7						
3331180	11.8						
3331190	11.9						
3331200	12						
3331203	12.03	56	100	12	42	58	
3331210	12.1						
3331220	12.2						
3331230	12.3						
3331240	12.4						
3331250	12.5						
3331260	12.6						
3331270	12.7						
3331280	12.8						
3331290	12.9						
3331300	13						
3331310	13.1	60	105		43	62	
3331320	13.2						
3331330	13.3						
3331340	13.4						
3331350	13.5						
3331360	13.6						
3331370	13.7						
3331380	13.8						
3331390	13.9						
3331400	14						
3331410	14.1	64	110		44	66	
3331420	14.2						
3331430	14.3						
3331440	14.4						
3331450	14.5						
3331460	14.6						
3331470	14.7						
3331480	14.8						
3331490	14.9						
3331500	15						
3331510	15.1	68	115		45	70	
3331520	15.2						
3331530	15.3						
3331540	15.4						
3331550	15.5						

EDP No.	DC	LCF	OAL	DCON	LS	ℓ2	TYPE
3331560	15.6	68	115	12	45	70	2
3331570	15.7						
3331580	15.8						
3331590	15.9						
3331600	16			16			
5560593410	16.1	74	125		49	76	
5560593420	16.2						
5560593430	16.3						
5560593440	16.4						
3331650	16.5						
5560593450	16.6						
5560593460	16.7						
5560593470	16.8						
5560593480	16.9						
3331700	17						
5560593490	17.1	78	130		50	80	
5560593500	17.2						
5560593510	17.3						
5560593520	17.4						
3331750	17.5						
5560593530	17.6						
5560593540	17.7						
5560593550	17.8						
5560593560	17.9						
3331800	18						
5560593570	18.1	84	135		49	86	
5560593580	18.2						
5560593590	18.3						
5560593600	18.4						
3331850	18.5						
5560593610	18.6						
5560593620	18.7						
5560593630	18.8						
5560593640	18.9						
3331900	19						
5560593650	19.1	88	140		50	90	
5560593660	19.2						
5560593670	19.3						
5560593680	19.4						
3331950	19.5						
5560593690	19.6						
5560593700	19.7						
5560593710	19.8						
5560593720	19.9						
3332000	20			20			

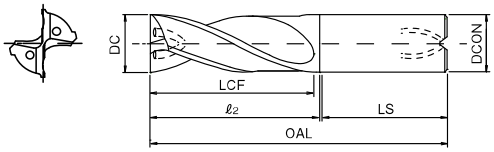
Work Material / Abbreviation	Low Carbon Steel	Medium Carbon Steel	High Carbon Steel	Alloy Steel	Hardened Steel		Quenched and Tempered Steel			Stainless Steel	Tool Steel	Cast Iron	Ductile Cast Iron	Copper Alloy	Aluminum	Aluminum Alloy Casting	Titanium Alloy	Inconel®	CFRP Composite Material	Magnesium Alloy	(MMC) Metal Matrix Composites
	C ~ 0.25%	C0.25 ~ 0.45%	C0.45% ~	SCM	~ 35 HRC	35 ~ 45 HRC	45 ~ 50 HRC	50 ~ 62 HRC	62 ~ 70 HRC	SUS	SKD SKS	FC	FCD	Cu	AL	AC				AZ91D	
ADF-2D	◎	◎	◎	◎	◎	○	○					◎	◎		○	○					

SPEED FEED P.161 | CARBIDE | EgiAs | h8 | 20° | SHRINK FIT

Type 1



Type 2



EDP No.	DC	LCF	OAL	DCON	LS	ℓ2	TYPE
3334300	3	15	55	4	37.1	16	1
3334301	3.03				37.2		
3334302	3.1				37.3		
3334303	3.15				37.4		
3334304	3.2				37.5		
3334305	3.3				37.7		
3334306	3.4	16			37.9	17	
3334307	3.5				37.1		
3334308	3.53						
3334309	3.6				37.3		
3334310	3.66				37.4		
3334311	3.68						
3334312	3.7						
3334313	3.8	19	60		39.6	20	
3334314	3.9				39.8		
3334315	4				40		2
3334316	4.03	21		6	34.3	22	1
3334317	4.1				34.5		
3334318	4.2				34.6		
3334319	4.3				34.8		
3334320	4.4				35		
3334321	4.5				35.2		
3334322	4.53				35.3		
3334323	4.6				35.4		
3334324	4.62						
3334325	4.64				35.5		
3334326	4.7				35.6		
3334327	4.8	24	65		37.8	25	
3334328	4.9				37.9		
3334329	5				38.1		
3334330	5.03				38.2		
3334331	5.1				38.3		
3334332	5.2				38.5		
3334333	5.3				38.7		
3334334	5.4	27			35.9	28	
3334335	5.5				36.1		
3334336	5.52						
3334337	5.54						
3334338	5.6				36.3		
3334339	5.7				36.4		
3334340	5.8				36.6		
3334341	5.9				36.8		
3334342	6				37		2
3334343	6.03	30	70	8	35.3	31	1
3334344	6.1				35.5		
3334345	6.2				35.6		
3334346	6.3				35.8		
3334347	6.4				36		
3334348	6.5				36.2		
3334349	6.53				36.3		
3334350	6.6				36.4		
3334351	6.7				36.6		
3334352	6.8				36.8		
3334353	6.9				36.9		
3334354	7				37.1		
3334355	7.03				37.2		

EDP No.	DC	LCF	OAL	DCON	LS	ℓ2	TYPE
3334356	7.1	34	75	8	38.3	35	1
3334357	7.2				38.5		
3334358	7.3				38.7		
3334359	7.4				38.9		
3334360	7.5				39.1		
3334361	7.6				39.3		
3334362	7.7				39.4		
3334363	7.8				39.6		
3334364	7.9				39.8		
3334365	8				40		2
3334366	8.03	38	80	10	37.3	39	1
3334367	8.1				37.5		
3334368	8.2				37.6		
3334369	8.3				37.8		
3334370	8.4				38		
3334371	8.5				38.2		
3334372	8.53				38.3		
3334373	8.6				38.4		
3334374	8.7				38.6		
3334375	8.8				38.8		
3334376	8.9				38.9		
3334377	9				39.1		
3334378	9.03				39.2		
3334379	9.1	42	85		40.3	43	
3334380	9.2				40.5		
3334381	9.3				40.7		
3334382	9.4				40.9		
3334383	9.5				41.1		
3334384	9.6				41.3		
3334385	9.7				41.4		
3334386	9.8				41.6		
3334387	9.9				41.8		
3334388	10				42		2
3334389	10.03	46	90	12	39.3	47	1
3334390	10.1				39.5		
3334391	10.2				39.8		
3334392	10.3						
3334393	10.4				40		
3334394	10.5				40.2		
3334395	10.6				40.4		
3334396	10.7				40.8		
3334397	10.8						
3334398	10.9				40.9		
3334399	11				41.1		
3334400	11.03				41.2		
3334401	11.1	50	95		42.3	51	
3334402	11.2				42.5		
3334403	11.3				42.7		
3334404	11.4				42.9		
3334405	11.5				43.1		
3334406	11.6				43.3		
3334407	11.7				43.4		
3334408	11.8				43.6		
3334409	11.9				43.8		
3334410	12				44		2
3334411	12.03	56	100	14	39.3	57	1

EDP No.	DC	LCF	OAL	DCON	LS	ℓ2	TYPE
3334412	12.1	56	100	14	39.5	57	1
3334413	12.2				39.6		
3334414	12.3				39.8		
3334415	12.4				40		
3334416	12.5				40.2		
3334417	12.6				40.4		
3334418	12.7				40.6		
3334419	12.8				40.8		
3334420	12.9				40.9		
3334421	13				41.1		
3334422	13.1	60	105		42.3	61	
3334423	13.2				42.5		
3334424	13.3				42.7		
3334425	13.4				42.9		
3334426	13.5				43.1		
3334427	13.6				43.3		
3334428	13.7				43.4		
3334429	13.8				43.8		
3334430	13.9						
3334431	14				44		2
3334432	14.1	64	110	16	41.5	65	1
3334433	14.2				41.6		
3334434	14.3				41.8		
3334435	14.4				42		
3334436	14.5				42.2		
3334437	14.6				42.4		
3334438	14.7				42.6		
3334439	14.8				42.8		
3334440	14.9				42.9		
3334441	15				43.1		
3334442	15.1	68	115		44.3	69	
3334443	15.2				44.5		
3334444	15.3				44.7		
3334445	15.4				44.9		
3334446	15.5				45.1		
3334447	15.6				45.3		
3334448	15.7				45.4		
3334449	15.8				45.6		
3334450	15.9				45.8		
3334451	16				46		2
3334452	16.5	74	125	18	47.2	75	1
3334453	17				48.1		
3334454	17.5	78	130		50.1	79	
3334455	18				51		2
3334456	18.5	84	135	20	47.2	85	1
3334457	19				48.1		
3334458	19.5	88	140		50.1	89	
3334459	20				51		2

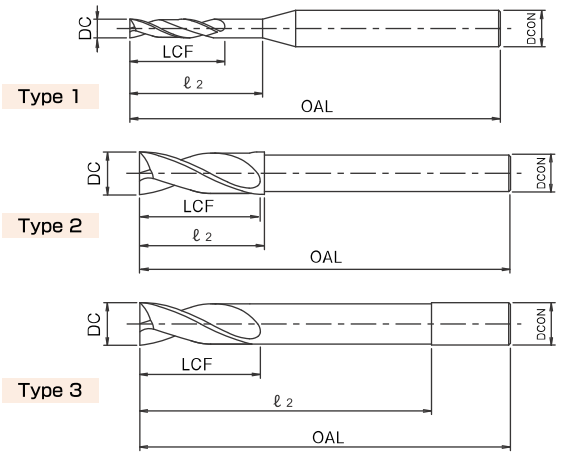
Work Material / Abbreviation	Low Carbon Steel	Medium Carbon Steel	High Carbon Steel	Alloy Steel	Hardened Steel		Quenched and Tempered Steel			Stainless Steel	Tool Steel	Cast Iron	Ductile Cast Iron	Copper Alloy	Aluminum	Aluminum Alloy Casting	Titanium Alloy	Inconel®	CFRP Composite Material	Magnesium Alloy	(MMC) Metal Matrix Composites
	C ~ 0.25%	C0.25 ~ 0.45%	C0.45% ~	SCM	~ 35 HRC	35 ~ 45 HRC	45 ~ 50 HRC	50 ~ 62 HRC	62 ~ 70 HRC	SUS	SKD SKS	FC	FCD	Cu	AL	AC				AZ91D	
ADFO-3D	○	○	○	○	○	○						○	○		○	○					

ADFLS-2D

Carbide Flat Drill Long Shank 2D Type

The A Brand

SPEED FEED P.160 | CARBIDE | EgiAs | h8 | 20° | SHRINK FIT



EDP No.	DC	LCF	OAL	DCON	ℓ2	TYPE
3332300	3	15	100	6	30	1
3332310	3.1				31	
3332320	3.2				32	
3332330	3.3				33	
3332340	3.4	16			34	
3332350	3.5				35	
3332360	3.6				36	
3332370	3.7				37	
3332380	3.8	19			38	
3332390	3.9				39	
3332400	4				40	
3332410	4.1				41	
3332420	4.2	21			42	
3332430	4.3				43	
3332440	4.4				44	
3332450	4.5				45	
3332460	4.6				46	
3332470	4.7				47	
3332480	4.8	24			48	
3332490	4.9				49	
3332500	5		110		50	
3332510	5.1				51	
3332520	5.2				52	
3332530	5.3				53	
3332540	5.4	27			54	
3332550	5.5				55	
3332560	5.6				56	
3332570	5.7				57	
3332580	5.8				58	
3332590	5.9				59	
3332600	6				29	2
3334060					60	3

EDP No.	DC	LCF	OAL	DCON	ℓ2	TYPE
3332650	6.5	30	120	6	32	2
3332680	6.8					
3332700	7					
3332750	7.5	34	130		36	
3332780	7.8					
3332800	8			8		
3334080					80	3
3332850	8.5	38	140		40	2
3332880	8.8					
3332900	9					
3332950	9.5	42	150		44	
3332980	9.8					
3333000	10			10		
3334100					100	3
3333050	10.5	46	160		48	2
3333080	10.8					
3333100	11					
3333180	11.8	50	170		52	
3333200	12			12		
3334120					120	3
3333250	12.5	56	180		58	2
3333300	13					
3333350	13.5	60	190		62	
3333400	14					
3333500	15	64	200		66	
3333600	16	68	210	16	70	
3334160					160	3
3333700	17	74	220		76	2
3333750	17.5	78	230		80	
3333800	18					
3334000	20	88	250	20	90	
3334200					200	3

Work Material / Abbreviation	Low Carbon Steel	Medium Carbon Steel	High Carbon Steel	Alloy Steel	Hardened Steel		Quenched and Tempered Steel			Stainless Steel	Tool Steel	Cast Iron	Ductile Cast Iron	Copper Alloy	Aluminum	Aluminum Alloy Casting	Titanium Alloy	Inconel®	CFRP Composite Material	Magnesium Alloy	(MMC) Metal Matrix Composites
	C ~ 0.25%	C0.25 ~ 0.45%	C0.45% ~	SCM	~ 35 HRC	35 ~ 45 HRC	45 ~ 50 HRC	50 ~ 62 HRC	62 ~ 70 HRC	SUS	SKD SKS	FC	FCD	Cu	AL	AC				AZ91D	
ADFLS-2D	○	○	○	○	○	○						○	○		○	○					

shaping your dreams

EX-SUS-GDS

High Performance HSS-EV3 Drills For SUS & General Applications

For General Purpose Applications

SPEED FEED P.162 | HSSE | TiN | 150° D < 1 | 140° D < 2 | 130° D < 4 | 120° D > 4 | h8 | h7 | 35~40°

EDP	DC	OAL	LCF	DCON
61505	0.5	38	3	3
8595051	0.51	38	3	3
8595052	0.52	38	3	3
8595053	0.53	38	3	3
8595054	0.54	38	3.5	3
8595055	0.55	38	3.5	3
8595056	0.56	38	3.5	3
8595057	0.57	38	3.5	3
8595058	0.58	38	3.5	3
8595059	0.59	38	3.5	3
61506	0.6	38	3.5	3
8595061	0.61	38	4	3
8595062	0.62	38	4	3
8595063	0.63	38	4	3
8595064	0.64	38	4	3
8595065	0.65	38	4	3
8595066	0.66	38	4	3
8595067	0.67	38	4	3
8595068	0.68	38	4.5	3
8595069	0.69	38	4.5	3
61507	0.7	38	4.5	3
8595071	0.71	38	4.5	3
8595072	0.72	38	4.5	3
8595073	0.73	38	4.5	3
8595074	0.74	38	4.5	3
8595075	0.75	38	4.5	3
8595076	0.76	38	5	3
8595077	0.77	38	5	3
8595078	0.78	38	5	3
8595079	0.79	38	5	3
61508	0.8	38	5	3
8595081	0.81	38	5	3
8595082	0.82	38	5	3
8595083	0.83	38	5	3
8595084	0.84	38	5	3
8595085	0.85	38	5	3
8595086	0.86	38	5.5	3
8595087	0.87	38	5.5	3
8595088	0.88	38	5.5	3
8595089	0.89	38	5.5	3
61509	0.9	38	5.5	3
8595091	0.91	38	5.5	3
8595092	0.92	38	5.5	3
8595093	0.93	38	5.5	3
8595094	0.94	38	5.5	3
8595095	0.95	38	5.5	3
8595096	0.96	38	6	3
8595097	0.97	38	6	3
8595098	0.98	38	6	3
8595099	0.99	38	6	3
61510	1	38	6	3
8595101	1.01	38	6	3
8595102	1.02	38	6	3
8595103	1.03	38	6	3
8595104	1.04	38	6	3
8595105	1.05	38	6	3
8595106	1.06	38	6	3
8595107	1.07	39	7	3
8595108	1.08	39	7	3
8595109	1.09	39	7	3
61511	1.1	39	7	3
8595111	1.11	39	7	3
8595112	1.12	39	7	3
8595113	1.13	39	7	3

EDP	DC	OAL	LCF	DCON
8595114	1.14	39	7	3
8595115	1.15	39	7	3
8595116	1.16	39	7	3
8595117	1.17	39	7	3
8595118	1.18	39	7	3
8595119	1.19	40	8	3
61512	1.2	40	8	3
8595121	1.21	40	8	3
8595122	1.22	40	8	3
8595123	1.23	40	8	3
8595124	1.24	40	8	3
8595125	1.25	40	8	3
8595126	1.26	40	8	3
8595127	1.27	40	8	3
8595128	1.28	40	8	3
8595129	1.29	40	8	3
61513	1.3	40	8	3
8595131	1.31	40	8	3
8595132	1.32	40	8	3
8595133	1.33	41	9	3
8595134	134	41	9	3
8595135	1.35	41	9	3
8595136	1.36	41	9	3
8595137	1.37	41	9	3
8595138	1.38	41	9	3
8595139	1.39	41	9	3
61514	1.4	41	9	3
8595141	1.41	41	9	3
8595142	1.42	41	9	3
8595143	1.43	41	9	3
8595144	1.44	41	9	3
8595145	1.45	41	9	3
8595146	1.46	41	9	3
8595147	1.47	41	9	3
8595148	1.48	41	9	3
8595149	1.49	41	9	3
61515	1.5	41	9	3
8595151	1.51	42	10	3
8595152	1.52	42	10	3
8595153	1.53	42	10	3
8595154	1.54	42	10	3
8595155	1.55	42	10	3
8595156	1.56	42	10	3
8595157	1.57	42	10	3
8595158	1.58	42	10	3
8595159	1.59	42	10	3
61516	1.6	42	10	3
8595161	1.61	42	10	3
8595162	1.62	42	10	3
8595163	1.63	42	10	3
8595164	1.64	42	10	3
8595165	1.65	42	10	3
8595166	1.66	42	10	3
8595167	1.67	42	10	3
8595168	1.68	42	10	3
8595169	1.69	42	10	3
61517	1.7	42	10	3
8595171	1.71	43	11	3
8595172	1.72	43	11	3
8595173	1.73	43	11	3
8595174	1.74	43	11	3
8595175	1.75	43	11	3
8595176	1.76	43	11	3
8595177	1.77	43	11	3

EDP	DC	OAL	LCF	DCON
8595178	1.78	43	11	3
8595179	1.79	43	11	3
61518	1.8	43	11	3
8595181	1.81	43	11	3
8595182	1.82	43	11	3
8595183	1.83	43	11	3
8595184	1.84	43	11	3
8595185	1.85	43	11	3
8595186	1.86	43	11	3
8595187	1.87	43	11	3
8595188	1.88	43	11	3
8595189	1.89	43	11	3
61519	1.9	43	11	3
8595191	1.91	44	12	3
8595192	1.92	44	12	3
8595193	1.93	44	12	3
8595194	1.94	44	12	3
8595195	1.95	44	12	3
8595196	1.96	44	12	3
8595197	1.97	44	12	3
8595198	1.98	44	12	3
8595199	1.99	44	12	3
61520	2	44	12	3
8595201	2.01	44	12	3
8595202	2.02	44	12	3
8595203	2.03	44	12	3
8595204	2.04	44	12	3
8595205	2.05	44	12	3
8595206	2.06	44	12	3
8595207	2.07	44	12	3
8595208	2.08	44	12	3
8595209	2.09	44	12	3
61521	2.1	44	12	3
8595211	2.11	44	12	3
8595212	2.12	44	12	3
8595213	2.13	45	13	3
8595214	2.14	45	13	3
8595215	2.15	45	13	3
8595216	2.16	45	13	3
8595217	2.17	45	13	3
8595218	2.18	45	13	3
8595219	2.19	45	13	3
61522	2.2	45	13	3
8595221	2.21	45	13	3
8595222	2.22	45	13	3
8595223	2.23	45	13	3
8595224	2.24	45	13	3
8595225	2.25	45	13	3
8595226	2.26	45	13	3
8595227	2.27	45	13	3
8595228	2.28	45	13	3
8595229	2.29	45	13	3
61523	2.3	45	13	3
8595231	2.31	45	13	3
8595232	2.32	45	13	3
8595233	2.33	45	13	3
8595234	2.34	45	13	3
8595235	2.35	45	13	3
8595236	2.36	45	13	3
8595237	2.37	46	14	3
8595238	2.38	46	14	3
8595239	2.39	46	14	3
61524	2.4	46	14	3
8595241	2.41	46	14	3

EX-SUS-GDS

High Performance HSS-EV3 Drills For SUS & General Applications

For General Purpose Applications

EDP	DC	OAL	LCF	DCON
8595242	2.42	46	14	3
8595243	2.43	46	14	3
8595244	2.44	46	14	3
8595245	2.45	46	14	3
8595246	2.46	46	14	3
8595247	2.47	46	14	3
8595248	2.48	46	14	3
8595249	2.49	46	14	3
61525	2.5	46	14	3
8595251	2.51	46	14	3
8595252	2.52	46	14	3
8595253	2.53	46	14	3
8595254	2.54	46	14	3
8595255	2.55	46	14	3
8595256	2.56	46	14	3
8595257	2.57	46	14	3
8595258	2.58	46	14	3
8595259	2.59	46	14	3
61526	2.6	46	14	3
8595261	2.61	46	14	3
8595262	2.62	46	14	3
8595263	2.63	46	14	3
8595264	2.64	46	14	3
8595265	2.65	46	14	3
8595266	2.66	48	16	3
8595267	2.67	48	16	3
8595268	2.68	48	16	3
8595269	2.69	48	16	3
61527	2.7	48	16	3
8595271	2.71	48	16	3
8595272	2.72	48	16	3
8595273	2.73	48	16	3
8595274	2.74	48	16	3
8595275	2.75	48	16	3
8595276	2.76	48	16	3
8595277	2.77	48	16	3
8595278	2.78	48	16	3
8595279	2.79	48	16	3
61528	2.8	48	16	3
8595281	2.81	48	16	3
8595282	2.82	48	16	3
8595283	2.83	48	16	3
8595284	2.84	48	16	3
8595285	2.85	48	16	3
8595286	2.86	48	16	3
8595287	2.87	48	16	3
8595288	2.88	48	16	3
8595289	2.89	48	16	3
61529	2.9	48	16	3
8595291	2.91	48	16	3
8595292	2.92	48	16	3
8595293	2.93	48	16	3
8595294	2.94	48	16	3
8595295	2.95	48	16	3
8595296	2.96	48	16	3
8595297	2.97	48	16	3
8595298	2.98	48	16	3
8595299	2.99	48	16	3
61530	3.00	48	16	3
8595301	3.01	50	18	4
8595302	3.02	50	18	4
8595303	3.03	50	18	4
8595304	3.04	50	18	4
8595305	3.05	50	18	4
8595306	3.06	50	18	4
8595307	3.07	50	18	4
8595308	3.08	50	18	4
8595309	3.09	50	18	4
61531	3.10	50	18	4
8595311	3.11	50	18	4
8595312	3.12	50	18	4
8595313	3.13	50	18	4
8595314	3.14	50	18	4
8595315	3.15	50	18	4
8595316	3.16	50	18	4
8595317	3.17	50	18	4
8595318	3.18	50	18	4

EDP	DC	OAL	LCF	DCON
8595319	3.19	50	18	4
61532	3.20	50	18	4
8595321	3.21	50	18	4
8595322	3.22	50	18	4
8595323	3.23	50	18	4
8595324	3.24	50	18	4
8595324	3.24	50	18	4
8595325	3.25	50	18	4
8595326	3.26	50	18	4
8595327	3.27	50	18	4
8595328	3.28	50	18	4
8595329	3.29	50	18	4
61533	3.3	50	18	4
8595331	3.31	50	18	4
8595332	3.32	50	18	4
8595333	3.33	50	18	4
8595334	3.34	50	18	4
8595335	3.35	50	18	4
8595336	3.36	52	20	4
8595337	3.37	52	20	4
8595338	3.38	52	20	4
8595339	3.39	52	20	4
61534	3.40	52	20	4
8595341	3.41	52	20	4
8595342	3.42	52	20	4
8595343	3.43	52	20	4
8595344	3.44	52	20	4
8595345	3.45	52	20	4
8595346	3.46	52	20	4
8595347	3.47	52	20	4
8595348	3.48	52	20	4
8595349	3.49	52	20	4
61535	3.50	52	20	4
8595351	3.51	52	20	4
8595352	3.52	52	20	4
8595353	3.53	52	20	4
8595354	3.54	52	20	4
8595355	3.55	52	20	4
8595356	3.56	52	20	4
8595357	3.57	52	20	4
8595358	3.58	52	20	4
8595359	3.59	52	20	4
61536	3.6	52	20	4
8595361	3.61	52	20	4
8595362	3.62	52	20	4
8595363	3.63	52	20	4
8595364	3.64	52	20	4
8595365	3.65	52	20	4
8595366	3.66	52	20	4
8595367	3.67	52	20	4
8595368	3.68	52	20	4
8595369	3.69	52	20	4
61537	3.7	52	20	4
8595371	3.71	52	20	4
8595372	3.72	52	20	4
8595373	3.73	52	20	4
8595374	3.74	52	20	4
8595375	3.75	52	20	4
8595376	3.76	54	22	4
8595377	3.77	54	22	4
8595378	3.78	54	22	4
8595379	3.79	54	22	4
61538	3.8	54	22	4
8595381	3.81	54	22	4
8595382	3.82	54	22	4
8595383	3.83	54	22	4
8595384	3.84	54	22	4
8595385	3.85	54	22	4
8595386	3.86	54	22	4
8595387	3.87	54	22	4
8595388	3.88	54	22	4
8595389	3.89	54	22	4
61539	3.9	54	22	4
8595391	3.91	54	22	4
8595392	3.92	54	22	4
8595393	3.93	54	22	4
8595394	3.94	54	22	4

EDP	DC	OAL	LCF	DCON
8595395	3.95	54	22	4
8595396	3.96	54	22	4
8595397	3.97	54	22	4
8595398	3.98	54	22	4
8595399	3.99	54	22	4
61540	4	54	22	4
8595401	4.01	66	22	6
8595402	4.02	66	22	6
8595403	4.03	66	22	6
8595404	4.04	66	22	6
8595405	4.05	66	22	6
8595406	4.06	66	22	6
8595407	4.07	66	22	6
8595408	4.08	66	22	6
8595409	4.09	66	22	6
61541	4.1	66	22	6
8595411	4.11	66	22	6
8595412	4.12	66	22	6
8595413	4.13	66	22	6
8595414	4.14	66	22	6
8595415	4.15	66	22	6
8595416	4.16	66	22	6
8595417	4.17	66	22	6
8595418	4.18	66	22	6
8595419	4.19	66	22	6
61542	4.20	66	22	6
8595421	4.21	66	22	6
8595422	4.22	66	22	6
8595423	4.23	66	22	6
8595424	4.24	66	22	6
8595425	4.25	66	22	6
8595426	4.26	68	24	6
8595427	4.27	68	24	6
8595428	4.28	68	24	6
8595429	4.29	68	24	6
61543	4.3	68	24	6
8595431	4.31	68	24	6
8595432	4.32	68	24	6
8595433	4.33	68	24	6
8595434	4.34	68	24	6
8595435	4.35	68	24	6
8595436	4.36	68	24	6
8595437	4.37	68	24	6
8595438	4.38	68	24	6
8595439	4.39	68	24	6
61544	4.4	68	24	6
8595441	4.41	68	24	6
8595442	4.42	68	24	6
8595443	4.43	68	24	6
8595444	4.44	68	24	6
8595445	4.45	68	24	6
8595446	4.46	68	24	6
8595447	4.47	68	24	6
8595448	4.48	68	24	6
8595449	4.49	68	24	6
61545	4.5	68	24	6
8595451	4.51	68	24	6
8595452	4.52	68	24	6
8595453	4.53	68	24	6
8595454	4.54	68	24	6
8595455	4.55	68	24	6
8595456	4.56	68	24	6
8595457	4.57	68	24	6
8595458	4.58	68	24	6
8595459	4.59	68	24	6
61546	4.6	68	24	6
8595461	4.61	68	24	6
8595462	4.62	68	24	6
8595463	4.63	68	24	6
8595464	4.64	68	24	6
8595465	4.65	68	24	6
8595466	4.66	68	24	6
8595467	4.67	68	24	6
8595468	4.68	68	24	6
8595469	4.69	68	24	6
61547	4.7	68	24	6
8595471	4.71	68	24	6

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EX-SUS-GDS

High Performance HSS-EV3 Drills For SUS & General Applications

For General Purpose Applications

EDP	DC	OAL	LCF	DCON
8595472	4.72	68	24	6
8595473	4.73	68	24	6
8595474	4.74	68	24	6
8595475	4.75	68	24	6
8595476	4.76	70	26	6
8595477	4.77	70	26	6
8595478	4.78	70	26	6
8595479	4.79	70	26	6
61548	4.8	70	26	6
8595481	4.81	70	26	6
8595482	4.82	70	26	6
8595483	4.83	70	26	6
8595484	4.84	70	26	6
8595485	4.85	70	26	6
8595486	4.86	70	26	6
8595487	4.87	70	26	6
8595488	4.88	70	26	6
8595489	4.89	70	26	6
61549	4.9	70	26	6
8595491	4.91	70	26	6
8595492	4.92	70	26	6
8595493	4.93	70	26	6
8595494	4.94	70	26	6
8595495	4.95	70	26	6
8595496	4.96	70	26	6
8595497	4.97	70	26	6
8595498	4.98	70	26	6
8595499	4.99	70	26	6
61550	5.00	70	26	6
8595501	5.01	70	26	6
8595502	5.02	70	26	6
8595503	5.03	70	26	6
8595504	5.04	70	26	6
8595505	5.05	70	26	6
8595506	5.06	70	26	6
8595507	5.07	70	26	6
8595508	5.08	70	26	6
8595509	5.09	70	26	6
61551	5.1	70	26	6
8595511	5.11	70	26	6
8595512	5.12	70	26	6
8595513	5.13	70	26	6
8595514	5.14	70	26	6
8595515	5.15	70	26	6
8595516	5.16	70	26	6
8595517	5.17	70	26	6
8595518	5.18	70	26	6
8595519	5.19	70	26	6
61552	5.2	70	26	6
8595521	5.21	70	26	6
8595522	5.22	70	26	6
8595523	5.23	70	26	6
8595524	5.24	70	26	6
8595525	5.25	70	26	6
8595526	5.26	70	26	6
8595527	5.27	70	26	6
8595528	5.28	70	26	6
8595529	5.29	70	26	6
61553	5.3	70	26	6
8595531	5.31	72	28	6
8595532	5.32	72	28	6
8595533	5.33	72	28	6
8595534	5.34	72	28	6
8595535	5.35	72	28	6
8595536	5.36	72	28	8
8595537	5.37	72	28	8
8595538	5.38	72	28	8
8595539	5.39	72	28	8
61554	5.4	72	28	8
8595541	5.41	72	28	8
8595542	5.42	72	28	8
8595543	5.43	72	28	8
8595544	5.44	72	28	8
8595545	5.45	72	28	8
8595546	5.46	72	28	8
8595547	5.47	72	28	8
8595548	5.48	72	28	8

EDP	DC	OAL	LCF	DCON
8595549	5.49	72	28	8
61555	5.5	72	28	8
8595551	5.51	72	28	8
8595552	5.52	72	28	8
8595553	5.53	72	28	8
8595554	5.54	72	28	8
8595555	5.55	72	28	8
8595556	5.56	72	28	8
8595557	5.57	72	28	8
8595558	5.58	72	28	8
8595559	5.59	72	28	8
61556	5.6	72	28	8
8595561	5.61	72	28	8
8595562	5.62	72	28	8
8595563	5.63	72	28	8
8595564	5.64	72	28	8
8595565	5.65	72	28	8
8595566	5.66	72	28	8
8595567	5.67	72	28	8
8595568	5.68	72	28	8
8595569	5.69	72	28	8
61557	5.7	72	28	8
8595571	5.71	72	28	8
8595572	5.72	72	28	8
8595573	5.73	72	28	8
8595574	5.74	72	28	8
8595575	5.75	72	28	8
8595576	5.76	72	28	8
8595577	5.77	72	28	8
8595578	5.78	72	28	8
8595579	5.79	72	28	8
61558	5.8	72	28	8
8595581	5.81	72	28	8
8595582	5.82	72	28	8
8595583	5.83	72	28	8
8595584	5.84	72	28	8
8595585	5.85	72	28	8
8595586	5.86	72	28	8
8595587	5.87	72	28	8
8595588	5.88	72	28	8
8595589	5.89	72	28	8
61559	5.9	72	28	8
8595591	5.91	72	28	8
8595592	5.92	72	28	8
8595593	5.93	72	28	8
8595594	5.94	72	28	8
8595595	5.95	72	28	8
8595596	5.96	72	28	8
8595597	5.97	72	28	8
8595598	5.98	72	28	8
8595599	5.99	72	28	8
61560	6	72	28	8
8595605	6.05	75	31	8
61561	6.1	75	31	8
8595615	6.15	75	31	8
61562	6.2	75	31	8
8595625	6.25	75	31	8
61563	6.3	75	31	8
8595635	6.35	75	31	8
61564	6.4	75	31	8
8595645	6.45	75	31	8
61565	6.5	75	31	8
8595655	6.55	75	31	8
61566	6.6	75	31	8
8595665	6.65	75	31	8
61567	6.7	75	31	8
8595675	6.75	78	34	8
61568	6.8	78	34	8
8595685	6.85	78	34	8
61569	6.9	78	34	8
8595695	6.95	78	34	8
61570	7	78	34	8
8595705	7.05	78	34	8
61571	7.1	78	34	8
8595715	7.15	78	34	8
61572	7.2	78	34	8
8595725	7.25	78	34	8

EDP	DC	OAL	LCF	DCON
61573	7.3	78	34	8
8595735	7.35	78	34	8
61574	7.4	78	34	8
8595745	7.45	78	34	8
61575	7.5	78	34	8
8595755	7.55	81	37	8
61576	7.6	81	37	8
8595765	7.65	81	37	8
61577	7.7	81	37	8
8595775	7.75	81	37	8
61578	7.8	81	37	8
8595785	7.85	81	37	8
61579	7.9	81	37	8
8595795	7.95	81	37	8
61580	8	81	37	8
8595805	8.05	87	37	10
61581	8.1	87	37	10
8595815	8.15	87	37	10
61582	8.2	87	37	10
8595825	8.25	87	37	10
61583	8.3	87	37	10
8595835	8.35	87	37	10
61584	8.4	87	37	10
8595845	8.45	87	37	10
61585	8.5	87	37	10
8595855	8.55	90	40	10
61586	8.6	90	40	10
8595865	8.65	90	40	10
61587	8.7	90	40	10
8595875	8.75	90	40	10
61588	8.8	90	40	10
8595885	8.85	90	40	10
61589	8.9	90	40	10
8595895	8.95	90	40	10
61690	9	90	40	10
8595905	9.05	90	40	10
61591	9.1	90	40	10
8595915	9.15	90	40	10
61592	9.2	90	40	10
8595925	9.25	90	40	10
61593	9.3	90	40	10
8595935	9.35	90	40	10
61594	9.4	90	40	10
8595945	9.45	90	40	10
61595	9.5	90	40	10
8595955	9.54	93	43	10
61596	9.6	93	43	10
8595965	9.65	93	43	10
61567	9.7	93	43	10
8595975	9.75	93	43	10
61598	9.8	93	43	10
8595985	9.85	93	43	10
61599	9.9	93	43	10
8595995	9.95	93	43	10
61600	10	93	43	10
61601	10.1	100	43	12
61602	10.2	100	43	12
61603	10.3	100	43	12
61604	10.4	100	43	12
61605	10.5	100	43	12
61606	10.6	100	43	12
61607	10.7	104	47	12
61608	10.8	104	47	12
61609	10.9	104	47	12
61610	11	104	47	12
61611	11.1	104	47	12
61612	11.2	104	47	12
61613	11.3	104	47	12
61614	11.4	104	47	12
61615	11.5	104	47	12
61616	11.6	104	47	12
61617	11.7	104	47	12
61618	11.8	104	47	12
61619	11.9	108	51	12
61620	12	108	51	12

EX-SUS-GDR

High Performance HSS-EV3 Drills For SUS & General Applications

For General Purpose Applications

SPEED FEED P.162 | HSSE | TiN | 130° | 120° | h8 | h7 | 35~40°

EDP	DC	OAL	LCF	DCON
62520	2	56	24	3
8597201	2.01	56	24	3
8597202	2.02	56	24	3
8597203	2.03	56	24	3
8597204	2.04	56	24	3
8597205	2.05	56	24	3
8597206	2.06	56	24	3
8597207	2.07	56	24	3
8597208	2.08	56	24	3
8597209	2.09	56	24	3
62521	2.1	56	24	3
8597211	2.11	56	24	3
8597212	2.12	56	24	3
8597213	2.13	59	27	3
8597214	2.14	59	27	3
8597215	2.15	59	27	3
8597216	2.16	59	27	3
8597217	2.17	59	27	3
8597218	2.18	59	27	3
8597219	2.19	59	27	3
62522	2.2	59	27	3
8597221	2.21	59	27	3
8597222	2.22	59	27	3
8597223	2.23	59	27	3
8597224	2.24	59	27	3
8597225	2.25	59	27	3
8597226	2.26	59	27	3
8597227	2.27	59	27	3
8597228	2.28	59	27	3
8597229	2.29	59	27	3
62523	2.3	59	27	3
8597231	2.31	59	27	3
8597232	2.32	59	27	3
8597233	2.33	59	27	3
8597234	2.34	59	27	3
8597235	2.35	59	27	3
8597236	2.36	59	27	3
8597237	2.37	62	30	3
8597238	2.38	62	30	3
8597239	2.39	62	30	3
62524	2.4	62	30	3
8597241	2.41	62	30	3
8597242	2.42	62	30	3
8597243	2.43	62	30	3
8597244	2.44	62	30	3
8597245	2.45	62	30	3
8597246	2.46	62	30	3
8597247	2.47	62	30	3
8597248	2.48	62	30	3
8597249	2.49	62	30	3
62525	2.5	62	30	3
8597251	2.51	62	30	3
8597252	2.52	62	30	3
8597253	2.53	62	30	3
8597254	2.54	62	30	3
8597255	2.55	62	30	3
8597256	2.56	62	30	3
8597257	2.57	62	30	3
8597258	2.58	62	30	3
8597259	2.59	62	30	3
62526	2.6	62	30	3
8597261	2.61	62	30	3
8597262	2.62	62	30	3
8597263	2.63	62	30	3

EDP	DC	OAL	LCF	DCON
8597264	2.64	62	30	3
8597265	2.65	62	30	3
8597266	2.66	65	33	3
8597267	2.67	65	33	3
8597268	2.68	65	33	3
8597269	2.69	65	33	3
62527	2.7	65	33	3
8597271	2.71	65	33	3
8597272	2.72	65	33	3
8597273	2.73	65	33	3
8597274	2.74	65	33	3
8597275	2.75	65	33	3
8597276	2.76	65	33	3
8597277	2.77	65	33	3
8597278	2.78	65	33	3
8597279	2.79	65	33	3
62528	2.8	65	33	3
8597281	2.81	65	33	3
8597282	2.82	65	33	3
8597283	2.83	65	33	3
8597284	2.84	65	33	3
8597285	2.85	65	33	3
8597286	2.86	65	33	3
8597287	2.87	65	33	3
8597288	2.88	65	33	3
8597289	2.89	65	33	3
62529	2.9	65	33	3
8597291	2.91	65	33	3
8597292	2.92	65	33	3
8597293	2.93	65	33	3
8597294	2.94	65	33	3
8597295	2.95	65	33	3
8597296	2.96	65	33	3
8597297	2.97	65	33	3
8597298	2.98	65	33	3
8597299	2.99	65	33	3
62530	3	65	33	3
8597301	3.01	68	36	4
8597302	3.02	68	36	4
8597303	3.03	68	36	4
8597304	3.04	68	36	4
8597305	3.05	68	36	4
8597306	3.06	68	36	4
8597307	3.07	68	36	4
8597308	3.08	68	36	4
8597309	3.09	68	36	4
62531	3.1	68	36	4
8597311	3.11	68	36	4
8597312	3.12	68	36	4
8597313	3.13	68	36	4
8597314	3.14	68	36	4
8597315	3.15	68	36	4
8597316	3.16	68	36	4
8597317	3.17	68	36	4
8597318	3.18	68	36	4
8597319	3.19	68	36	4
62532	3.2	68	36	4
8597321	3.21	68	36	4
8597322	3.22	68	36	4
8597323	3.23	68	36	4
8597324	3.24	68	36	4
8597325	3.25	68	36	4
8597326	3.26	68	36	4
8597327	3.27	68	36	4

EDP	DC	OAL	LCF	DCON
8597328	3.28	68	36	4
8597329	3.29	68	36	4
62533	3.3	68	36	4
8597331	3.31	68	36	4
8597332	3.32	68	36	4
8597333	3.33	68	36	4
8597334	3.34	68	36	4
8597335	3.35	68	36	4
8597336	3.36	71	39	4
8597337	3.37	71	39	4
8597338	3.38	71	39	4
8597339	3.39	71	39	4
62534	3.4	71	39	4
8597341	3.41	71	39	4
8597342	3.42	71	39	4
8597343	3.43	71	39	4
8597344	3.44	71	39	4
8597345	3.45	71	39	4
8597346	3.46	71	39	4
8597347	3.47	71	39	4
8597348	3.48	71	39	4
8597349	3.49	71	39	4
62535	3.5	71	39	4
8597351	3.51	71	39	4
8597352	3.52	71	39	4
8597353	3.53	71	39	4
8597354	3.54	71	39	4
8597355	3.55	71	39	4
8597356	3.56	71	39	4
8597357	3.57	71	39	4
8597358	3.58	71	39	4
8597359	3.59	71	39	4
62536	3.6	71	39	4
8597361	3.61	71	39	4
8597362	3.62	71	39	4
8597363	3.63	71	39	4
8597364	3.64	71	39	4
8597365	3.65	71	39	4
8597366	3.66	71	39	4
8597367	3.67	71	39	4
8597368	3.68	71	39	4
8597369	3.69	71	39	4
62537	3.7	71	39	4
8597371	3.71	71	39	4
8597372	3.72	71	39	4
8597373	3.73	71	39	4
8597374	3.74	71	39	4
8597375	3.75	71	39	4
8597376	3.76	75	43	4
8597377	3.77	75	43	4
8597378	3.78	75	43	4
8597379	3.79	75	43	4
62538	3.8	75	43	4
8597381	3.81	75	43	4
8597382	3.82	75	43	4
8597383	3.83	75	43	4
8597384	3.84	75	43	4
8597385	3.85	75	43	4
8597386	3.86	75	43	4
8597387	3.87	75	43	4
8597388	3.88	75	43	4
8597389	3.89	75	43	4
62539	3.9	75	43	4
8597391	3.91	75	43	4

shaping your dreams

EX-SUS-GDR

High Performance HSS-EV3 Drills For SUS & General Applications

For General Purpose Applications

EDP	DC	OAL	LCF	DCON
8597392	3.92	75	43	4
8597393	3.93	75	43	4
8597394	3.94	75	43	4
8597395	3.95	75	43	4
8597396	3.96	75	43	4
8597397	3.97	75	43	4
8597398	3.98	75	43	4
8597399	3.99	75	43	4
62540	4	75	43	4
8597401	4.01	87	43	6
8597402	4.02	87	43	6
8597403	4.03	87	43	6
8597404	4.04	87	43	6
8597405	4.05	87	43	6
8597406	4.06	87	43	6
8597407	4.07	87	43	6
8597408	4.08	87	43	6
8597409	4.09	87	43	6
62541	4.1	87	43	6
8597411	4.11	87	43	6
8597412	4.12	87	43	6
8597413	4.13	87	43	6
8597414	4.14	87	43	6
8597415	4.15	87	43	6
8597416	4.16	87	43	6
8597417	4.17	87	43	6
8597418	4.18	87	43	6
8597419	4.19	87	43	6
62542	4.2	87	43	6
8597421	4.21	87	43	6
8597422	4.22	87	43	6
8597423	4.23	87	43	6
8597424	4.24	87	43	6
8597425	4.25	87	43	6
8597426	4.26	91	47	6
8597427	4.27	91	47	6
8597428	4.28	91	47	6
8597429	4.29	91	47	6
62543	4.3	91	47	6
8597431	4.31	91	47	6
8597432	4.32	91	47	6
8597433	4.33	91	47	6
8597434	4.34	91	47	6
8597435	4.35	91	47	6
8597436	4.36	91	47	6
8597437	4.37	91	47	6
8597438	4.38	91	47	6
8597439	4.39	91	47	6
62544	4.4	91	47	6
8597441	4.41	91	47	6
8597442	4.42	91	47	6
8597443	4.43	91	47	6
8597444	4.44	91	47	6
8597445	4.45	91	47	6
8597446	4.46	91	47	6
8597447	4.47	91	47	6
8597448	4.48	91	47	6
8597449	4.49	91	47	6
62545	4.5	91	47	6
8597451	4.51	91	47	6
8597452	4.52	91	47	6
8597453	4.53	91	47	6
8597454	4.54	91	47	6
8597455	4.55	91	47	6

EDP	DC	OAL	LCF	DCON
8597456	4.56	91	47	6
8597457	4.57	91	47	6
8597458	4.58	91	47	6
8597459	4.59	91	47	6
62546	4.6	91	47	6
8597461	4.61	91	47	6
8597462	4.62	91	47	6
8597463	4.63	91	47	6
8597464	4.64	91	47	6
8597465	4.65	91	47	6
8597466	4.66	91	47	6
8597467	4.67	91	47	6
8597468	4.68	91	47	6
8597469	4.69	91	47	6
62547	4.7	91	47	6
8597471	4.71	91	47	6
8597472	4.72	91	47	6
8597473	4.73	91	47	6
8597474	4.74	91	47	6
8597475	4.75	91	47	6
8597476	4.76	96	52	6
8597477	4.77	96	52	6
8597478	4.78	96	52	6
8597479	4.79	96	52	6
62548	4.8	96	52	6
8597481	4.81	96	52	6
8597482	4.82	96	52	6
8597483	4.83	96	52	6
8597484	4.84	96	52	6
8597485	4.85	96	52	6
8597486	4.86	96	52	6
8597487	4.87	96	52	6
8597488	4.88	96	52	6
8597489	4.89	96	52	6
62549	4.9	96	52	6
8597491	4.91	96	52	6
8597492	4.92	96	52	6
8597493	4.93	96	52	6
8597494	4.94	96	52	6
8597495	4.95	96	52	6
8597496	4.96	96	52	6
8597497	4.97	96	52	6
8597498	4.98	96	52	6
8597499	4.99	96	52	6
62550	5	96	52	6
8597501	5.01	96	52	6
8597502	5.02	96	52	6
8597503	5.03	96	52	6
8597504	5.04	96	52	6
8597505	5.05	96	52	6
8597506	5.06	96	52	6
8597507	5.07	96	52	6
8597508	5.08	96	52	6
8597509	5.09	96	52	6
62551	5.1	96	52	6
8597511	5.11	96	52	6
8597512	5.12	96	52	6
8597513	5.13	96	52	6
8597514	5.14	96	52	6
8597515	5.15	96	52	6
8597516	5.16	96	52	6
8597517	5.17	96	52	6
8597518	5.18	96	52	6
8597519	5.19	96	52	6

EDP	DC	OAL	LCF	DCON
62552	5.2	96	52	6
8597521	5.21	96	52	6
8597522	5.22	96	52	6
8597523	5.23	96	52	6
8597524	5.24	96	52	6
8597525	5.25	96	52	6
8597526	5.26	96	52	6
8597527	5.27	96	52	6
8597528	5.28	96	52	6
8597529	5.29	96	52	6
62553	5.3	96	52	6
8597531	5.31	101	57	6
8597532	5.32	101	57	6
8597533	5.33	101	57	6
8597534	5.34	101	57	6
8597535	5.35	101	57	6
8597536	5.36	101	57	6
8597537	5.37	101	57	6
8597538	5.38	101	57	6
8597539	5.39	101	57	6
62554	5.4	101	57	6
8597541	5.41	101	57	6
8597542	5.42	101	57	6
8597543	5.43	101	57	6
8597544	5.44	101	57	6
8597545	5.45	101	57	6
8597546	5.46	101	57	6
8597547	5.47	101	57	6
8597548	5.48	101	57	6
8597549	5.49	101	57	6
62555	5.5	101	57	6
8597551	5.51	101	57	6
8597552	5.52	101	57	6
8597553	5.53	101	57	6
8597554	5.54	101	57	6
8597555	5.55	101	57	6
8597556	5.56	101	57	6
8597557	5.57	101	57	6
8597558	5.58	101	57	6
8597559	5.59	101	57	6
62556	5.6	101	57	6
8597561	5.61	101	57	6
8597562	5.62	101	57	6
8597563	5.63	101	57	6
8597564	5.64	101	57	6
8597565	5.65	101	57	6
8597566	5.66	101	57	6
8597567	5.67	101	57	6
8597568	5.68	101	57	6
8597569	5.69	101	57	6
62557	5.7	101	57	6
8597571	5.71	101	57	6
8597572	5.72	101	57	6
8597573	5.73	101	57	6
8597574	5.74	101	57	6
8597575	5.75	101	57	6
8597576	5.76	101	57	6
8597577	5.77	101	57	6
8597578	5.78	101	57	6
8597579	5.79	101	57	6
62558	5.8	101	57	6
8597581	5.81	101	57	6
8597582	5.82	101	57	6
8597583	5.83	101	57	6

EX-SUS-GDR

High Performance HSS-EV3 Drills For SUS & General Applications

For General Purpose Applications

EDP	DC	OAL	LCF	DCON
8597584	5.84	101	57	6
8597585	5.85	101	57	6
8597586	5.86	101	57	6
8597587	5.87	101	57	6
8597588	5.88	101	57	6
8597589	5.89	101	57	6
62559	5.9	101	57	6
8597591	5.91	101	57	6
8597592	5.92	101	57	6
8597593	5.93	101	57	6
8597594	5.94	101	57	6
8597595	5.95	101	57	6
8597596	5.96	101	57	6
8597597	5.97	101	57	6
8597598	5.98	101	57	6
8597599	5.99	101	57	6
62560	6	101	57	6
8597605	6.05	107	63	8
62561	6.1	107	63	8
8597615	6.15	107	63	8
62562	6.2	107	63	8
8597625	6.25	107	63	8
62563	6.3	107	63	8
8597635	6.35	107	63	8
62564	6.4	107	63	8
8597645	6.45	107	63	8
62565	6.5	107	63	8
8597655	6.55	107	63	8
62566	6.6	107	63	8
8597665	6.65	107	63	8
62567	6.7	107	63	8
8597675	6.75	113	69	8
62568	6.8	113	69	8
8597685	6.85	113	69	8
62569	6.9	113	69	8
8597695	6.95	113	69	8
62570	7	113	69	8
8597705	7.05	113	69	8
62571	7.1	113	69	8
8597715	7.15	113	69	8
62572	7.2	113	69	8
8597725	7.25	113	69	8
62573	7.3	113	69	8
8597735	7.35	113	69	8
62574	7.4	113	69	8
8597745	7.45	113	69	8
62575	7.5	113	69	8
8597755	7.55	119	69	8
62576	7.6	119	69	8
8597765	7.65	119	75	8
62577	7.7	119	75	8
8597775	7.75	119	75	8
62578	7.8	119	75	8
8597785	7.85	119	75	8
62579	7.9	119	75	8
8597795	7.95	119	75	8
62580	8	119	75	8
8597805	8.05	125	75	10
62581	8.1	125	75	10
8597815	8.15	125	75	10
62582	8.2	125	75	10
8597825	8.25	125	75	10
62583	8.3	125	75	10
8597835	8.35	125	75	10

EDP	DC	OAL	LCF	DCON
62584	8.4	125	75	10
8597845	8.45	125	75	10
62585	8.5	125	75	10
8597855	8.55	131	75	10
62586	8.6	131	75	10
8597865	8.65	131	75	10
62587	8.7	131	81	10
8597875	8.75	131	81	10
62588	8.8	131	81	10
8597885	8.85	131	81	10
62589	8.9	131	81	10
8597895	8.95	131	81	10
62590	9	131	81	10
8597905	9.05	131	81	10
62591	9.1	131	81	10
8597915	9.15	131	81	10
62592	9.2	131	81	10
8597925	9.25	131	81	10
62593	9.3	131	81	10
8597935	9.35	131	81	10
62594	9.4	131	81	10
8597945	9.45	131	81	10
62595	9.5	131	81	10
8597955	9.55	137	87	10
62596	9.6	137	87	10
8597965	9.65	137	87	10
62597	9.7	137	87	10
8597975	9.75	137	87	10
62598	9.8	137	87	10
8597985	9.85	137	87	10
62599	9.9	137	87	10
8597995	9.95	137	87	10
62600	10	137	87	10
62601	10.1	144	87	12
62602	10.2	144	87	12
62603	10.3	144	87	12
62604	10.4	144	87	12
62605	10.5	144	87	12
62606	10.6	144	87	12
62607	10.7	151	94	12
62608	10.8	151	94	12
62609	10.9	151	94	12
62610	11	151	94	12
62611	11.1	151	94	12
62612	11.2	151	94	12
62613	11.3	151	94	12
62614	11.4	151	94	12
62615	11.5	151	94	12
62616	11.6	151	94	12
62617	11.7	151	94	12
62618	11.8	151	94	12
62619	11.9	158	101	12
62620	12	158	101	12

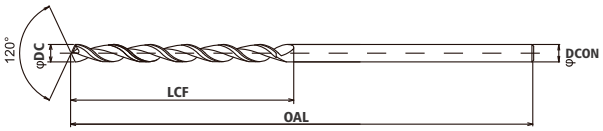
shaping your dreams

TDXL

HSS Drills Can Achieve 10 X D TDXL Drill 10D Type

X thinning
(DC<3)

R thinning
(DC≦3)



SPEED FEED P.163 | HSS-Co | WXL | h8 | SHANK h7 | 40°

Start manufacturing with WXL Coating of tip from June 2012.

For 10D operation

EDP No.	DC	LCF	OAL	DCON
	1.5× 10D	26	70	1.5
8622816	1.6× 10D			1.6
	1.7× 10D			1.7
8622818	1.8× 10D		75	1.8
	1.9× 10D			1.9
8622820	2 × 10D			2
8622821	2.1× 10D	33		2.1
8622822	2.2× 10D			2.2
8622823	2.3× 10D			2.3
8622824	2.4× 10D			2.4
8622825	2.5× 10D			2.5
8622826	2.6× 10D	40	90	2.6
8622827	2.7× 10D			2.7
8622828	2.8× 10D			2.8
8622829	2.9× 10D			2.9
8622830	3 × 10D			3
8622831	3.1× 10D	45	100	3.1
8622832	3.2× 10D			3.2
8622833	3.3× 10D			3.3
8622834	3.4× 10D	50		3.4
8622835	3.5× 10D			3.5
8622836	3.6× 10D			3.6
8622837	3.7× 10D			3.7
8622838	3.8× 10D			3.8
8622839	3.9× 10D			3.9
8622840	4 × 10D			4
8622841	4.1× 10D	55	115	4.1
8622842	4.2× 10D			4.2
8622843	4.3× 10D	60		4.3
8622844	4.4× 10D			4.4
8622845	4.5× 10D			4.5
8622846	4.6× 10D			4.6
8622847	4.7× 10D			4.7
8622848	4.8× 10D	65		4.8
8622849	4.9× 10D			4.9
8622850	5 × 10D			5
8622851	5.1× 10D	70	128	5.1
8622852	5.2× 10D			5.2
8622853	5.3× 10D			5.3
8622854	5.4× 10D	78		5.4
8622855	5.5× 10D			5.5
8622856	5.6× 10D			5.6
8622857	5.7× 10D			5.7
8622858	5.8× 10D			5.8
8622859	5.9× 10D			5.9
8622860	6 × 10D			6
8622861	6.1× 10D	87	140	6.1
8622862	6.2× 10D			6.2
8622863	6.3× 10D			6.3
8622864	6.4× 10D			6.4
8622865	6.5× 10D			6.5
8622866	6.6× 10D			6.6
8622867	6.7× 10D			6.7

For 10D operation

EDP No.	DC	LCF	OAL	DCON
8622868	6.8× 10D	90	140	6.8
8622869	6.9× 10D			6.9
8622870	7 × 10D			7
8622871	7.1× 10D	100	155	7.1
8622872	7.2× 10D			7.2
8622873	7.3× 10D			7.3
8622874	7.4× 10D			7.4
8622875	7.5× 10D			7.5
8622876	7.6× 10D	105		7.6
8622877	7.7× 10D			7.7
8622878	7.8× 10D			7.8
8622879	7.9× 10D			7.9
8622880	8 × 10D			8
8622881	8.1× 10D	110	165	8.1
8622882	8.2× 10D			8.2
8622883	8.3× 10D			8.3
8622884	8.4× 10D			8.4
8622885	8.5× 10D			8.5
8622886	8.6× 10D	115		8.6
8622887	8.7× 10D			8.7
8622888	8.8× 10D			8.8
8622889	8.9× 10D			8.9
8622890	9 × 10D			9
8622891	9.1× 10D	125	190	9.1
8622892	9.2× 10D			9.2
8622893	9.3× 10D			9.3
8622894	9.4× 10D			9.4
8622895	9.5× 10D			9.5
8622896	9.6× 10D	130		9.6
8622897	9.7× 10D			9.7
8622898	9.8× 10D			9.8
8622899	9.9× 10D			9.9
8622900	10 × 10D			10
8622901	10.1× 10D	140	205	10.1
8622902	10.2× 10D			10.2
8622903	10.3× 10D			10.3
8622904	10.4× 10D			10.4
8622905	10.5× 10D			10.5
8622906	10.6× 10D	145		10.6
8622907	10.7× 10D			10.7
8622908	10.8× 10D			10.8
8622909	10.9× 10D			10.9
8622910	11 × 10D			11
8622911	11.1× 10D	155	215	11.1
8622912	11.2× 10D			11.2
8622913	11.3× 10D			11.3
8622914	11.4× 10D			11.4
8622915	11.5× 10D			11.5
8622916	11.6× 10D			11.6
8622917	11.7× 10D			11.7
8622918	11.8× 10D			11.8
8622919	11.9× 10D			11.9
8622920	12 × 10D			12

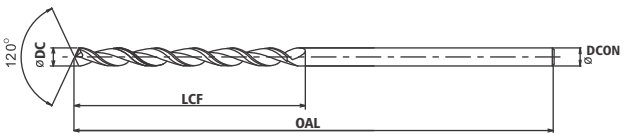
Work Material / Abbreviation	Low Carbon Steel	Medium Carbon Steel	High Carbon Steel	Alloy Steel	Hardened Steel		Quenched and Tempered Steel			Stainless Steel	Tool Steel	Cast Iron	Ductile Cast Iron	Copper Alloy	Aluminum	Aluminum Alloy Casting	Titanium Alloy	Inconel®	Composite Material	Magnesium Alloy	(MMC) Metal Matrix Composites
	C ~ 0.25%	C0.25 ~ 0.45%	C0.45% ~	SCM	~ 35 HRC	35 ~ 45 HRC	45 ~ 50 HRC	50 ~ 62 HRC	62 ~ 70 HRC	SUS	SKD SKS	FC	FCD	Cu	AL	AC			CFRP	AZ91D	
TDXL	○	◎	◎	◎								◎	◎			◎				◎	

TDXL

HSS Extra Long Drills (Without Oil Holes) Capable of Non-Step Drilling 15D

X thinning
(DC<3)

R thinning
(DC>3)



SPEED FEED P.163 | HSS-Co | WXL | h8 | FIT | 40°

TDXL		15XD OPERATION		
EDP	DC	LCF	OAL	DCON
8623016	1.6X15D	70	30	1.6
8623018	1.8X15D	75	34	1.8
8623020	2X15D	80	36	2
8623021	2.1X15D	80	38	2.1
8623022	2.2X15D	80	40	2.2
8623023	2.3X15D	85	42	2.3
8623024	2.4X15D	85	44	2.4
8623025	2.5X15D	85	46	2.5
8623026	2.6X15D	100	48	2.6
8623027	2.7X15D	100	50	2.7
8623028	2.8X15D	100	50	2.8
8623029	2.9X15D	105	54	2.9
8623030	3X15D	105	54	3
8623031	3.1X15D	110	56	3.1
8623032	3.2X15D	110	58	3.2
8623033	3.3X15D	110	60	3.3
8623034	3.4X15D	115	62	3.4
8623035	3.5X15D	115	64	3.5
8623036	3.6X15D	115	66	3.6
8623037	3.7X15D	120	68	3.7
8623038	3.8X15D	120	70	3.8
8623039	3.9X15D	120	70	3.9
8623040	4X15D	120	72	4
8623041	4.1X15D	135	74	4.1
8623042	4.2X15D	135	76	4.2
8623043	4.3X15D	140	78	4.3
8623044	4.4X15D	140	80	4.4
8623045	4.5X15D	140	82	4.5
8623046	4.6X15D	145	84	4.6
8623047	4.7X15D	145	86	4.7
8623048	4.8X15D	145	86	4.8
8623049	4.9X15D	150	88	4.9
8623050	5X15D	150	90	5
8623051	5.1X15D	150	92	5.1
8623052	5.2X15D	155	94	5.2
8623053	5.3X15D	155	96	5.3
8623054	5.4X15D	155	98	5.4
8623055	5.5X15D	155	100	5.5
8623056	5.6X15D	160	102	5.6
8623057	5.7X15D	165	104	5.7
8623058	5.8X15D	165	106	5.8
8623060	6X15D	170	108	6
8623062	6.2X15D	170	112	6.2

TDXL		15XD OPERATION		
EDP	DC	LCF	OAL	DCON
8623063	6.3X15D	175	114	6.3
8623065	6.5X15D	200	118	6.5
8623066	6.6X15D	200	120	6.6
8623068	6.8X15D	200	124	6.8
8623069	6.9X15D	200	126	6.9
8623070	7X15D	200	126	7
8623071	7.1X15D	200	128	7.1
8623075	7.5X15D	205	136	7.5
8623080	8X15D	215	144	8
8623081	8.1X15D	215	146	8.1
8623082	8.2X15D	220	148	8.2
8623085	8.5X15D	225	154	8.5
8623086	8.6X15D	225	156	8.6
8623088	8.8X15D	230	160	8.8
8623090	9X15D	230	162	9
8623093	9.3X15D	240	168	9.3
8623095	9.5X15D	240	172	9.5
8623097	9.7X15D	245	176	9.7
8623098	9.8X15D	245	178	9.8
8623100	10X15D	250	180	10
8623105	10.5X15	270	190	10.5
8623110	11X15D	280	200	11.0
8623115	11.5X15D	290	208	11.5
8623118	11.8X15D	295	214	11.8
8623120	12X15D	300	216	12.0

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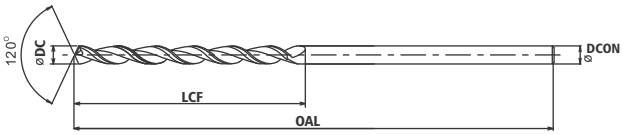
TDXL

HSS Extra Long Drills (Without Oil Holes) Capable of Non-Step Drilling 20D

X thinning
(DC<3)

R thinning
(DC>3)



SPEED FEED P.163 | HSS-Co | WXL | h8 | FIT | 40°

TDXL		20XD OPERATION		
EDP	DC	LCF	OAL	DCON
8623216	1.6X20D	85	38	1.6
8623218	1.8X20D	85	42	1.8
8623220	2X20D	85	46	2
8623221	2.1X20D	90	50	2.1
8623222	2.2X20D	90	52	2.2
8623223	2.3X20D	95	54	2.3
8623224	2.4X20D	95	56	2.4
8623225	2.5X20D	100	58	2.5
8623226	2.6X20D	110	60	2.6
8623227	2.7X20D	115	64	2.7
8623228	2.8X20D	115	66	2.8
8623229	2.9X20D	120	68	2.9
8623230	3X20D	120	70	3
8623231	3.1X20D	125	72	3.1
8623232	3.2X20D	125	74	3.2
8623233	3.3X20D	125	76	3.3
8623234	3.4X20D	130	80	3.4

TDXL		20XD OPERATION		
EDP	DC	LCF	OAL	DCON
8623260	6X20D	200	138	6
8623263	6.3X20D	200	146	6.3
8623265	6.5X20D	225	150	6.5
8623268	6.8X20D	225	158	6.8
8623269	6.9X20D	230	160	6.9
8623270	7X20D	230	162	7.0
8623275	7.5X20D	245	174	7.5
8623280	8X20D	255	184	8
8623281	8.1X20D	255	188	8.1
8623282	8.2X20D	260	190	8.2
8623285	8.5X20D	265	196	8.5
8623290	9X20D	275	208	9
8623300	10X20D	300	230	10.0
8623310	11X20D	350	254	11.0
8623320	12X20D	350	276	12.0

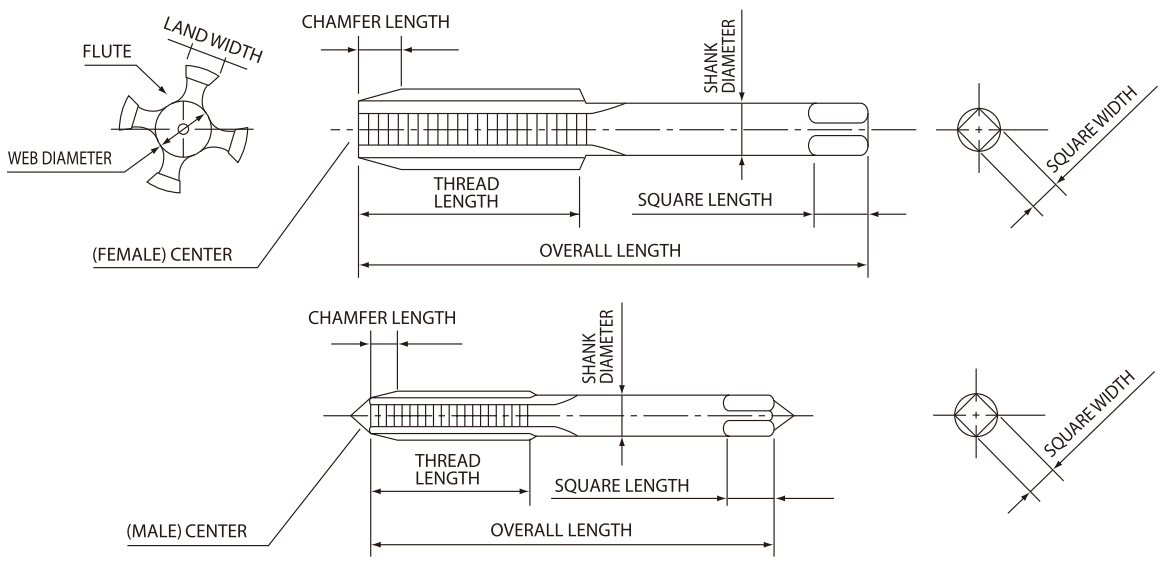
TDXL		20XD OPERATION		
EDP	DC	LCF	OAL	DCON
8623235	3.5X20D	130	82	3.5
8623237	3.7X20D	135	86	3.7
8623238	3.8X20D	140	88	3.8
8623240	4X20D	140	92	4
8623241	4.1X20D	155	96	4.1
8623242	4.2X20D	155	98	4.2
8623243	4.3X20D	160	100	4.3
8623245	4.5X20D	165	104	4.5
8623246	4.6X20D	165	106	4.6
8623248	4.8X20D	170	112	4.8
8623250	5X20D	175	116	5
8623251	5.1X20D	180	118	5.1
8623252	5.2X20D	180	120	5.2
8623255	5.5X20D	185	128	5.5
8623257	5.7X20D	190	132	5.7
8623258	5.8X20D	200	134	5.8

Work Material / Abbreviation	Low Carbon Steel	Medium Carbon Steel	High Carbon Steel	Alloy Steel	Hardened Steel		Quenched and Tempered Steel			Stainless Steel	Tool Steel	Cast Iron	Ductile Cast Iron	Copper Alloy	Aluminum	Aluminum Alloy Casting	Titanium Alloy	Inconel®	Composite Material	Magnesium Alloy	(MMC) Metal Matrix Composites
	C ~ 0.25%	C0.25 ~ 0.45%	C0.45% ~	SCM	~ 35 HRC	35 ~ 45 HRC	45 ~ 50 HRC	50 ~ 62 HRC	62 ~ 70 HRC	SUS	SKD SKS	FC	FCD	Cu	AL	AC			CFRP	AZ91D	
TDXL	○	◎	◎	◎								◎	◎			◎				◎	

shaping your dreams

INFORMATION FOR THE USER

TERMINOLOGY



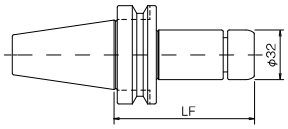
TYPE OF TAPS & FEATURES

Type	Features	Application
Spiral Fluted Taps	· Spiral flute · Chips flow out against tapping direction(ejected from holes) · Lower tapping torque and applicable for tapping to the bottom of holes · Good cutting action	· For blind holes · Materials where chips come out continuously in coil shape
Spiral Pointed Taps	· Spiral point(Chip Drive) · Pushes chips forward with low cutting torque · Shallow and unique flute form provides strong structure · Good cutting action	· For through holes · Materials where chips come out continuously in coil shape · High speed tapping
Fluteless Taps(Forming Taps)	· Fluteless · Taps do not produce chips · Precise uniformity of tapped thread limit · Excellent rigidity	· For both through & blind holes · Materials with Formability
Straight Fluted Taps(Hand Taps)	· Straight flute · Strong cutting edges · Applicable for various cuttig conditions · Easy to re-grind	· For both through & blind holes (short thread depth only) · Materials where chips come out in powder form · Hard materials

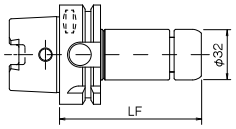
SynchroMaster

To manufacturers who are looking for a tap holder for equipment with synchronous feed mechanism

BT Shank Holder



HSK Shank Holder



BT Shank Holder

Unit:mm

EDP NO.	Designation	LF	Tap Size
79910	**BT30-SMH16-90**	90	M3 ～ M12
79911	**BT40-SMH16-90**	90	

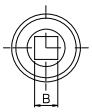
HSK Shank Holder

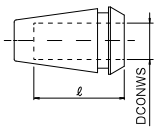
Unit:mm

EDP NO.	Designation	LF	Tap Size
79912※	**HSK40A-SMH16-85**	85	M3 ～ M12
79913	**HSK63A-SMH16-90**	90	

1. The collet and spanner are sold separately.
2. Refer to the following chart for the corresponding tap size.
3. Please use a machine with synchronous feed capability.

※ The HSK40A is without manual clamping hole.





SynchroMaster Collet

Unit:mm

EDP NO.	Designation	DCONWS	B	ℓ	Corresponding Tap Size		Standard Tightening Torque
					Old JIS	End Mill Shank	
79914	**ER16GH - 4 - 3.2**	4	3.2	15	M3	M3	30 ～ 35Nm
79915	**ER16GH - 5 - 4**	5	4	18	M4	–	
79916	**ER16GH - 5.5 - 4.5**	5.5	4.5	18	M5	–	
79917	**ER16GH - 6 - 4.5**	6	4.5	18	M6	M4、M5、M6	
79918	**ER16GH - 6.2 - 5**	6.2	5	18	M8	–	
79919	**ER16GH - 7 - 5.5**	7	5.5	18	M10	–	45 ～ 50Nm
79920	**ER16GH - 8 - 6**	8	6	22	–	M8、M10	
79921	**ER16GH - 8.5 - 6.5**	8.5	6.5	22	M12	–	

1. For center-through coolant system, please insert the tool all the way to the back of the collet. Coolant leakage may occur if the tool insertion length is too short.
2. Select the appropriate collet after confirming the dimensions of the tap to be used.
3. Please confirm the tightening torque with a torque spanner or similar tool.

Accessories

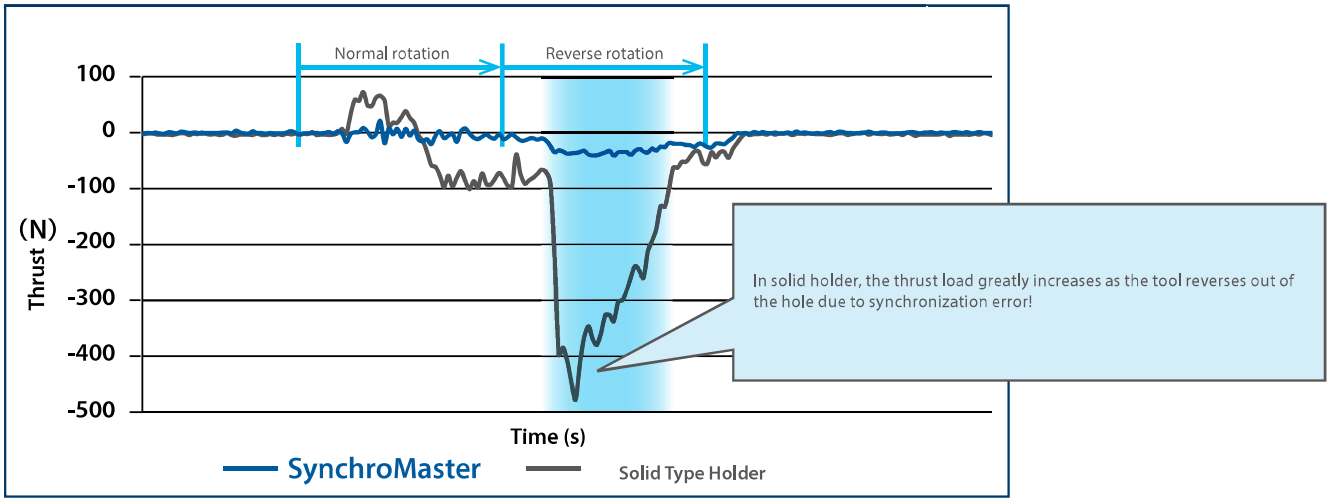
Spanner

EDP NO.	Designation
79923	**FKT-32L**

Nut

EDP NO.	Designation
79922	**ERP-16T**

Micro compensator reduces axial forces in the machining process



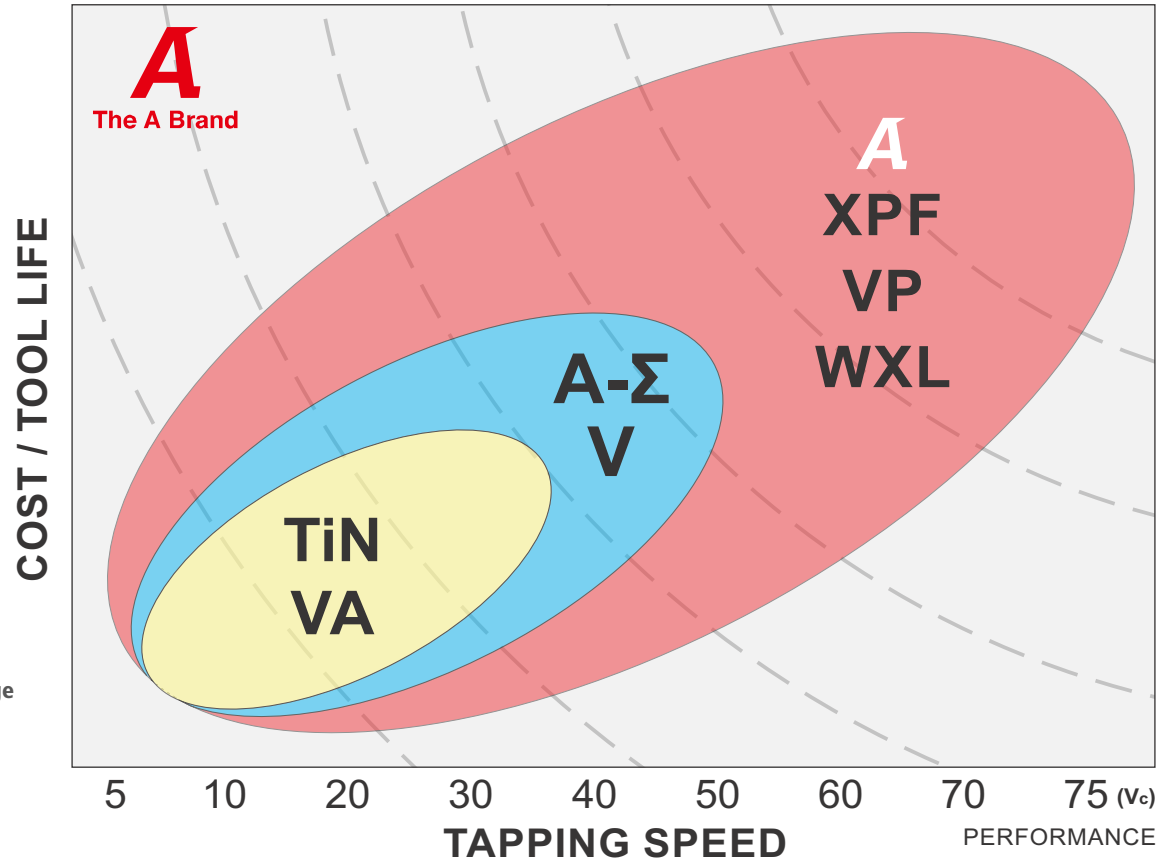
S45C　Tool：A-SFT M4×0.7　Cutting Speed：25m/min

Sharp Cutting Edge
Stabilizes chip shape

Variable Lead Flute
Accelerate chip evacuation

V Coating
High wear resistance

Powder Metallurgy HSS(CPM)
High wear resistance



TOP3 Tapping Troubles		
No.1	Breakage and chipping	26%
No.2	Dimensional error	17%
No.3	Galling	14%
	Others	43%

Main factor is chip packing

Conventional Tap

A-SFT

No Galling

SS400
Work Material:
Mild Steel

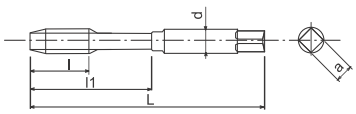
SUS304
Work Material:
Stainless Steel

Table of Contents

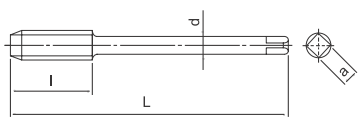
Sr. No.	Tool Abbreviation	Specification	Stocked Size	Tool Material	Surface Treatment	Recommended Work Material
61.	A-TAP	A-SFT Spiral Fluted Tap	M2 ~ M24 No.4 ~ 2UN	PM / HSSE	V (TiCN)	SCM, Carbon Steel, SUS, AC/ADC, AL, FCD, Hardened Steel 25 ~ 35HRC, Cu, Bs, BsC, ZDC, MC
61.	A-TAP	A-OIL-SFT Spiral Fluted Tap with Internal Coolant	M6 ~ M56	PM / HSSE	V (TiCN)	SCM, Carbon Steel, SUS, AC/ADC, AL, FCD, Hardened Steel 25 ~ 35HRC, Cu, Bs, BsC, ZDC, MC
65.	A-TAP	A-SFT Spiral Fluted tap Rc (ISO) Taper pipe thread	Rc1/16 ~ Rc1	PM	V (TiCN)	SCM, Carbon Steel, SUS, AC/ADC, AL, FCD, Hardened Steel 25 ~ 35HRC, Cu, Bs, BsC, ZDC, MC
65.	A-TAP	A-POT Spiral Pointed Tap	M2 ~ M24 No.4 ~ 1UN	PM	V (TiCN)	SCM, Carbon Steel, SUS, AC/ADC, AL, FCD, Hardened Steel 25 ~ 35HRC, Cu, Bs, BsC, ZDC, MC
95.	A-TAP	S-XPF Fluteless Tap	M6 ~ M20	HSSE	V (TiCN)	SCM, Carbon Steel, SUS, AC/ADC, AL, Hardened Steel 25 ~ 35HRC, Cu, Bs, BsC, ZDC
95.	A-TAP	R-XPF Fluteless Tap	M3 ~ M6	HSSE	V (TiCN)	SCM, Carbon Steel, SUS, AC/ADC, AL, Hardened Steel 25 ~ 35HRC, Cu, Bs, BsC, ZDC
96.	A-TAP	S-OIL-XPF Fluteless Tap with Internal Coolant	M6 ~ M18	HSSE	V (TiCN)	SCM, Carbon Steel, SUS, AC/ADC, AL, Hardened Steel 25 ~ 35HRC, Cu, Bs, BsC, ZDC
-	A-TAP	A-TPT Spiral Fluted Tap (Taper Pipe Thread)	PT1/16 ~ PT1 Rc1/16 ~ Rc1	HSSE	V (TiCN)	SCM, Carbon Steel, SUS, AC/ADC, AL, FCD, Hardened Steel 25 ~ 35HRC, Cu, Bs, BsC, ZDC
-	A-TAP	A-S-TPT Spiral Fluted Tap (Taper Pipe Thread)	PT1/16 ~ PT1	HSSE	V (TiCN)	SCM, Carbon Steel, SUS, AC/ADC, AL, FCD, Hardened Steel 25 ~ 36HRC, Cu, Bs, BsC, ZDC
92.	WXL-TAP	WXL-CPM-RFT Spiral Pointed Tap	M6 ~ M18	PM	WXL (Cr)	Carbon Steel, SCM
93.	VP-TAP	V-TI-SFT Spiral Fluted Tap	M3 ~ M12 No.4 ~ 8/3UNJC・F	PM	V (TiCN)	Titanium Alloy
93.	VP-TAP	V-TI-POT Spiral Pointed Tap	M3 ~ M12 No.4 ~ 8/4UNJC・F	PM	V (TiCN)	Titanium Alloy
89.	VP-TAP	VP-DC-MT Straight Fluted Tap	M5 ~ M24 No.4 ~ 1UN	PM	V (TiCN)	FC, FCD, AC/ADC, MC, ZDC
90.	VP-TAP	OIL-VP-DC-MT Straight Flute Tap with Internal Coolant	M5 ~ M24	PM	V (TiCN)	FC, FCD, AC/ADC, MC, ZDC
91.	VP-TAP	VPO-MT Straight Flute Tap with Internal Coolant	M6 ~ M16	PM	V (TiCN)	Carbon Steel, SCM
72.	A-TAP Σ	A-SFT Σ Spiral Fluted Tap	M2 ~ M52 No.2 ~ 1UN	HSSE	TiN	SCM, Carbon Steel, SUS, AC/ADC, AL, FCD, Hardened Steel 25 ~ 35HRC, Cu, Bs, BsC, ZDC, MC
70.	A-TAP Σ	A-POT Σ Spiral Pointed Tap	M2 ~ M52 No.2 ~ 1UN	HSSE	TiN	SCM, Carbon Steel, SUS, AC/ADC, AL, FCD, Hardened Steel 25 ~ 35HRC, Cu, Bs, BsC, ZDC, MC
83.	V-TAP	V-AW-SFT Spiral Fuluted Tap	M5 ~ M20	HSSE	V (TiCN)	Carbon Steel, SCM
86.	V-TAP	V-DC-MT Straight Fluted Tap	M5 ~ M24 No.4 ~ 1UN	HSSE	V (TiCN)	FC, FCD, AC/ADC, MC, ZDC
86.	V-TAP	OIL-V-DC-MT Straight Flute Tap with Internal Coolant	M5 ~ M24	HSSE	V (TiCN)	FC, FCD, AC/ADC, MC, ZDC
94.	V-TAP	V-NRT Fluteless Tap	M1 ~ M5	HSSE	V (TiCN)	SCM, Carbon Steel, SUS, AC/ADC, Cu, Bs, BsC, ZDC
75.	TIN-TAP	TIN-SFT Spiral Fluted Tap	M3 ~ M24	HSSE	TiN	SCM, Carbon Steel, SUS, AC/ADC, AL, FCD, Hardened Steel 25 ~ 35HRC, Cu, Bs, BsC, ZDC, MC
76.	TIN-TAP	TIN-POT Spiral Pointed Tap	M3 ~ M24	HSSE	TiN	SCM, Carbon Steel, SUS, AC/ADC, AL, FCD, Hardened Steel 25 ~ 35HRC, Cu, Bs, BsC, ZDC, MC
74.	TIN-TAP	TIN-MT Straight Fluted Tap	M3 ~ M25	HSSE	TiN	SCM, Carbon Steel, SUS, AC/ADC, Hardened Steel 25 ~ 35HRC
74.	TIN-TAP	TIN-NRT Fluteless Tap	M5 ~ M10	HSSE	TiN	AC/ADC
77.	VA-TAP	VA-SFT Spiral Fluted Tap	M2 ~ M36 No.4 ~ 1UN	HSSE	OX (Steam Oxide)	SCM, Carbon Steel, SUS, AC/ADC, Hardened Steel 25 ~ 35HRC
80.	VA-TAP	VA-POT Spiral Pointed Tap	M2 ~ M36 No.4 ~ 1UN	HSSE	OX (Steam Oxide)	SCM, Carbon Steel, SUS, AC/ADC, Hardened Steel 25 ~ 35HRC
97.	VA-TAP	VXL-SFT Spiral Fluted Tap	1UN ~ 2UN	HSSE	OX (Steam Oxide)	SCM, Carbon Steel, Hardened Steel 25 ~ 35HRC, SC, FC, FCD
97.	VA-TAP	HXL-SFT Spiral Fluted Tap	1UN ~ 2UN	HSSE	OX (Steam Oxide)	SCM, Carbon Steel, Hardened Steel 25 ~ 35HRC, SC, FC, FCD
97.	VA-TAP	NPT National Pipe Thread DIN2181	Rc1/16 ~ Rc1	HSSE	Non coat	Carbon Steel, AC/ADC, AL, FC, FCD, Cu, Bs, BsC, MC, ZDC
69.	A-TAP	AT-1 One Pass Thread Milling Cutter	M = P0.5 ~ P3 UN = TPI 32 ~ 8 Rc/Rp = TPI 28 ~ 11 NPT = TPI 27 ~ 11 1/2	Carbide	EgiAs (Cr)	SCM, Carbon Steel, SUS, AC/ADC, AL, Hardened Steel 25 ~ 45HRC, FC, FCD, Cu, Bs, BsC, PB, MC, ZDC
68.	A-TAP	A-CSF Carbide Spiral Fluted Tap with Internal Coolant	M6 ~ M12	Carbide	FX (TiAlN)	FC, FCD, AC, ADC, Bs, BsC, PB, ZDC
68.	A-TAP	A-CHT Carbide Straight Fluted Tap with Internal Coolant	M6 ~ M12	Carbide	FX (TiAlN)	FC, FCD, AC, ADC, Bs, BsC, PB, ZDC
98.	V-TAP	WH55-OT Carbide Straight Flute For Hardened Steel ~ 55HRC	M3 ~ M12	Carbide	V (TiCN)	Hardened Steel 35 ~ 55HRC
98.	V-TAP	VX-OT Carbide Straight Flute For Hardened Steel 50 ~ 60HRC	M2 ~ M20	Carbide	V (TiCN)	Hardened Steel 50 ~ 60HRC

M PM V 45° ISO 2 6HX C/2.5

A-SFT Metric



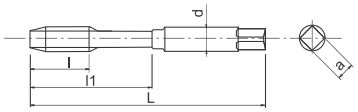
EDP	METRIC DIN 371	L	l	l1	d	a	Z
48139125	M2X0.4 6HX	45	3.2	10	2.8	2.1	2
48139133	M2.5X0.45 6HX	50	3.6	13	2.8	2.1	2
48139138	M3X0.5 6HX	56	4	18	3.5	2.7	3
48139144	M4X0.7 6HX	63	5.6	21	4.5	3.4	3
48139149	M5X0.8 6HX	70	6.4	25	6	4.9	3
48139155	M6X1 6HX	80	8	30	6	4.9	3
48139161	M8X1.25 6HX	90	10	35	8	6.2	3
48139169	M10X1.5 6HX	100	12	39	10	8	3



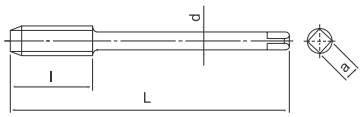
EDP	METRIC DIN 376	L	l	d	a	Z
48139179	M12X1.75 6HX	110	14	9	7	3
48139191	M14X2 6HX	110	16	11	9	3
48139202	M16 X2 6HX	110	16	12	9	3
48139214	M18X2.5 6HX	125	25	14	11	4
48139228	M20X2.5 6HX	140	25	16	12	4
48139238	M22X2.5 6HX	140	25	18	14.5	4
48139247	M24X3 6HX	160	30	18	14.5	4

M PM V 45° ISO 2 6HX C/2.5

A-OIL-SFT Metric



EDP	METRIC DIN 371	L	l	l1	d	a	Z
48140155	M6X1 6HX	80	8	30	6	4.9	3
48140161	M8X1.25 6HX	90	10	35	8	6.2	3
48140169	M10X1.5 6HX	100	12	39	10	8	3

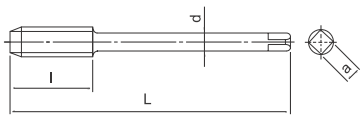


EDP	METRIC DIN 376	L	l	d	a	Z
48140179	M12X1.75 6HX	110	14	9	7	3
48140191	M14X2 6HX	110	16	11	9	3
48140202	M16X2 6HX	110	16	12	9	3

Applications												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25-35 HRC	35-45 HRC	45-52 HRC	52-62 HRC	SUS	SKD	SC	GG	GGG
◎ 15~60 m/min	◎ 15~60 m/min	◎ 10~60 m/min	◎ 8~30 m/min	○ 8~20 m/min				◎ 8~20 m/min				
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
○ 15~35 m/min		○ 15~30 m/min		○ 15~35 m/min	○ 15~35 m/min	○ 15~35 m/min	○ 15~35 m/min	○ 5~10 m/min			○ 15~20 m/min	

M HSSE V 45° ISO 2 6HX C/2.5

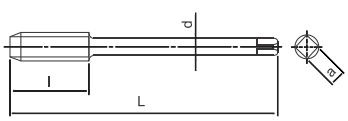
A-SFT Metric



EDP	METRIC DIN 376	L	l	d	a	Z
48140262	M27x3 6HX	160	36	20	16	4
48140271	M30x3.5 6HX	180	42	22	18	4
48140281	M33x3.5 6HX	180	42	25	20	4
48140294	M36x4 6HX	200	48	28	22	4
48140304	M39x4 6HX	200	48	32	24	4
48140314	M42x4.5 6HX	200	54	32	24	4
48140319	M45x4.5 6HX	220	54	36	29	4
48140325	M48x5 6HX	250	60	36	29	4
48140337	M52x5 6HX	250	60	40	32	4
48140347	M56x5.5 6HX	250	66	40	32	4

M PM V 45° ISO 2 6HX C/2.5

A-SFT Metric

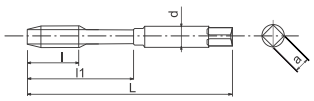


EDP	METRIC DIN 374	L	l	d	a	Z
48139156	M6X0.75 6HX	80	8	4.5	3.4	3
48139163	M8X0.75 6HX	80	8	6	4.9	3
48139162	M8X1 6HX	90	10	6	4.9	3
48139171	M10X1 6HX	90	10	7	5.5	3
48139170	M10X1.25 6HX	100	12	7	5.5	3
48139182	M12X1 6HX	100	12	9	7	3
48139181	M12X1.25 6HX	100	12	9	7	3
48139180	M12X1.5 6HX	100	14	9	7	3
48139192	M14X1.5 6HX	100	16	11	9	3
48139203	M16X1.5 6HX	100	16	12	9	3
48139216	M18X1.5 6HX	110	16	14	11	4
48139230	M20X1.5 6HX	125	16	16	12	4
48139240	M22X1.5 6HX	125	16	18	14.5	4
48139250	M24X1.5 6HX	140	16	18	14.5	4

Applications												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25-35 HRC	35-45 HRC	45-52 HRC	52-62 HRC	SUS	SKD	SC	GG	GGG
◎ 15~60 m/min	◎ 15~60 m/min	◎ 10~60 m/min	◎ 8~30 m/min	○ 8~20 m/min				◎ 8~20 m/min				
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
○ 15~35 m/min		○ 15~30 m/min		○ 15~35 m/min	○ 15~35 m/min	○ 15~35 m/min	○ 15~35 m/min	○ 5~10 m/min			○ 15~20 m/min	

UNC V 45° ANSI 2B C/2.5

A-SFT UNC



ANSI 2BX PM

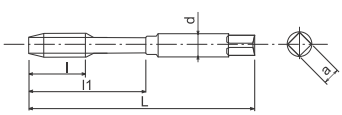
EDP	UNC DIN 2184	L	l	l1	d	a	Z
48139457	4-40 UNC 2BX	56	5.1	18	3.5	2.7	2
48139459	5-40 UNC 2BX	56	5.1	18	3.5	2.7	2
48139461	6-32 UNC 2BX	56	6.4	20	4	3	2
48139464	8-32 UNC 2BX	63	6.4	21	4.5	3.4	2
48139466	10-24 UNC 2BX	70	8.5	25	6	4.9	2

ANSI 2B HSSE

EDP	UNC DIN 2184	L	l	l1	d	a	Z
T1403785	1/4-20 UNC 2B	80	10.2	28	4.5	3.4	2
T1403786	5/16-18 UNC 2B	90	11.3	36	6	4.9	3
T1403787	3/8-16 UNC 2B	100	12.7	40	7	5.5	3
T1403788	7/16-14 UNC 2B	100	14.5	40	8	6.2	3
T1403789	1/2-13 UNC 2B	110	15.6	44	9	7	3
T1403790	9/16-12 UNC 2B	110	16.9	52	11	9	3
T1403791	5/8-11 UNC 2B	110	18.5	57	12	9	3
T1403792	3/4-10 UNC 2B	125	25.4	67	14	11	4
T1403793	7/8-9 UNC 2B	140	28.2	78	18	14.5	4
T1404146	1-8 UNC 2B	160	31.8	80	18	14.5	4
T1403650	1 1/8-8 UNC 2B	180	38.1	97	22	18	4
T1403651	1 1/4-8 UNC 2B	180	38.1	100	22	18	4
T1403652	1 3/8-8 UNC 2B	200	38.1	115	28	22	4
T1403653	1 1/2-8 UNC 2B	200	38.1	115	28	22	4
T1403794	1 5/8-8 UNC 2B	200	38.1	115	32	24	4
T1403654	1 3/4-8 UNC 2B	200	38.1	103	36	29	4
T1403795	1 7/8-8 UNC 2B	225	38.1	130	36	29	4
T1403655	2-8 UNC 2B	225	38.1	125	40	32	4

UNF PM V 45° ANSI 2BX C/2.5

A-SFT UNC



EDP	UNF DIN 2184	L	l	l1	d	a	Z
48139462	6-40 UNF 2BX	56	6.4	20	4	3	2
48139467	10-32 UNF 2BX	70	8.5	25	6	4.9	2
48139472	1/4-28 UNF 2BX	80	10.2	30	7	5.5	2
48139476	5/16-24UNF 2BX	90	11.3	35	8	6.2	3
48139481	3/8-24 UNF 2BX	90	12.7	35	10	8	3

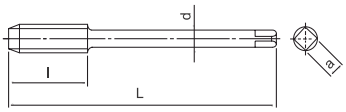
Applications												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25-35 HRC	35-45 HRC	45-52 HRC	52-62 HRC	SUS	SKD	SC	GG	GGG
◎ 15~60 m/min	◎ 15~60 m/min	◎ 10~60 m/min	◎ 8~30 m/min	○ 8~20 m/min				◎ 8~20 m/min				
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
○ 15~35 m/min		○ 15~30 m/min		○ 15~35 m/min	○ 15~35 m/min	○ 15~35 m/min	○ 15~35 m/min	○ 5~10 m/min			○ 15~20 m/min	

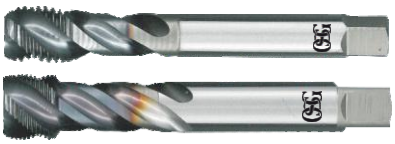
DIN TAPS FOR ALL APPLICATIONS

The A Brand

UNF PM V 45° ANSI 2BX C/2.5

A-SFT UNC



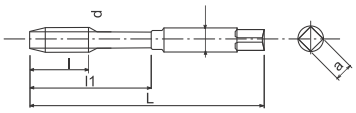


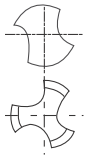
EDP	UNF DIN 2184	L	l	d	a	Z
48139486	7/16-20 UNF 2BX	100	14.5	8	6.2	3
48139491	1/2-20 UNF 2BX	100	15.6	9	7	3
48139496	9/16-18 UNF 2BX	100	16.9	11	9	3
48139504	5/8-18 UNF 2BX	100	18.5	12	9	3
48139517	3/4-16 UNF 2BX	110	25.4	14	11	4
48139528	7/8-14 UNF 2BX	125	28.2	18	14.5	4
48139539	1-12 UNF 2BX	140	31.8	18	14.5	4

Applications												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25-35 HRC	35-45 HRC	45-52 HRC	52-62 HRC	SUS	SKD	SC	GG	GGG
◎ 15~60 m/min	◎ 15~60 m/min	◎ 10~60 m/min	◎ 8~30 m/min	○ 8~20 m/min				◎ 8~20 m/min				
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
○ 15~35 m/min		○ 15~30 m/min		○ 15~35 m/min	○ 15~35 m/min	○ 15~35 m/min	○ 15~35 m/min	○ 5~10 m/min			○ 15~20 m/min	

M PM V 45° ISO 2 6HX C/1.5

A-SFT Metric Form E (Short chamfer)



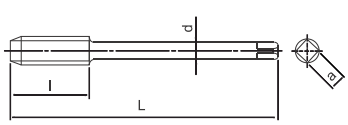


Unit.mm

EDP	METRIC DIN 371	L	l	l1	d	a	Z	Type
48203138	M3X0.5 6HX	56	4	18	3.5	2.7	2	
48203144	M4X0.7 6HX	63	5.6	21	4.5	3.4	2	
48203149	M5X0.8 6HX	70	6.4	25	6	4.9	3	
48203155	M6X1 6HX	80	8	30	6	4.9	3	
48203161	M8X1.25 6HX	90	10	35	8	6.2	3	
48203169	M10X1.5 6HX	100	12	39	10	8	3	

Unit.mm

EDP	METRIC DIN 376	L	l	d	a	Z	Type
48203179	M12X1.75 6HX	110	14	9	7	3	
48203191	M14X2 6HX	110	16	11	9	3	
48203202	M16X2 6HX	110	16	12	9	3	



Unit.mm

EDP	METRIC DIN 374	L	l	d	a	Z	Type
48203162	M8X1 6HX	90	10	6	4.9	3	
48203171	M10X1 6HX	90	10	7	5.5	3	
48203170	M10X1.25 6HX	100	12	7	5.5	3	
48203181	M12X1.25 6HX	100	14	9	7	3	
48203180	M12X1.5 6HX	100	14	9	7	3	

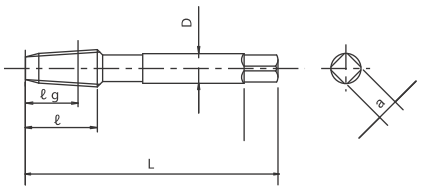
DIN TAPS FOR ALL APPLICATIONS

The A Brand

Rc (ISO) SPIRAL FLUTED TAP (TAPER PIPE THREAD)

Rc PM V 45° C/2.5

A-SFT Rc (ISO)

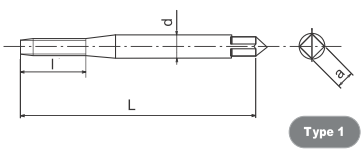


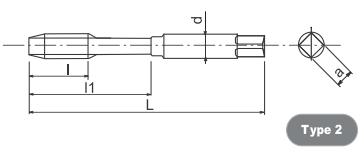
Unit.mm

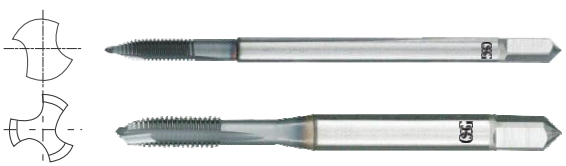
EDP	METRIC DIN 5156	L	lg	l	d	a	Z
48302374	Rc1/16-28	90	10.1	14	6	4.9	3
48302384	Rc1/8-28	90	10.1	15	7	5.5	3
48302394	Rc1/4-19	100	15	19	11	9	3
48302404	Rc3/8-19	100	15.4	21	12	9	4
48302414	Rc1/2-14	125	20.5	26	16	12	4
48302434	Rc3/4-14	140	21.8	28	20	16	4
48302454	Rc1-11	160	26	33	25	23	4

M PM V ISO 2 6HX B/4

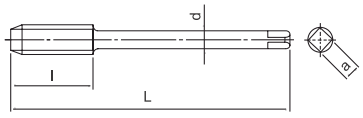
A-POT Metric







EDP	METRIC DIN 371	L	l	l1	d	a	Z	Type
48145125	M2X0.4 6HX	45	8	-	2.8	2.1	2	1
48145133	M2.5X0.45 6HX	50	9	-	2.8	2.1	2	1
48145138	M3X0.5 6HX	56	11	18	3.5	2.7	3	2
48145144	M4X0.7 6HX	63	13	21	4.5	3.4	3	2
48145149	M5X0.8 6HX	70	16	25	6	4.9	3	2
48145155	M6X1 6HX	80	19	30	6	4.9	3	2
48145161	M8X1.25 6HX	90	22	35	8	6.2	3	2
48145169	M10X1.5 6HX	100	24	39	10	8	3	2



EDP	METRIC DIN 376	L	l	d	a	Z
48145179	M12X1.75 6HX	110	29	9	7	3
48145191	M14X2 6HX	110	30	11	9	3
48145202	M16X2 6HX	110	32	12	9	3
48145214	M18X2.5 6HX	125	34	14	11	3
48145228	M20X2.5 6HX	140	34	16	12	3
48145238	M22X2.5 6HX	140	34	18	14.5	3
48145247	M24X3 6HX	160	38	18	14.5	3

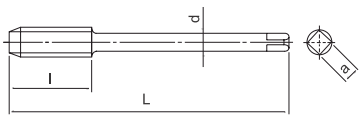
Applications

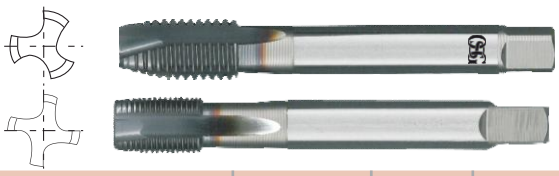
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25-35 HRC	35-45 HRC	45-52 HRC	52-62 HRC	SUS	SKD	SC	GG	GGG
◎ 15~60 m/min	◎ 15~60 m/min	◎ 10~60 m/min	◎ 8~30 m/min	○ 8~20 m/min				◎ 8~20 m/min				
Cu	**BS**	**BsC**	**PB**	**Al**	**AC,ADC**	**MC**	**ZDC**	**Ti**	**Ni**	**Plast.**	**Vinyl**	
○ 15~35 m/min		○ 15~30 m/min		○ 15~35 m/min	○ 15~35 m/min	○ 15~35 m/min	○ 15~35 m/min	○ 5~10 m/min			○ 15~20 m/min	

shaping your dreams

MF PM V ISO 2 6HX B/4

A-POT Metric Fine

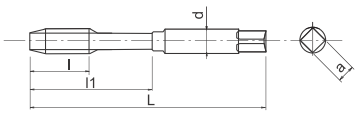


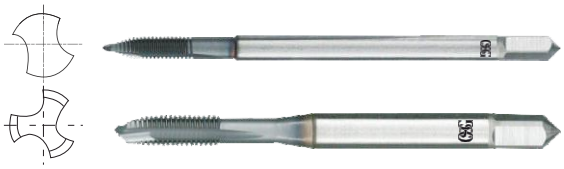


EDP	METRIC DIN 374	L	l	d	a	Z
48145156	M6X0.75 6HX	80	13	4.5	3.4	3
48145163	M8X0.75 6HX	80	19	6	4.9	3
48145162	M8X1 6HX	90	22	6	4.9	3
48145171	M10X1 6HX	90	20	7	5.5	3
48145170	M10X1.25 6HX	100	24	7	5.5	3
48145182	M12X1 6HX	100	22	9	7	3
48145181	M12X1.25 6HX	100	22	9	7	3
48145180	M12X1.5 6HX	100	22	9	7	3
48145192	M14X1.5 6HX	100	22	11	9	4
48145203	M16X1.5 6HX	100	22	12	9	4
48145216	M18X1.5 6HX	110	25	14	11	4
48145230	M20X1.5 6HX	125	25	16	12	4
48145240	M22X1.5 6HX	125	25	18	14.5	4
48145250	M24X1.5 6HX	140	28	18	14.5	4

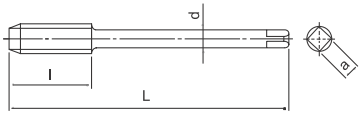
UNC PM V ANSI 2BX B/4

A-POT UNC





EDP	UNC DIN 2184	L	l	l1	d	a	Z
48145457	4-40 UNC 2BX	56	11	18	3.5	2.7	2
48145459	5-40 UNC 2BX	56	11	18	3.5	2.7	3
48145461	6-32 UNC 2BX	56	12	20	4	3	3
48145464	8-32 UNC 2BX	63	13	21	4.5	3.4	3
48145466	10-24 UNC 2BX	70	16	25	6	4.9	3
48145471	1/4-20 UNC 2BX	80	19	30	7	5.5	3
48145474	5/16-18 UNC 2BX	90	22	35	8	6.2	3
48145479	3/8-16 UNC 2BX	100	24	39	10	8	3



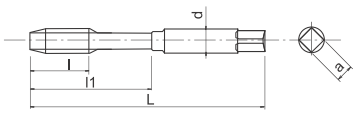
EDP	UNC DIN 2184	L	l	d	a	Z
48145484	7/16-14 UNC 2BX	100	24	8	6.2	3
48145489	1/2-13 UNC 2BX	110	28	9	7	3
48145494	9/16-12 UNC 2BX	110	30	11	9	3
48145501	5/8-11 UNC 2BX	110	32	12	9	3
48145515	3/4-10 UNC 2BX	125	34	14	11	3
48145526	7/8-9 UNC 2BX	140	34	18	14.5	3
48145538	1-8 UNC 2BX	160	38	18	14.5	3

DIN TAPS FOR ALL APPLICATIONS

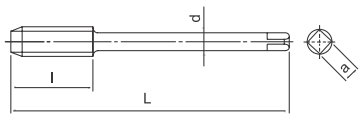
The A Brand

UNF PM V ANSI 2BX B/4

A-POT UNF

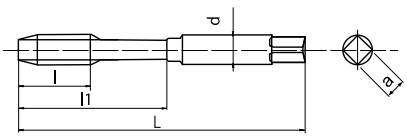


EDP	UNF DIN 2184	L	l	l1	d	a	Z
48145462	6-40 UNF 2BX	56	12	20	4	3	3
48145467	10-32 UNF 2BX	70	16	25	6	4.9	3
48145472	1/4-28 UNF 2BX	80	19	30	7	5.5	3
48145476	5/16-24 UNF 2BX	90	22	35	8	6.2	3
48145481	3/8-24 UNF 2BX	90	20	35	10	8	3

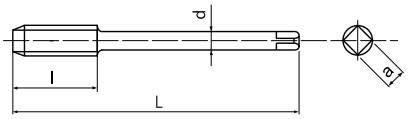


EDP	UNF DIN 2184	L	l	d	a	Z
48145486	7/16-20 UNF 2BX	100	24	8	6.2	3
48145491	1/2-20 UNF 2BX	100	22	9	7	3
48145496	9/16-18 UNF 2BX	100	22	11	9	3
48145504	5/8-18 UNF 2BX	100	22	12	9	3
48145517	3/4-16 UNF 2BX	110	25	14	11	3
48145528	7/8-14 UNF 2BX	125	25	18	14.5	3
48145539	1-12 UNF 2BX	140	28	18	14.5	3

A-CSF



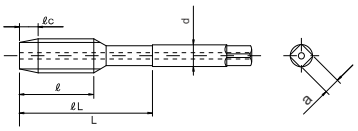
Type 1



Type 2

K G6 10-100 | K G66 10-100 | N AC,ADC 10-100 | m/min | A | M | CARBIDE | FX | ISO 2 6HX | C/2,5 | DIN 371 | DIN 376

EDP	DIN 371 / 376	L	l	l1	d	a	Z	Type
48267149	M5 x 0.8	70	10	25	6	4.9	3	1
48267155	M6 x 1	80	12	30	6	4.9	3	1
48267161	M8 x 1.25	90	15	35	8	6.2	4	1
48267169	M10 x 1.5	100	18	39	10	8	4	1
48267179	M12 x 1.75	110	21	-	9	7	4	2



M

Unit:mm CARBIDE FX SHANK h6 15°

EDP	Thread Size		Grade	TAP Limit	ℓc	L	ℓ	ℓL	d	a	z
8330860	M6 x 1	- 6	STD	OH3	1.5P	80	19	30	6	3	4.5
8330870	M8 x 1.25	- 8		OH4		90	22	37	8		6
8330880	M10 x 1.5	- 8				100	24	-	8		6
8330881	M10 x 1.25	- 8				100	24	-	8		6
8330890	M12 x 1.75	- 10				110	29	-	10		8
8330892	M12 x 1.25	- 10				100	29	-	10		8

Work Material / Abbreviation	Low Carbon Steel Mild Steel	Medium Carbon Steel	High Carbon Steel	Alloy Steel	Hardened Steel				Stainless Steel	Tool Steel	Cast Steel	Cast Iron	Ductile Cast Iron	Copper	Brass	Brass Casting	Bronze	Aluminum Rolled	Aluminum Alloy Casting	Magnesium Alloy Casting	Zinc Alloy Casting	Titanium Alloy	Nickel Alloy	Thermo Setting Plastic	Thermo Plastic
	C ~0.25%	C0.25% ~0.45%	C 0.45% ~	SCM	25~35 HRC	35~45 HRC	45~50 HRC	50~60 HRC	SUS	SKD	SC	FC	FCD	Cu	Bs	BsC	PB	AL	AC,ADC	MC	ZDC				
A-CSF												◎	◎		◎	◎	○		○	○	○			◎	○

shaping your dreams

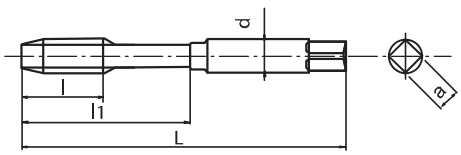
CARBIDE STRAIGHT FLUTED TAP

The A Brand

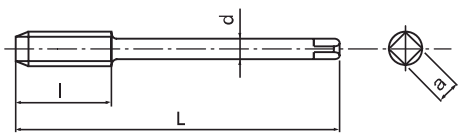
UNF PM V ANSI 2BX B/4

A-CHT OIL Center

Type 1



Type 2



K GG 10-100 | K GGG 10-100 | N AC,AOC 10-100 | m/min

A M CARBIDE FX ISO 2 6HX C/2,5 DIN 371 DIN 376

EDP	DIN 371 / 376	L	l	l1	d	a	Z	Type
48264149	M5 x 0.8	70	10	25	6	4.9	3	1
48264155	M6 x 1	80	12	30	6	4.9	3	1
48264161	M8 x 1.25	90	15	35	8	6.2	4	1
48264169	M10 x 1.5	100	18	39	10	8	4	1
48264179	M12 x 1.75	110	21	-	9	7	4	2

A MF CARBIDE FX ISO 2 6HX C/2,5 DIN 374

EDP	DIN 371 / 376	L	l	d	a	Z
48264162	MF8 x 1	90	15	6	4.9	4
48264171	MF10 x 1	90	18	7	5.5	4
48264180	MF12 x 1.5	100	21	9	7	4
48264182	MF12 X 1	100	21	9	7	4
48264192	MF14 X 1.5	100	24	11	9	4
48264203	MF16 X 1.5	100	24	12	9	4
48264230	MF20 X 1.5	125	30	16	12	4

A-CHT OIL Side

K GG 10-100 | K GGG 10-100 | N AC,AOC 10-100 | m/min

A M CARBIDE FX ISO 2 6HX C/2,5 DIN 371 DIN 376

EDP	DIN 371 / 376	L	l	l1	d	a	Z	Type
48265149	M5 x 0.8	70	10	25	6	4.9	3	1
48265155	M6 x 1	80	12	30	6	4.9	3	1
48265161	M8 x 1.25	90	15	35	8	6.2	4	1
48265169	M10 x 1.5	100	18	39	10	8	4	1
48265179	M12 x 1.75	110	21	-	9	7	4	2

A MF CARBIDE FX ISO 2 6HX C/2,5 DIN 374

EDP	DIN 371 / 376	L	l	d	a	Z
48265162	MF8 x 1	90	15	6	4.9	4
48265171	MF10 x 1	90	18	7	5.5	4
48265180	MF12 x 1.5	100	21	9	7	4
48265182	MF12 X 1	100	21	9	7	4
48265192	MF14 X 1.5	100	24	11	9	4
48265203	MF16 X 1.5	100	24	12	9	4
48265230	MF20 X 1.5	125	30	16	12	4

A-CHT OIL FORM E

K GG 10-100 | K GGG 10-100 | N AC,AOC 10-100 | m/min

A M CARBIDE FX ISO 2 6HX E/1,5 ≥2D DIN 371 DIN 376

EDP	DIN 371 / 376	L	l	l1	d	a	Z	Type
48263149	M5 x 0.8	70	10	25	6	4.9	3	1
48263155	M6 x 1	80	12	30	6	4.9	3	1
48263161	M8 x 1.25	90	15	35	8	6.2	4	1
48263169	M10 x 1.5	100	18	39	10	8	4	1
48263179	M12 x 1.75	110	21	-	9	7	4	2

A MF CARBIDE FX ISO 2 6HX E/1,5 DIN 374

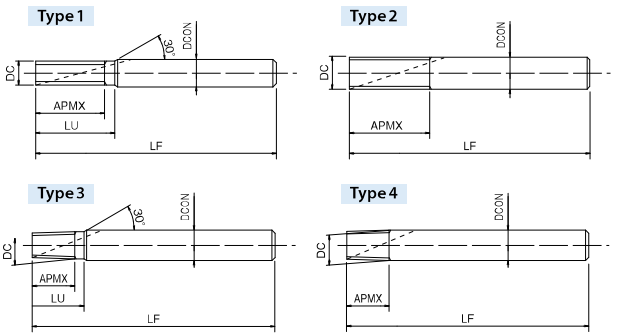
EDP	DIN 371 / 376	L	l	d	a	Z
48263171	MF10 x 1	90	18	7	5.5	3
48263180	MF12 x 1.5	100	21	9	7	3
48263182	MF12 X 1	100	21	9	7	3
48263192	MF14 X 1.5	100	24	11	9	4
48263203	MF16 X 1.5	100	24	12	9	4

ONE PASS THREAD MILLING CUTTER

The A Brand

CARBIDE | EgiAs | 9°~11° | SHRINK h6

AT - 1



M

EDP No.	Min. Cutting Bore Dia	TP	DC	LF	APMX	LU	DCON	FLUTES	TYPE
8331000	M 6	0.75	4.5	75	13.5	16	6	4	1
8331001		1			14				
8331002	M 8	0.5	5.7		17				2
8331003		1			18				
8331004		1.25			18.75				
8331005	M 10	1	7.7	85	22		8		
8331006		1.25			22.5				
8331007		1.5			24				
8331008	M 12	1	9.7	100	26		10	5	
8331009		1.25			27.5				
8331010		1.5			27				
8331011		1.75			28				
8331012	M 14	0.5	11.7	120	29		12		
8331013		0.75			30				
8331014		1							
8331015		1.5	10.7		31.5	34.5			1
8331016		2	9.7	100	32		10		2
8331017	M 16	1	13.7	135	34	39	16		1
8331018		1.5			36				
8331019		2	11.7	120			12		2
8331020	M 18	2.5			42.5				
8331021	M 20	1.5	15.7	135	43.5		16		
8331022		2.5	13.7		45	50			1
8331023	M 24	1.5	19.7	150	51		20	6	2
8331024		2			52				
8331025		3			54				

U, UNJ

EDP No.	Min. Cutting Bore Dia	TPI	DC	LF	APMX	LU	DCON	FLUTES	TYPE
8331026	1/4	20	4.55	75	15.24	17.78	6	4	1
8331027		28			15.42	17.23			
8331028	5/16	18	5.7		19.75				2
8331029		24			19.04				
8331030		32			17.47				
8331031	3/8	16	6.7	85	22.23	25.41	8		1
8331032		24			22.22	24.33			
8331033		32			20.64	22.23			
8331034	7/16	14	7.7		27.21				2
8331035		20			25.40				
8331036	1/2	13	8.7	100	29.31	33.22	10	5	1
8331037		20			27.94	30.48			
8331038		28			28.12	29.93			
8331039	9/16	12	9.7		33.87				2
8331040		18			32.45				
8331041	5/8	11	10.7	120	36.94	41.56	12		1
8331042		18			35.28	38.10			
8331043		24			34.91	37.03			
8331044	3/4	10	11.7		43.18				2
8331045		16			41.29				
8331046	7/8	9	13.7	135	50.80	56.44	16		1
8331047		14			48.98	52.61			
8331048	1	8	18.7	150	57.15	63.50	20	6	
8331049		20			53.34	55.58			

R(PT), Rc(PT)

EDP No.	RANGE OF THREAD SIZE DIA	TPI	DC	LF	APMX	LU	DCON	FLUTES	TYPE
8331075	1/16 - 1/8	28	5.67	60	9.1		6	4	4
8331076	1/8		7.67				8		
8331077	1/4 - 3/8	19	9.67	75	14.7		10	5	
8331078	3/8		11.67	85			12		
8331079	1/2 - 3/4	14			20				
8331080	3/4		15.67	95			16		
8331081	1～2	11	19.67	105	27.7		20	6	

Rp(PS), G(PF)

EDP No.	RANGE OF THREAD SIZE DIA	TPI	DC	LF	APMX	LU	DCON	FLUTES	TYPE
8331082	1/16 - 1/8	28	5.67	60	11.8		6	4	2
8331083	1/8		7.67	65	14.5		8		
8331084	1/4 - 3/8	19	9.67	80	20.1		10	5	
8331085	3/8		11.67	100	25.4		12		
8331086	1/2 - 3/4	14			32.7				
8331087	3/4		15.67	115	39.9		16		
8331088	1～2	11	19.67	130	50.8		20	6	

NPT

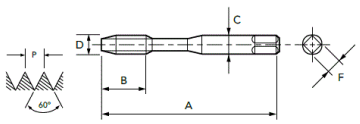
EDP No.	RANGE OF THREAD SIZE DIA	TPI	DC	LF	APMX	LU	DCON	FLUTES	TYPE
8331089	1/16 - 1/8	27	5.67	60	10.35		6	4	4
8331090	1/8		7.67				8		
8331091	1/4 - 3/8	18	9.67	75	15.52		10	5	
8331092	3/8		11.67	85			12		
8331093	1/2 - 3/4	14	15.67	95	19.96		16		
8331094	1～2	11½	18.72	105	24.3	28.7	20	6	3

shaping your dreams

M

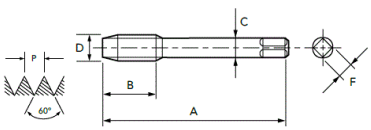
2000/0 A-SIGMA-POT 6HX

EDP	METRIC DIN 371		L	l1	d	a	Z
49100124	M2 X 0.4	6HX	45	8	2.8	2.1	2
49100174	M3 X 0.5	6HX	56	11	3.5	2.7	3
49100204	M4 X 0.7	6HX	63	13	4.5	3.4	3
49100234	M5 X 0.8	6HX	70	16	6	4.9	3
49100254	M6 X 1	6HX	80	19	6	4.9	3
49100274	M8 X 1.25	6HX	90	22	8	6.2	3
49100294	M10 X 1.5	6HX	100	24	10	8	3



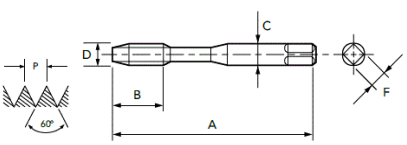
2000/4 A-SIGMA-POT

EDP	METRIC DIN 376		L	l1	d	a	Z
49140174	M3 X 0.5	6HX	56	11	2.2	-	3
49140204	M4 X 0.7	6HX	63	13	2.8	2.1	3
49140254	M6 X 1	6HX	80	19	4.5	3.4	3
49140274	M8 X 1.25	6HX	90	22	6	4.9	3
49140294	M10 X 1.5	6HX	100	24	7	5.5	3
49140314	M12 X 1.75	6HX	110	29	9	7	3
49140324	M14 X 2	6HX	110	30	11	9	3
49140334	M16 X 2	6HX	110	32	12	9	3
49140344	M18 X 2.5	6HX	125	34	14	11	3
49140354	M20 X 2.5	6HX	140	34	16	12	3
49140364	M22 X 2.5	6HX	140	34	18	14.5	3
49140374	M24 X 3	6HX	160	38	18	14.5	3



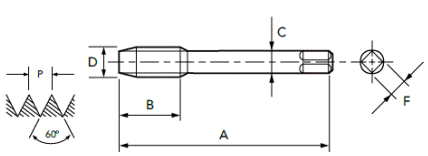
2004/0 A-SIGMA-POT 6GX

EDP	METRIC DIN 371		L	l1	d	a	Z
49100127	M2 X 0.4	6GX	45	8	2.8	2.1	2
49100177	M3 X 0.5	6GX	56	11	3.5	2.7	3
49100207	M4 X 0.7	6GX	63	13	4.5	3.4	3
49100237	M5 X 0.8	6GX	70	16	6	4.9	3
49100257	M6 X 1	6GX	80	19	6	4.9	3
49100277	M8 X 1.25	6GX	90	22	8	6.2	3
49100297	M10 X 1.5	6GX	100	24	10	8	3



2004/4 A-SIGMA-POT 6GX

EDP	METRIC DIN 376		L	l1	d	a	Z
49140177	M3 X 0.5	6GX	56	11	2.2	-	3
49140207	M4 X 0.7	6GX	63	13	2.8	2.1	3
49140237	M5 X 0.8	6GX	70	16	3.5	2.7	3
49140257	M6 X 1	6GX	80	19	4.5	3.4	3
49140277	M8 X 1.25	6GX	90	22	6	4.9	3
49140297	M10 X 1.5	6GX	100	24	7	5.5	3
49140317	M12 X 1.75	6GX	110	29	9	7	3
49140327	M14 X 2	6GX	110	30	11	9	3
49140337	M16 X 2	6GX	110	32	12	9	3
49140347	M18 X 2.5	6GX	125	34	14	11	3
49140357	M20 X 2.5	6GX	140	34	16	12	3
49140367	M22 X 2.5	6GX	140	34	18	14.5	3
49140377	M24 X 3	6GX	160	38	18	14.5	3



A DIN TAPS FOR ALL APPLICATIONS

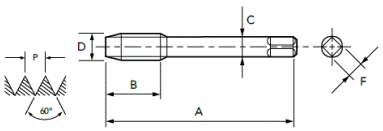
SPEED FEED P.164 | HSSE | TiN | 4,5

A - SIGMA TAP

MF

2000/5 A-SIGMA-POT

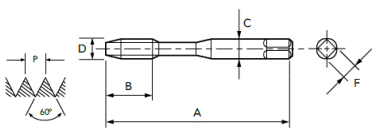
EDP	METRIC DIN 374		L	l1	d	a	Z
49151704	M6 X 0.75	6HX	80	14	4.5	3.4	3
49151744	M8 X 0.75	6HX	80	19	6	4.9	3
49151964	M8 X 1.0	6HX	90	22	6	4.9	3
49152004	M10 X 1.0	6HX	90	20	7	5.5	3
49152524	M10 X 1.25	6HX	100	24	7	5.5	3
49152044	M12 X 1.0	6HX	100	22	9	7	3
49152534	M12 X 1.25	6HX	100	22	9	7	3
49152554	M12 X 1.5	6HX	100	22	9	7	3
49152564	M14 X 1.5	6HX	100	22	11	9	3
49152584	M16 X 1.5	6HX	100	22	12	9	3
49152604	M18 X 1.5	6HX	110	25	14	11	3
49152614	M20 X 1.5	6HX	125	25	16	12	3
49152624	M22 X 1.5	6HX	125	25	18	14.5	3
49152634	M24 X 1.5	6HX	140	28	18	14.5	3



UNC

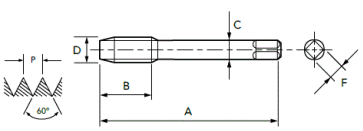
2000/1 A-SIGMA-POT

EDP	UNC DIN 2182		L	l1	d	a
49114024	2 - 56 UNC	2BX	50	9	2.8	2.1
49114044	4 - 40 UNC	2BX	56	11	3.5	2.7
49114054	5 - 40 UNC	2BX	56	11	3.5	2.7
49114064	6 - 32 UNC	2BX	56	13	4	3
49114074	8 - 32 UNC	2BX	63	13	4.5	3.4
49114084	10 - 24 UNC	2BX	70	16	5.5	4.3
49114104	1/4 - 20 UNC	2BX	80	19	7	5.5
49114114	5/16 - 18 UNC	2BX	90	22	8	6.2
49114124	3/8 - 16 UNC	2BX	100	22	9	7



2000/6 A-SIGMA-POT

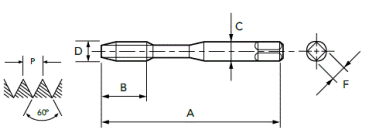
EDP	UNC DIN 2184		L	l1	d	a
49164134	7/16 - 14 UNC	2BX	100	24	8	6.2
49164144	1/2 - 13 UNC	2BX	110	29	9	7
49164154	9/16 - 12 UNC	2BX	110	30	11	9
49164164	5/8 - 11 UNC	2BX	110	32	12	9
49164174	3/4 - 10 UNC	2BX	125	34	14	11
49164184	7/8 - 9 UNC	2BX	140	34	18	14.5
49164194	1 - 8 UNC	2BX	160	38	20	16



UNF

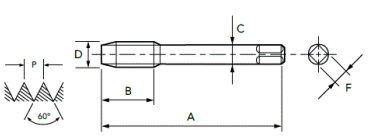
2000/2 A-SIGMA-POT

EDP	UNF DIN 2182		L	l1	d	a
49124364	6 - 40 UNF	2BX	56	13	4	3
49124384	10 - 32 UNF	2BX	70	16	5.5	4.3
49124404	1/4 - 28 UNF	2BX	80	19	7	5.5
49124414	5/16 - 24 UNF	2BX	90	22	8	6.2
49124424	3/8 - 24 UNF	2BX	100	22	9	7



2000/7 A-SIGMA-POT

EDP	UNF DIN 2183		L	l1	d	a
49174434	7/16 - 20 UNF	2BX	100	20	8	6.2
49174444	1/2 - 20 UNF	2BX	100	22	9	7
49174454	9/16 - 18 UNF	2BX	100	22	11	9
49174464	5/8 - 18 UNF	2BX	100	22	12	9
49174474	3/4 - 16 UNF	2BX	110	25	14	11
49174484	7/8 - 14 UNF	2BX	125	25	18	14.5
49174494	1 - 12 UNF	2BX	125	25	20	16

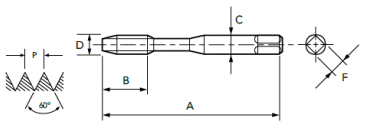


shaping your dreams

M

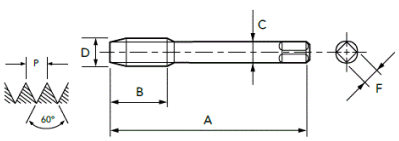
2002/0 A-SIGMA-SFT

EDP	METRIC DIN 371		L	l1	d	a	Z
49200124	M2 X 0.4	6HX	45	4	2.8	2.1	2
49200174	M3 X 0.5	6HX	56	5	3.5	2.7	3
49200204	M4 X 0.7	6HX	63	7	4.5	3.4	3
49200234	M5 X 0.8	6HX	70	8	6	4.9	3
49200254	M6 X 1	6HX	80	10	6	4.9	3
49200274	M8 X 1.25	6HX	90	13	8	6.2	3
49200294	M10 X 1.5	6HX	100	15	10	8	3



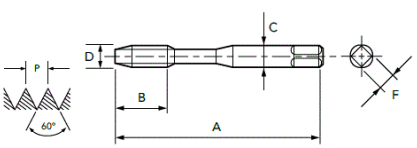
2002/4 A-SIGMA-SFT

EDP	METRIC DIN 376		L	l1	d	a	Z
49240174	M3 X 0.5	6HX	56	5	2.2	-	3
49240204	M4 X 0.7	6HX	63	7	2.8	2.1	3
49240254	M6 X 1	6HX	80	10	4.5	3.4	3
49240274	M8 X 1.25	6HX	90	13	6	4.9	3
49240294	M10 X 1.5	6HX	100	15	7	5.5	3
49240314	M12 X 1.75	6HX	110	18	9	7	3
49240324	M14 X 2	6HX	110	20	11	9	3
49240334	M16 X 2	6HX	110	20	12	9	3
49240344	M18 X 2.5	6HX	125	25	14	11	4
49240354	M20 X 2.5	6HX	140	25	16	12	4
49240364	M22 X 2.5	6HX	140	25	18	14.5	4
49240374	M24 X 3	6HX	160	30	18	14.5	4
49240384	M27 X 3	6HX	160	30	20	16	4
49240394	M30 X 3.5	6HX	180	35	22	18	4
49240404	M33 X 3.5	6HX	180	35	25	20	4
49240414	M36 X 4	6HX	200	40	28	22	4
49240424	M39 X 4	6HX	200	40	32	24	4
49240434	M42 X 4.5	6HX	200	45	32	24	4
49240444	M45 X 4.5	6HX	220	45	36	29	4
49240454	M48 X 5	6HX	250	50	36	29	4
49240464	M52 X 5	6HX	250	50	40	32	4



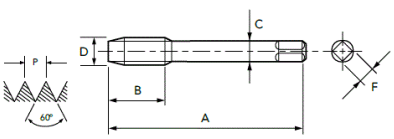
2005/0 A-SIGMA-SFT 6GX

EDP	METRIC DIN 371		L	l1	d	a	Z
49200127	M2 X 0.4	6GX	45	4	2.8	2.1	2
49200177	M3 X 0.5	6GX	56	5	3.5	2.7	3
49200207	M4 X 0.7	6GX	63	7	4.5	3.4	3
49200237	M5 X 0.8	6GX	70	8	6	4.9	3
49200257	M6 X 1	6GX	80	10	6	4.9	3
49200277	M8 X 1.25	6GX	90	13	8	6.2	3
49200297	M10 X 1.5	6GX	100	15	10	8	3



2005/4 A-SIGMA-SFT 6GX

EDP	METRIC DIN 376		L	l1	d	a	Z
49240177	M3 X 0.5	6GX	56	5	2.2	-	3
49240207	M4 X 0.7	6GX	63	7	2.8	2.1	3
49240237	M5 X 0.8	6GX	70	8	3.5	2.7	3
49240257	M6 X 1	6GX	80	10	4.5	3.4	3
49240277	M8 X 1.25	6GX	90	13	6	4.9	3
49240297	M10 X 1.5	6GX	100	15	7	5.5	3
49240317	M12 X 1.75	6GX	110	18	9	7	3
49240327	M14 X 2	6GX	110	20	11	9	3
49240337	M16 X 2	6GX	110	20	12	9	3
49240347	M18 X 2.5	6GX	125	25	14	11	4
49240357	M20 X 2.5	6GX	140	25	16	12	4
49240367	M22 X 2.5	6GX	140	25	18	14.5	4
49240377	M24 X 3	6GX	160	30	18	14.5	4



A DIN TAPS FOR ALL APPLICATIONS

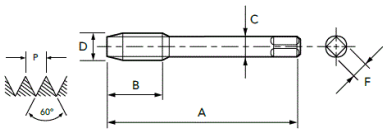
SPEED FEED P.164 | HSSE | TiN | 2.5

A - SIGMA TAP

MF

2002/5 A-SIGMA-SFT

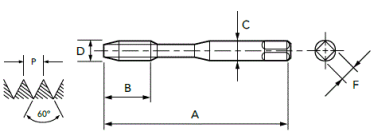
EDP	METRIC DIN 374		L	l1	d	a	Z
49251704	M6 X 0.75	6HX	80	7.5	4.5	3.4	3
49251744	M8 X 0.75	6HX	80	7.5	6	4.9	3
49251964	M8 X 1.0	6HX	90	10	6	4.9	3
49252004	M10 X 1.0	6HX	90	10	7	5.5	4
49252524	M10 X 1.25	6HX	100	12.5	7	5.5	4
49252044	M12 X 1.0	6HX	100	10	9	7	4
49252534	M12 X 1.25	6HX	100	12.5	9	7	4
49252554	M12 X 1.5	6HX	100	15	9	7	4
49252564	M14 X 1.5	6HX	100	15	11	9	3
49252584	M16 X 1.5	6HX	100	15	12	9	5
49252604	M18 X 1.5	6HX	110	15	14	11	5
49252614	M20 X 1.5	6HX	125	15	16	12	5
49252624	M22 X 1.5	6HX	125	15	18	14.5	4
49252634	M24 X 1.5	6HX	140	15	18	14.5	4



UNC

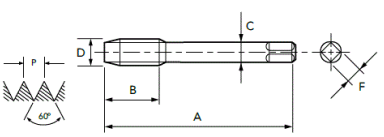
2002/1 A-SIGMA-SFT

EDP	UNC DIN 2182		L	l1	d	a
49214024	2 - 56 UNC	2BX	50	4.5	2.8	2.1
49214044	4 - 40 UNC	2BX	56	6.5	3.5	2.7
49214054	5 - 40 UNC	2BX	56	6.5	3.5	2.7
49214064	6 - 32 UNC	2BX	56	8	4	3
49214074	8 - 32 UNC	2BX	63	8	4.5	3.4
49214084	10 - 24 UNC	2BX	70	10.5	5.5	4.3
49214104	1/4 - 20 UNC	2BX	80	12.5	7	5.5
49214114	5/16 - 18 UNC	2BX	90	14	8	6.2
49214124	3/8 - 16 UNC	2BX	100	16	9	7



2002/6 A-SIGMA-SFT

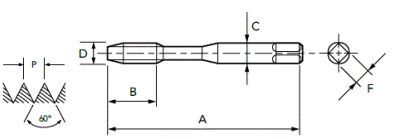
EDP	UNC DIN 2182		L	l1	d	a
49264134	7/16 - 14 UNC	2BX	100	18	8	6.2
49264144	1/2 - 13 UNC	2BX	110	19.5	9	7
49264154	9/16 - 12 UNC	2BX	110	22	11	9
49264164	5/8 - 11 UNC	2BX	110	23	12	9
49264174	3/4 - 10 UNC	2BX	125	25.5	14	11
49264184	7/8 - 9 UNC	2BX	140	28	18	14.5
49264194	1 - 8 UNC	2BX	160	32	18	14.5



UNF

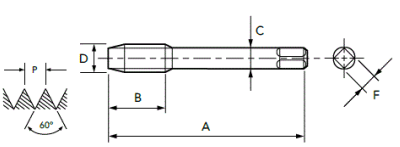
2002/2 A-SIGMA-SFT

EDP	UNF DIN 2182		L	l1	d	a
49224364	6 - 40 UNF	2BX	56	6.5	4	3
49224384	10 - 32 UNF	2BX	70	8	5.5	4.3
49224404	1/4 - 28 UNF	2BX	80	9	7	5.5
49224414	5/16 - 24 UNF	2BX	90	10.5	8	6.2
49224424	3/8 - 24 UNF	2BX	100	10.5	9	7



2002/7 A-SIGMA-SFT

EDP	UNF DIN 2183		L	l1	d	a
49274434	7/16 - 20 UNF	2BX	100	13	8	6.2
49274444	1/2 - 20 UNF	2BX	100	13	9	7
49274454	9/16 - 18 UNF	2BX	100	14	11	9
49274464	5/8 - 18 UNF	2BX	100	14	12	9
49274474	3/4 - 16 UNF	2BX	110	16	14	11
49274484	7/8 - 14 UNF	2BX	125	18	18	14.5
49274494	1 - 12 UNF	2BX	125	21	20	16



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DIN TAPS FOR THE GENERAL INDUSTRY

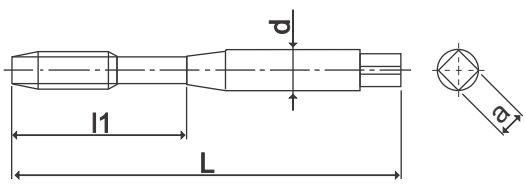
SPEED FEED P.165 | M | HSSE | TiN | ISO 2 6HX | C/2.5

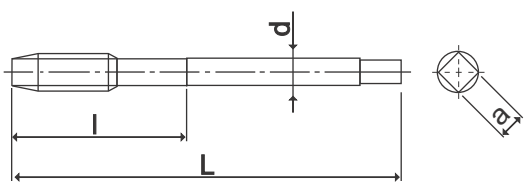
TIN-NRT Metric

EDP	METRIC DIN 371		L	l1	d	a	Z
T1911168	M5 x 0.8	6HX	70	25	6	4.9	
T1910954	M6 x 1	6HX	80	30	6	4.9	
T1911170	M8 x 1.25	6HX	90	35	8	6.2	
T1911171	M10 x 1.5	6HX	100	39	10	8	

TIN-MT Metric

- TIN coating for increased durability and wear resistance for longer tool life at high speeds
- For pilot hole use OSG HPD Drill Series
- For Cast Iron (GG, GGG) and Aluminium Diecast
- Manufactured from OSG's HSS-EV3

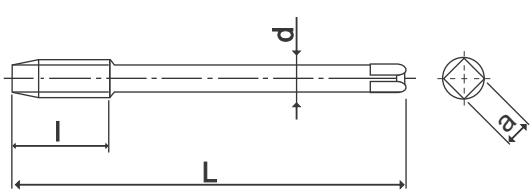




EDP	METRIC DIN 371		L	l1	d	a	Z
TM11030501	M3 x 0.5	6HX	56	18	3.5	2.7	3
TM11040701	M4 x 0.7	6HX	63	21	4.5	3.4	3
TM11050801	M5 x 0.8	6HX	70	25	6	4.9	3
TM11061001	M6 x1	6HX	80	30	6	4.9	3
TM11081301	M8 x 1.25	6HX	90	35	8	6.2	4
TM11101501	M10 x 1.5	6HX	100	39	10	8	4

EDP	METRIC DIN 376		L	d	a	Z
TM16121801	M12 x 1.75	6HX	110	9	7	4
TM16142001	M14 x 2	6HX	110	11	9	4
TM16162001	M16 x 2	6HX	110	12	9	4
TM16182501	M18 x 2.5	6HX	125	14	11	4
TM16202501	M20 x 2.5	6HX	140	16	12	4
TM16222501	M22 x 2.5	6HX	140	18	14.5	5
TM16243001	M24 x 3	6HX	160	18	14.5	5

TIN-MT Metric Fine pitch



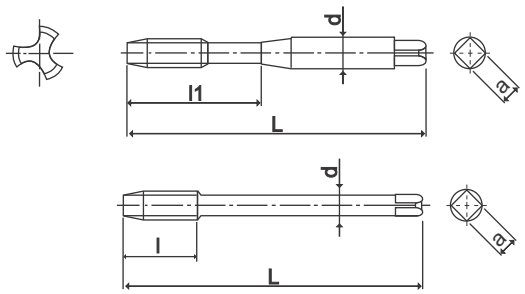
EDP	METRIC DIN 374		L	d	a	Z
TM14081001	M8 x 1	6HX	90	6	4.9	4
TM14101001	M10 x 1	6HX	90	7	5.5	4
TM14101301	M10 x 1.25	6HX	100	7	5.5	4
TM14121301	M12 x 1.25	6HX	100	9	7	4
TM14121501	M12 x 1.5	6HX	100	9	7	4
TM14141501	M14 x 1.5	6HX	100	11	9	4
TM14161501	M16 x 1.5	6HX	100	12	9	4
TM14181501	M18 x 1.5	6HX	110	14	11	4
TM14201501	M20 x 1.5	6HX	125	16	12	4
TM14241501	M24 x 1.5	6HX	140	18	14.5	5

DIN TAPS FOR THE GENERAL INDUSTRY

SPEED FEED P.165 | M | HSSE | TiN | 40° | Blind hole applications

TIN-SFT Metric

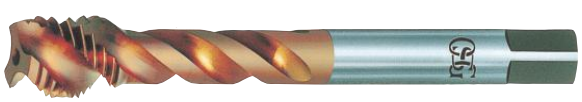
- This tap is made for cutting materials whose chips are produced in continuos coil form, such as carbon steels.
- Alloy steels and nonferrous metals.

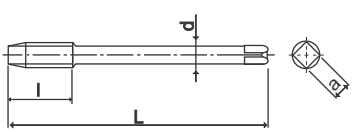


EDP	METRIC DIN 371		L	l1	d	a	Z
6131386001	M3 x 0.5	6HX	56	18	3.5	2.7	3
6131446001	M4 x 0.7	6HX	63	21	4.5	3.4	3
6131496001	M5 x 0.8	6HX	70	25	6	4.9	3
6131556001	M6 x1	6HX	80	30	6	4.9	3
6131616001	M8 x 1.25	6HX	90	35	8	6.2	4
6131696001	M10 x 1.5	6HX	100	39	10	8	4

EDP	METRIC DIN 376		L	d	a	Z
6141796001	M12 x 1.75	6HX	110	9	7	3
6141916001	M14 x 2	6HX	110	11	9	3
6142026001	M16 x 2	6HX	110	12	9	3
6142146001	M18 x 2.5	6HX	125	14	11	4
6142286001	M20 x 2.5	6HX	140	16	12	4
6142386001	M22 x 2.5	6HX	140	18	14.5	4
6142476001	M24 x 3	6HX	160	18	14.5	4

TIN-SFT Metric Fine pitch





EDP	METRIC DIN 374		L	d	a	Z
6121516001	M5 x 0.5	6HX	70	3.5	2.7	3
6121626001	M8 x 1	6HX	90	6	4.9	3
6121716001	M10 x 1	6HX	90	7	5.5	3
6121706001	M10 x 1.25	6HX	100	7	5.5	3
6121816001	M12 x 1.25	6HX	100	9	7	3
6121806001	M12 x 1.5	6HX	100	9	7	3
6121926001	M14 x 1.5	6HX	100	11	9	3
6122036001	M16 x 1.5	6HX	100	12	9	3
6122166001	M18 x 1.5	6HX	110	14	11	4
6122306001	M20 x 1.5	6HX	125	16	12	4
6122506001	M24 x 1.5	6HX	140	18	14.5	4

TIN-SFT

EDP	METRIC DIN 371		L	l1	d	a	Z
6131389001	M3 x 0.5	6G	56	18	3.5	2.7	3
6131449001	M4 x 0.7	6G	63	21	4.5	3.4	3
6131499001	M5 x 0.8	6G	70	25	6	4.9	3
6131559001	M6 x1.0	6G	80	30	6	4.9	3
6131619001	M8 x 1.25	6G	90	35	8	6.2	4
6131699001	M10 x 1.5	6G	100	39	10	8	4

shaping your dreams

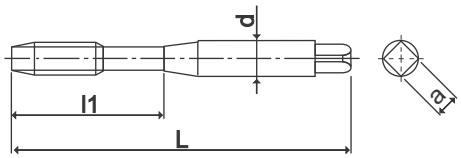
DIN TAPS FOR THE GENERAL INDUSTRY

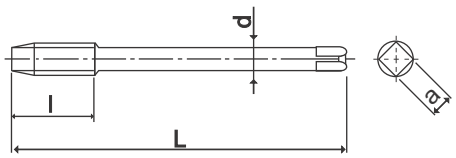
SPEED FEED P.165 | M | HSSE | TiN | 4

Through hole applications

TIN-POT Metric

- Suitable for through hole tapping of carbon steels, alloy steels and nonferrous metals whose chips are produced in continuous coil form.
- These taps discharge chips through the hole.

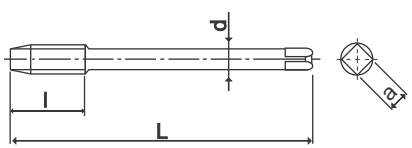




EDP	METRIC DIN 371		L	l1	d	a	Z
6071386001	M3 x 0.5	6HX	56	18	3.5	2.7	3
6071446001	M4 x 0.7	6HX	63	21	4.5	3.4	3
6071496001	M5 x 0.8	6HX	70	25	6	4.9	3
6071556001	M6 x1	6HX	80	30	6	4.9	3
6071616001	M8 x 1.25	6HX	90	35	8	6.2	4
6071696001	M10 x 1.5	6HX	100	39	10	8	4

EDP	METRIC DIN 376		L	d	a	Z
6081796001	M12 x 1.75	6HX	110	9	7	3
6081916001	M14 x 2	6HX	110	11	9	3
6082026001	M16 x 2	6HX	110	12	9	3
6082146001	M18 x 2.5	6HX	125	14	11	3
6082286001	M20 x 2.5	6HX	140	16	12	3
6082386001	M22 x 2.5	6HX	140	18	14.5	3
6082476001	M24 x 3	6HX	160	18	14.5	3

TIN-POT Metric Fine pitch



EDP	METRIC DIN 374		L	d	a	Z
6061516001	M5 x 0.5	6HX	70	3.5	2.7	3
6061626001	M8 x 1	6HX	90	6	4.9	3
6061716001	M10 x 1	6HX	90	7	5.5	3
6061706001	M10 x 1.25	6HX	100	7	5.5	3
6061816001	M12 x 1.25	6HX	100	9	7	3
6061806001	M12 x 1.5	6HX	100	9	7	3
6061926001	M14 x 1.5	6HX	100	11	9	3
6062036001	M16 x 1.5	6HX	100	12	9	3
6062166001	M18 x 1.5	6HX	110	14	11	3
6062306001	M20 x 1.5	6HX	125	16	12	3
6062506001	M24 x 1.5	6HX	140	18	14.5	3

TIN-POT

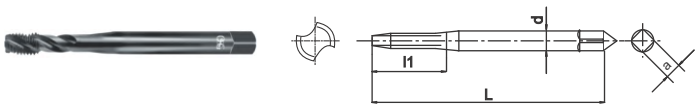
EDP	METRIC DIN 371		L	l1	d	a	Z
6091386001	M3 x 0.5	6G	56	18	3.5	2.7	3
6091446001	M4 x 0.7	6G	63	21	4.5	3.4	3
6091496001	M5 x 0.8	6G	70	25	6	4.9	3
6091556001	M6 x1.0	6G	80	30	6	4.9	3
6091616001	M8 x 1.25	6G	90	35	8	6.2	4
6091696001	M10 x 1.5	6G	100	39	10	8	4

DIN TAPS FOR THE GENERAL INDUSTRY

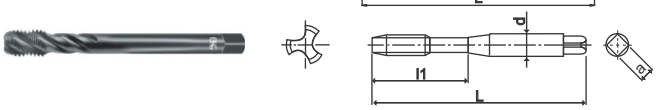
VA-SFT

- For stainless steels and alloy steels
- Displays superb cutting characteristics and durability
- For pilot hole use OSG HPD Drill Series

Type.1



Type.2

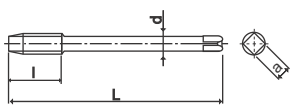


SPEED FEED P.165 | HSSE | OX | 40° | 2.5

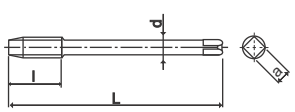
Blind hole applications

Unit.mm

EDP	METRIC DIN 371	L	l1	d	a	Z	Type
65312560	M2x0.4 6H	45	8	2.8	2.1	2	1
65312860	M2.2x0.45 6H	45	9	2.8	2.1	2	1
65313360	M2.5x0.45 6H	50	9	2.8	2.1	2	1
65313860	M3x0.5 6H	56	18	3.5	2.7	3	2
65314060	M3.5x0.6 6H	56	20	4	3	3	2
65314460	M4x0.7 6H	63	21	4.5	3.4	3	2
65314960	M5x0.8 6H	70	25	6	4.9	3	2
65315560	M6x1 6H	80	30	6	4.9	3	2
65316160	M8x1.25 6H	90	35	8	6.2	3	2
65316960	M10x1.5 6H	100	39	10	8	3	2



EDP	METRIC DIN 376	L	l	d	a	Z
65417960	M12x1.75 6H	110	18	9	7	4
65419160	M14x2 6H	110	20	11	9	4
65420260	M16x2 6H	110	20	12	9	4
65421460	M18x2.5 6H	125	25	14	11	4
65422860	M20x2.5 6H	140	25	16	12	4
65423860	M22x2.5 6H	140	25	18	14.5	4
65424760	M24x3 6H	160	30	18	14.5	4
65426260	M27x3 6H	160	30	20	16	5
65427160	M30x3.5 6H	180	35	22	18	5
65428160	M33x3.5 6H	180	35	25	20	5
65429460	M36x4 6H	200	40	28	22	



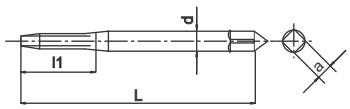
EDP	METRIC FINE DIN 374	L	l	d	a	Z
65513960	M3x0.35 6H	56	4	2.2	-	3
65514560	M4x0.5 6H	63	6	2.8	2.1	3
65515160	M5x0.5 6H	70	7	3.5	2.7	3
65515760	M6x0.5 6H	80	8	4.5	3.4	3
65515660	M6x0.75 6H	80	8	4.5	3.4	3
65516360	M8x0.75 6H	80	10	6	4.9	3
65516260	M8x1 6H	90	10	6	4.9	3
65517160	M10x1 6H	90	12	7	5.5	4
65517060	M10x1.25 6H	100	12	7	5.5	4
65518260	M12x1 6H	100	14	9	7	4
65518160	M12x1.25 6H	100	14	9	7	4
65518060	M12x1.5 6H	100	14	9	7	4
65519260	M14x1.5 6H	100	16	11	9	4
65520360	M16x1.5 6H	100	16	12	9	5
65521660	M18x1.5 6H	110	20	14	11	5
65523060	M20x1.5 6H	125	20	16	12	5
65524060	M22x1.5 6H	125	20	18	14.5	5
65525060	M24x1.5 6H	140	24	18	14.5	5

shaping your dreams

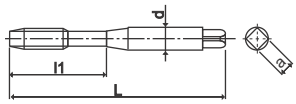
DIN TAPS FOR THE GENERAL INDUSTRY

VA-SFT

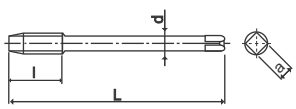
Type.1



Type.2

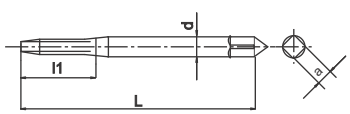


EDP	METRIC 6G DIN 371	L	l1	d	a	Z	Type
65312599	M2x0.4 6G	45	8	2.8	2.1	2	1
65313399	M2.5x0.45 6G	50	9	2.8	2.1	2	1
65313899	M3x0.5 6G	56	18	3.5	2.7	3	2
65314499	M4x0.7 6G	63	21	4.5	3.4	3	2
65314999	M5x0.8 6G	70	25	6	4.9	3	2
65315599	M6x1 6G	80	30	6	4.9	3	2
65316199	M8x1.25 6G	90	35	8	6.2	3	2
65316999	M10x1.5 6G	100	39	10	8	3	2

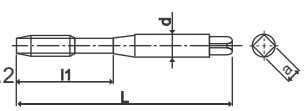


EDP	METRIC 6G DIN 376	L	l	d	a	Z	
65417999	M12x1.75 6G	110	18	9	7	4	
65419199	M14x2 6G	110	20	11	9	4	
65420299	M16x2 6G	110	20	12	9	4	

Type.1

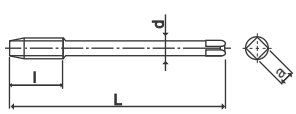


Type.2

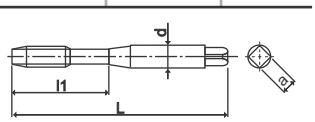


Unit.mm

EDP	UNC DIN 2182	L	l1	d	a	Z	Type
74945730	4-40 UNC 2B	56	11	3.5	2.7	2	1
74945930	5-40 UNC 2B	56	18	3.5	2.7	3	2
74946130	6-32 UNC 2B	56	20	4	3	3	2
74946430	8-32 UNC 2B	63	21	4.5	3.4	3	2
74946630	10-24 UNC 2B	70	25	6	4.9	3	2
74947150	1/4-20 UNC 2B	80	30	7	5.5	3	2
74947450	5/16-18 UNC 2B	90	35	8	6.2	3	2
74947950	3/8-16 UNC 2B	90	35	9	7	3	2



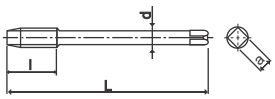
EDP	UNC DIN 2183	L	l	d	a	Z	
75248450	7/16-14 UNC 2B	100	19	8	6.2	4	
75248950	1/2-13 UNC 2B	110	20	9	7	4	
75249450	9/16-12 UNC 2B	110	22	11	9	4	
75250150	5/8-11 UNC 2B	110	24	12	9	4	
75251550	3/4-10 UNC 2B	125	26	14	11	4	
75252660	7/8-9 UNC 2B	140	29	18	14.5	4	
75253860	1"-8 UNC 2B	160	32	18	14.5	5	



EDP	UNF DIN 2182	L	l1	d	a	Z	
75246220	6-40 UNF 2B	56	20	4	3	3	
75246730	10-32 UNF 2B	70	25	6	4.9	3	
75247240	1/4-28 UNF 2B	80	30	7	5.5	3	
75247640	5/16-24 UNF 2B	90	35	8	6.2	3	
75248140	3/8-24 UNF 2B	90	35	9	7	3	

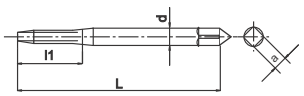
DIN TAPS FOR THE GENERAL INDUSTRY

VA-SFT

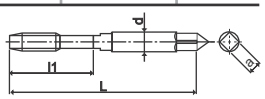


EDP	UNF DIN 2183	L	l	d	a	Z
75248650	7/16-20 UNF 2B	100	15	8	6.2	4
75249150	1/2-20 UNF 2B	100	16	9	7	4
75249650	9/16-18 UNF 2B	100	17	11	9	4
75250450	5/8-18 UNF 2B	100	18	12	9	4
75251750	3/4-16 UNF 2B	110	21	14	11	4
75252860	7/8-14 UNF 2B	125	23	18	14.5	4
75253960	1"-12 UNF 2B	125	25	18	14.5	5

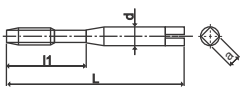
Type.1



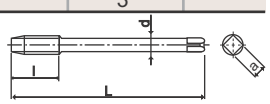
Type.2



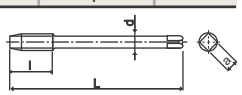
EDP	UNJC DIN 2182	L	l1	d	a	Z	Type
48001457	4-40 UNJC 3B	56	11	3.5	2.7	2	1
48001461	6-32 UNJC 3B	56	20	4	3	3	2
48001464	8-32 UNJC 3B	63	21	4.5	3.4	3	2



EDP	UNJF DIN 2182	L	l1	d	a	Z
48001467	10-32 UNJF 3B	70	25	6	4.9	3
48001472	1/4-28 UNJF 3B	80	30	7	5.5	3
48001476	5/16-24 UNJF 3B	90	35	8	6.2	3
48001481	3/8-24 UNJF 3B	90	35	9	7	3



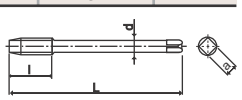
EDP	UNJF DIN 2183	L	l	d	a	Z
48001486	7/16-20 UNJF 3B	100	15	8	6.2	4
48001491	1/2-20 UNJF 3B	100	16	9	7	4



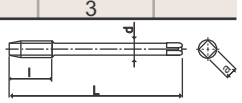
EDP	BSP DIN5156	L	l	d	a	Z
65881909	G 1/8-28	90	11	7	5.5	4
65882009	G 1/4-19	100	16	11	9	4
65882109	G 3/8-19	100	16	12	9	5
65882209	G 1/2-14	125	22	16	12	5
65882309	G 5/8-14	125	22	18	14.5	5
65882409	G 3/4-14	140	22	20	16	5
65882509	G 7/8-14	150	22	22	18	5
65882609	G 1-11	160	28	25	20	5

VA-SFT Form E 1.5P (SHORT CHAMFER)

SPEED FEED P.165 | HSSE | OX | 40° | 1,5 | Blind hole applications



EDP	METRIC DIN 371	L	l	d	a	Z
48036138	M3x0.5 6H	56	18	3.5	2.7	3
48036144	M4x0.7 6H	63	21	4.5	3.4	3
48036149	M5x0.8 6H	70	25	6	4.9	3
48036155	M6x1 6H	80	30	6	4.9	3
48036161	M8x1.25 6H	90	35	8	6.2	3
48036169	M10x1.5 6H	100	39	10	8	3



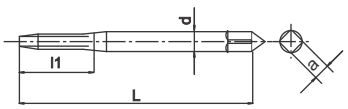
EDP	METRIC DIN 376	L	l	d	a	Z
48036179	M12x1.75 6H	110	18	9	7	3
48036191	M14x2 6H	110	20	11	9	3
48036202	M16x2 6H	110	20	12	9	3

DIN TAPS FOR THE GENERAL INDUSTRY

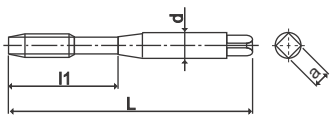
VA-POT

- For stainless steels and alloy steels
- Displays superb cutting characteristics and durability
- For pilot hole use OSG HPD Drill Series

Type.1



Type.2

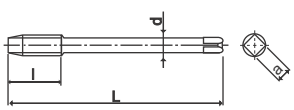


SPEED FEED P.165 | HSSE | OX | ⊢4⊣

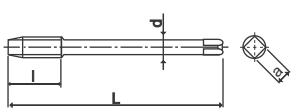
Through hole applications

Unit.mm

EDP	METRIC DIN 371	L	l1	d	a	Z	Type
63812560	M2x0.4 6H	45	8	2.8	2.1	2	1
63812860	M2.2x0.45 6H	45	9	2.8	2.1	2	1
63813360	M2.5x0.45 6H	50	9	2.8	2.1	2	1
63813860	M3x0.5 6H	56	18	3.5	2.7	3	2
63814060	M3.5x0.6 6H	56	20	4	3	3	2
63814460	M4x0.7 6H	63	21	4.5	3.4	3	2
63814960	M5x0.8 6H	70	25	6	4.9	3	2
63815560	M6x1 6H	80	30	6	4.9	3	2
63816160	M8x1.25 6H	90	35	8	6.2	3	2
63816960	M10x1.5 6H	100	39	10	8	3	2



EDP	METRIC DIN 376	L	l	d	a	Z
63917960	M12x1.75 6H	110	29	9	7	3
63919160	M14x2 6H	110	30	11	9	3
63920260	M16x2 6H	110	32	12	9	3
63921460	M18x2.5 6H	125	34	14	11	3
63922860	M20x2.5 6H	140	34	16	12	3
63923860	M22x2.5 6H	140	34	18	14.5	3
63924760	M24x3 6H	160	38	18	14.5	3
63926260	M27x3 6H	160	38	20	16	4
63927160	M30x3.5 6H	180	45	22	18	4
63928160	M33x3.5 6H	180	50	25	20	4
63929460	M36x4 6H	200	56	28	22	4

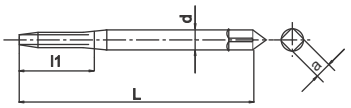


EDP	METRIC FINE DIN 374	L	l	d	a	Z
63713960	M3x0.35 6H	56	9	2.2	-	3
63714560	M4x0.5 6H	36	10	2.8	2.1	3
63715160	M5x0.5 6H	70	12	3.5	2.7	3
63715760	M6x0.5 6H	80	14	4.5	3.4	3
63715660	M6x0.75 6H	80	14	4.5	3.4	3
63716360	M8x0.75 6H	80	19	6	4.9	3
63716260	M8x1 6H	90	22	6	4.9	3
63717160	M10x1 6H	90	20	7	5.5	3
63717060	M10x1.25 6H	100	24	7	5.5	3
63718260	M12x1 6H	100	22	9	7	3
63718160	M12x1.25 6H	100	22	9	7	3
63718060	M12x1.5 6H	100	22	9	7	3
63719260	M14x1.5 6H	100	22	11	9	3
63720360	M16x1.5 6H	100	22	12	9	3
63721660	M18x1.5 6H	110	25	14	11	3
63723060	M20x1.5 6H	125	25	16	12	3
63724060	M22x1.5 6H	125	25	18	14.5	3
63725060	M24x1.5 6H	140	28	18	14.5	3

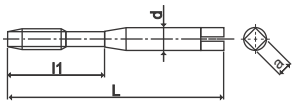
DIN TAPS FOR THE GENERAL INDUSTRY

VA-POT

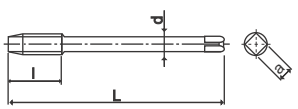
Type.1



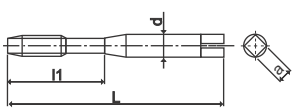
Type.2



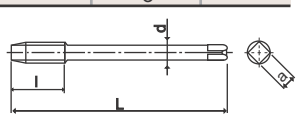
EDP	METRIC 6G DIN 371	L	l1	d	a	Z	Type
63812599	M2x0.4 6G	45	8	2.8	2.1	2	1
63813399	M2.5x0.45 6G	50	9	2.8	2.1	2	1
63813899	M3x0.5 6G	56	18	3.5	2.7	3	2
63814499	M4x0.7 6G	63	21	4.5	3.4	3	2
63814999	M5x0.8 6G	70	25	6	4.9	3	2
63815599	M6x1 6G	80	30	6	4.9	3	2
63816199	M8x1.25 6G	90	35	8	6.2	3	2
63816999	M10x1.5 6G	100	39	10	8	3	2



EDP	METRIC 6G DIN 376	L	l	d	a	Z
63917999	M12x1.75 6G	110	29	9	7	3
63919199	M14x2 6G	110	30	11	9	3
63920299	M16x2 6G	110	32	12	9	3

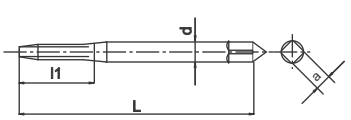


EDP	UNC DIN 2182	L	l1	d	a	Z
74845720	4-40 UNC 2B	56	18	3.5	2.7	2
74845920	5-40 UNC 2B	56	18	3.5	2.7	3
74846130	6-32 UNC 2B	56	20	4	3	3
74846430	8-32 UNC 2B	63	21	4.5	3.4	3
74846630	10-24 UNC 2B	70	25	6	4.9	3
74847150	1/4-20 UNC 2B	80	30	7	5.5	3
74847450	5/16-18 UNC 2B	90	35	8	6.2	3
74847950	3/8-16 UNC 2B	90	35	9	7	3

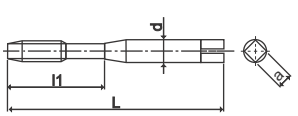


EDP	UNC DIN 2183	L	l	d	a	Z
75148450	7/16-14 UNC 2B	100	24	8	6.2	3
75148950	1/2-13 UNC 2B	110	29	9	7	3
75149450	9/16-12 UNC 2B	110	30	11	9	3
75150150	5/8-11 UNC 2B	110	32	12	9	3
75151550	3/4-10 UNC 2B	125	34	14	11	3
75152660	7/8-9 UNC 2B	140	34	18	14.5	3
75153860	1"-8 UNC 2B	160	38	18	14.5	3

Type.1



Type.2

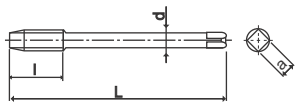


EDP	UNF DIN 2182	L	l1	d	a	Z	Type
75146220	6-40 UNF 2B	56	13	4	3	3	1
75146730	10-32 UNF 2B	70	25	6	4.9	3	2
75147240	1/4-28 UNF 2B	80	30	7	5.5	3	2
75147640	5/16-24 UNF 2B	90	35	8	6.2	3	2
75148140	3/8-24 UNF 2B	90	35	9	7	3	2

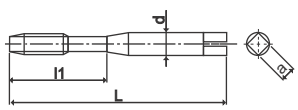
shaping your dreams

DIN TAPS FOR THE GENERAL INDUSTRY

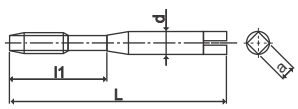
VA-POT



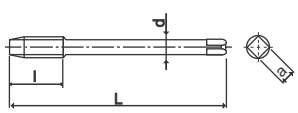
EDP	UNF DIN 2183	L	l	d	a	z
75148650	7/16-20 UNF 2B	100	20	8	6.2	3
75149150	1/2-20 UNF 2B	100	22	9	7	3
75149650	9/16-18 UNF 2B	100	22	11	9	3
75150450	5/8-18 UNF 2B	100	22	12	9	3
75151750	3/4-16 UNF 2B	110	25	14	11	3
75152860	7/8-14 UNF 2B	125	25	18	14.5	3
75153960	1"-12 UNF 2B	125	25	18	14.5	3



EDP	UNJC DIN 2182	L	l	d	a	Z
48002457	4-40 UNJC 3B	56	18	3.5	2.7	2
48002461	6-32 UNJC 3B	56	20	4	3	3
48002464	8-32 UNJC 3B	63	21	4.5	3.4	3



EDP	UNJF DIN 2182	L	l1	d	a	Z
48002467	10-32 UNJF 3B	70	25	6	4.9	3
48002472	1/4-28 UNJF 3B	80	30	7	5.5	3
48002476	5/16-24 UNJF 3B	90	35	8	6.2	3
48002481	3/8-24 UNJF 3B	90	35	9	7	3



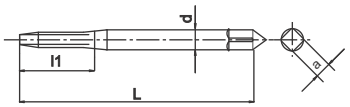
EDP	UNJF DIN 2183	L	l	d	a	Z
48002486	7/16-20 UNJF 3B	100	20	8	6.2	3
48002491	1/2-20 UNJF 3B	100	22	9	7	3

DIN TAPS FOR CAST IRON, ADC & STEEL APPLICATION

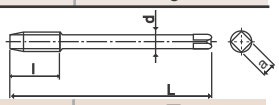
V-AW-SFT

Especially Good For Cast Iron & Steel on Horizontal Machine

SPEED FEED P.165 | HSSE | V | 15° | Blind hole applications



EDP	METRIC DIN 371	L	l1	d	a	Z
T1503379	M5X0.8 6H	70	30	6	4.9	3
T1503380	M6X1 6H	80	40	6	4.9	3
T1503381	M8X1.25 6H	90	36	8	6.2	3
T1503382	M10X1.5 6H	100	44	10	8	3



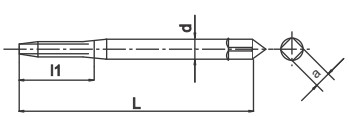
EDP	METRIC DIN 376	L	l	d	a	Z
T1503383	M12X1.75 6H	110	18	9	7	3
T1503384	M14X2 6H	110	20	11	9	3
T1503385	M16X2 6H	110	20	12	9	3

EDP	METRIC DIN 374	L	l	d	a	Z
T1503386	M10X1 6H	90	10	7	5.5	3
T1503387	M10X1.25 6H	100	13	7	5.5	3
T1503388	M12X1.25 6H	100	13	9	7	3
T1503389	M12X1.5 6H	100	15	9	7	3
T1503390	M14X1.5 6H	100	15	11	9	3
T1503391	M16X1.5 6H	100	15	12	9	3
T1503392	M18X1.5 6H	110	15	14	11	4
T1503393	M20X1.5 6H	125	15	16	12	4

AW-SFT

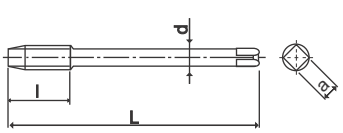
Especially Good For Cast Iron & ADC on Horizontal Machine

SPEED FEED P.165 | HSSE | 15° | Blind hole applications



Unit.mm

EDP	METRIC DIN 371	L	l1	d	a	Z
48063149	M5x0.8 6H	70	30	6	4.9	3
48063155	M6x1 6H	80	40	6	4.9	3
48063161	M8x1.25 6H	90	36	8	6.2	3
48063169	M10x1.5 6H	100	44	10	8	3



EDP	METRIC DIN 376	L	l	d	a	Z
48063179	M12x1.75 6H	100	18	9	7	3
48063191	M14x2 6H	110	20	11	9	3
48063202	M16x2 6H	110	20	12	9	3

EDP	METRIC FINE DIN 374	L	l	d	a	Z
48063171	M10x1 6H	90	12	7	5.5	3
48063170	M10x1.25 6H	100	12	7	5.5	3
48063181	M12x1.25 6H	100	14	9	7	3
48063180	M12x1.5 6H	100	14	9	7	3
48063192	M14x1.5 6H	100	16	11	9	3
48063203	M16x1.5 6H	100	16	12	9	3
48063216	M18X1.5 6H	110	20	14	11	4
48063230	M20X1.5 6H	125	20	16	12	4

shaping your dreams

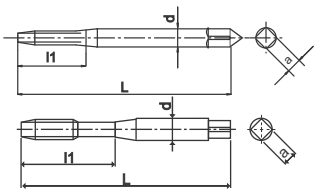
DIN TAP WITH CHIP CONTROL

CC-SFT / CC-HL-SFT

- For stainless steels, 17-4 PH, steels, aluminium & copper
- For threading up to two times diameter
- Developed for CNC machines equipped for rigid tapping
- For pilot hole use OSG HPD Drill Series

Type. 1

Type. 2

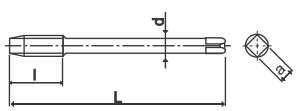


SPEED FEED P.166 | HSSE | CrN | 45° | 2.5

Blind hole applications

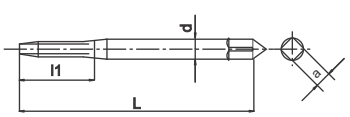
Unit.mm

EDP	METRIC DIN 371	L	l1	d	a	Z	Type
48032125	M2 x 0.4 6HX	45	8	2.8	2.1	2	1
48032133	M2.5 x 0.45 6HX	50	10	2.8	2.1	2	1
48032138	M3 x 0.5 6HX	56	12	3.5	2.7	3	1
48032144	M4 x 0.7 6HX	63	16	4.5	3.4	3	1
48032149	M5 x 0.8 6HX	70	20	6	4.9	3	1
48032155	M6 x 1.0 6HX	80	24	6	4.9	3	1
48032161	M8 x 1.25 6HX	90	35	8	6.2	3	2
48032169	M10 x 1.5 6HX	100	39	10	8	4	2

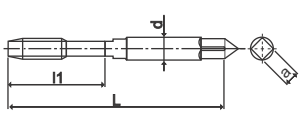


EDP	METRIC DIN 376	L	l	d	a	Z
48032179	M12 x 1.75 6HX	110	16	9	7	4
48032191	M14 x 2.0 6HX	110	18	11	9	4
48032202	M16 x 2.0 6HX	110	18	12	9	4
48032214	M18 x 2.5 6HX	125	23	14	11	4
48032228	M20 x 2.5 6HX	140	23	16	12	4
48032247	M24 x 3.0 6HX	160	27	18	14.5	4

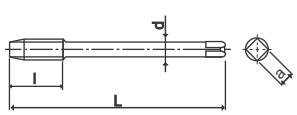
Type.1



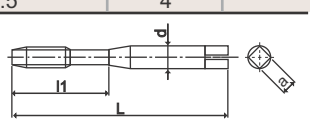
Type.2



EDP	UNC DIN 2182	L	l1	d	a	Z	Type
48032464	8-32 UNC 2B/3B	63	16.7	4.5	3.4	3	1
48032466	10-24 UNC 2B/3B	70	19.3	6	4.9	3	1
48032471	1/4-20 UNC 2B/3B	80	25.4	7	5.5	3	1
48032474	5/16-18 UNC 2B/3B	90	13	8	6.2	3	2
48032479	3/8-16 UNC 2B/3B	90	15	9	7	3	2



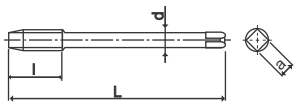
EDP	UNC DIN 2183	L	l	d	a	Z
48032484	7/16-14 UNC 2B/3B	100	17	8	6.2	4
48032489	1/2-13 UNC 2B/3B	110	18	9	7	4
48032501	5/8-11 UNC 2B/3B	110	21	12	9	4
48032515	3/4-10 UNC 2B/3B	125	23	14	11	4
48032526	7/8-9 UNC 2B/3B	140	26	18	14.5	4
48032538	1"-8 UNC 2B/3B	160	29	18	14.5	4



EDP	UNJF DIN 2182	L	l1	d	a	Z
48032467	10-32 UNF 2B/3B	70	19.3	6	4.9	3
48032472	1/4-28 UNF 2B/3B	80	25.4	7	5.5	3
48032476	5/16-24 UNF 2B/3B	90	11	8	6.2	3
48032481	3/8-24 UNF 2B/3B	90	12	9	7	3

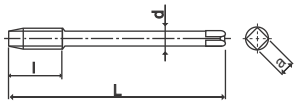
DIN TAP WITH CHIP CONTROL

CC-SFT



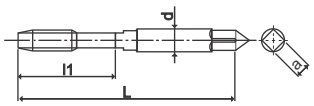
EDP	UNF DIN 2183	L	l	d	a	Z
48032486	7/16-20 UNF 2B/3B	100	14	9	7	4
48032491	1/2-20 UNF 2B/3B	100	15	9	7	4

CC-SFT-SPT



EDP	G SERIES DIN 5156	L	l	d	a	Z
48034838	G 1/8-28	90	10	7	5.5	3
48034839	G 1/4-19	100	15	11	9.0	4
48034840	G 3/8-19	100	15	12	9	4
48034841	G 1/2-14	125	20	16	12	4

CC-HL-SFT



Helical Coil Wire Insert

EDP	UNF DIN 2182	L	l1	d	a	Z
48033467	10-32 UNF 2B/3B	80	25.4	7	5.5	3
48033472	1/4-28 UNF 2B/3B	90	11	8	6.2	3
48033476	5/16-24 UNF 2B/3B	90	12	9	7.0	3
48033481	3/8-24 UNF 2B/3B	100	14	11	9	3

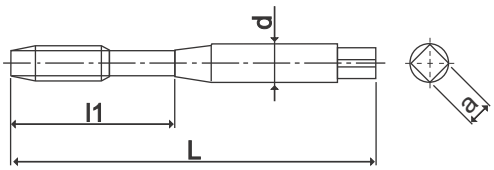
shaping your dreams

TAPPING TECHNOLOGY FOR CAST IRON & ALUMINIUM DIECAST FOR THE AUTOMOTIVE INDUSTRY

V-DC-MT / OIL-V-DC-MT

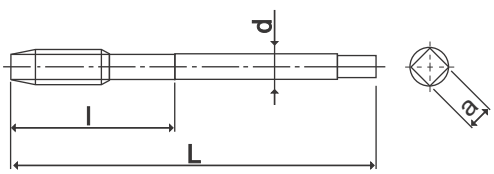
- For Cast Iron (GG, GGG) and Aluminium Diecast
- Manufactured from OSG's HSS-EV3
- V coating (OSG original developed TiCN coating) for increased durability and wear resistance for longer tool life at high speeds
- For pilot hole use OSG HPD Drill Series

V-DC-MT

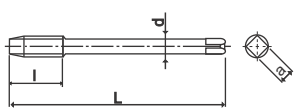


SPEED FEED P.165 | HSSE | V | ↔2,5↔

EDP	METRIC DIN 371	L	l1	d	a	Z
48039149	M5x0.8 6HX	70	25	6	4.9	3
48039155	M6x1.0 6HX	80	30	6	4.9	3
48039161	M8x1.25 6HX	90	35	8	6.2	4
48039169	M10x1.5 6HX	100	39	10	8	4

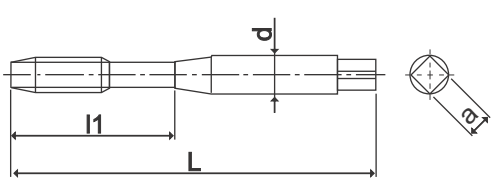


EDP	METRIC DIN 376	L	l	d	a	Z
48039179	M12x1.75 6HX	110	21	9	7	4
48039191	M14x2 6HX	110	24	11	9	4
48039202	M16x2 6HX	110	24	12	9	4
48039214	M18x2.5 6HX	125	30	14	11	4
48039228	M20x2.5 6HX	140	30	16	12	4
48039238	M22x2.5 6HX	140	30	18	14.5	4
48039247	M24x3 6HX	160	36	18	14.5	4



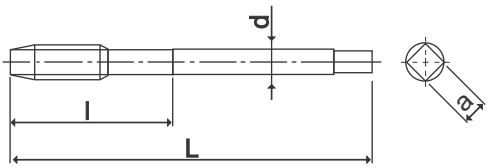
EDP	METRIC FINE DIN 374	L	l	d	a	Z
48039170	M10x1.25 6HX	100	18	7	5.5	4
48039181	M12x1.25 6HX	100	21	9	7	4
48039180	M12x1.5 6HX	100	21	9	7	4
48039192	M14x1.5 6HX	100	24	11	9	4
48039203	M16x1.5 6HX	100	24	12	9	4
48039216	M18x1.5 6HX	110	30	14	11	4
48039250	M24x1.5 6HX	140	24	18	14.5	4

OIL-V-DC-MT

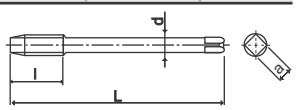


EDP	METRIC DIN 371	L	l1	d	a	Z
48040149	M5x0.8 6HX Oil Hole	70	25	6	4.9	3
48040155	M6x1.0 6HX Oil Hole	80	30	6	4.9	3
48040161	M8x1.25 6HX Oil Hole	90	35	8	6.2	4
48040169	M10x1.5 6HX Oil Hole	100	39	10	8	4

TAPPING TECHNOLOGY FOR CAST IRON & ALUMINIUM DIECAST FOR THE AUTOMOTIVE INDUSTRY



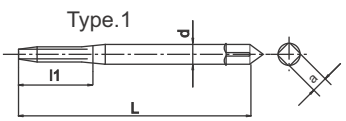
EDP	METRIC DIN 376	L	l	d	a	Z
48040179	M12x1.75 6HX Oil Hole	110	21	9	7	4
48040191	M14x2 6HX Oil Hole	110	24	11	9	4
48040202	M16x2 6HX Oil Hole	110	24	12	9	4
48040214	M18x2.5 6HX Oil Hole	125	30	14	11	4



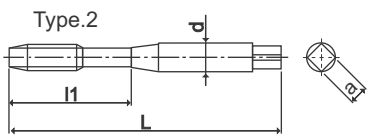
EDP	METRIC FINE DIN 374	L	l	d	a	Z
48040162	M8x1 6HX Oil Hole	90	15	6	4.9	4
48040170	M10x1.25 6HX Oil Hole	100	18	7	5.5	4
48040181	M12x1.25 6HX Oil Hole	100	21	9	7	4
48040180	M12x1.5 6HX Oil Hole	100	21	9	7	4
48040192	M14x1.5 6HX Oil Hole	100	24	11	9	4
48040203	M16x1.5 6HX Oil Hole	100	24	12	9	4
48040216	M18X1.5 6HX Oil Hole	110	30	14	11	4
48040240	M22X1.5 6HX Oil Hole	125	20	18	14.5	4
48040250	M24X1.5 6HX Oil Hole	140	24	18	14.5	4

V-DC-MT

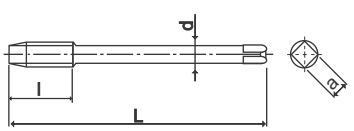
Type.1



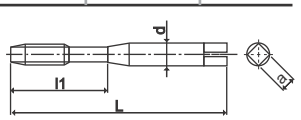
Type.2



EDP	UNC DIN 2182	L	l1	d	a	Z	Type
48039457	4-40 UNC 2B	56	18	3.5	2.7	2	1
48039459	5-40 UNC 2B	56	18	3.5	2.7	3	2
48039461	6--32 UNC 2B	56	20	4	3	3	2
48039464	8-32 UNC 2B	63	21	4.5	3.4	3	2
48039466	10-24 UNC 2B	70	25	6	4.9	3	2
48039471	1/4-20 UNC 2B	80	30	7	5.5	3	2
48039474	5/16-18 UNC 2B	90	35	8	6.2	3	2
48039479	3/8-16 UNC 2B	90	35	9	7	3	2



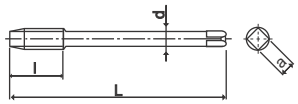
EDP	UNC DIN 2183	L	l	d	a	Z
48039484	7/16-14 UNC 2B	100	24	8	6.2	3
48039489	1/2-13 UNC 2B	110	29	9	7	3
48039494	9/16-12 UNC 2B	110	30	11	9	3
48039501	5/8-11 UNC 2B	110	32	12	9	3
48039515	3/4-10 UNC 2B	125	34	14	11	3
48039526	7/8-9 UNC 2B	140	34	18	14.5	3
48039538	1-8 UNC 2B	160	30	18	14.5	3



EDP	UNF DIN2182	L	l1	d	a	Z
48039462	6-40 UNF 2B	56	13	4	3	3
48039467	10-32 UNF 2B	70	25	6	4.9	3
48039472	1/4-28 UNF 2B	80	30	7	5.5	3
48039476	5/16-24 UNF 2B	90	35	8	6.2	3
48039481	3/8-24 UNF 2B	90	35	9	7	3

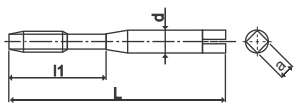
shaping your dreams

TAPPING TECHNOLOGY FOR CAST IRON & ALUMINIUM DIECAST FOR THE AUTOMOTIVE INDUSTRY

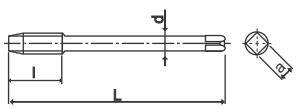


EDP	UNF DIN2183	L	l	d	a	Z
48039486	7/16-20 UNF 2B	100	20	8	6.2	3
48039491	1/2-20 UNF 2B	100	22	9	7	3
48039496	9/16-18 UNF 2B	100	22	11	9	3
48039504	5/8-18 UNF 2B	100	22	12	9	3
48039517	3/4-16 UNF 2B	110	25	14	11	3
48039528	7/8-14 UNF 2B	125	25	18	14.5	3
48039539	1-12 UNF 2B	125	25	18	14.5	3

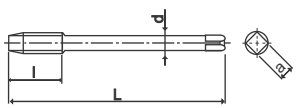
V-DC-SC-MT (1.5P SHORT CHAMFER)



EDP	METRIC DIN 371	L	l1	d	a	Z
48096155	M6X1 6HX	80	30	6	4.9	3
48096161	M8X1.25 6HX	90	35	8	6.2	3
48096169	M10X1.5 6HX	100	39	10	8	3



EDP	METRIC DIN 376	L	l	d	a	Z
48096179	M12X1.75 6HX	110	18	9	7	3

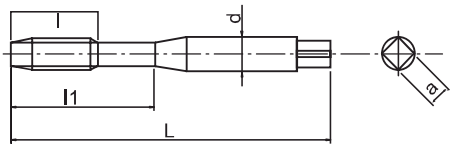


EDP	METRIC FINE DIN 374	L	l	d	a	Z
48096162	M8X1 6HX	90	10	6	4.9	3
48096170	M10X1.25 6HX	100	12	7	5.5	3
48096171	M10X1 6HX	90	12	7	5.5	3
48096180	M12X1.5 6HX	100	14	9	7	4
48096181	M12X1.25 6HX	100	14	9	7	4

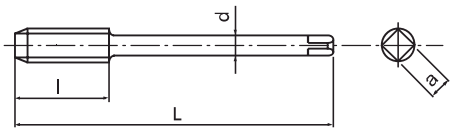
TAPPING TECHNOLOGY FOR CAST IRON & ALUMINIUM DIECAST FOR THE AUTOMOTIVE INDUSTRY

VP-DC-MT

Type 1



Type 2



P	P	K	K	N	H	H	
C>0.45%	SCM	GG	GGG	AC,ADC	25-35 HRC	35-45 HRC	
10-25	10-20	15-60	15-40	25-70	8-20	8-20	m/min

PM V 2.5

EDP	METRIC DIN 371 / 376		L	l	l1	d	a	Z	Type
48020125	M2 x 0.4	6HX	45			2.8	2.1	3	1
48020133	M2.5 x 0.45	6HX	50	12	30	7	5.5	3	1
48020138	M3 x 0.5	6HX	56	-	18	3.5	2.7	3	1
48020142	M3.5 x 0.6	6HX	56	18	-	8	6.2	4	2
48020144	M4 x 0.7	6HX	63	-	21	4.5	3.4	3	1
48020149	M5 x 0.8	6HX	70	-	25	6	4.9	3	1
48020155	M6 x 1	6HX	80	-	30	6	4.9	3	1
48020158	M7 x 1	6HX	80	30	-	18	14.5	5	2
48020161	M8 x 1.25	6HX	90	-	35	8	6.2	4	1
48020169	M10 x 1.5	6HX	100	-	39	10	8	4	1
48020175	M11 x 1.5	6HX	100	36	-	18	14.5	5	1
48020179	M12 x 1.75	6HX	110	21	-	9	7	4	2
48022191	M14 x 2	6HX	110	24	-	11	9	4	2
48022202	M16 x 2	6HX	110	24	-	12	9	4	2
48022214	M18 x 2.5	6HX	125	30	-	14	11	4	2
48022228	M20 x 2.5	6HX	140	30	-	16	12	4	2
48020238	M22 x 2.5	6HX	140	42	-	22	18	6	2
48020247	M24 x 3	6HX	160	-	-	-	-	-	2
48020271	M30 x 3.5	6HX	180	-	-	-	-	-	2

VP-DC-MT FORM E

P	P	K	K	N	H	H	
C>0.45%	SCM	GG	GGG	AC,ADC	25-35 HRC	35-45 HRC	
10-25	10-20	15-60	15-40	25-70	8-20	8-20	m/min

PM V 1.5

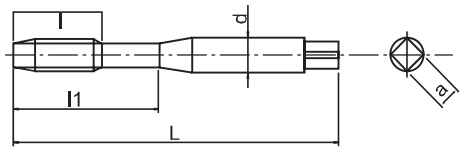
EDP	METRIC DIN 371 / 376		L	l1	d	a	Z	Type
48037138	M3 x 0.5	6HX	56	-	3.5	2.7	3	1
48037144	M4 x 0.7	6HX	63	-	4.5	3.4	3	1
48037149	M5 x 0.8	6HX	70	-	6	4.9	3	1
48037155	M6 x 1	6HX	80	-	6	4.9	3	1
48037161	M8 x 1.25	6HX	90	-	8	6.2	4	1
48037169	M10 x 1.5	6HX	100	-	10	8	4	1
48037179	M12 x 1.75	6HX	110	21	9	7	4	2
48037191	M14 x 2	6HX	110	24	11	9	4	2
48037202	M16 x 2	6HX	110	24	12	9	4	2
48037214	M18 x 2.5	6HX	125	30	14	11	4	2
48037228	M20 x 2.5	6HX	140	30	16	12	4	2
48037238	M22 x 2.5	6HX	140	30	18	14.5	5	2
48037247	M24 x 3	6HX	160	36	18	14.5	5	2

shaping your dreams

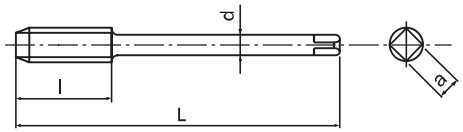
TAPPING TECHNOLOGY FOR CAST IRON & ALUMINIUM DIECAST FOR THE AUTOMOTIVE INDUSTRY

VPO-DC-MT Center

Type 1



Type 2



P	P	K	K	N	H	H	
C>0.45%	SCM	GG	GGG	AC,ADC	25-35 HRC	35-45 HRC	
10-25	10-20	15-60	15-40	25-70	8-20	8-20	m/min

PM V 2.5

EDP	METRIC DIN 371 / 376		L	l	l1	d	a	Z	Type
48021155	M6 x 1	6HX	80	-	30	6	4.9	3	1
48021161	M8 x 1.25	6HX	90	-	35	8	6.2	4	1
48021169	M10 x 1.5	6HX	100	-	39	10	8	4	1
48300179	M12 x 1.75	6HX	110	28	-	9	7	3	2
48300191	M14 x 2	6HX	110	24	-	11	9	3	2
48300202	M16 x 2	6HX	110	24	-	12	9	3	2
48300214	M18 x 2.5	6HX	125	30	-	14	11	4	2
48300228	M20 x 2.5	6HX	140	30	-	16	12	4	2

VPO-DC-MT FORM E

P	P	K	K	N	H	H	
C>0.45%	SCM	GG	GGG	AC,ADC	25-35 HRC	35-45 HRC	
10-25	10-20	15-60	15-40	25-70	8-20	8-20	m/min

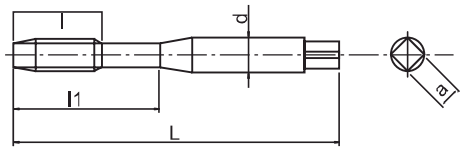
PM V 1.5

shaping your dreams

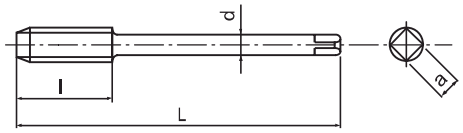
EDP	METRIC DIN 371 / 376		L	l	l1	d	a	Z	Type
48038155	M6 x 1	6HX	80	-	30	6	4.9	3	1
48038161	M8 x 1.25	6HX	90	-	35	8	6.2	4	1
48038169	M10 x 1.5	6HX	100	-	39	10	8	4	1
48038179	M12 x 1.75	6HX	110	28	-	9	7	3	2
48038191	M14 x 2	6HX	110	24	-	11	9	3	2
48038202	M16 x 2	6HX	110	24	-	12	9	3	2
48038214	M18 x 2.5	6HX	125	30	-	14	11	4	2
48038228	M20 x 2.5	6HX	140	30	-	16	12	4	2
48038238	M22 x 2.5	6HX	140	30	-	18	14.5	5	2
48038247	M24 x 3	6HX	160	36	-	18	14.5	5	2

VPO-DC-MT Side

Type 1



Type 2



P	P	K	K	N	H	H	
C>0.45%	SCM	GG	GGG	AC,ADC	25-35 HRC	35-45 HRC	
10-25	10-20	15-60	15-40	25-70	8-20	8-20	m/min

PM V 2.5

EDP	METRIC DIN 371 / 376		L	l	l1	d	a	Z	Type
48299155	M6 x 1	6HX	80	8	30	6	4.9	3	1
48299161	M8 x 1.25	6HX	90	10	35	8	6.2	3	1
48299169	M10 x 1.5	6HX	100	12	39	10	8	3	1
48021179	M12 x 1.75	6HX	110	21	-	9	7	4	2
48024191	M14 x 2	6HX	110	24	-	11	9	4	2
48024202	M16 x 2	6HX	110	24	-	12	9	4	2
48024214	M18 x 2.5	6HX	125	30	-	14	11	4	2
48024228	M20 x 2.5	6HX	140	30	-	16	12	4	2

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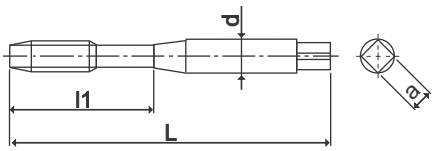
TAPPING TECHNOLOGY FOR CAST IRON & FORGED STEEL FOR THE AUTOMOTIVE INDUSTRY

VPO-LW-SFT (CRANK SHAFT TAP)

- Designed specially for steel & cast iron Crank shafts, Connecting rods & Tie rods.
- Excellent chip evacuation due to lapped flutes and oil hole.
- Especially excellent for blind hole and horizontal MC.
- Also suitable for forged steel automotive componants
- Cutting speed range between 5~30m/min

Type 1



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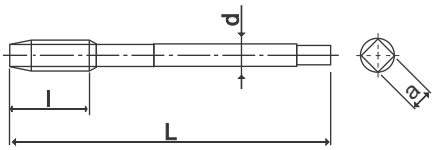


SPEED FEED P.165 | PM | V | 15° | 2.5

Blind hole applications

EDP	METRIC DIN 371	Chamfer Length	L	l1	d	a	Z	Type
T1503078	M6X1 6HX	2.5P	80	30	6	4.9	3	1
T1503079	M8X1.25 6HX	2.5P	90	35	8	6.2	3	1
T1503080	M10X1.5 6HX	2.5P	100	39	10	8	3	1

EDP	METRIC DIN 376	Chamfer Length	L	l	d	a	Z	Type
T1506978	M12X1.75 6HX	2.5P	110	18	9	7	3	2
T1503370	M14X2 6HX	2.5P	110	20	11	9	3	2
T1503371	M16X2 6HX	2.5P	110	20	12	9	3	2

EDP	METRIC DIN 374	Chamfer Length	L	l	d	a	Z	Type
T1503372	M9X1 6HX	2.5P	90	10	7	5.5	3	2
T1503373	M10X1 6HX	2.5P	90	10	7	5.5	3	2
T1503374	M10X1.25 6HX	2.5P	100	13	7	5.5	3	2
T1503413	M11x1.25 6HX	2.5P	100	13	8	6.2	3	2
T1503375	M12X1.25 6HX	2.5P	100	13	9	7	3	2
T1503376	M12X1.5 6HX	2.5P	100	15	9	7	3	2
T1503377	M14X1.5 6HX	2.5P	100	15	11	9	3	2
T1503378	M16X1.5 6HX	2.5P	100	15	12	9	3	2

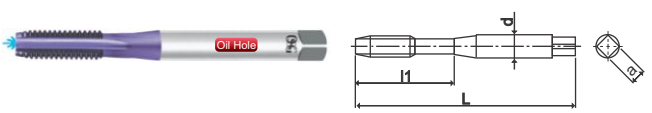
VPO-MT (CRANK SHAFT TAP)

- Designed specially for steel & cast iron crankshafts
- Excellent chip evacuation due to lapped flutes and oil hole.
- Also suitable for forged steel automotive componants
- Cutting speed range between 5~30m/min

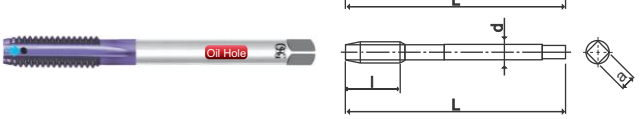
SPEED FEED P.165 | PM | V | 2.5

Blind hole applications

Type.1



Type.2



Unit.mm

EDP	METRIC DIN 371	L	l	d	a	Z	Type
T1102171	M6x1 2.5P 6HX	80	30	6	4.9	3	2
T1102176	M8x1.25 2.5P 6HX	90	35	8	6.2	4	2

EDP	METRIC DIN 376	L	l	d	a	Z	Type
T0803923	M14x2 2.5P 6HX	110	24	11	9	4	1
T0803925	M16x2 2.5P 6HX	110	24	12	9	4	1

EDP	METRIC FINE DIN 374	L	l	d	a	Z	Type
T0803919	M10x1 5P 6HX	90	12	7	5.5	4	2
T0803920	M10x1.25 5P 6HX	100	15	7	5.5	4	2
T0803921	M12x1.25 2.5P 6HX	100	15	9	7	4	1
T0803922	M12x1.5 2.5P 6HX	100	18	9	7	4	1
T0803924	M14x1.5 2.5P 6HX	100	18	11	9	4	1
T0803926	M16x1.5 2.5P 6HX	100	18	12	9	4	1

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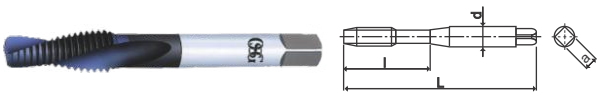
TAPPING TECHNOLOGY FOR CAST IRON & FORGED STEEL FOR THE AUTOMOTIVE INDUSTRY

WXL-CPM-RFT

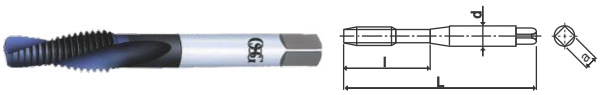
- Designed specially for through holes in connecting rods and wheel hubs
- High speed tapping up to 40m/min for mass production
- Also suitable for forged steel automotive components.

Type.1

Type.2



Type.3



SPEED FEED P.165 | PM | WXL | 5

Unit.mm

EDP	METRIC DIN 371	L	l	d	a	Z	Type
48043155	M6X1 6HX	80	30	6	4.9	3	1
48043158	M7X1 6HX	80	30	7	5.5	4	1
48043161	M8X1.25 6HX	90	35	8	6.2	4	1
48043165	M9X1.25 6HX	90	35	9	7	4	1
48043169	M10X1.5 6HX	100	39	10	8	4	1

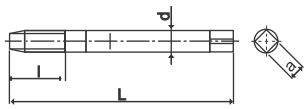
EDP	METRIC DIN 376	L	l1	d	a	Z	Type
48043174	M11X1.5 6HX	100	24	8	6.2	5	2
48043179	M12X1.75 6HX	110	29	9	7	5	2
48043191	M14X2 6HX	110	30	11	9	5	2
48043202	M16X2 6HX	110	32	12	9	5	2
48043214	M18X2.5 6HX	125	34	14	11	5	2

EDP	METRIC FINE DIN 374	L	l1	d	a	Z	Type
48043162	M8X1 6HX	90	22	6	4.9	4	3
48043166	M9X1 6HX	90	22	7	5.5	5	3
48043171	M10X1 6HX	90	20	7	5.5	5	3
48043170	M10X1.25 6HX	100	24	7	5.5	5	3
48043175	M11X1.25 6HX	100	24	8	6.2	5	3
48043181	M12X1.25 6HX	100	22	9	7	5	3
48043180	M12X1.5 6HX	100	22	9	7	5	3
48043192	M14X1.5 6HX	100	22	11	9	5	3
48043203	M16X1.5 6HX	100	22	12	9	5	3
48043216	M18X1.5 6HX	110	25	14	11	5	3

TAPS FOR THE AEROSPACE INDUSTRY

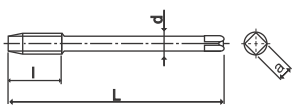
V-TI-SFT

- This tap provides high performance and longer tool life when tapping titanium alloy steels (Ti-6Al-4V) which are used in the aerospace and chemical industries.
- These materials have a hardness of 40~45 HRC after the process of age hardening by solution treatment.

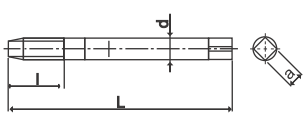


SPEED FEED P.166 | PM | V | 10° | 2.5 | Blind hole applications

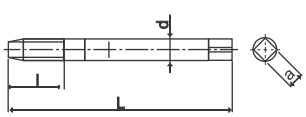
EDP	METRIC DIN 371	L	l1	d	a	Z
48011138	M3x0.5 6H	56	11	3.5	2.7	3
48011144	M4x0.7 6H	63	14	4.5	3.4	3
48011149	M5x0.8 6H	70	17	6.0	4.9	3
48011155	M6x1.0 6H	80	21	6.0	4.9	3
48011161	M8x1.25 6H	90	28	8.0	6.2	3
48011169	M10x1.5 6H	100	35	10.0	8.0	3



EDP	METRIC DIN 376	L	l	d	a	Z
48011179	M12x1.75 6H	110	18	10	8	3



EDP	UNJC DIN 2184-1	L	l	d	a	Z
48013457	4-40UNJC 3B	56	10	3.5	2.7	3
48013461	6-32UNJC 3B	56	13	4.0	3.0	3
48013464	8-32UNJC 3B	63	15	4.5	3.4	3



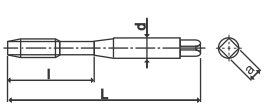
EDP	UNJF DIN 2184-1	L	l	d	a	Z
48013467	10-32UNJF 3B	70	25	6	4.9	3
48013472	1/4-28UNJF 3B	80	30	7	5.5	3
48013476	5/16-24UNJF 3B	90	35	8	6.2	3
48013481	3/8-24UNJF 3B	90	35	10	8.0	3

V-TI-POT

- This tap provides high performance and longer tool life when tapping titanium alloy steels (Ti-6Al-4V) which are used in the aerospace and chemical industries.
- These materials have a hardness of 40~45 HRC after the process of age hardening by solution treatment.

Type.1

Type.2



SPEED FEED P.166 | PM | V | 5

EDP	METRIC DIN 371	L	l	d	a	Z
48012138	M3x0.5 6H	56	12	3.5	2.7	3
48012144	M4x0.7 6H	63	16	4.5	3.4	3
48012149	M5x0.8 6H	70	19	6.0	4.9	3
48012155	M6x1.0 6H	80	23	6.0	4.9	3
48012161	M8x1.25 6H	90	30	8.0	6.2	3
48012169	M10x1.5 6H	100	38	10.0	8.0	3

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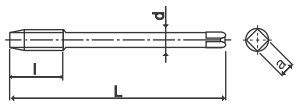
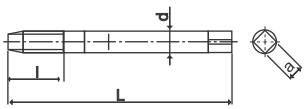
TAPS FOR THE AEROSPACE INDUSTRY

V-TI-POT



EDP	METRIC DIN 376	L	l	d	a	Z
48012179	M12x1.75 6H	110	28	10	8	3



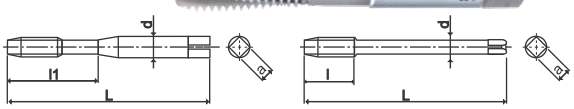
EDP	UNJC DIN 2184-1	L	l	d	a	Z
48014457	4-40 UNJC 3B	56	12	3.5	2.7	3
48014461	6-32 UNJC 3B	56	14	4.0	3.0	3
48014464	8-32 UNJC 3B	63	16	4.5	3.4	3

EDP	UNJF DIN 2184-1	L	l	d	a	Type
48014467	10-32 UNJF 3B	70	25	6	4.9	3
48014472	1/4-28 UNJF 3B	80	30	7	5.5	3
48014476	5/16-24 UNJF 3B	90	31	8	6.2	3
48014481	3/8-24 UNJF 3B	90	35	10	8	3

WHR-NI-SFT

- This tap provides high performance and longer tool life when tapping Nickle alloy steels (Inconel, Waspalloy) which are used in the aerospace and chemical industries.
- These materials have a hardness of 40~45 HRC after the process of age hardening by solution treatment.

SPEED FEED P.166 | UNF | PM | 11° | HR | ANSI 3B | C /2,5



Type 1 Type 2

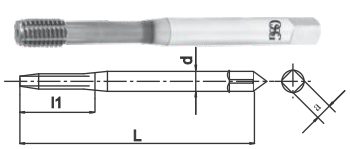
EDP	UNJF DIN 2184-1	L	l	d	a	Z	Type
48078467	10-32 UNJF 3B	70	18	6	4.9	3	1
48078472	1/4-28 UNJF 3B	80	23	7	5.5	3	1
48078476	5/16-24 UNJF 3B	90	35	8	6.2	3	2
48078481	3/8-24 UNJF 3B	90	35	10	8	3	2

EDP	UNJF DIN 2184-1	L	l	d	a	Z
48078486	7/16-20 UNJF 3B	100	15	8	6.2	3
48078491	1/2-20 UNJF 3B	100	16	9	7	3

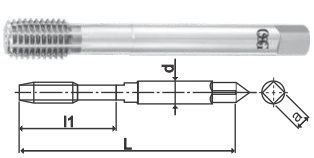
V-NRT-B (Without oil Hole)

- For aluminium, stainless & steels < 850 N/mm^2
- Manufactured from OSG's high performance cobalt steel
- 2 pitch lead / Eliminate swarf problems
- For pilot hole use OSG Drills.

Type.1



Type.2



SPEED FEED P.165 | HSSE | V | ISO 2 6 HX | 2

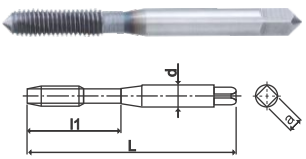
EDP	METRIC DIN 371	L	l1	d	a	Z	Type
48003111	M1 x 0.25 4HX	40	5.5	2.5	2.1	0	1
48003113	M1.2 x 0.25 4HX	40	5.5	2.5	2.1	0	1
66711568	M1.4 x 0.3 6HX	40	7	2.5	2.1	0	1
66711868	M1.6 x 0.35 6HX	40	8	2.5	2.1	0	1
66712568	M2 x 0.4 6HX	45	8	2.8	2.1	0	1
66712868	M2.2 x 0.45 6HX	45	9	2.8	2.1	0	1
66713368	M2.5 x 0.45 6HX	50	9	2.8	2.1	0	1
66713868	M3 x 0.5 6HX	56	18	3.5	2.7	2	2
66714068	M3.5 x 0.6 6HX	56	20	4	3	2	2
66714468	M4 x 0.7 6HX	63	21	4.5	3.4	2	2
66714968	M5 x 0.8 6HX	70	25	6	4.9	2	2

ISO 2/4HX For M1 and M1.2

FORMING TAPS FOR THE AUTOMOTIVE INDUSTRY

R-XPF

- Long tool life in Carbon and Alloy steels
- No problems with swarf, typically found with cutting taps.
- Stable tapping performance thanks to the high wear resistance and toughness of the Colbalt HSS substrate
- Excellent wear resistance due to OSG's special V coating



SPEED FEED P.166

HSSE

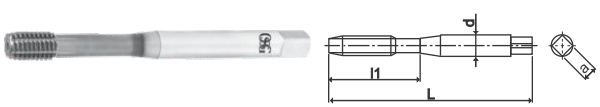
Unit.mm

EDP	METRIC DIN 371	L	l1	d	a	
48116138	M3 x 0.5 6HX	56	11	3.5	2.7	
48116144	M4 x 0.7 6HX	63	13	4.5	3.4	
48116149	M5 x 0.8 6HX	70	16	6	4.9	
48116155	M6 x 1 6HX	80	19	6	4.9	
48118138	M3 x 0.5 6GX	56	18	3.5	2.7	
48118144	M4 x 0.7 6GX	63	21	4.5	3.4	
48118149	M5 x 0.8 6GX	70	25	6	4.9	
48118155	M6 x 1 6GX	80	30	6	4.9	

S-XPF (Without oil Hole)

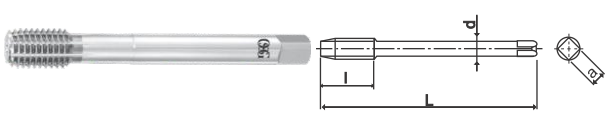
HSSE

- Long tool life in Carbon and Alloy steels
- No problems with swarf, typically found with cutting taps.
- Stable tapping performance thanks to the high wear resistance and toughness of the Colbalt HSS substrate
- Excellent wear resistance due to OSG's special V coating



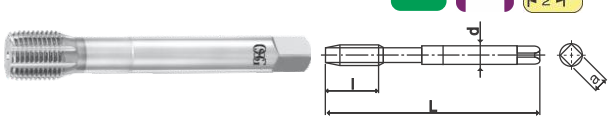
Unit.mm

EDP	METRIC DIN 371	L	l1	d	a	Z	
48030155	M6 x 1.0 6HX	80	30	6	4.9	5	
48030161	M8 x 1.25 6HX	90	35	8	6.2	8	
48030169	M10 x 1.5 6HX	100	39	10	8	8	



EDP	METRIC DIN 376	L	l	d	a	Z	
48030179	M12 x 1.75 6HX	110	30	6	4.9	8	
48030191	M14 x 2 6HX	110	20	11	9	8	
48030202	M16 x 2 6HX	110	20	12	9	5	

HSSE



EDP	METRIC FINE DIN 374	L	l1	d	a	Z	
48030162	M8 x 1 6HX	90	10	6	4.9	5	
48030171	M10 x 1 6HX	90	12	7	5.5	8	
48030170	M10 x 1.25 6HX	100	12	7	5.5	8	
48030182	M12 x 1 6HX	100	15	9	7	8	
48030181	M12 x 1.25 6HX	100	15	9	7	8	
48030180	M12 x 1.5 6HX	100	15	9	7	8	
48030192	M14 x 1.5 6HX	100	15	11	9	8	
48030203	M16 x 1.5 6HX	100	15	12	9	8	
48030216	M18 x 1.5 6HX	110	15	14	11	8	
48030230	M20 x 1.5 6HX	125	15	16	12	8	

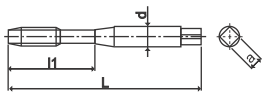
shaping your dreams

FORMING TAPS FOR THE AUTOMOTIVE INDUSTRY

S-OIL-XPF (With oil Hole)

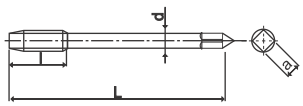
HSSE | V | ISO 2 6 HX | 2

- Long tool life in Carbon and Alloy steels
- No problems with swarf, typically found with cutting taps.
- Stable tapping performance thanks to the high wear resistance and toughness of the Colbalt HSS substrate
- Excellent wear resistance due to OSG's special V coating

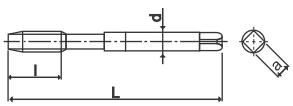


Unit.mm

EDP	METRIC DIN 371	L	l1	d	a	Z
48042155	M6X1 6HX	80	30	6	4.9	5
48042161	M8X1.25 6HX	90	35	8	6.2	5
48042169	M10X1.5 6HX	100	39	10	8	8



EDP	METRIC DIN 376	L	l	d	a	Z
48042179	M12X1.75 6HX	110	17	9	7	8
48042191	M14X2 6HX	110	20	11	9	8
48042202	M16X2 6HX	110	20	12	9	8
48042214	M18X2.5 6HX	125	25	14	11	8

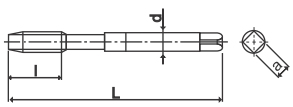


EDP	METRIC FINE DIN 374	L	l1	d	a	Z
48042162	M8 x 1 6HX	90	10	6	4.9	5
48042171	M10 x 1 6HX	90	12	7	5.5	8
48042170	M10 x 1.25 6HX	100	12	7	5.5	8
48042181	M12 x 1.25 6HX	100	15	9	7	8
48042180	M12 x 1.5 6HX	100	15	9	7	8
48042192	M14 x 1.5 6HX	100	15	11	9	8
48042203	M16 x 1.5 6HX	100	15	12	9	8
48042216	M18 x 1.5 6HX	110	20	14	11	8

OIL-SP-XPF (FINE PITCH)

CPM | V | ISO 2 4 HX | 2

- Long tool life in Carbon and Alloy steels
- Especially good for C70 material & Conrod application
- Stable tapping performance thanks to the high wear resistance and toughness of the powder metal HSS substrate
- Excellent wear resistance due to OSG's special V coating



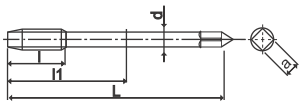
EDP	METRIC DIN 376	L	l	d	a	Z
T1503394	M7X1 4HX	80	10	7	5.5	5

EDP	METRIC FINE DIN 374	L	l	d	a	Z
T1503395	M8X1 4HX	90	12	6	4.9	5
T1503397	M9X1 4HX	90	12	7	5.5	8
T1503398	M10X1 4HX	90	15	7	5.5	8
T1503399	M11X1.25 4HX	100	15	8	6.2	8

TAPPING FOR CAST IRON & STEEL
FOR THE PETROCHEMICAL AND POWER INDUSTRY

VXL-SFT Vertical Application

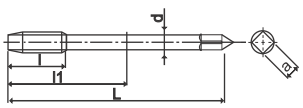
SPEED FEED P.165 | HSSE | OX | 45° | 2.5-3



EDP	UNC/UN	L	l	l1 flute	d	a	Z
48051538	1"-8 UNC 2B	160	25.4	90	18	14.5	5
48051552	1.1/8-8 UN 2B	180	25.4	100	22	18	5
48051565	1.1/4-8 UN 2B	180	25.4	100	22	18	5
48051578	1.3/8-8 UN 2B	200	25.4	115	28	22	5
48051592	1.1/2-8 UN 2B	200	25.4	115	32	24	5
48051618	1.3/4-8 UN 2B	200	25.4	101	36	29	6
48051639	2"-8 UN 2B	225	25.4	125	40	32	6

HXL-SFT Horizontal Application

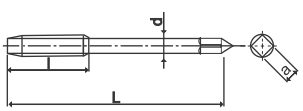
HSSE | OX | 15° | 2.5-3



EDP	UNC/UN	L	l	l1 flute	d	a	Z
48050538	1"-8 UNC 2B	160	25.4	90	18	14.5	5
48050552	1.1/8-8 UN 2B	180	25.4	100	22	18	5
48050565	1.1/4-8 UN 2B	180	25.4	100	22	18	5
48050578	1.3/8-8 UN 2B	200	25.4	115	28	22	5
48050592	1.1/2-8 UN 2B	200	25.4	115	32	24	5
48050618	1.3/4-8 UN 2B	200	25.4	101	36	29	6
48050639	2"-8 UN 2B	225	25.4	125	40	32	6

NPT (NATIONAL PIPE THREAD) DIN 2181

HSSE | 2.5-3



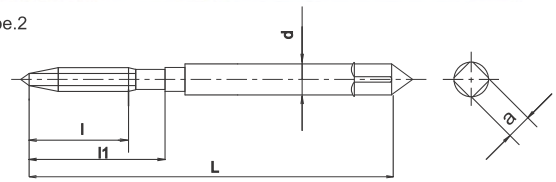
EDP	NPT	L	l		d	a	Z
60087500	1/16-27	56	14	-	6	4.9	4
60087600	1/8-27	63	15	-	7	5.5	4
60087700	1/4-18	63	21	-	11	9	4
60087800	3/8-18	70	21	-	12	9	4
60087900	1/2-14	80	27	-	16	12	4
60088000	3/4-14	100	27	-	20	16	5
60088100	1-11.5	100	32	-	25	20	5

shaping your dreams

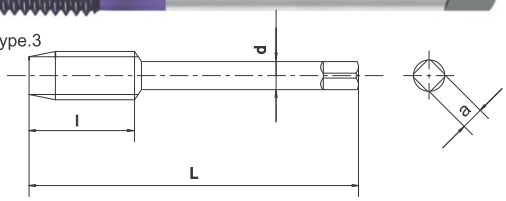
TAPPING FOR HARDENED STEEL (38 ~ 60 HRC)

V-XPM-HT

Type.2



Type.3



EDP	METRIC DIN 371	L	l1	d	a	Type
89913868	M3X0.5 6HX	46	19	3.5	2.7	2
89914468	M4X0.7 6HX	53	21	4.5	3.4	2
89914968	M5X0.8 6HX	60	24	6	4.9	2
89915568	M6X1.0 6HX	62	29	6	4.9	2
89916168	M8X1.25 6HX	70	22	6	4.9	3
89916968	M10X1.5 6HX	75	24	7	5.5	3

EDP	METRIC DIN 376	L	l1	d	a	Type
89917968	M12X1.75 6HX	82	29	9	7	3

WH55 - OT(Carbide TAP~55 HRC)

EDP	THREAD SIZE	GRADE	TAP Limit	ℓc	LF	THLGTH	LU	DCON	NOF
3901010	M3X0.5	STD	OH3	5P	46	11	19	4	4
3901011	M3X0.5	STD	OH3	2.5P	46	11	19	4	4
3901014	M4X0.7	STD	OH3	5P	52	13	21	5	4
3901015	M4X0.7	STD	OH3	2.5P	52	13	21	5	4
3901018	M5X0.8	STD	OH3	5P	60	16	24	5.5	4
3901019	M5X0.8	STD	OH3	2.5P	60	16	24	5.5	4
3901022	M6X1	STD	OH3	5P	62	19	29	6	4
3901023	M6X1	STD	OH3	2.5P	62	19	29	6	4
3901026	M8X1.25	STD	OH3	5P	70	22	-	6.2	5
3901027	M8X1.25	STD	OH3	2.5P	70	22	-	6.2	5
3901030	M10X1.5	STD	OH3	5P	75	24	-	7	5
3901031	M10X1.5	STD	OH3	2.5P	75	24	-	7	5
3901034	M12X1.75	STD	OH3	5P	82	29	-	8.5	5
3901035	M12X1.75	STD	OH3	2.5P	82	29	-	8.5	5

VX - OT(Carbide TAP~60 HRC)

EDP	THREAD SIZE	GRADE	TAP Limit	ℓc	LF	THLGTH	LU	DCON	NOF
8330029	M2X0.4	STD	OH3	3P	40	12	-	3	3
8330039	M2.3X0.4	STD	OH3	3P	42	13	-	3	4
8330045	M2.5X0.45	STD	OH3	3P	44	14	-	3	4
8330049	M2.6X0.45	STD	OH3	3P	44	14	-	3	4
8330055	M3X0.5	STD	OH3	3P	46	11	19	4	4
8330061	M4X0.7	STD	OH3	3P	52	13	21	5	4
8330067	M5X0.8	STD	OH3	3P	60	16	24	5.5	4
8330073	M6X1	STD	OH3	3P	62	19	29	6	5
8330085	M8X1.25	STD	OH3	3P	70	22	-	6.2	5
8330087	M8X1	STD	OH3	3P	70	22	-	6.2	5
8330097	M10X1.5	STD	OH3	3P	75	24	-	7	5
8330099	M10X1.25	STD	OH3	3P	75	24	-	7	5
8330101	M10X1	STD	OH3	3P	75	24	-	7	5
8330115	M12X1.75	STD	OH3	3P	82	29	-	8.5	5
8330117	M12X1.5	STD	OH3	3P	82	29	-	8.5	5
8330119	M12X1.25	STD	OH4	3P	82	29	-	8.5	5
8330121	M12X1	STD	OH3	3P	82	29	-	8.5	5
8330123	M14X2	STD	OH4	3P	88	30	-	10.5	6
8330125	M14X1.5	STD	OH3	3P	88	30	-	10.5	6
8330131	M16X2	STD	OH4	3P	95	32	-	12.5	6
8330133	M16X1.5	STD	OH3	3P	95	32	-	12.5	6
8330139	M18X2.5	STD	OH4	3P	100	37	-	14	6
8330141	M18X1.5	STD	OH4	3P	100	37	-	14	6
8330147	M20X2.5	STD	OH4	3P	105	37	-	15	6
8330149	M20X1.5	STD	OH4	3P	105	37	-	15	6

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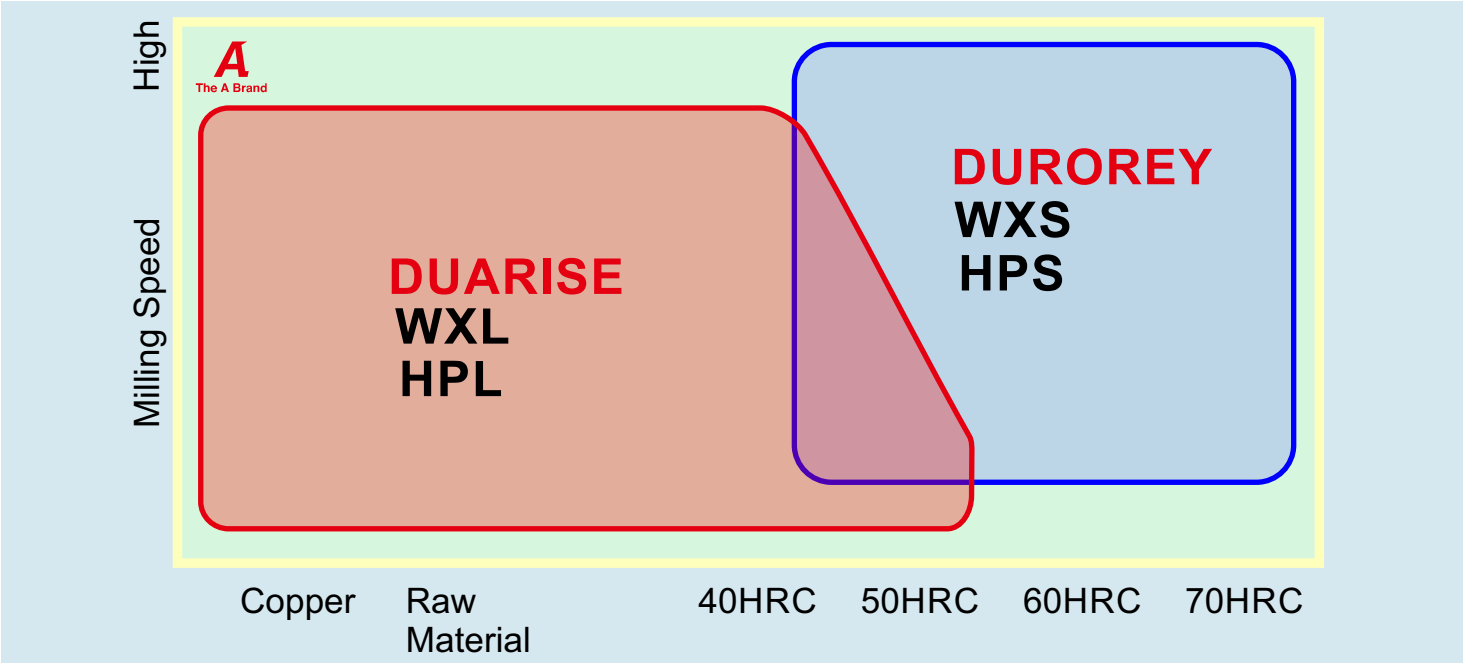


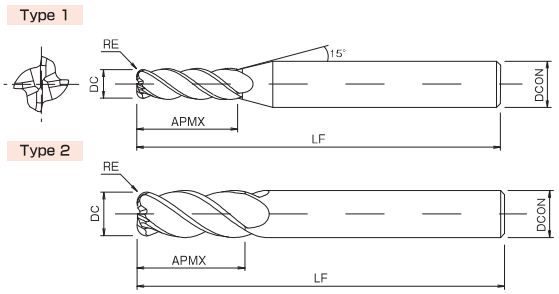
Page No.	Surface Treatment	Specification	Size	Corner R/C
99.	DUARISE	AE-VMS Anti-Vibration Short	ϕ3～ϕ25	R0.2～R3
100.	DUARISE	AE-VMSS Anti-Vibration Stub Carbide	ϕ1～ϕ12	
101.	DUARISE	AE-VML Anti-Vibration long	ϕ6～ϕ12	
102.	DUARISE	AE-BM-H 4 Flute For High-Efficiency Processing	R1 ～ R6	
102.	DUARISE	AE-BD-H 2 Flute For High-Precision Finishing	R0.5 ～ R6	
103.	DUARISE	AE-LNBD-H 2 Flute Long Neck For High-Precision Finishing	R0.05 ～ R3	
108.	DUARISE	AM-EBT Additive Manufacturing Ball	R3 ～ R10	
108.	DUARISE	AM-CRE Additive Manufacturing Radius	ϕ6～ϕ20	R1.5～R3
109.	WXL	WXL-EMS 4 Flutes Short	ϕ1～ϕ30	
110.	WXL	WXL-EBD 2 Flutes Ball Nose	R0.05 ～ R10	
111.	WXL	WXL-LN-EBD 2 Flutes Long Neck Ball Nose	R0.05 ～ R3	
116.	HPS	450 HPE Rocket Mill Multiple Flute	ϕ3～ϕ25	
116.	HPS	4512 HPE MOON BALL 2 Flute Ball Nose for Hard Material	R0.5 ～ R10	
117.	HPS	4522 HPE MOON BALL 2 Flute Ball Nose Long Length	R0.5 ～ R6	
117.	HPS	4514 HPE MOON BALL 4 Flute for Hard Material	R1.5 ～ R6	
118.	HPL	404 4 Flutes Short	ϕ3～ϕ20	
118.	HPL	402 404 4 Flutes Regular	ϕ0.5～ϕ25	
119.	HPL	462 464 4 Flutes Long	ϕ3～ϕ25	
119.	HPL	462 484 4 Flutes Extra Long	ϕ3～ϕ25	
120.	HPL	452/4527 Unequal Helix For SUS, Ti & Ni	ϕ1～ϕ25	c0.1～c0.5 / R0.5～R1.0
120.	HPL	483 Roughing	ϕ3～ϕ25	

AE-VMS

Type 1

Type 2

SPEED FEED P.124 | CARBIDE | DUR | 0~-0.02 | SHRINK FIT | 37°·40°



AE-VMS Square

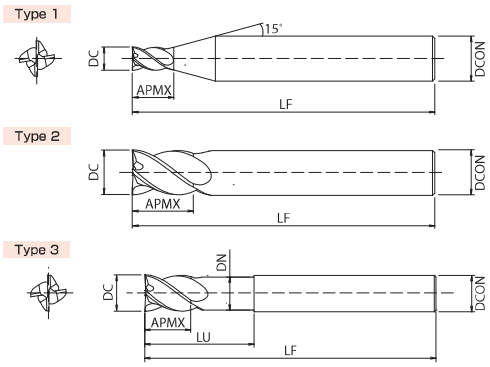
EDP No.	DC	RE	LF	APMX	DN	DCON	Z	TYPE
8555830	3	-	60	8	-	6	4	1
8555840	4	-	60	11	-	6	4	1
8555850	5	-	60	13	-	6	4	1
8555860	6	-	60	13	-	6	4	2
8555880	8	-	70	19	-	8	4	2
8555900	10	-	80	22	-	10	4	2
8555920	12	-	90	26	-	12	4	2
8555960	16	-	100	32	-	16	4	2
8556000	20	-	110	40	-	20	4	2
8556010	25	-	120	50	-	25	4	2

AE-VMS Corner R

EDP No.	DC	RE	LF	APMX	DN	DCON	Z	TYPE
8556050	3	0.2	60	8	-	6	4	1
8556060	3	0.5	60	8	-	6	4	1
8556070	4	0.2	60	11	-	6	4	1
8556080	4	0.5	60	11	-	6	4	1
8556090	4	1	60	11	-	6	4	1
8556100	5	0.2	60	13	-	6	4	1
8556110	5	0.5	60	13	-	6	4	1
8556120	5	1	60	13	-	6	4	1
8556130	6	0.3	60	13	-	6	4	2
8556140	6	0.5	60	13	-	6	4	2
8556150	6	1	60	13	-	6	4	2
8556160	8	0.3	70	19	-	8	4	2
8556170	8	0.5	70	19	-	8	4	2
8556180	8	1	70	19	-	8	4	2
8556190	8	1.5	70	19	-	8	4	2
8556200	8	2	70	19	-	8	4	2
8556210	10	0.3	80	22	-	10	4	2
8556220	10	0.5	80	22	-	10	4	2
8556230	10	1	80	22	-	10	4	2
8556240	10	1.5	80	22	-	10	4	2
8556250	10	2	80	22	-	10	4	2
8556260	10	3	80	22	-	10	4	2
8556270	12	0.5	90	26	-	12	4	2
8556280	12	1	90	26	-	12	4	2
8556290	12	1.5	90	26	-	12	4	2
8556300	12	2	90	26	-	12	4	2
8556310	12	3	90	26	-	12	4	2

Work Material / Abbreviation	Carbon Steel Alloy Steel Prehardened Steel Tool Steel ~40HRC	Prehardened Steel Hardened Steel ~45HRC	~55HRC	~60HRC	~65HRC	Stainless Steel ~35HRC	Cast Iron Ductile Cast Iron ~350HB	Copper Alloy	Aluminum Alloy	Graphite	Titanium Alloy	Heat Resistant Alloy	Plastic
AE-VMS	◎	○				◎	◎	○	○		○	○	

AE-VMSS



SPEED FEED P.125 | CARBIDE | DUR | 0～-0.02 | SHRINK FIT | 37°·40°

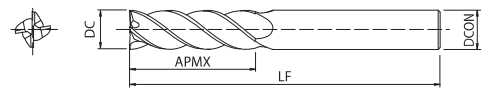
EDP No·	DC	LF	APMX	DCON	Type
8556410	**1**	40	1.5	4	1
8556415	**1.5**		2.3		
8556420	**2**		3		
8556425	**2.5**		3.8		
8556430	**3**	45	4.5	6	
8556435	**3.5**		5.3		
8556440	**4**		6		
8556445	**4.5**		6.8		
8556450	**5**		7.5		
8556455	**5.5**		8.3		
8556460	**6**		9		2
8556465	**6.5**	60	9.8	8	1
8556470	**7**		10.5		
8556475	**7.5**		11.3		
8556480	**8**		12		2
8556485	**8.5**	70	12.8	10	1
8556490	**9**		13.5		
8556495	**9.5**		14.3		
8556500	**10**		15		2
8556505	**10.5**	75	15.8	12	1
8556510	**11**		16.5		
8556515	**11.5**		17.3		
8556520	**12**		18		2

EDP No.	DC × LU	LF	APMX	DCON	DN	Type
8556618	**6 × 18**	60	9	6	5.8	3
8556630	**6 × 30**	70				
8556724	**8 × 24**		12	8	7.7	
8556740	**8 × 40**	80				
8556830	**10 × 30**		15	10	9.7	
8556850	**10 × 50**	100				
8556936	**12 × 36**	90	18	12	11.7	
8556960	**12 × 60**	110				

Work Material / Abbreviation	Carbon Steel Alloy Steel Prehardened Steel Tool Steel ～40HRC	Prehardened Steel Hardened Steel ～45HRC	～55HRC	～60HRC	～65HRC	Stainless Steel ～35HRC	Cast Iron Ductile Cast Iron ～350HB	Copper Alloy	Aluminum Alloy	Graphite	Titanium Alloy	Heat Resistant Alloy	Plastic
AE-VMSS	◎	○				◎	◎	○	○		○	○	

AE-VML

Type 1



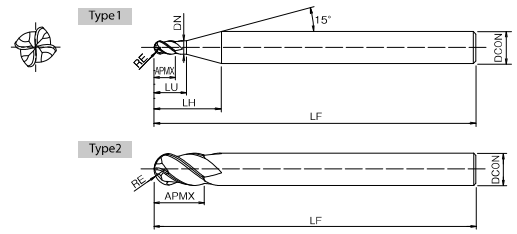
SPEED FEED P.126 | CARBIDE | DUR | 0～-0.02 | SHRINK FIT | 42°·44°

EDP No·	DC × APMX	LF	APMX	DCON	L/D
8556320	**6 × 19**	70	19	6	3
8556328	**6 × 24**		24		4
8556322	**8 × 25**	80	25	8	3
8556330	**8 × 32**	90	32		4
8556324	**10 × 31**		31	10	3
8556332	**10 × 40**	100	40		4
8556326	**12 × 38**		38	12	3
8556334	**12 × 48**	110	48		4

EDP No·	DC × APMX	LF	APMX	DCON	L/D
8556321	**6 × 19 - N**	70	19	6	3
8556329	**6 × 24 - N**		24		4
8556323	**8 × 25 - N**	80	25	8	3
8556331	**8 × 32 - N**	90	32		4
8556325	**10 × 31 - N**		31	10	3
8556333	**10 × 40 - N**	100	40		4
8556327	**12 × 38 - N**		38	12	3
8556335	**12 × 48 - N**	110	48		4

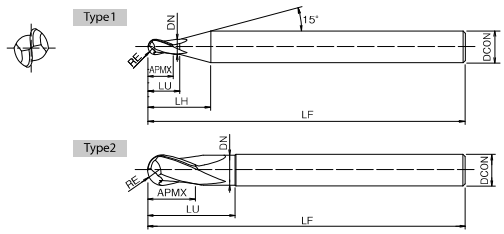
Work Material / Abbreviation	Carbon Steel Alloy Steel Prehardened Steel Tool Steel ～40HRC	Prehardened Steel Hardened Steel ～45HRC	～55HRC	～60HRC	～65HRC	Stainless Steel ～35HRC	Cast Iron Ductile Cast Iron ～350HB	Copper Alloy	Aluminum Alloy	Graphite	Titanium Alloy	Heat Resistant Alloy	Plastic
AE-VML	◎	◎	○			◎	◎	○	○		○	○	

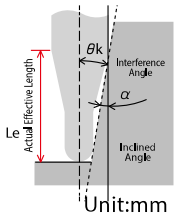
AE-BM-H



CARBIDE | DUROREY | R ±0.005 (RE≦1.5) | R ±0.007 (1.5<RE≦3) | R ±0.01 (3<RE) | SHRINK FIT | 40° | SPEED FEED P.128

AE-BD-H





CARBIDE | DUROREY | R ±0.005 | SHANK h4 | SHRINK FIT | 25°

AE-BM-H

EDP No.	RE × LU	LF	APMX	LH	DCON	DN	θk	Effective length by inclined angles Le 0.5°	1°	1.5°	2°	3°	Type
8549602	R1 × 4	50	2	12	6	1.95	10.64°	4.19	4.3	4.42	4.55	4.85	1
8549603	R1.5 × 6	50	3	12	6	2.85	8.15°	6.44	6.61	6.79	7	7.45	
8549604	R2 × 8	60	4	12.1	6	3.85	5.65°	8.49	8.71	8.96	9.22	9.81	
8549605	R2.5 × 10	60	5	12.2	6	4.85	2.95°	10.54	10.82	11.12	11.45	—	
8549606	R3	60	9	—	6	—	—	—	—	—	—	—	2
8549608	R4	70	12	—	8	—	—	—	—	—	—	—	
8549610	R5	80	15	—	10	—	—	—	—	—	—	—	
8549612	R6	90	18	—	12	—	—	—	—	—	—	—	

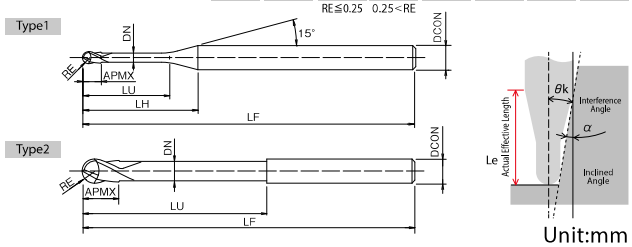
AE-BD-H

EDP No.	RE × LU	Short Shank	LF	APMX	LH	DCON	DN	θk	Effective length by inclined angles Le 0.5°	1°	1.5°	2°	3°	Type
3042001	R0.5 × 2	—	50	0.8	7.7	4	0.95	11.71°	2.14	2.2	2.26	2.33	2.48	1
3042002	R0.75 × 3	—	50	1.2	7.9	4	1.45	10.03°	3.17	3.25	3.34	3.44	3.66	
3042003	R1 × 4	—	50	1.6	12	6	1.95	10.64°	4.19	4.3	4.42	4.55	4.85	
3042004	R1.5 × 6	—	60	2.4	11.9	6	2.85	8.15°	6.44	6.61	6.79	7	7.45	
3042005	R2 × 8-4	—	60	3.2	—	4	3.85	—	—	—	—	—	—	2
3042006	R2 × 8	—	70		12.1	6		5.65°	8.49	8.71	8.96	9.22	9.81	1
3042007	R2 × 8-S	○	45											
3042008	R2.5 × 10	—	80	4	12.2	6	4.8	2.92°	10.63	10.9	11.22	11.55	—	
3042009	R2.5 × 10-S	○	50											
3042010	R3 × 18	—	90	9	—	6	5.8	—	—	—	—	—	—	2
3042011	R3 × 18-S	○	55											
3042012	R4 × 24	—	100	12	—	8	7.7	—	—	—	—	—	—	
3042013	R4 × 24-S	○	75											
3042014	R5 × 30	—	100	15	—	10	9.7	—	—	—	—	—	—	
3042015	R5 × 30-S	○	75											
3042016	R6 × 36	—	110	18	—	12	11.7	—	—	—	—	—	—	
3042017	R6 × 36-S	○	80											

Work Material / Abbreviation	Carbon Steel Alloy Steel Prehardened Steel Tool Steel ~40HRC	Prehardened Steel Hardened Steel ~45HRC	~55HRC	~60HRC	~65HRC	Stainless Steel ~35HRC	Cast Iron Ductile Cast Iron ~350HB	Copper Alloy	Aluminum Alloy	Graphite	Titanium Alloy	Heat Resistant Alloy	Plastic
AE-BM/D-H		○	◎	◎	◎							○	

AE-LNBD-H

CARBIDE | DUROREY | R ±0.003 (RE≦0.25) | R ±0.005 (0.25<RE) | SHANK h4 | SHRINK FIT | 30° | SPEED FEED P130



Unit:mm

EDP No.	RE × LU × DCON	LF	APMX	LH	DN	θk	Effective length by inclined angles 0.5°	1°	1.5°	2°	3°	Type
3056100	R0.05 × 0.2 × 4	45	0.08	7.5	0.095	14.69°	0.21	0.22	0.22	0.23	0.24	1
3056101	R0.05 × 0.3 × 4			7.6		14.52°	0.3	0.31	0.32	0.33	0.36	
3056102	R0.05 × 0.5 × 4			7.8		14.16°	0.51	0.53	0.54	0.56	0.6	
3056103	R0.1 × 0.3 × 4	45	0.16	7.4	0.19	14.55°	0.32	0.33	0.34	0.35	0.37	1
3056104	R0.1 × 0.5 × 4			7.6		14.18°	0.53	0.54	0.56	0.58	0.62	
3056105	R0.1 × 0.75 × 4			7.9		13.74°	0.79	0.81	0.84	0.86	0.93	
3056106	R0.1 × 1 × 4			8.1		13.33°	1.04	1.08	1.11	1.15	1.24	
3056107	R0.1 × 1 × 6			11.8		13.86°						
3056108	R0.1 × 1.25 × 4			8.4		12.94°	1.3	1.35	1.39	1.44	1.55	
3056109	R0.1 × 1.5 × 4			8.6		12.58°	1.56	1.61	1.67	1.73	1.86	
3056110	R0.1 × 1.75 × 4			8.9		12.23°	1.82	1.88	1.94	2.01	2.17	
3056111	R0.1 × 2 × 4			9.1		11.9°	2.08	2.15	2.22	2.3	2.48	
3056112	R0.1 × 2.5 × 4			9.6		11.29°	2.6	2.68	2.78	2.88	3.1	
3056113	R0.1 × 3 × 4			10.1		10.74°	3.11	3.22	3.33	3.45	3.72	
3056114	R0.15 × 0.5 × 4	45	0.24	7.4	0.29	14.24°	0.53	0.54	0.55	0.57	0.6	1
3056115	R0.15 × 0.6 × 4			7.5		14.06°	0.63	0.65	0.66	0.68	0.73	
3056116	R0.15 × 0.75 × 4			7.7		13.79°	0.78	0.81	0.83	0.86	0.92	
3056117	R0.15 × 1 × 4			7.9		13.36°	1.04	1.07	1.11	1.14	1.23	
3056118	R0.15 × 1.25 × 4			8.2		12.96°	1.3	1.34	1.39	1.43	1.54	
3056119	R0.15 × 1.5 × 4			8.4		12.59°	1.56	1.61	1.66	1.72	1.85	
3056120	R0.15 × 1.5 × 6			12.2		13.34°						
3056121	R0.15 × 1.75 × 4			8.7		12.23°	1.82	1.88	1.94	2.01	2.16	
3056122	R0.15 × 2 × 4			8.9		11.89°	2.08	2.14	2.22	2.29	2.47	
3056123	R0.15 × 2.25 × 4			9.2		11.57°	2.34	2.41	2.49	2.58	2.78	
3056124	R0.15 × 2.5 × 4			9.4		11.27°	2.59	2.68	2.77	2.87	3.09	
3056125	R0.15 × 3 × 4			9.9		10.71°	3.11	3.21	3.32	3.44	3.71	
3056126	R0.15 × 3.5 × 4			10.4		10.2°	3.63	3.75	3.88	4.02	4.33	
3056127	R0.15 × 4 × 4			10.9		9.74°	4.14	4.28	4.43	4.59	4.96	
3056128	R0.15 × 4.5 × 4			11.4		9.31°	4.66	4.82	4.99	5.17	5.58	
3056129	R0.15 × 5 × 4			11.9		8.93°	5.18	5.35	5.54	5.74	6.2	
3056130	R0.2 × 0.5 × 4	45	0.3	7.3	0.38	14.27°	0.54	0.56	0.57	0.58	0.62	1
3056131	R0.2 × 0.75 × 4			7.5		13.8°	0.8	0.82	0.85	0.87	0.93	
3056132	R0.2 × 0.8 × 4			7.6		13.71°	0.85	0.88	0.9	0.93	0.99	
3056133	R0.2 × 1 × 4			7.8		13.37°	1.06	1.09	1.12	1.16	1.24	
3056134	R0.2 × 1 × 6			11.5		13.91°						
3056135	R0.2 × 1.5 × 4			8.3		12.57°	1.58	1.63	1.68	1.73	1.86	
3056136	R0.2 × 2 × 4			8.8		11.86°	2.09	2.16	2.23	2.31	2.48	
3056137	R0.2 × 2 × 6			12.5		12.82°						
3056138	R0.2 × 2.5 × 4			9.3		11.22°	2.61	2.7	2.79	2.88	3.1	
3056139	R0.2 × 3 × 4			9.8		10.65°	3.13	3.23	3.34	3.46	3.72	
3056140	R0.2 × 3.5 × 4			10.3		10.14°	3.64	3.76	3.89	4.03	4.35	
3056141	R0.2 × 4 × 4			10.8		9.67°	4.16	4.3	4.45	4.61	4.97	
3056142	R0.2 × 4.5 × 4			11.3		9.24°	4.68	4.83	5	5.18	5.59	
3056143	R0.2 × 5 × 4			11.8		8.85°	5.2	5.37	5.56	5.76	6.21	
3056144	R0.2 × 5.5 × 4			12.3		8.49°	5.71	5.9	6.11	6.33	6.83	
3056145	R0.2 × 6 × 4			12.8		8.15°	6.23	6.44	6.66	6.91	7.45	

2 FLUTE LONG NECK FOR HIGH-PRECISION FINISHING

EDP No.	RE × LU × DCON	LF	APMX	LH	DN	θk	Effective length by inclined angles 0.5°	1°	1.5°	2°	3°	Type
3056146	R0.25 × 0.75 × 4	45	0.4	7.3	0.48	13.85°	0.8	0.82	0.84	0.86	0.91	1
3056147	R0.25 × 1 × 4			7.6		13.4°	1.06	1.09	1.12	1.15	1.23	
3056148	R0.25 × 1.5 × 4			8.1		12.58°	1.58	1.62	1.67	1.73	1.85	
3056149	R0.25 × 2 × 4			8.6		11.85°	2.09	2.16	2.23	2.3	2.47	
3056150	R0.25 × 2.5 × 4			9.1		11.2°	2.61	2.69	2.78	2.88	3.09	
3056151	R0.25 × 3 × 4			9.6		10.62°	3.13	3.23	3.33	3.45	3.71	
3056152	R0.25 × 3.5 × 4			10.1		10.09°	3.64	3.76	3.89	4.03	4.33	
3056153	R0.25 × 4 × 4			10.6		9.61°	4.16	4.3	4.44	4.6	4.95	
3056154	R0.25 × 4.5 × 4			11.1		9.18°	4.68	4.83	5	5.18	5.58	
3056155	R0.25 × 5 × 4			11.6		8.78°	5.19	5.37	5.55	5.75	6.2	
3056156	R0.25 × 5.5 × 4			12.1		8.41°	5.71	5.9	6.11	6.33	6.82	
3056157	R0.25 × 6 × 4			12.6		8.08°	6.23	6.44	6.66	6.9	7.44	
3056158	R0.25 × 7 × 4			13.6		7.48°	7.26	7.51	7.77	8.05	8.68	
3056159	R0.25 × 8 × 4			14.6		6.97°	8.29	8.58	8.88	9.2	9.93	
3056160	R0.25 × 9 × 4			15.6		6.52°	9.33	9.64	9.98	10.35	11.17	
3056161	R0.25 × 10 × 4			16.6		6.12°	10.36	10.71	11.09	11.5	12.41	
3056162	R0.3 × 0.75 × 4	45	0.5	7.2	0.55	13.8°	0.86	0.88	0.9	0.92	0.97	1
3056163	R0.3 × 1 × 4			7.4		13.34°	1.12	1.14	1.17	1.21	1.28	
3056164	R0.3 × 1.2 × 4			7.6		12.99°	1.32	1.36	1.4	1.44	1.53	
3056165	R0.3 × 1.5 × 4			7.9		12.5°	1.63	1.68	1.73	1.78	1.9	
3056166	R0.3 × 2 × 4			8.4		11.76°	2.15	2.21	2.28	2.36	2.53	
3056167	R0.3 × 2 × 6			12.2		12.78°						
3056168	R0.3 × 2.5 × 4			8.9		11.1°	2.67	2.75	2.84	2.93	3.15	
3056169	R0.3 × 3 × 4			9.4		10.51°	3.18	3.28	3.39	3.51	3.77	
3056170	R0.3 × 3 × 6			13.2		11.83°						
3056171	R0.3 × 3.5 × 4			9.9		9.98°	3.7	3.82	3.95	4.08	4.39	
3056172	R0.3 × 4 × 4			10.4		9.5°	4.22	4.35	4.5	4.66	5.01	
3056173	R0.3 × 4 × 6			14.2		11°						
3056174	R0.3 × 4.5 × 4			10.9		9.06°	4.73	4.89	5.05	5.23	5.63	
3056175	R0.3 × 5 × 4			11.4		8.67°	5.25	5.42	5.61	5.81	6.26	
3056176	R0.3 × 5.5 × 4			11.9		8.3°	5.77	5.96	6.16	6.38	6.88	
3056177	R0.3 × 6 × 4			12.4		7.96°	6.28	6.49	6.72	6.96	7.5	
3056178	R0.3 × 6.5 × 4			12.9		7.65°	6.8	7.03	7.27	7.53	8.12	
3056179	R0.3 × 7 × 4			13.4		7.37°	7.32	7.56	7.82	8.11	8.74	
3056180	R0.3 × 7.5 × 4			13.9		7.1°	7.83	8.1	8.38	8.68	9.36	
3056181	R0.3 × 8 × 4			14.4		6.85°	8.35	8.63	8.93	9.26	9.99	
3056182	R0.3 × 8.5 × 4			14.9		6.62°	8.87	9.17	9.49	9.83	10.61	
3056183	R0.3 × 9 × 4			15.4		6.41°	9.38	9.7	10.04	10.41	11.23	
3056184	R0.3 × 9.5 × 4			15.9		6.2°	9.9	10.24	10.6	10.98	11.85	
3056185	R0.3 × 10 × 4			16.4		6.01°	10.42	10.77	11.15	11.56	12.47	
3056186	R0.3 × 11 × 4	50		17.4		5.67°	11.45	11.84	12.26	12.71	13.71	
3056187	R0.3 × 12 × 4			18.4		5.36°	12.49	12.91	13.37	13.86	14.96	
3056188	R0.4 × 1 × 4	45	0.6	7.1	0.75	13.41°	1.11	1.14	1.16	1.19	1.26	1
3056189	R0.4 × 1.5 × 4			7.6		12.52°	1.63	1.67	1.72	1.77	1.88	
3056190	R0.4 × 2 × 4			8.1		11.74°	2.15	2.21	2.27	2.34	2.5	
3056191	R0.4 × 2 × 6			11.8		12.81°						
3056192	R0.4 × 2.5 × 4			8.6		11.04°	2.66	2.74	2.83	2.92	3.12	
3056193	R0.4 × 3 × 4			9.1		10.42°	3.18	3.28	3.38	3.49	3.75	
3056194	R0.4 × 4 × 4			10.1		9.37°	4.21	4.35	4.49	4.64	4.99	
3056195	R0.4 × 5 × 4			11.1		8.51°	5.25	5.42	5.6	5.79	6.23	
3056196	R0.4 × 6 × 4			12.1		7.8°	6.28	6.49	6.71	6.94	7.48	
3056197	R0.4 × 7 × 4			13.1		7.19°	7.31	7.55	7.81	8.09	8.72	
3056198	R0.4 × 8 × 4			14.1		6.67°	8.35	8.62	8.92	9.24	9.96	
3056199	R0.4 × 9 × 4			15.1		6.22°	9.38	9.69	10.03	10.39	11.2	
3056200	R0.4 × 10 × 4			16.1		5.83°	10.41	10.76	11.14	11.54	12.45	
3056201	R0.4 × 12 × 4	50		18.1		5.18°	12.48	12.9	13.36	13.84	14.93	

2 FLUTE LONG NECK FOR HIGH-PRECISION FINISHING

The A Brand

EDP No.	RE × LU × DCON	LF	APMX	LH	DN	θk	Effective length by inclined angles 0.5°	1°	1.5°	2°	3°	Type
3056202	R0.5 × 1.5 ×4	45	0.8	7.2	0.95	12.54°	1.63	1.66	1.71	1.75	1.86	1
3056203	R0.5 × 2 ×4			7.7		11.71°	2.14	2.2	2.26	2.33	2.48	
3056204	R0.5 × 2 ×6			11.4		12.83°						
3056205	R0.5 × 2.5 ×4			8.2		10.97°	2.66	2.73	2.82	2.9	3.1	
3056206	R0.5 × 3 ×4			8.7		10.33°	3.18	3.27	3.37	3.48	3.72	
3056207	R0.5 × 3 ×6			12.4		11.8°						
3056208	R0.5 × 4 ×4			9.7		9.23°	4.21	4.34	4.48	4.63	4.97	
3056209	R0.5 × 4 ×6			13.4		10.91°						
3056210	R0.5 × 5 ×4			10.7		8.35°	5.24	5.41	5.59	5.78	6.21	
3056211	R0.5 × 5 ×6			14.4		10.15°						
3056212	R0.5 × 6 ×4			11.7		7.62°	6.28	6.48	6.69	6.93	7.45	
3056213	R0.5 × 6 ×6			15.4		9.49°						
3056214	R0.5 × 7 ×4			12.7		7°	7.31	7.55	7.8	8.08	8.69	
3056215	R0.5 × 7 ×6			16.4		8.91°						
3056216	R0.5 × 8 ×4			13.7		6.48°	8.34	8.62	8.91	9.23	9.94	
3056217	R0.5 × 8 ×6			17.4		8.39°						
3056218	R0.5 × 9 ×4			14.7		6.03°	9.38	9.69	10.02	10.38	11.18	
3056219	R0.5 × 10 ×4			15.7		5.64°	10.41	10.76	11.13	11.53	12.42	
3056220	R0.5 × 10 ×6	50		19.4		7.52°						
3056221	R0.5 × 12 ×4	45		17.7		4.99°	12.48	12.9	13.34	13.83	14.91	
3056222	R0.5 × 13 ×4	50		18.7		4.71°	13.51	13.97	14.45	14.98	16.15	
3056223	R0.5 × 14 ×4			19.7		4.47°	14.55	15.04	15.56	16.13	17.4	
3056224	R0.5 × 16 ×4			21.7		4.05°	16.61	17.18	17.78	18.43	19.88	
3056225	R0.5 × 18 ×4	55		23.7		3.7°	18.68	19.31	19.99	20.73	22.37	
3056226	R0.5 × 20 ×4			25.7		3.41°	20.75	21.45	22.21	23.03	24.86	
3056227	R0.5 × 22 ×4	60		27.7		3.16°	22.82	23.59	24.43	25.33	27.34	
3056228	R0.5 × 22 ×6			31.4		4.62°						
3056229	R0.6 × 2 ×4	45	1	7.3	1.15	11.67°	2.14	2.19	2.25	2.31	2.46	1
3056230	R0.6 × 2 ×6			11.1		12.86°						
3056231	R0.6 × 2.4 ×4			7.7		11.04°	2.55	2.62	2.69	2.77	2.95	
3056232	R0.6 × 2.5 ×4			7.8		10.9°	2.66	2.73	2.81	2.89	3.08	
3056233	R0.6 × 3 ×4			8.3		10.22°	3.17	3.26	3.36	3.46	3.7	
3056234	R0.6 × 4 ×4			9.3		9.08°	4.21	4.33	4.47	4.61	4.94	
3056235	R0.6 × 4 ×6			13.1		10.87°						
3056236	R0.6 × 6 ×4			11.3		7.42°	6.27	6.47	6.68	6.91	7.43	
3056237	R0.6 × 8 ×4			13.3		6.27°	8.34	8.61	8.9	9.21	9.91	
3056238	R0.6 × 10 ×4			15.3		5.43°	10.41	10.75	11.12	11.51	12.4	
3056239	R0.6 × 12 ×4			17.3		4.78°	12.48	12.89	13.33	13.81	14.89	
3056240	R0.6 × 14 ×4	50		19.3		4.28°	14.54	15.03	15.55	16.11	17.37	
3056241	R0.6 × 16 ×4			21.3		3.87°	16.61	17.17	17.77	18.41	19.86	
3056242	R0.6 × 18 ×4	55		23.3		3.53°	18.68	19.31	19.98	20.71	22.35	
3056243	R0.6 × 20 ×4			25.3		3.24°	20.74	21.45	22.2	23.01	24.83	
3056244	R0.75 × 2 ×4	45	1.2	6.8	1.45	11.61°	2.13	2.18	2.23	2.29	2.42	1
3056245	R0.75 × 2.5 ×4			7.3		10.76°	2.65	2.72	2.79	2.87	3.04	
3056246	R0.75 × 3 ×4			7.8		10.03°	3.17	3.25	3.34	3.44	3.66	
3056247	R0.75 × 3 ×6			11.5		11.75°						
3056248	R0.75 × 4 ×4			8.8		8.81°	4.2	4.32	4.45	4.59	4.91	
3056249	R0.75 × 5 ×4			9.8		7.86°	5.23	5.39	5.56	5.74	6.15	
3056250	R0.75 × 5 ×6			13.5		9.97°						
3056251	R0.75 × 6 ×4			10.8		7.09°	6.27	6.46	6.67	6.89	7.39	
3056252	R0.75 × 6 ×6			14.5		9.26°						
3056253	R0.75 × 8 ×4			12.8		5.93°	8.34	8.6	8.88	9.19	9.88	
3056254	R0.75 × 8 ×6			16.5		8.11°						
3056255	R0.75 × 10 ×4			14.8		5.09°	10.4	10.74	11.1	11.49	12.36	
3056256	R0.75 × 12 ×4			16.8		4.46°	12.47	12.88	13.32	13.79	14.85	

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2 FLUTE LONG NECK FOR HIGH-PRECISION FINISHING

EDP No.	RE × LU × DCON	LF	APMX	LH	DN	θk	Effective length by inclined angles 0.5°	1°	1.5°	2°	3°	Type
3056257	R0.75 × 14 ×4	50	1.2	18.8	1.45	3.97°	14.54	15.02	15.53	16.09	17.34	1
3056258	R0.75 × 16 ×4			20.8		3.58°	16.6	17.16	17.75	18.39	19.82	
3056259	R0.75 × 18 ×4	55		22.8		3.25°	18.67	19.3	19.97	20.69	22.31	
3056260	R0.75 × 20 ×4			24.8		2.98°	20.74	21.44	22.18	22.99	—	
3056261	R0.75 × 22 ×4	60		26.8		2.75°	22.81	23.58	24.4	25.29		
3056262	R0.75 × 25 ×4	65		29.8		2.47°	25.91	26.79	27.73	28.74		
3056263	R0.75 × 30 ×4	70		34.8		2.11°	31.08	32.13	33.27	34.49		
3056264	R0.8 × 4 ×4	45	1.3	8.6	1.55	8.72°	4.2	4.32	4.45	4.58	4.89	1
3056265	R0.8 × 8 ×4			12.6		5.81°	8.33	8.6	8.88	9.18	9.87	
3056266	R0.8 × 12 ×4			16.6		4.35°	12.47	12.88	13.31	13.78	14.84	
3056267	R0.8 × 16 ×4	50		20.6		3.47°	16.6	17.15	17.75	18.38	19.81	
3056268	R0.8 × 20 ×4	55		24.6		2.89°	20.74	21.43	22.18	22.98	—	
3056269	R1 × 2.5 ×4	45	1.6	6.3	1.95	10.46°	2.64	2.7	2.76	2.83	2.98	1
3056270	R1 × 3 ×4			6.8		9.61°	3.16	3.23	3.32	3.4	3.6	
3056271	R1 × 3 ×6			10.6		11.7°						
3056272	R1 × 4 ×4			7.8		8.25°	4.19	4.3	4.42	4.55	4.85	
3056273	R1 × 4 ×6			11.6		10.64°						
3056274	R1 × 5 ×4			8.8		7.23°	5.23	5.37	5.53	5.7	6.09	
3056275	R1 × 6 ×4			9.8		6.43°	6.26	6.44	6.64	6.85	7.33	
3056276	R1 × 6 ×6			13.6		9°						
3056277	R1 × 8 ×4			11.8		5.26°	8.33	8.58	8.86	9.15	9.82	
3056278	R1 × 8 ×6			15.6		7.79°						
3056279	R1 × 10 ×4			13.8		4.45°	10.39	10.72	11.07	11.45	12.31	
3056280	R1 × 10 ×6	50		17.6		6.87°						
3056281	R1 × 12 ×4	45		15.8		3.86°	12.46	12.86	13.29	13.75	14.79	
3056282	R1 × 12 ×6	50		19.6		6.14°						
3056283	R1 × 13 ×4			16.8		3.61°	13.5	13.93	14.4	14.9	16.04	
3056284	R1 × 14 ×4			17.8		3.4°	14.53	15	15.51	16.05	17.28	
3056285	R1 × 16 ×4			19.8		3.04°	16.6	17.14	17.72	18.35	19.76	
3056286	R1 × 16 ×6	55		23.6		5.06°						
3056287	R1 × 18 ×4			21.8		2.75°	18.66	19.28	19.94	20.65	—	
3056288	R1 × 20 ×4			23.8		2.51°	20.73	21.42	22.16	22.95		
3056289	R1 × 20 ×6	60		27.6		4.31°					24.74	
3056290	R1 × 22 ×4			25.8		2.31°	22.8	23.56	24.37	25.25	—	
3056291	R1 × 25 ×4	65		28.8		2.06°	25.9	26.77	27.7	28.7		
3056292	R1 × 25 ×6			32.6		3.63°					30.95	
3056293	R1 × 30 ×4	70		33.8		1.75°	31.07	32.12	33.24	—	—	
3056294	R1 × 35 ×4			38.8		1.52°	36.24	37.46	38.78			
3056295	R1 × 40 ×4	80		43.8		1.34°	41.4	42.81	—			
3056296	R1.25 × 6 ×4	45		9.1		5.44°	6.44	6.63	6.82	7.03	7.51	
3056297	R1.25 × 8 ×4			11.1		4.35°	8.51	8.77	9.04	9.33	9.99	
3056298	R1.25 × 10 ×4			13.1		3.62°	10.58	10.9	11.25	11.63	12.48	
3056299	R1.25 × 15 ×4	50	2	18.1	2.35	2.55°	15.75	16.25	16.8	17.38	—	1
3056300	R1.25 × 20 ×4	55		23.1		1.97°	20.92	21.6	22.34	—		
3056301	R1.25 × 25 ×4	65		28.1		1.61°	26.08	26.95	27.88			
3056302	R1.25 × 30 ×4	70		33.1		1.35°	31.25	32.3	—			
3056303	R1.25 × 35 ×4			38.1		1.17°	36.42	37.65				
3056304	R1.5 × 6 ×6	50	2.4	11.9	2.85	8.15°	6.44	6.61	6.79	7	7.45	1
3056305	R1.5 × 8 ×6			13.9		6.87°	8.5	8.75	9.01	9.29	9.93	
3056306	R1.5 × 10 ×6			15.9		5.93°	10.57	10.89	11.23	11.59	12.42	
3056307	R1.5 × 12 ×6	55		17.9		5.22°	12.64	13.03	13.44	13.89	14.91	
3056308	R1.5 × 13 ×6			18.9		4.92°	13.67	14.1	14.55	15.04	16.15	
3056309	R1.5 × 14 ×6			19.9		4.66°	14.71	15.17	15.66	16.19	17.39	
3056310	R1.5 × 15 ×6			20.9		4.42°	15.74	16.24	16.77	17.34	18.63	

2 FLUTE LONG NECK FOR HIGH-PRECISION FINISHING

The A Brand

EDP No.	RE × LU × DCON	LF	APMX	LH	DN	θk	Effective length by inclined angles 0.5°	1°	1.5°	2°	3°	Type
3056311	R1.5 × 16 ×6		2.4	21.9	2.85	4.2°	16.77	17.31	17.88	18.49	19.88	1
3056312	R1.5 × 20 ×6	60		25.9		3.52°	20.91	21.58	22.31	23.09	24.85	
3056313	R1.5 × 25 ×6	65		30.9		2.92°	26.08	26.93	27.85	28.84	—	
3056314	R1.5 × 30 ×6	70		35.9		2.5°	31.24	32.28	33.39	34.59		
3056315	R1.5 × 35 ×6	80		40.9		2.18°	36.41	37.63	38.94	40.34		
3056316	R1.5 × 40 ×6	90		45.9		1.94°	41.58	42.98	44.48	—		
3056317	R1.75 × 10 ×6	50	2.8	14.9	3.35	5.38°	10.56	10.87	11.2	11.56	12.36	1
3056318	R1.75 × 15 ×6	55		19.9		3.92°	15.73	16.22	16.74	17.31	18.58	
3056319	R1.75 × 16 ×6			20.9		3.72°	16.76	17.29	17.85	18.46	19.82	
3056320	R1.75 × 20 ×6	60		24.9		3.08°	20.9	21.57	22.28	23.06	24.79	
3056321	R1.75 × 25 ×6	65		29.9		2.54°	26.07	26.92	27.83	28.81	—	
3056322	R1.75 × 30 ×6	70		34.9		2.16°	31.24	32.26	33.37	34.55		
3056323	R1.75 × 35 ×6	80		39.9		1.88°	36.4	37.61	38.91	—		
3056324	R1.75 × 40 ×6	90		44.9		1.66°	41.57	42.96	44.45			
3056325	R1.75 × 45 ×6			49.9		1.49°	46.74	48.31	—			
3056326	R2 × 8 ×4	55	3.2	—	3.85	—	—	—	—	—	—	2
3056327	R2 × 8 ×6			12		5.65°	8.49	8.71	8.96	9.22	9.81	1
3056328	R2 × 10 ×6	60		14		4.73°	10.55	10.85	11.17	11.52	12.3	
3056329	R2 × 12 ×6			16		4.07°	12.62	12.99	13.39	13.82	14.79	
3056330	R2 × 13 ×6			17		3.8°	13.65	14.06	14.5	14.97	16.03	
3056331	R2 × 14 ×6			18		3.56°	14.69	15.13	15.61	16.12	17.27	
3056332	R2 × 15 ×6			19		3.36°	15.72	16.2	16.72	17.27	18.52	
3056333	R2 × 16 ×6			20		3.17°	16.76	17.27	17.82	18.42	19.76	
3056334	R2 × 20 ×6	65		24		2.6°	20.89	21.55	22.26	23.02	—	
3056335	R2 × 25 ×6	70		29		2.12°	26.06	26.9	27.8	28.77		
3056336	R2 × 30 ×6	80		34		1.79°	31.23	32.25	33.34	—		
3056337	R2 × 35 ×6			39		1.55°	36.4	37.6	38.88			
3056338	R2 × 40 ×6	90		44		1.37°	41.56	42.94	—			
3056339	R2 × 45 ×6			49		1.22°	46.73	48.29				
3056340	R2 × 50 ×6	100		54		1.11°	51.9	53.64				
3056341	R2.5 × 10 ×6	60	4	12.1	4.85	2.95°	10.54	10.82	11.12	11.45	—	1
3056342	R2.5 × 15 ×6			17.1		1.95°	15.71	16.17	16.66	—		
3056343	R2.5 × 20 ×6	70		22.1		1.46°	20.87	21.52	—			
3056344	R2.5 × 25 ×6			27.1		1.17°	26.04	26.86				
3056345	R2.5 × 30 ×6	80		32.1		0.97°	31.21	—				
3056346	R2.5 × 35 ×6			37.1		0.83°	36.38					
3056347	R2.5 × 40 ×6	90		42.1		0.73°	41.55					
3056348	R2.5 × 45 ×6	100		47.1		0.65°	46.72					
3056349	R2.5 × 50 ×6			52.1		0.58°	51.88					
3056350	R3 × 10 ×6	60	4.8	—	5.85	—	—	—	—	—	—	2
3056351	R3 × 12 ×6			—								
3056352	R3 × 15 ×6	65		—								
3056353	R3 × 20 ×6	70		—								
3056354	R3 × 25 ×6			—								
3056355	R3 × 30 ×6	80		—								
3056356	R3 × 35 ×6			—								
3056357	R3 × 40 ×6	90		—								
3056358	R3 × 45 ×6	100		—								
3056359	R3 × 50 ×6	120		—								
3056360	R3 × 60 ×6			—								

Work Material / Abbreviation	Carbon Steel Alloy Steel Prehardened Steel Tool Steel ~40HRC	Prehardened Steel Hardened Steel ~45HRC	~55HRC	~60HRC	~65HRC	Stainless Steel ~35HRC	Cast Iron Ductile Cast Iron ~350HB	Copper Alloy	Aluminum Alloy	Graphite	Titanium Alloy	Heat Resistant Alloy	Cobalt Chromium Based Alloy (Stellite)
AM-EBT	○	◎	◎	◎	◎								

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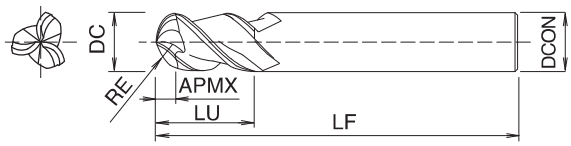
AM-EBT

CARBIDE | DUROREY | R ±0.01 | SHRINK FIT | 30° | SPEED FEED P.132

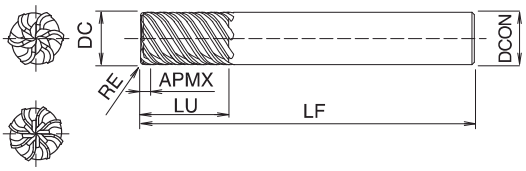


Unit:mm

EDP No.	RE × DC	LF	APMX	LU	DCON	ZEFP
3188060	R3 × 6	60	3	9	6	3
3188080	R4 × 8	70	4	12	8	3
3188100	R5 × 10	80	5	15	10	3
3188120	R6 × 12	90	6	18	12	3
3188160	R8 × 16	105	8	24	16	3
3188200	R10 × 20	110	10	30	20	3

AM-CRE

CARBIDE | DUROREY | R ±0.03 | ±0.01 | SHRINK FIT | 60°



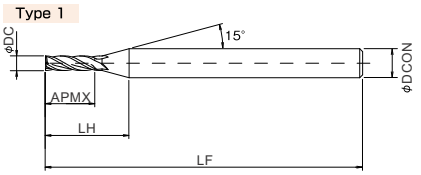
Unit:mm

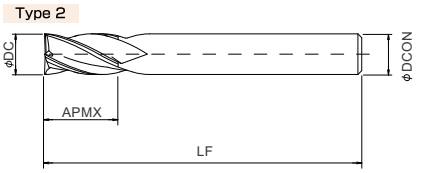
EDP No.	DC × RE	LF	APMX	LU	DCON	ZEFP
3183015	6 × R1.5	60	1.5	9	6	6
3183020	8 × R2	70	2	12	8	6
3183120	10 × R2	80	2	15	10	6
3183220	12 × R2	90	2	18	12	8
3183230	16 × R3	105	3	24	16	8
3183330	20 × R3	110	3	30	20	8

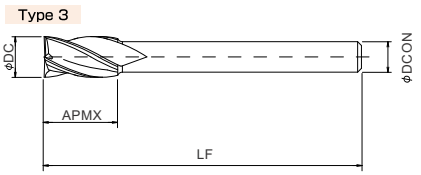
Work Material / Abbreviation	Carbon Steel Alloy Steel Prehardened Steel Tool Steel ~40HRC	Prehardened Steel Hardened Steel ~45HRC	~55HRC	~60HRC	~65HRC	Stainless Steel ~35HRC	Cast Iron Ductile Cast Iron ~350HB	Copper Alloy	Aluminum Alloy	Graphite	Titanium Alloy	Heat Resistant Alloy	Cobalt Chromium Based Alloy (Stellite)
AM-EBT	◎	◎	◎	◎	◎	○	○				○	○	○
AM-CRE		○	◎	◎	◎	◎					◎	◎	◎

WXL COATED 4 FLUTES ENDMILL

WXL-EMS







SPEED FEED P.133 | CARBIDE | WXL | SHRINK FIT | 30°

EDP No.	DC	LF	APMX	LH	DCON	Type
3130510	**1**	40	2.5	7.9	4	1
3130515	**1.5**		4	8.5		
3130520	**2**		6	10.1		
3130525	**2.5**		8	11.4		
3130530	**3**	45		15	6	
3130535	**3.5**		10	16		
3130540	**4**		11	16.1		
3130545	**4.5**			15.1		
3130550	**5**	50	13	16.2		
3130555	**5.5**			16.3		
3130560	**6**			-		2
3130565	**6.5**	60	16	21.1	8	1
3130570	**7**			19.2		
3130575	**7.5**			19.3		
3130580	**8**		19	-		2
3130585	**8.5**	70		24.1	10	1
3130590	**9**			22.2		
3130595	**9.5**			22.3		
3130600	**10**			-		2

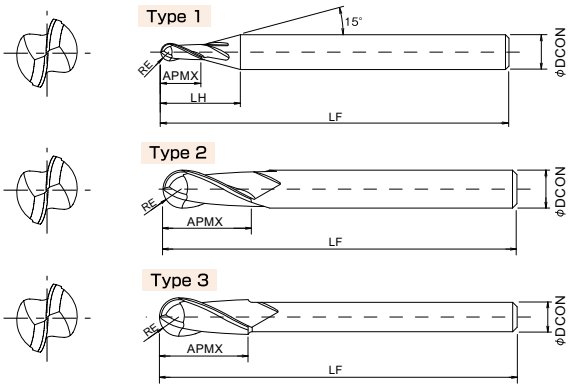
EDP No.	DC	LF	APMX	LH	DCON	Type
3130605	**10.5**	75	22	27.1	12	1
3130610	**11**			26.2		
3130615	**11.5**			25.3		
3130620	**12**		26	-		2
3130625	**12.5**	85				3
3130630	**13**					
3130640	**14**					
3130650	**15**	90		30.1	16	1
3130660	**16**	100	32	-		2
3130670	**17**					3
3130680	**18**					
3130690	**19**			37.4	20	1
3130700	**20**	105	38	-		2
3130710	**21**					3
3130720	**22**					
3130730	**23**	120	45	52.3	25	1
3130740	**24**			50.4		
3130750	**25**			-		2
3130800	**30**	125		50.8	32	1

Work Material / Abbreviation	Carbon Steel, Alloy Steel, Prehardened Steel, Tool Steel ~40HRC	Prehardened Steel / Hardened Steel ~45HRC	~55HRC	~60HRC	~65HRC	Stainless Steel ~35HRC	Cast Iron, Ductile Cast Iron ~350HB	Copper Alloy	Aluminum Alloy	Graphite	Titanium Alloy	Heat Resistant Alloy	Plastic
WXL-EMS	◎	◎				◎	◎	◎	○		○	○	

shaping your dreams

WXL COATED 2 FLUTES BALL NOSE ENDMILL

WXL-EBD



SPEED FEED P.134 | CARBIDE | WXL | R ±0.005 (R<3) | R 0.003~0.007 (3≦R≦6) | R ±0.01 (6<R) | SHRINK FIT | 30°

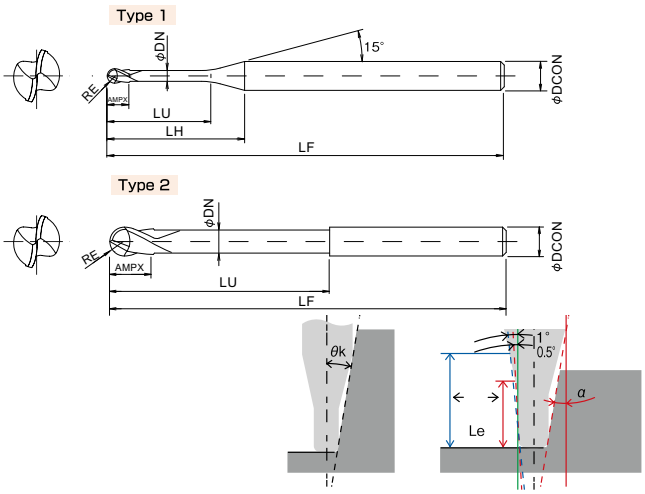
EDP No.	RE X APMX X DCON	LF	APMX	LH	DCON	Type
3105010	R0.05 X 0.2 X 4	40	0.2	6.5	4	1
3105020	R0.1 X 0.4 X 4		0.4			
3105030	R0.15 X 0.6 X 4		0.6	6.7		
3106030	R0.15 X 0.6 X 6	50		10.4	6	
3105040	R0.2 X 0.8 X 4	40	0.8	7.2	4	
3106040	R0.2 X 0.8 X 6	50		10.7	6	
3105050	R0.25 X 1.1 X 4	40	1.1	7.1	4	
3106050	R0.25 X 1.1 X 6	50		10.8	6	
3105060	R0.3 X 1.1 X 4	40		6.9	4	
3106060	R0.3 X 1.1 X 6	50		10.6	6	
3106710	R0.35 X 1.5 X 4	40	1.5	8.2	4	
3105080	R0.4 X 2 X 4		2	7.4		
3106080	R0.4 X 2 X 6	50		11.1	6	
3106720	R0.45 X 2.2 X 4		2.2	8.5	4	
3105100	R0.5 X 1.5 X 4		1.5	6.7		
3105101	R0.5 X 2.5 X 4		2.5	7.7		
3106100	R0.5 X 2.5 X 6	60		11.5	6	
3106730	R0.55 X 2.7 X 4	50	2.7	8.9	4	
3105120	R0.6 X 3 X 4		3	7.9		
3106740	R0.65 X 3.2 X 4		3.2	9.1		
3105140	R0.7 X 3.5 X 4		3.5	8.1		
3105150	R0.75 X 2 X 4		2	6.4		
3105151	R0.75 X 4 X 4		4	8.4		
3106150	R0.75 X 4 X 6			12.1	6	
3105160	R0.8 X 4 X 4			8.2	4	
3106750	R0.85 X 4.2 X 4		4.2	9.3		
3106760	R0.9 X 4.5 X 4		4.5	9.4		
3106770	R0.95 X 4.7 X 4		4.7			
3105200	R1 X 3 X 4		3	7.1		
3106200	R1 X 5 X 6		5	12.8	6	
3105201	R1 X 6 X 4		6	10.1	4	
3106780	R1.05 X 4.8 X 6		4.8	13.5	6	
3106790	R1.1 X 4.9 X 6		4.9	13.4		
3106800	R1.15 X 5 X 6		5	13.3		
3106810	R1.2 X 5.1 X 6		5.1	13.2		
3105250	R1.25 X 3 X 4		3	6.1	4	
3105251	R1.25 X 6 X 4		6	9.1		
3106250	R1.25 X 6 X 6	60	6	12.9	6	

EDP No.	RE X APMX X DCON	LF	APMX	LH	DCON	Type
3106820	R1.3 X 5.2 X 6	50	5.2	13.5	6	1
3106830	R1.35 X 5.4 X 6		5.4			
3106840	R1.4 X 5.6 X 6	60	5.6			
3106850	R1.45 X 5.8 X 6		5.8			
3105300	R1.5 X 4.5 X 4		4.5	7.9	4	
3106300	R1.5 X 4.5 X 6			11.6	6	
3106301	R1.5 X 8 X 6		8	15.1		
3106350	R1.75 X 8 X 6	70		14.2		
3106400	R2 X 6 X 6		6	11.2		
3105400	R2 X 8 X 4	60	8	-	4	2
3106401	R2 X 8 X 6	70		13.2	6	1
3106860	R2.25 X 8 X 6	80		13.6		
3106500	R2.5 X 8			11.4		
3106501	R2.5 X 10		10	13.4		
3106502	R2.5 X 12		12	15.4		
3106870	R2.75 X 10		10	13.7		
3106600	R3 X 10	90		-		2
3106601	R3 X 12		12	-		
3106880	R3.25 X 13		13	-		3
3106610	R3.5 X 14		14	-		
3106890	R3.75 X 14			-		
3106620	R4 X 12	100	12	-	8	2
3106621	R4 X 14		14	-		
3106900	R4.25 X 16		16	-		3
3106630	R4.5 X 18		18	-		
3106910	R4.75 X 18			-		
3106640	R5 X 15		15	-	10	2
3106641	R5 X 18		18	-		
3106650	R5.5 X 22		22	-		3
3106560	R6 X 18	110	18	-	12	2
3106661	R6 X 22		22	-		
3106920	R6.5 X 24		24	-		3
3106670	R7 X 26		26	-		
3106930	R7.5 X 28		28	-		
3106680	R8 X 30	140	30	-	16	2
3106690	R9 X 34		34	-		3
3106700	R10 X 38	160	38	-	20	2

Work Material / Abbreviation	Carbon Steel, Alloy Steel, Prehardened Steel, Tool Steel ~40HRC	Prehardened Steel, Hardened Steel ~45HRC	~55HRC	~60HRC	~65HRC	Stainless Steel ~35HRC	Cast Iron, Ductile Cast Iron ~350HB	Copper Alloy	Aluminum Alloy	Graphite	Titanium Alloy	Heat Resistant Alloy	Plastic
WXL-EBD	◎	◎	○			◎	◎	◎	○		○	○	

WXL COATED 2 FLUTES BALL NOSE ENDMILL

WXL-LN-EBD



SPEED FEED P.135 | CARBIDE | WXL | R ±0.005 | SHRINK FIT | 30°

EDP No.	RE X LU X DCON	LF	APMX	LH	DCON	DN	θk	Le 0.5°	Le 1°	Le 1.5°	Le 2°	Le 3°	Type
3110103	R0.05 X 0.3 X 4	45	0.08	7.5	4	0.085	14.46°	0.34	0.35	0.36	0.37	0.4	1
3110105	R0.05 X 0.5 X 4			7.7			14.1°	0.54	0.56	0.58	0.6	0.64	
3110203	R0.1 X 0.3 X 4		0.16	7.3		0.18	14.59°	0.3	0.31	0.32	0.33	0.35	
3110205	R0.1 X 0.5 X 4			7.5			14.44°	0.53	0.55	0.57	0.59	0.63	
3120205	R0.1 X 0.5 X 6	50		11.3	6		14.16°	0.53	0.55	0.57	0.59	0.63	
3110207	R0.1 X 0.75 X 4	45		7.8	4		13.72°	0.79	0.82	0.85	0.88	0.94	
3110210	R0.1 X 1 X 4			8			13.31°	1.05	1.09	1.13	1.17	1.26	
3120210	R0.1 X 1 X 6	50		11.8	6		13.85°	1.05	1.09	1.13	1.17	1.26	
3110212	R0.1 X 1.25 X 4	45		8.3	4		12.92°	1.31	1.36	1.41	1.46	1.57	
3110215	R0.1 X 1.5 X 4			8.5			12.56°	1.57	1.63	1.68	1.74	1.88	
3120215	R0.1 X 1.5 X 6	50		12.3	6		13.3°	1.57	1.63	1.68	1.74	1.88	
3110217	R0.1 X 1.75 X 4	45		8.8	4		12.21°	1.83	1.9	1.96	2.03	2.19	
3110220	R0.1 X 2 X 4			9			11.88°	2.09	2.16	2.24	2.32	2.5	
3120220	R0.1 X 2 X 6	50		12.8	6		12.8°	2.09	2.16	2.24	2.32	2.5	
3110225	R0.1 X 2.5 X 4	45		9.5	4		11.28°	2.61	2.7	2.79	2.89	3.12	
3110230	R0.1 X 3 X 4			10			10.73°	3.13	3.23	3.35	3.47	3.74	
3110305	R0.15 X 0.5 X 4		0.24	7.3		0.28	14.22°	0.52	0.54	0.56	0.58	0.62	
3110306	R0.15 X 0.6 X 4			7.4			14.03°	0.63	0.65	0.68	0.7	0.75	
3110307	R0.15 X 0.75 X 4			7.6			13.77°	0.79	0.82	0.85	0.87	0.93	
3110310	R0.15 X 1 X 4			7.8			13.34°	1.05	1.09	1.12	1.16	1.24	
3120310	R0.15 X 1 X 6	50		11.6	6		13.88°	1.05	1.09	1.12	1.16	1.24	
3110312	R0.15 X 1.25 X 4	45		8.1	4		12.94°	1.31	1.36	1.4	1.45	1.55	
3110315	R0.15 X 1.5 X 4			8.3			12.57°	1.57	1.63	1.68	1.74	1.87	
3120315	R0.15 X 1.5 X 6	50		12.1	6		13.33°	1.57	1.63	1.68	1.74	1.87	
3110317	R0.15 X 1.75 X 4	45		8.6	4		12.21°	1.83	1.89	1.96	2.02	2.18	
3110320	R0.15 X 2 X 4			8.8			11.87°	2.09	2.16	2.23	2.31	2.49	
3120320	R0.15 X 2 X 6	50		12.6	6		12.81°	2.09	2.16	2.23	2.31	2.49	
3110322	R0.15 X 2.25 X 4	45		9.1	4		11.56°	2.35	2.43	2.51	2.6	2.8	
3110325	R0.15 X 2.5 X 4			9.3			11.25°	2.61	2.69	2.79	2.89	3.11	
3120325	R0.15 X 2.5 X 6	50		13.1	6		12.34°	2.61	2.69	2.79	2.89	3.11	

EDP No.	RE X LU X DCON	LF	APMX	LH	DCON	DN	θk	Le 0.5°	Le 1°	Le 1.5°	Le 2°	Le 3°	Type
3110327	R0.15 X 2.75 X 4	45	0.24	9.6	4	0.28	10.97°	2.87	2.96	3.06	3.17	3.42	1
3110330	R0.15 X 3 X 4			9.8			10.69°	3.13	3.23	3.34	3.46	3.73	
3120330	R0.15 X 3 X 6	50		13.6	6		11.89°	3.13	3.23	3.34	3.46	3.73	
3110335	R0.15 X 3.5 X 4	45		10.3	4		10.19°	3.64	3.76	3.9	4.04	4.35	
3110340	R0.15 X 4 X 4			10.8			9.72°	4.16	4.3	4.45	4.61	4.97	
3110345	R0.15 X 4.5 X 4			11.3			9.3°	4.68	4.83	5	5.19	5.59	
3110350	R0.15 X 5 X 4			11.8			8.91°	5.19	5.37	5.56	5.76	6.22	
3110405	R0.2 X 0.5 X 4			7.1			14.3°	0.52	0.53	0.55	0.56	0.6	
3110407	R0.2 X 0.75 X 4			7.4			13.83°	0.78	0.8	0.83	0.85	0.91	
3110410	R0.2 X 1 X 4			7.6			13.39°	1.04	1.07	1.11	1.14	1.22	
3120410	R0.2 X 1 X 6	50		11.4	6		13.93°	1.04	1.07	1.11	1.14	1.22	
3110415	R0.2 X 1.5 X 4	45		8.1	4		12.59°	1.56	1.61	1.66	1.72	1.84	
3120415	R0.2 X 1.5 X 6	50		11.9	6		13.36°	1.56	1.61	1.66	1.72	1.84	
3110420	R0.2 X 2 X 4	45		8.6	4		11.88°	2.08	2.14	2.21	2.29	2.46	

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WXL COATED 2 FLUTES BALL NOSE ENDMILL

EDP No.	RE X LU X DCON	LF	APMX	LH	DCON	DN	θk	Le 0.5°	Le 1°	Le 1.5°	Le 2°	Le 3°	Type
3120420	R0.2 X 2 X 6	50		12.4	6		12.83°	2.08	2.14	2.21	2.29	2.46	
3110425	R0.2 X 2.5 X 4	45		9.1	4		11.24°	2.6	2.68	2.77	2.87	3.08	
3120425	R0.2 X 2.5 X 6	50		12.9	6		12.35°	2.6	2.68	2.77	2.87	3.08	
3110430	R0.2 X 3 X 4	45	0.3	9.6	4	0.37	10.67°	3.11	3.21	3.32	3.44	3.7	
3120430	R0.2 X 3 X 6	50		13.4	6		11.9°	3.11	3.21	3.32	3.44	3.7	
3110435	R0.2 X 3.5 X 4	45		10.1	4		10.15°	3.63	3.75	3.88	4.02	4.33	
3110440	R0.2 X 4 X 4			10.6			9.68°	4.15	4.28	4.43	4.59	4.95	
3120440	R0.2 X 4 X 6	50		14.4	6		11.09°	4.15	4.28	4.43	4.59	4.95	
3110445	R0.2 X 4.5 X 4	45		11.1	4		9.25°	4.66	4.82	4.99	5.17	5.57	
3110450	R0.2 X 5 X 4			11.6			8.86°	5.18	5.35	5.54	5.74	6.19	
3120450	R0.2 X 5 X 6	50		15.4	6		10.38°	5.18	5.35	5.54	5.74	6.19	
3110455	R0.2 X 5.5 X 4	45		12.1	4		8.5°	5.7	5.89	6.09	6.32	6.81	
3110460	R0.2 X 6 X 4			12.6			8.16°	6.21	6.42	6.65	6.89	7.43	
3120460	R0.2 X 6 X 6	50		16.4	6		9.76°	6.21	6.42	6.65	6.89	7.43	
3110510	R0.25 X 1 X 4	45		7.6	4		13.45°	1.03	1.06	1.09	1.12	1.19	
3110515	R0.25 X 1.5 X 4			8.1			12.62°	1.55	1.59	1.64	1.69	1.81	
3120515	R0.25 X 1.5 X 6	50		11.9	6		13.4°	1.55	1.59	1.64	1.69	1.81	
3110520	R0.25 X 2 X 4	45		8.6	4		11.89°	2.06	2.13	2.2	2.27	2.43	
3120520	R0.25 X 2 X 6	50		12.4	6		12.86°	2.06	2.13	2.2	2.27	2.43	
3110525	R0.25 X 2.5 X 4	45		9.1	4		11.23°	2.58	2.66	2.75	2.84	3.05	
3120525	R0.25 X 2.5 X 6	50		12.9	6		12.36°	2.58	2.66	2.75	2.84	3.05	
3110530	R0.25 X 3 X 4	45		9.6	4		10.65°	3.1	3.2	3.3	3.42	3.68	
3120530	R0.25 X 3 X 6	50		13.4	6		11.9°	3.1	3.2	3.3	3.42	3.68	
3110535	R0.25 X 3.5 X 4	45		10.1	4		10.12°	3.61	3.73	3.86	3.99	4.3	
3110540	R0.25 X 4 X 4		0.4	10.6		0.45	9.64°	4.13	4.27	4.41	4.57	4.92	
3120540	R0.25 X 4 X 6	50		14.4	6		11.08°	4.13	4.27	4.41	4.57	4.92	
3110545	R0.25 X 4.5 X 4	45		11.1	4		9.2°	4.65	4.8	4.97	5.14	5.54	
3110550	R0.25 X 5 X 4			11.6			8.8°	5.17	5.34	5.52	5.72	6.16	
3120550	R0.25 X 5 X 6	50		15.4	6		10.36°	5.17	5.34	5.52	5.72	6.16	
3110555	R0.25 X 5.5 X 4	45		12.1	4		8.43°	5.68	5.87	6.07	6.29	6.78	
3110560	R0.25 X 6 X 4			12.6			8.1°	6.2	6.41	6.63	6.87	7.41	
3120560	R0.25 X 6 X 6	50		16.4	6		9.73°	6.2	6.41	6.63	6.87	7.41	
3110570	R0.25 X 7 X 4	45		13.6	4		7.49°	7.23	7.48	7.74	8.02	8.65	
3110580	R0.25 X 8 X 4			14.6			6.98°	8.27	8.55	8.85	9.17	9.89	1
3120580	R0.25 X 8 X 6	50		18.4	6		8.67°	8.27	8.55	8.85	9.17	9.89	
3110590	R0.25 X 9 X 4			15.6			6.52°	9.3	9.62	9.95	10.32	11.14	
3110600	R0.25 X 10 X 4	45		16.6	4		6.13°	10.33	10.68	11.06	11.47	12.38	
3110610	R0.3 X 1 X 4			7.4			13.49°	1.03	1.05	1.08	1.11	1.18	
3110615	R0.3 X 1.5 X 4			7.9			12.64°	1.55	1.59	1.64	1.69	1.8	
3120615	R0.3 X 1.5 X 6	50		11.7	6		13.42°	1.55	1.59	1.64	1.69	1.8	
3110620	R0.3 X 2 X 4	45		8.4	4		11.88°	2.06	2.12	2.19	2.26	2.42	
3120620	R0.3 X 2 X 6	50		12.2	6		12.87°	2.06	2.12	2.19	2.26	2.42	
3110625	R0.3 X 2.5 X 4	45		8.9	4		11.21°	2.58	2.66	2.74	2.84	3.04	
3120625	R0.3 X 2.5 X 6	50		12.7	6		12.37°	2.58	2.66	2.74	2.84	3.04	
3110630	R0.3 X 3 X 4	45		9.4	4		10.61°	3.1	3.19	3.3	3.41	3.66	
3120630	R0.3 X 3 X 6	50		13.2	6		11.9°	3.1	3.19	3.3	3.41	3.66	
3110635	R0.3 X 3.5 X 4	45		9.9	4		10.07°	3.61	3.73	3.85	3.99	4.29	
3110640	R0.3 X 4 X 4			10.4			9.58°	4.13	4.26	4.41	4.56	4.91	
3120640	R0.3 X 4 X 6	50		14.2	6		11.06°	4.13	4.26	4.41	4.56	4.91	
3110645	R0.3 X 4.5 X 4	45		10.9	4		9.13°	4.65	4.8	4.96	5.14	5.53	
3110650	R0.3 X 5 X 4		0.5	11.4		0.55	8.73°	5.16	5.33	5.51	5.71	6.15	
3120650	R0.3 X 5 X 6	50		15.2	6		10.33°	5.16	5.33	5.51	5.71	6.15	
3110655	R0.3 X 5.5 X 4	45		11.9	4		8.36°	5.68	5.87	6.07	6.29	6.77	
3110660	R0.3 X 6 X 4			12.4			8.02°	6.2	6.4	6.62	6.86	7.39	
3120660	R0.3 X 6 X 6	50		16.2	6		9.69°	6.2	6.4	6.62	6.86	7.39	
3110665	R0.3 X 6.5 X 4	45		12.9	4		7.7°	6.71	6.94	7.18	7.44	8.02	
3110670	R0.3 X 7 X 4			13.4			7.41°	7.23	7.47	7.73	8.01	8.64	
3110675	R0.3 X 7.5 X 4			13.9			7.14°	7.75	8.01	8.29	8.59	9.26	
3110680	R0.3 X 8 X 4			14.4			6.89°	8.26	8.54	8.84	9.16	9.88	
3120680	R0.3 X 8 X 6	50		18.2	6		8.62°	8.26	8.54	8.84	9.16	9.88	
3110685	R0.3 X 8.5 X 4	45		14.9	4		6.66°	8.78	9.08	9.39	9.74	10.5	
3110690	R0.3 X 9 X 4			15.4			6.44°	9.3	9.61	9.95	10.31	11.12	
3110695	R0.3 X 9.5 X 4			15.9			6.23°	9.81	10.15	10.5	10.89	11.75	
3110700	R0.3 X 10 X 4			16.4			6.04°	10.33	10.68	11.06	11.46	12.37	
3120700	R0.3 X 10 X 6	50		20.2	6		7.76°	10.33	10.68	11.06	11.46	12.37	
3110711	R0.3 X 11 X 4	45		17.4	4		5.69°	11.37	11.75	12.16	12.61	13.61	
3110712	R0.3 X 12 X 4			18.4			5.38°	12.4	12.82	13.27	13.76	14.85	
3110820	R0.4 X 2 X 4			8.1			11.86°	2.06	2.12	2.18	2.25	2.4	

WXL COATED 2 FLUTES BALL NOSE ENDMILL

EDP No.	RE X LU X DCON	LF	APMX	LH	DCON	DN	θk	Le 0.5°	Le 1°	Le 1.5°	Le 2°	Le 3°	Type
3120820	R0.4 X 2 X 6	50	0.6	11.8	6	0.75	12.9°	2.06	2.12	2.18	2.25	2.4	1
3110830	R0.4 X 3 X 4	45		9.1	4		10.52°	3.09	3.19	3.29	3.4	3.64	
3120830	R0.4 X 3 X 6	50		12.8	6		11.89°	3.09	3.19	3.29	3.4	3.64	
3110840	R0.4 X 4 X 4	45		10.1	4		9.45°	4.13	4.26	4.4	4.55	4.88	
3120840	R0.4 X 4 X 6	50		13.8	6		11.02°	4.13	4.26	4.4	4.55	4.88	
3110850	R0.4 X 5 X 4	45		11.1	4		8.58°	5.16	5.33	5.5	5.7	6.13	
3120850	R0.4 X 5 X 6	50		14.8	6		10.27°	5.16	5.33	5.5	5.7	6.13	
3110860	R0.4 X 6 X 4	45		12.1	4		7.85°	6.19	6.4	6.61	6.85	7.37	
3120860	R0.4 X 6 X 6	50		15.8	6		9.62°	6.19	6.4	6.61	6.85	7.37	
3110870	R0.4 X 7 X 4	45		13.1	4		7.24°	7.23	7.47	7.72	8	8.61	
3110880	R0.4 X 8 X 4			14.1			6.71°	8.26	8.54	8.83	9.15	9.86	
3120880	R0.4 X 8 X 6	50		17.8	6		8.53°	8.26	8.54	8.83	9.15	9.86	
3110890	R0.4 X 9 X 4	45		15.1	4		6.25°	9.29	9.6	9.94	10.3	11.1	
3110900	R0.4 X 10 X 4			16.1			5.86°	10.33	10.67	11.05	11.45	12.34	
3120900	R0.4 X 10 X 6	50		19.8	6		7.66°	10.33	10.67	11.05	11.45	12.34	
3110912	R0.4 X 12 X 4	45	0.5	18.1	4		5.2°	12.4	12.81	13.26	13.75	14.83	
3111025	R0.5 X 2.5 X 4		0.8	8.2		0.95	11.09°	2.57	2.64	2.72	2.81	3	
3111030	R0.5 X 3 X 4			8.7			10.43°	3.09	3.18	3.28	3.38	3.62	
3121030	R0.5 X 3 X 6	50		12.4	6		11.88°	3.09	3.18	3.28	3.38	3.62	
3111040	R0.5 X 4 X 4	45		9.7	4		9.32°	4.12	4.25	4.39	4.53	4.86	
3121040	R0.5 X 4 X 6	50		13.4	6		10.98°	4.12	4.25	4.39	4.53	4.86	
3111050	R0.5 X 5 X 4	45		10.7	4		8.41°	5.16	5.32	5.49	5.68	6.1	
3121050	R0.5 X 5 X 6	50		14.4	6		10.21°	5.16	5.32	5.49	5.68	6.1	
3111060	R0.5 X 6 X 4	45		11.7	4		7.67°	6.19	6.39	6.6	6.83	7.35	
3121060	R0.5 X 6 X 6	50		15.4	6		9.54°	6.19	6.39	6.6	6.83	7.35	
3111070	R0.5 X 7 X 4	45		12.7	4		7.05°	7.22	7.46	7.71	7.98	8.59	
3121070	R0.5 X 7 X 6	50		16.4	6		8.95°	7.22	7.46	7.71	7.98	8.59	
3111080	R0.5 X 8 4	45		13.7	4		6.52°	8.26	8.53	8.82	9.13	9.83	
3121080	R0.5 X 8 6	50		17.4	6		8.43°	8.26	8.53	8.82	9.13	9.83	
3111090	R0.5 X 9 4	45		14.7	4		6.06°	9.29	9.6	9.93	10.28	11.08	
3111100	R0.5 X 10 4			15.7			5.66°	10.33	10.67	11.04	11.43	12.32	
3121100	R0.5 X 10 6	50		19.4	6		7.55°	10.33	10.67	11.04	11.43	12.32	
3111112	R0.5 X 12 4	45		17.7	4		5.01°	12.39	12.81	13.25	13.73	14.81	
3121112	R0.5 X 12 6	50		21.4	6		6.83°	12.39	12.81	13.25	13.73	14.81	
3111114	R0.5 X 14 4			19.7	4		4.49°	14.46	14.95	15.47	16.03	17.29	
3121114	R0.5 X 14 6	60		23.4	6		6.24°	14.46	14.95	15.47	16.03	17.29	
3111116	R0.5 X 16 4	50		21.7	4		4.06°	16.53	17.09	17.69	18.33	19.78	
3121116	R0.5 X 16 6	60		25.4	6		5.74°	16.53	17.09	17.69	18.33	19.78	
3111118	R0.5 X 18 4	55		23.7	4		3.71°	18.59	19.23	19.9	20.63	22.26	
3111120	R0.5 X 20 4			25.7			4.95°	20.66	21.36	22.12	22.93	24.75	
3121120	R0.5 X 20 6	60		29.4	6		3.42°	20.66	21.36	22.12	22.93	24.75	
3121122	R0.5 X 22 6			31.4			4.63°	22.73	23.5	24.33	25.23	27.24	
3111240	R0.6 X 4 4	45	1	9.4	4	1.15	9.07°	4.19	4.34	4.48	4.62	4.95	
3111260	R0.6 X 6 4			11.4			7.41°	6.27	6.48	6.69	6.92	7.44	
3121260	R0.6 X 6 6	50		15.2	6		9.4°	6.27	6.48	6.69	6.92	7.44	
3111280	R0.6 X 8 4	45		13.4	4		6.26°	8.35	8.62	8.91	9.22	9.93	
3121280	R0.6 X 8 X 6	50		17.1	6		8.28°	8.35	8.62	8.91	9.22	9.93	
3111300	R0.6 X 10 X 4	45		15.4	4		5.42°	10.42	10.76	11.13	11.52	12.41	
3121300	R0.6 X 10 X 6	50		19.2	6		7.39°	10.42	10.76	11.13	11.52	12.41	
3111312	R0.6 X 12 X 4	45		17.4	4		4.78°	12.49	12.9	13.34	13.82	14.9	
3121312	R0.6 X 12 X 6	50		21.2	6		6.68°	12.49	12.9	13.34	13.82	14.9	
3111314	R0.6 X 14 X 4			19.4	4		4.27°	14.55	15.04	15.56	16.12	17.38	
3111316	R0.6 X 16 X 4			21.4			3.86°	16.62	17.18	17.78	18.42	19.87	
3121316	R0.6 X 16 X 6	60		25.2	6		5.6°	16.62	17.18	17.78	18.42	19.87	
3111318	R0.6 X 18 X 4	55		23.4	4		3.52°	18.69	19.32	19.99	20.72	22.36	
3111320	R0.6 X 20 X 4	60		25.4			3.24°	20.75	21.46	22.21	23.02	24.84	
3111324	R0.6 X 24 X 4			29.4			2.79°	24.89	25.74	26.64	27.62	-	
3111480	R0.7 X 8 X 4	45	1.1	13.1		1.35	6.04°	8.35	8.61	8.9	9.21	9.9	
3111512	R0.7 X 12 X 4			17.1			4.57°	12.48	12.89	13.33	13.81	14.87	
3111516	R0.7 X 16 X 4	50		21.1			3.67°	16.62	17.17	17.77	18.41	19.85	
3111530	R0.75 X 3 X 4	45	1.2	7.9		1.45	10.01°	3.13	3.25	3.35	3.45	3.67	
3111540	R0.75 X 4 X 4			8.9			8.8°	4.18	4.33	4.46	4.6	4.92	
3111560	R0.75 X 6 X 4			10.9			7.08°	6.27	6.47	6.68	6.9	7.4	
3121560	R0.75 X 6 X 6	50		14.6	6		9.26°	6.27	6.47	6.68	6.9	7.4	
3111580	R0.75 X 8 X 4	45		12.9	4		5.92°	8.34	8.61	8.9	9.2	9.89	
3121580	R0.75 X 8 X 6	50		16.6	6		8.11°	8.34	8.61	8.9	9.2	9.89	
3111600	R0.75 X 10 X 4	45		14.9	4		5.09°	10.41	10.75	11.11	11.5	12.38	
3121600	R0.75 X 10 X 6	50		18.6	6		7.21°	10.41	10.75	11.11	11.5	12.38	

shaping your dreams

WXL COATED 2 FLUTES BALL NOSE ENDMILL

EDP No.	RE X LU X DCON	LF	APMX	LH	DCON	DN	θk	Le 0.5°	Le 1°	Le 1.5°	Le 2°	Le 3°	Type
3111612	R0.75 X 12 X 4	45	1.2	16.9	4	1.45	4.46°	12.48	12.89	13.33	13.8	14.86	1
3121612	R0.75 X 12 X 6	50		20.6	6		6.49°	12.48	12.89	13.33	13.8	14.86	
3111614	R0.75 X 14 X 4			18.9	4		3.96°	14.55	15.03	15.55	16.1	17.35	
3111616	R0.75 X 16 X 4	55		20.9			3.57°	16.62	17.17	17.76	18.4	19.83	
3121616	R0.75 X 16 X 6	60		24.6	6		5.4°	16.62	17.17	17.76	18.4	19.83	
3111618	R0.75 X 18 X 4	55		22.9	4		3.25°	18.68	19.31	19.98	20.7	22.32	
3111620	R0.75 X 20 X 4			24.9			2.98°	20.75	21.45	22.19	23	-	
3121620	R0.75 X 20 X 6	60		28.6	6		4.63°	20.75	21.45	22.19	23	24.81	
3111622	R0.75 X 22 X 4	55		26.9	4	1.15	2.75°	22.82	23.59	24.41	25.3	-	
3111630	R0.75 X 30 X 4	65		34.9			2.1°	31.09	32.14	33.28	34.5	-	
3111640	R0.8 X 4 X 4	45	1.3	8.7			8.7°	4.18	4.33	4.46	4.59	4.91	
3111680	R0.8 X 8 X 4			12.7			5.8°	8.34	8.61	8.89	9.19	9.88	
3111712	R0.8 X 12 X 4			16.7			4.34°	12.48	12.89	13.32	13.79	14.85	
3111716	R0.8 X 16 X 4	50		20.7			3.47°	16.61	17.16	17.76	18.39	19.82	
3111720	R0.8 X 20 X 4	55		24.7			2.89°	20.75	21.44	22.19	22.99	-	
3111880	R0.9 X 8 X 4	45	1.4	12.6			5.38°	8.48	8.88	9.23	9.56	10.27	
3111912	R0.9 X 12 X 4			16.6			4.02°	12.69	13.22	13.68	14.16	15.24	
3111916	R0.9 X 16 X 4	50		20.6			3.2°	16.88	17.51	18.11	18.76	20.21	
3111920	R0.9 X 20 X 4	55		24.6			2.66°	21.05	21.79	22.55	23.36	-	
3112030	R1 X 3 X 4	45	1.6	7.3		1.35	9.1°	3.16	3.31	3.47	3.64	3.96	
3112040	R1 X 4 X 4			8.3			7.87°	4.23	4.44	4.66	4.86	5.26	
3122040	R1 X 4 X 6	50		12	6		10.32°	4.23	4.44	4.66	4.86	5.26	
3112060	R1 X 6 X 4	45		10.3	4	1.45	6.19°	6.36	6.67	6.96	7.23	7.76	
3122060	R1 X 6 X 6	50		14	6		8.77°	6.36	6.67	6.96	7.23	7.76	
3112080	R1 X 8 X 4	45		12.3	4		5.1°	8.48	8.87	9.22	9.55	10.24	
3122080	R1 X 8 X 6	50		16	6		7.61°	8.48	8.87	9.22	9.55	10.24	
3112100	R1 X 10 X 4	45		14.3	4		4.33°	10.59	11.05	11.45	11.85	12.73	
3122100	R1 X 10 X 6	50		18	6		6.73°	10.59	11.05	11.45	11.85	12.73	
3112112	R1 X 12 X 4	45		16.3	4		3.77°	12.69	13.21	13.67	14.15	15.22	
3122112	R1 X 12 X 6	50		20	6		6.03°	12.69	13.21	13.67	14.15	15.22	
3112114	R1 X 14 X 4			18.3	4		3.33°	14.78	15.36	15.89	16.45	17.7	
3112116	R1 X 16 X 4			20.3			2.98°	16.88	17.51	18.1	18.75	-	
3122116	R1 X 16 X 6	60		24	6		4.98°	16.88	17.51	18.1	18.75	20.19	
3112118	R1 X 18 X 4	55		22.3	4		2.7°	18.96	19.65	20.32	21.04	-	
3112120	R1 X 20 X 4			24.3			2.47°	21.05	21.78	22.54	23.34	-	
3122120	R1 X 20 X 6	65		28	6		4.25°	21.05	21.78	22.54	23.34	25.16	
3112122	R1 X 22 X 4	60		26.3	4		2.27°	23.13	23.92	24.75	25.64	-	
3112125	R1 X 25 X 4	65		29.3			2.03°	26.24	27.13	28.08	29.09	-	
3122125	R1 X 25 X 6	70		33	6		3.58°	26.24	27.13	28.08	29.09	31.38	
3112130	R1 X 30 X 4			34.3	4		1.73°	31.42	32.48	33.62	-	-	
3122130	R1 X 30 X 6	75		38	6		3.1°	31.42	32.48	33.62	34.84	37.59	
3112135	R1 X 35 X 4			39.3	4		1.5°	36.59	37.83	39.16	-	-	
3122135	R1 X 35 X 6	80		43	6		2.73°	36.59	37.83	39.16	40.59	-	
3112140	R1 X 40 X 4			44.3	4		1.33°	41.76	43.18	-	-	-	
3112560	R1.25 X 6 X 4	45	2	9.1	4		5.46°	6.26	6.51	6.75	6.99	7.46	
3112600	R1.25 X 10 X 4	50		13.1			3.63°	10.46	10.85	11.21	11.59	12.43	
3112615	R1.25 X 15 X 4	55		18.1			2.55°	15.67	16.21	16.75	17.34	-	
3112620	R1.25 X 20 X 4	60		23.1			1.97°	20.87	21.56	22.3	-	-	
3112625	R1.25 X 25 X 4	65		28.1			1.6°	26.04	26.91	27.84	-	-	
3112630	R1.25 X 30 X 4	70		33.1			1.35°	31.21	32.26	-	-	-	
3112635	R1.25 X 35 X 4			38.1			1.17°	36.38	37.61	-	-	-	
3123059	R1.5 X 6 X 3	45	2.4	-	3		-	-	-	-	-	-	2
3113060	R1.5 X 6 X 4			8.2	4		4.29°	6.25	6.49	6.72	6.95	7.4	1
3123060	R1.5 X 6 X 6	50		11.9	6		8.17°	6.25	6.49	6.72	6.95	7.4	
3123080	R1.5 X 8 X 6			13.9			6.88°	8.35	8.67	8.97	9.25	9.88	
3123100	R1.5 X 10 X 6			15.9			5.94°	10.44	10.83	11.19	11.55	12.37	
3123112	R1.5 X 12 X 6	55		17.9			5.22°	12.53	12.98	13.4	13.85	14.86	
3123114	R1.5 X 14 X 6			19.9		2.85	4.66°	14.62	15.13	15.62	16.15	17.34	
3123115	R1.5 X 15 X 6			20.9			4.42°	15.66	16.2	16.73	17.3	18.59	
3123116	R1.5 X 16 X 6			21.9			4.21°	16.7	17.26	17.84	18.45	19.83	
3123120	R1.5 X 20 X 6	60		25.9			3.52°	20.86	21.54	22.27	23.05	24.8	
3123125	R1.5 X 25 X 6	65		30.9			2.92°	26.04	26.89	27.81	28.8	-	
3123130	R1.5 X 30 X 6	70		35.9			2.5°	31.2	32.24	33.35	34.55	-	
3123135	R1.5 X 35 X 6	80		40.9			2.18°	36.37	37.59	38.89	40.3	-	
3123140	R1.5 X 40 X 6	85		45.9			1.94°	41.54	42.94	44.43	-	-	

WXL COATED 2 FLUTES BALL NOSE ENDMILL

EDP No.	RE X LU X DCON	LF	APMX	LH	DCON	DN	θk	Le					Type
								0.5°	1°	1.5°	2°	3°	
3123600	R1.75 X 10 X 6	60	2.8	15	6	3.35	5.4°	10.43	10.81	11.16	11.51	12.31	1
3123615	R1.75 X 15 X 6			20			3.93°	15.65	16.18	16.7	17.26	18.53	
3123620	R1.75 X 20 X 6	65		25			3.08°	20.85	21.53	22.24	23.01	24.74	
3123625	R1.75 X 25 X 6			30			2.54°	26.03	26.87	27.78	28.76	-	
3123630	R1.75 X 30 X 6	70		35			2.16°	31.2	32.22	33.32	34.51	-	
3123635	R1.75 X 35 X 6	80		40			1.88°	36.36	37.57	38.87	-	-	
3123640	R1.75 X 40 X 6	90		45			1.66°	41.53	42.92	44.41	-	-	
3123645	R1.75 X 45 X 6			50			1.49°	46.7	48.27	-	-	-	
3114080	R2 X 8 X 4	55	3.2	-	4	3.85	-	-	-	-	-	-	2
3124080	R2 X 8 X 6	60		12.1	6		5.67°	8.33	8.63	8.91	9.18	9.77	1
3124100	R2 X 10 X 6			14.1			4.74°	10.42	10.79	11.13	11.48	12.25	
3124112	R2 X 12 X 6			16.1			4.07°	12.51	12.95	13.35	13.78	14.74	
3124114	R2 X 14 X 6			18.1			3.57°	14.6	15.09	15.57	16.08	17.22	
3124115	R2 X 15 X 6			19.1			3.36°	15.64	16.16	16.67	17.23	18.47	
3124116	R2 X 16 X 6			20.1			3.18°	16.68	17.23	17.78	18.38	19.71	
3124120	R2 X 20 X 6	65		24.1			2.6°	20.84	21.51	22.22	22.98	-	
3124125	R2 X 25 X 6	70		29.1			2.12°	26.02	26.86	27.76	28.72	-	
3124130	R2 X 30 X 6	80		34.1			1.79°	31.19	32.21	33.3	-	-	
3124135	R2 X 35 X 6			39.1			1.55°	36.36	37.55	38.84	-	-	
3124140	R2 X 40 X 6	90		44.1			1.36°	41.52	42.9	-	-	-	
3124145	R2 X 45 X 6			49.1			1.22°	46.69	48.25	-	-	-	
3124150	R2 X 50 X 6	100		54.1			1.1°	51.86	53.6	-	-	-	
3125100	R2.5 X 10	65	5	12.2		4.85	2.96°	10.4	10.75	11.08	11.4	-	
3125115	R2.5 X 15	70		17.2			1.96°	15.62	16.13	16.62	-	-	
3125120	R2.5 X 20			22.2			1.46°	20.82	21.47	-	-	-	
3125125	R2.5 X 25			27.2			1.16°	26	26.82	-	-	-	
3125130	R2.5 X 30	80		32.2			0.97°	31.17	-	-	-	-	
3125135	R2.5 X 35			37.2			0.83°	36.34	-	-	-	-	
3125140	R2.5 X 40	90		42.2			0.72°	41.51	-	-	-	-	
3125145	R2.5 X 45	100		47.2			0.64°	46.68	-	-	-	-	
3125150	R2.5 X 50			52.2			0.58°	51.84	-	-	-	-	
3126100	R3 X 10	60	6	-		5.85	-	-	-	-	-	-	2
3126120	R3 X 20	70		-			-	-	-	-	-	-	
3126125	R3 X 25			-			-	-	-	-	-	-	
3126130	R3 X 30	80		-			-	-	-	-	-	-	
3126135	R3 X 35			-			-	-	-	-	-	-	
3126140	R3 X 40	90		-			-	-	-	-	-	-	
3126145	R3 X 45	100		-			-	-	-	-	-	-	
3126150	R3 X 50	120		-			-	-	-	-	-	-	

shaping your dreams

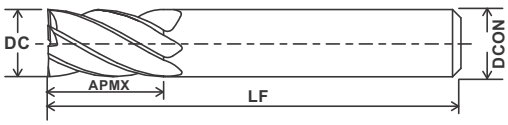
Series 450 HPE Rocket Mill

SPEED FEED P-145 | CARBIDE | HPS | 50°

Metric Sizes, Multiple Flute

Tolerance for cutter Diameter	
Smaller than Dia 3mm	+0.000/-0.025
Dia 3mm and Larger	+0.000/-0.038

450



EDP Number	Mill Diameter	OAL	Length of Cut	Shank Diameter	No. of Flutes
	DC	LF	APMX	DCON	
450-118111	3	57	8	6	4
450-157511	4	57	11	6	4
450-196911	5	57	13	6	4
450-236211	6	57	13	6	6
450-315011	8	63	19	8	6
450-393711	10	72	22	10	6

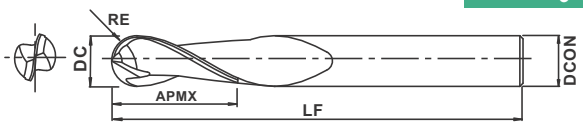
EDP Number	Mill Diameter	OAL	Length of Cut	Shank Diameter	No. of Flutes
	DC	LF	APMX	DCON	
450-472411	12	83	26	12	6
450-551211	14	83	26	14	6
450-629911	16	92	32	16	6
450-708711	18	92	32	18	6
450-787411	20	104	38	20	6
450-984311	25	121	50	25	6

SPEED FEED P-146 | CARBIDE | HPS | 20°

Series 4512 HPE MOON BALL

Tolerance for cutter Radius	
R<3	± 0.005
3 ≦ R ≦ 6	± 0.007
6<R	± 0.01

MetricSize,2Flute
ForHardMaterialDie



EDP Number	Mill Diameter	OAL	Length of Cut	Neck Length	Shank Diameter	No. of Flute
	RE x DC	LF	APMX	LN	DCON	Z
451201017	R0.5x1	39	1.5	2.5	4	2
451202017	R1x2	39	3	5	4	2
451203017	R1.5x3	39	4.5	-	4	2
451204017	R2x4	51	6	-	4	2
451205017	R2.5X5	51	7.5	-	5	2
451206017	R3x6	64	9	-	6	2
451208017	R4x8	64	12	-	8	2
451210017	R5x10	70	15	-	10	2
451212017	R6x12	100	18	-	12	2
451216017	R8x16	89	24	-	16	2
451220017	R10x20	102	30	-	20	2

Work Matrial																
Serial No.	Aluminum		Cast Iron	Low Carbon Steel	Med.Carbon Steel	High Carbon Steel	Alloy Steel	Die Steels	Titanium	High Nickel Alloy	Stainless Steels			Die Steels		
	6061, 7075	Castings		1010, 1018	1035, 1045	1065	4140, 4340	20 HrC	6AL4V (30HrC)	20 HrC	300	400	17-4PH	45 HrC	55 HrC	65 HrC
450 4512			○	○	○	○	○	○	○	○				○	◎	◎

◎ Excellent ○ Fair

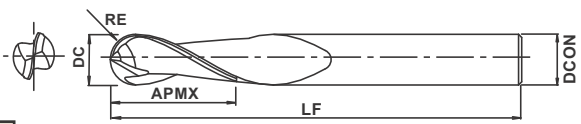
shaping your dreams

SPEED FEED P-147 | CARBIDE | HPS | 20°

Tolerance for cutter Radius	
R<3	± 0.005
3 ≦ R ≦ 6	± 0.007
6<R	± 0.01

Series 4522 HPE MOON BALL Long Length

MetricSize,2Flute
ForHardMaterialDie



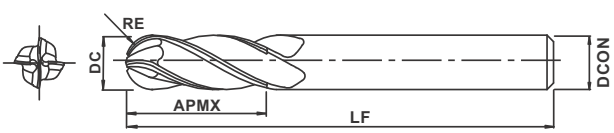
EDP Number	Mill Diameter	OAL	Length of Cut	Neck Length	Shank Diameter	No. of Flute
	RE x DC	LF	APMX	LN	DCON	Z
452201017	R0.5x1	75	2.5	3.5	3	2
452202017	R1x2	75	4	6	3	2
452203017	R1.5x3	75	4.5	-	3	2
452204017	R2x4	75	6	-	4	2
452205017	R2.5X5	75	7.5	-	5	2
452206017	R3x6	100	9	-	6	2
452208017	R4x8	100	12	-	8	2
452210017	R5x10	100	15	-	10	2
452212017	R6x12	150	18	-	12	2

SPEED FEED P-146 | CARBIDE | HPS | 30°

Tolerance for cutter Radius	
R<3	± 0.005
3 ≦ R ≦ 6	± 0.007
6<R	± 0.01

Series 4514 HPE MOON BALL

MetricSize,4Flute
ForHardMaterialDie



EDP Number	Mill Diameter	OAL	Length of Cut	Shank Diameter	No. of Flute
	RE x DC	LF	APMX	DCON	
451403017	R1.5x3	39	4.5	3	4
451404017	R2x4	51	6	4	4
451406017	R3X6	64	9	6	4
451408017	R4X8	64	12	8	4
451410017	R5X10	70	15	10	4
451412017	R6X12	76	18	12	4

Work Matrial																
Serial No.	Aluminum		Cast Iron	Low Carbon Steel	Med.Carbon Steel	High Carbon Steel	Alloy Steel	Die Steels	Titanium	High Nickel Alloy	Stainless Steels			Die Steels		
	6061, 7075	Castings		1010, 1018	1035, 1045	1065	4140, 4340	20 HrC	6AL4V (30HrC)	20 HrC	300	400	17-4PH	45 HrC	55 HrC	65 HrC
450 4512			○	○	○	○	○	○	○	○				○	◎	◎

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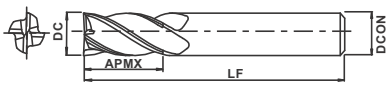
Series 404 Short Flute

SPEED FEED P-142 | CARBIDE | HPL | 30°

Metric Size 4 Flute

404



Tolerance for cutter Diameter	
Smaller than Dia 3mm	+0.000/-0.025
Dia 3mm and Larger	+0.000/-0.038

EDP Number	Mill Diameter	OAL	Length of Cut	Shank Diameter	No. of Flute
	DC	LF	AMPX	DCON	Z
404103011	3	39	4	3	4
404104011	4	51	6	4	4
404105011	5	51	8	5	4
404106011	6	64	8	6	4
404108011	8	64	12	8	4
404110011	10	70	14	10	4
404112011	12	76	16	12	4
404116011	16	89	22	16	4
404120011	20	102	26	20	4

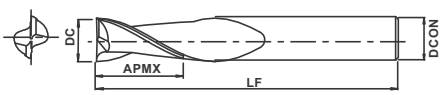
Series 402, 404 Regular Length

SPEED FEED P-142 | CARBIDE | HPL | 30°

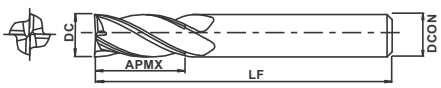
Metric Size, 2, or 4 Flute

Tolerance for cutter Diameter	
Smaller than Dia 3mm	+0.000/-0.025
Dia 3mm and Larger	+0.000/-0.038

402



404



EDP Number		Mill Diameter	OAL	Length of Cut	Shank Diameter
402	404				
2 Flute	4 Flute	DC	LF	APMX	DCON
402-019711	—	0.5	39	1.5	3
402-039411	404-039411	1	39	3	3
402-059111	404-059111	1.5	39	5	3
402-078711	404-078711	2	39	7	3
402-098411	404-098411	2.5	39	8	3
402-118111	404-118111	3	39	10	3
402-137811	404-137811	3.5	51	12	4
402-157511	404-157511	4	51	14	4
402-177211	404-177211	4.5	51	14	5
402-196811	404-196811	5	51	16	5
402-236211	404-236211	6	64	19	6
402-275611	404-275611	7	64	19	8
402-315011	404-315011	8	64	21	8
402-354311	404-354311	9	70	22	10
402-393711	404-393711	10	70	25	10
402-433111	404-433111	11	70	25	12
402-472411	404-472411	12	76	25	12
402-551211	404-551211	14	89	30	14
402-629911	404-629911	16	89	32	16
402-708711	404-708711	18	102	35	18
402-787411	404-787411	20	102	38	20
402-866111	404-866111	22	102	38	22
402-984311	404-984311	25	102	38	25

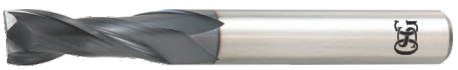
Work Matrial																
Chart applies to all series numbers on this page.	Aluminum		Cast Iron	Low Carbon Steel	Med.Carbon Steel	High Carbon Steel	Alloy Steel	Die Steels	Titanium	High Nickel Alloy	Stainless Steels			Die Steels		
	6061, 7075	Castings		1010, 1018	1035, 1045	1065	4140, 4340	20 HrC	6AL4V (30HrC)	20 HrC	300	400	17-4PH	-35 HrC	35-45 HrC	45-50 HrC
	○	○	◎	◎	◎	◎	◎	◎			○	○	○	○	○	

Series 462, 464 Long Length

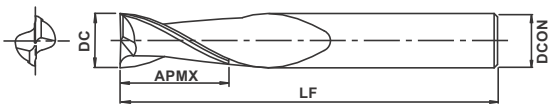
SPEED FEED P.143-144 | CARBIDE | HPL | 30°

Long Length, Metric Sizes, 2 or 4 Flute

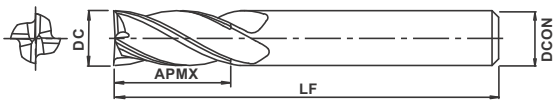
Tolerance for cutter Diameter	
Smaller than Dia 3mm	+0.000/-0.025
Dia 3mm and Larger	+0.000/-0.038



462



464



EDP Number		Mill Diameter	OAL	Length of Cut	Shank Diameter
462	464				
2 Flute	4 Flute	DC	LF	APMX	DCON
462-118111	464-118111	3	57	19	3
462-157511	464-157511	4	57	19	4
462-196811	464-196811	5	64	25	5
462-236211	464-236211	6	76	28	6
462-315011	464-315011	8	76	29	8
462-393711	464-393711	10	76	32	10
462-472411	464-472411	12	102	51	12
462-551211	464-551211	14	127	57	14
462-629911	464-629911	16	127	57	16
462-708711	464-708711	18	127	57	18
462-787411	464-787411	20	127	57	20
462-984311	464-984311	25	127	57	25

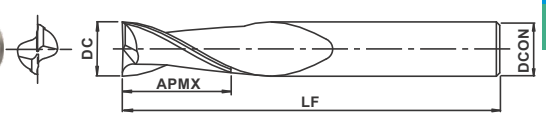
Series 482, 484 Extra Long Length

SPEED FEED P.143-144 | CARBIDE | HPL | 30°

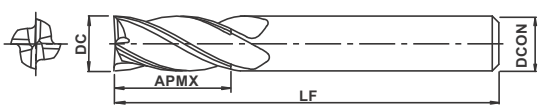
Extra Long Length, Metric Sizes, 2 or 4 Flute

Tolerance for cutter Diameter	
Smaller than Dia 3mm	+0.000/-0.025
Dia 3mm and Larger	+0.000/-0.038

482



484



EDP Number		Mill Diameter	OAL	Length of Cut	Shank Diameter
482	484				
2 Flute	4 Flute	DC	LF	APMX	DCON
482-118111	484-118111	3	76	25	3
482-157511	484-157511	4	76	28	4
482-196811	484-196811	5	76	29	5
482-236211	484-236211	6	102	38	6
482-315011	484-315011	8	102	42	8
482-393711	484-393711	10	102	45	10
482-472411	484-472411	12	153	76	12
482-551211	484-551211	14	153	76	14
482-629911	484-629911	16	153	76	16
482-708711	484-708711	18	153	76	18
482-787411	484-787411	20	153	76	20
482-984311	484-984311	25	153	76	25

Work Matrial																
Chart applies to all series numbers on this page.	Aluminum		Cast Iron	Low Carbon Steel	Med.Carbon Steel	High Carbon Steel	Alloy Steel	Die Steels	Titanium	High Nickel Alloy	Stainless Steels			Die Steels		
	6061, 7075	Castings		1010, 1018	1035, 1045	1065	4140, 4340	20 HrC	6AL4V (30HrC)	20 HrC	300	400	17-4PH	-35 HrC	35-45 HrC	45-50 HrC
	○	○	◎	◎	◎	◎	◎	◎			○	○	○	○	○	

shaping your dreams

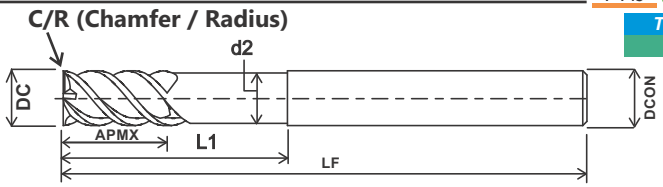
Series 452/4527 Unequal Helix for SUS, Ti & Ni

SPEED FEED P-145 | CARBIDE | HPL | 35° + 38°

Super Tough Mills, Metric Sizes

Tolerance for cutter Diameter: All sizes h10

452



EDP Number	Mill Dia.	OAL	Length of Cut	Neck Dia.	Neck Length	Shank Dia.
	DC	LF	APMX	d2	L1	DCON
452-039411	1xc0.1	57	2.5	3.7	21	6
452-078711	2xc0.1	57	6	4.7	21	6
452-118111	3xc0.1	57	8	5.7	21	6
452-157511	4xc0.1	57	11	3.7	21	6
452-196911	5xc0.1	57	13	4.7	21	6
452-236211	6xc0.2	57	13	5.7	21	6
452-315011	8xc0.2	63	19	7.7	27	8
452-393711	10xc0.3	72	22	9.5	32	10

EDP Number	Mill Dia.	OAL	Length of Cut	Neck Dia.	Neck Length	Shank Dia.
	DC	LF	APMX	d2	L1	DCON
452-472411	12xc0.3	83	26	11.5	38	12
452-551211	14xc0.3	83	26	13.5	42	14
452-629911	16xc0.4	92	32	15.5	44	16
452-787411	20xc0.5	104	38	19.5	54	20
452-984311	25xc0.5	121	50	24.5	60	25

EDP Number	Mill Dia.	OAL	Length of Cut	Neck Dia.	Neck Length	Shank Dia.
	DC	LF	APMX	d2	L1	DCON
4527030501	3xR0.5	57	8	5.7	21	6
4527040501	4xR0.5	57	11	3.7	21	6
4527050501	5xR0.5	57	13	4.7	21	6
4527051001	5xR1.0	57	13	4.7	21	6
4527060501	6xR0.5	57	13	5.7	21	6
4527061001	6xR1.0	57	13	5.7	21	6
4527080501	8xR0.5	63	19	7.7	27	8
4527081001	8xR1.0	63	19	7.7	27	8

EDP Number	Mill Dia.	OAL	Length of Cut	Neck Dia.	Neck Length	Shank Dia.
	DC	LF	APMX	d2	L1	DCON
4527100501	10xR0.5	72	22	9.5	32	10
4527101001	10xR1.0	72	22	9.5	32	10
4527120501	12xR0.5	83	26	11.5	38	12
4527121001	12xR1.0	83	26	11.5	38	12
4527140501	14xR0.5	83	26	13.5	42	14
4527141001	14xR1.0	83	26	13.5	42	14
4527160501	16xR0.5	92	32	15.5	44	16
4527161001	16xR1.0	92	32	15.5	44	16

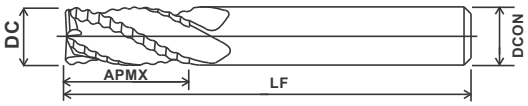
Series 483 Roughing

CARBIDE | HPL | 45°

Roughing Mills, Metric Sizes

Tolerance for cutter Diameter: All sizes h10

483



EDP Number	Mill Diameter	OAL	Length of Cut	Shank Diameter	No. of Flutes
	DC	LF	APMX	DCON	
483-118111	3	57	7	6	3
483-157511	4	57	14	6	3
483-196811	5	57	14	6	3
483-236211	6	64	19	6	4
483-315011	8	64	21	8	4

EDP Number	Mill Diameter	OAL	Length of Cut	Shank Diameter	No. of Flutes
	DC	LF	APMX	DCON	
483-393711	10	70	22	10	4
483-472411	12	76	25	12	4
483-551211	14	89	30	14	4
483-629911	16	89	32	16	5
483-787411	20	102	38	20	6
483-984311	25	102	38	25	6

Work Matrial

Serial No.	Aluminum		Cast Iron	Low Carbon Steel	Med.Carbon Steel	High Carbon Steel	Alloy Steel	Die Steels	Titanium	High Nickel Alloy	Stainless Steels			Die Steels		
	6061, 7075	Castings		1010, 1018	1035, 1045	1065	4140, 4340	20 HrC	6AL4V (30HrC)	20 HrC	300	400	17-4PH	-35 HrC	35-45 HrC	45-50 HrC
452			◎	◎	◎	◎	◎	◎	○	○	○	○	◎	◎	○	
483			○	○	○	○	○	○	◎	◎	○	○	○	◎	◎	

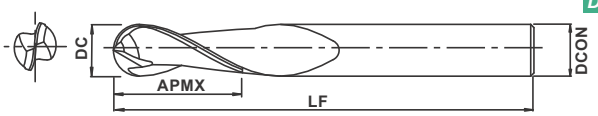
Series 402BN, 404BN Regular

SPEED FEED P-147 | CARBIDE | HPL | 30°

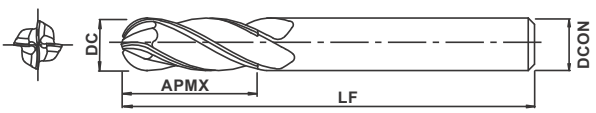
Ball Nose, Metric Sizes, 2 or 4 Flute

Tolerance for cutter Diameter	
Smaller than Dia 3mm	+0.000/-0.025
Dia 3mm and Larger	+0.000/-0.038

402BN



404BN



402BN 2 Flute	404BN 4 Flute	Mill Diameter DC	OAL LF	Length of Cut APMX	Shank Diameter DCON
402-0197-BN11	-----	0.5	39	1.5	3
402-0394-BN11	404-0394-BN11	1	39	3	3
402-0591-BN11	404-0591-BN11	1.5	39	5	3
402-0787-BN11	404-0787-BN11	2	39	7	3
402-0984-BN11	404-0984-BN11	2.5	39	8	3
402-1181-BN11	404-1181-BN11	3	39	10	3
402-1378-BN11	404-1378-BN11	3.5	51	12	4
402-1575-BN11	404-1575-BN11	4	51	14	4
402-1772-BN11	404-1772-BN11	4.5	51	14	5
402-1968-BN11	404-1968-BN11	5	51	16	5
402-2362-BN11	404-2362-BN11	6	64	19	6
402-2756-BN11	404-2756-BN11	7	64	19	8
402-3150-BN11	404-3150-BN11	8	64	21	8
402-3543-BN11	404-3543-BN11	9	70	22	10
402-3937-BN11	404-3937-BN11	10	70	25	10
402-4332-BN11	404-4332-BN11	11	70	25	12
402-4724-BN11	404-4724-BN11	12	76	25	12
402-5512-BN11	404-5512-BN11	14	89	30	14
402-6299-BN11	404-6299-BN11	16	89	32	16
402-7087-BN11	404-7087-BN11	18	102	35	18
402-7874-BN11	404-7874-BN11	20	102	38	20
402-8661-BN11	404-8661-BN11	22	102	38	22
402-9843-BN11	404-9843-BN11	25	102	38	25

Series 462BN, 464BN Long Length

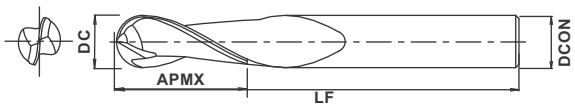
SPEED FEED P-147 | CARBIDE | HPL | 30°

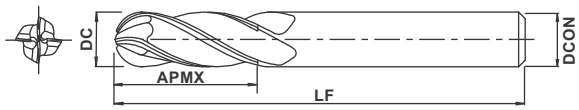
Ball Nose, Metric Sizes, Long Length, 2 or 4 Flute

Tolerance for cutter Diameter	
Smaller than Dia 3mm	+0.000/-0.025
Dia 3mm and Larger	+0.000/-0.038

462BN

464BN





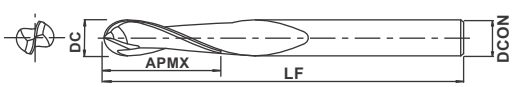
EDP Number		Mill Diameter	OAL	Length of Cut	Shank Diameter
462BN	464BN				
2 Flute	4 Flute	DC	LF	APMX	DCON
462-1181-BN11	464-1181-BN11	3	57	19	3
462-1575-BN11	464-1575-BN11	4	57	19	4
462-1968-BN11	464-1968-BN11	5	64	25	5
462-2362-BN11	464-2362-BN11	6	76	28	6
462-3150-BN11	464-3150-BN11	8	76	29	8
462-3937-BN11	464-3937-BN11	10	76	32	10
462-4724-BN11	464-4724-BN11	12	102	51	12
462-5512-BN11	464-5512-BN11	14	127	57	14
462-6299-BN11	464-6299-BN11	16	127	57	16
462-7087-BN11	464-7087-BN11	18	127	57	18
462-7874-BN11	464-7874-BN11	20	127	57	20
462-9843-BN11	464-9843-BN11	25	127	57	25

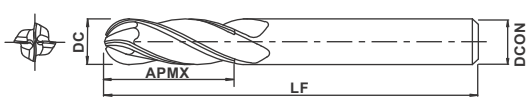
Series 482BN, 484BN Extra Long Length

SPEED FEED P-147 | CARBIDE | HPL | 30°

Ball Nose, Metric Sizes, Extra Long Length, 2 or 4 Flute

Tolerance for cutter Diameter	
Smaller than Dia 3mm	+0.000/-0.025
Dia 3mm and Larger	+0.000/-0.038



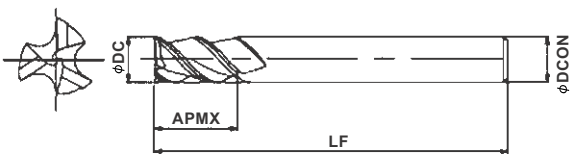


EDP Number		Mill Diameter	OAL	Length of Cut	Shank Diameter
482BN	484BN				
2 Flute	4 Flute	DC	LF	APMX	DCON
482-1181-BN11	484-1181-BN11	3	76	25	3
482-1575-BN11	484-1575-BN11	4	76	28	4
482-1968-BN11	484-1968-BN11	5	76	32	5
482-2362-BN11	484-2362-BN11	6	102	38	6
482-3150-BN11	484-3150-BN11	8	102	42	8
482-3937-BN11	484-3937-BN11	10	102	45	10
482-4724-BN11	484-4724-BN11	12	153	76	12
482-5512-BN11	484-5512-BN11	14	153	76	14
482-6299-BN11	484-6299-BN11	16	153	76	16
482-7087-BN11	484-7087-BN11	18	153	76	18
482-7874-BN11	484-7874-BN11	20	153	76	20
482-9843-BN11	484-9843-BN11	25	153	76	25

Work Matrial																
Serial No.	Aluminum		Cast Iron	Low Carbon Steel	Med.Carbon Steel	High Carbon Steel	Alloy Steel	Die Steels	Titanium	High Nickel Alloy	Stainless Steels			Die Steels		
	6061, 7075	Castings		1010, 1018	1035, 1045	1065	4140, 4340	20 HrC	6AL4V (30HrC)	20 HrC	300	400	17-4PH	-35 HrC	35-45 HrC	45-50 HrC
462BN 464BN	○	○	◎	◎	◎	◎	◎	◎			○	○		○	○	
482BN 484BN	○	○	◎	◎	◎	◎	◎	◎			○	○		○	○	

Series SCA - ETS for Copper & Aluminum Alloys

SCA-ETS



SPEED FEED P-148 | CARBIDE | 0~-0.02 | SHRINK FIT | 40°

(Unit:mm)

EDP NO.	DC	LF	AMPX	DCON
S530030	3.0	45	8	6
S530040	4.0	45	11	6
S530050	5.0	50	13	6
S530060	6.0	50	13	6
S530080	8.0	60	19	8
S530100	10.0	70	22	10
S530120	12.0	75	26	12

WORK MATERIAL / Abbreviation	CARBON STEELS, PREHARDENED STEELS, ALLOY STEELS, TOOL STEELS ~40HRC	PREHARDENED STEELS / HARDENED STEELS ~45HRC	~55HRC	~60HRC	~65HRC	STAINLESS STEELS ~35HRC	CAST IRON, DUCTILE CAST IRON ~ 350HB	COPPER ALLOYS	ALUMINUM ALLOYS	GRAPHITE	TITANIUM ALLOYS	HEAT RESISTANT ALLOYS	PLASTIC
SCA-ETS								◎	◎				○

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CUTTING CONDITIONS FOR CARBIDE END MILLS

AE-VMS

SIDE MILLING

Work Material	Mild Steel · Carbon Steel · Cast Iron SS400·S55C·FC250 (~ 750N/mm²)		Alloy Steel · Tool Steel SCM·SKS·SKD (~ 30HRC)		Prehardened Steel · Hardened Steel PX5·NAK80 (30 ~ 45HRC)		Stainless Steel (≦200HB)	
Cutting Speed (m/min)	130 (100-150)		120 (100-150)		100 (80-120)		80 (60-100)	
Mill Dia. (mm)	Speed (min-1)	Feed (mm/min)	Speed (min-1)	Feed (mm/min)	Speed (min-1)	Feed (mm/min)	Speed (min-1)	Feed (mm/min)
3	13,800	1,660	12,700	1,070	10,600	760	8,000	480
4	10,400	1,830	9,600	1,150	8,000	800	6,000	530
5	8,300	1,990	7,600	1,220	6,400	900	4,800	560
6	6,900	2,070	6,400	1,540	5,300	1,060	4,200	640
8	5,200	1,770	4,800	1,540	4,000	1,040	3,200	610
10	4,100	1,640	3,800	1,370	3,200	900	2,500	580
12	3,500	1,400	3,200	1,280	2,700	760	2,100	530
Depth of Cut	ap 1.5D, ae 0.2D							

AE-VMS

SLOTTING

Work Material	Mild Steel · Carbon Steel · Cast Iron SS400·S55C·FC250 (~ 750N/mm²)		Alloy Steel · Tool Steel SCM·SKS·SKD (~ 30HRC)		Prehardened Steel · Hardened Steel PX5·NAK80 (30 ~ 45HRC)		Stainless Steel (≦200HB)	
Cutting Speed (m/min)	100 (80-120)		90 (70-110)		80 (60-100)		70 (50-80)	
Mill Dia. (mm)	Speed (min-1)	Feed (mm/min)	Speed (min-1)	Feed (mm/min)	Speed (min-1)	Feed (mm/min)	Speed (min-1)	Feed (mm/min)
3	10,600	930	9,600	690	8,500	510	7,400	470
4	8,000	960	7,200	720	6,400	510	5,600	490
5	6,400	1,020	5,700	800	5,100	610	4,500	560
6	5,300	1,060	4,800	900	4,200	670	3,700	370
8	4,000	910	3,600	720	3,200	640	2,800	370
10	3,200	840	2,900	700	2,500	550	2,200	350
12	2,700	810	2,400	670	2,100	550	1,900	330
Depth of Cut	ap 1D						Dc / ap: Dc < 6 — 0.5D; Dc≧6 — 1D	

1. The above milling condition is a guideline for the overhang length is 3 × D.
2. Use a rigid and precise machine and holder.
3. The rotational speed is calculated by the median of the recommended cutting speed. Adjustment may be necessary depending on the rigidity of the workpiece fixture and machine.
4. Please use a suitable fluid with high smoke retardant properties.
5. During dry (no fluid) milling, please use air blow to remove disposable chips from the milling area and to eliminate chip packing.
6. Please use water-soluble oil when machining stainless steel.
7. Reduce speed and feed as well as depth of cut when high precision is required.
8. Adjust the speed and feed accordingly when the overhang length is longer than specified.

(Dc≧φ6) AE-VMS

FIX RATE FOR CUTTING CONDITION

	Work Material	Mild Steel · Carbon Steel · Cast Iron SS400 · S55C · FC250 (~ 750N/mm²)		Alloy Steel · Tool Steel SCM·SKS·SKD (~ 30HRC)		Prehardened Steel · Hardened Steel PX5·NAK80 (30 ~ 45HRC)		Stainless Steel (≦200HB)	
	L/D	Speed (min-1)	Feed (mm/min)	Speed (min-1)	Feed (mm/min)	Speed (min-1)	Feed (mm/min)	Speed (min-1)	Feed (mm/min)
Side Milling	4	90%		90%		80%		70%	
	5	80%		80%		70%		70%	
Slotting	4	80%		70%		70%		60%	
	5	70%		60%		60%			

CUTTING CONDITIONS FOR CARBIDE END MILLS

AE-VMSS

SLOTTING

Work Material	Mild Steel・Carbon Steel・Cast Iron SS400・S55C・FC250 (～750N/mm²)		Alloy Steel・Tool Steel SCM・SKS・SKD (～30HRC)		Prehardened Steel・Hardened Steel PX5・NAK80 (30～45HRC)		Stainless Steel SUS304・SUS420 (≦200HB)	
Cutting Speed (m/min)	100(80-120)		90(70-110)		80(60-100)		70(50-80)	
Mill Dia. (mm)	Speed (min⁻¹)	Feed (mm/min)	Speed (min⁻¹)	Feed (mm/min)	Speed (min⁻¹)	Feed (mm/min)	Speed (min⁻¹)	Feed (mm/min)
1	28,700	570	25,500	460	22,300	360	19,100	340
1.5	19,100	610	17,000	480	14,900	420	12,700	360
2	14,300	630	12,700	510	11,100	440	9,600	380
2.5	11,500	780	10,200	570	8,900	460	7,600	430
3	10,600	930	9,600	690	8,500	510	7,400	470
4	8,000	960	7,200	720	6,400	510	5,600	490
5	6,400	1,020	5,700	800	5,100	610	4,500	560
6	5,300	1,060	4,800	900	4,200	670	3,700	370
8	4,000	910	3,600	720	3,200	640	2,800	370
10	3,200	840	2,900	700	2,500	550	2,200	350
12	2,700	810	2,400	670	2,100	550	1,900	330
Depth of Cut	ap: 1D						DC: ap DC≦6: 0.5D DC>6: 1D	

SIDE MILLING

Work Material	Mild Steel・Carbon Steel・Cast Iron SS400・S55C・FC250 (～750N/mm²)		Alloy Steel・Tool Steel SCM・SKS・SKD (～30HRC)		Prehardened Steel・Hardened Steel PX5・NAK80 (30～45HRC)		Stainless Steel SUS304・SUS420 (≦200HB)	
Cutting Speed (m/min)	100(80-120)		90(70-110)		80(60-100)		70(50-80)	
Mill Dia. (mm)	Speed (min⁻¹)	Feed (mm/min)	Speed (min⁻¹)	Feed (mm/min)	Speed (min⁻¹)	Feed (mm/min)	Speed (min⁻¹)	Feed (mm/min)
1	38,200	840	28,700	690	25,500	510	22,300	450
1.5	25,500	920	21,200	760	17,000	540	14,900	460
2	19,900	1,430	17,500	840	14,300	630	11,100	470
2.5	15,900	1,590	14,000	900	11,500	690	8,900	480
3	13,800	1,660	12,700	1,070	10,600	760	8,000	480
4	10,400	1,830	9,600	1,150	8,000	800	6,000	530
5	8,300	1,990	7,600	1,220	6,400	900	4,800	560
6	6,900	2,070	6,400	1,540	5,300	1,060	4,200	640
8	5,200	1,770	4,800	1,540	4,000	1,040	3,200	610
10	4,100	1,640	3,800	1,370	3,200	900	2,500	580
12	3,500	1,400	3,200	1,280	2,700	760	2,100	530
Depth of Cut	ap: 1.5D, ae: 0.2D							

LONG NECK TYPE
SIDE MILLING

Work Material	Mild Steel・Carbon Steel・Cast Iron SS400・S55C・FC250 (～750N/mm²)		Alloy Steel・Tool Steel SCM・SKS・SKD (～30HRC)		Prehardened Steel・Hardened Steel PX5・NAK80 (30～45HRC)		Stainless Steel SUS304・SUS420 (≦200HB)	
Cutting Speed (m/min)	100(80-120)		90(70-110)		80(60-100)		70(50-80)	
Mill Dia. (mm)	Speed (min⁻¹)	Feed (mm/min)	Speed (min⁻¹)	Feed (mm/min)	Speed (min⁻¹)	Feed (mm/min)	Speed (min⁻¹)	Feed (mm/min)
6	5,520	1,660	5,120	1,230	3,710	740	2,940	450
8	4,160	1,420	3,840	1,230	2,800	730	2,240	430
10	3,280	1,310	3,040	1,100	2,240	630	1,750	410
12	2,800	1,120	2,560	1,020	1,890	530	1,470	370
Depth of Cut	ap: 1.5D, ae: 0.02D							

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CUTTING CONDITIONS FOR CARBIDE END MILLS

STANDARD SIDE MILLING 3D
DEPTH OF CUT

AE-VML

Work Material	Mild Steel・Carbon Steel・Cast Iron SS400・S55C・FC250 (～750N/mm²)		Alloy Steel・Tool Steel SCM・SKS・SKD (～30HRC)		Prehardened Steel・Hardened Steel PX5・NAK80 (30～45HRC)		Stainless Steel SUS304・SUS420 (≦200HB)	
Cutting Speed (m/min)	160(140-180)		150(130-170)		140(120-160)		125(100-140)	
Mill Dia. (mm)	Speed (min⁻¹)	Feed (mm/min)	Speed (min⁻¹)	Feed (mm/min)	Speed (min⁻¹)	Feed (mm/min)	Speed (min⁻¹)	Feed (mm/min)
6	8,500	2,480	8,000	2,180	7,400	2,010	6,600	1,660
8	6,400	1,870	6,000	1,630	5,600	1,520	5,000	1,260
10	5,100	1,730	4,800	1,440	4,500	1,350	4,000	1,120
12	4,200	1,430	4,000	1,200	3,700	1,110	3,300	920
Depth of Cut	ap: 3D, ae: <0.05D							

HIGH EFFICIENCY SIDE MILLING 3D
DEPTH OF CUT

AE-VML

Work Material	Mild Steel・Carbon Steel・Cast Iron SS400・S55C・FC250 (～750N/mm²)		Alloy Steel・Tool Steel SCM・SKS・SKD (～30HRC)		Prehardened Steel・Hardened Steel PX5・NAK80 (30～45HRC)		Stainless Steel SUS304・SUS420 (≦200HB)	
Cutting Speed (m/min)	220(200-240)		170(150-190)		135(110-150)		130(110-150)	
Mill Dia. (mm)	Speed (min⁻¹)	Feed (mm/min)	Speed (min⁻¹)	Feed (mm/min)	Speed (min⁻¹)	Feed (mm/min)	Speed (min⁻¹)	Feed (mm/min)
6	11,700	3,180	9,000	2,270	7,200	1,810	6,900	1,600
8	8,800	2,390	6,800	1,710	5,400	1,360	5,200	1,210
10	7,000	2,240	5,400	1,510	4,300	1,200	4,100	1,070
12	5,800	1,860	4,500	1,260	3,600	1,010	3,500	910
Depth of Cut	ap: 3D, ae: 0.1D							

DEPTH OF CUT

AE-VML

Work Material	Mild Steel・Carbon Steel・Cast Iron SS400・S55C・FC250 (～750N/mm²)		Alloy Steel・Tool Steel SCM・SKS・SKD (～30HRC)		Prehardened Steel・Hardened Steel PX5・NAK80 (30～45HRC)		Stainless Steel SUS304・SUS420 (≦200HB)	
Cutting Speed (m/min)	140(120-160)		100(80-120)		90(70-110)		85(60-100)	
Mill Dia. (mm)	Speed (min⁻¹)	Feed (mm/min)	Speed (min⁻¹)	Feed (mm/min)	Speed (min⁻¹)	Feed (mm/min)	Speed (min⁻¹)	Feed (mm/min)
	7,400	1,860	5,600	1,300	4,800	1,110	4,500	950
8	5,600	1,410	4,200	970	3,600	840	3,400	720
	4,500	1,350	3,300	860	2,900	750	2,700	650
12	3,700	1,110	2,800	730	2,400	620	2,300	550
Depth of Cut	ap: 3D, ae: 0.15D							

DEPTH OF CUT

AE-VML

Work Material	Mild Steel・Carbon Steel・Cast Iron SS400・S55C・FC250 (～750N/mm²)		Alloy Steel・Tool Steel SCM・SKS・SKD (～30HRC)		Prehardened Steel・Hardened Steel PX5・NAK80 (30～45HRC)		Stainless Steel SUS304・SUS420 (≦200HB)	
Cutting Speed (m/min)	100(80-120)		80(60-100)		70(50-90)		65(40-80)	
Mill Dia. (mm)	Speed (min⁻¹)	Feed (mm/min)	Speed (min⁻¹)	Feed (mm/min)	Speed (min⁻¹)	Feed (mm/min)	Speed (min⁻¹)	Feed (mm/min)
6	5,300	1,230	4,200	890	3,700	780	3,500	670
8	4,000	930	3,200	680	2,800	590	2,600	500
10	3,200	900	2,500	600	2,200	530	2,100	460
12	2,700	760	2,100	500	1,900	460	1,700	370
Depth of Cut	ap: 3D, ae: ≦0.2D							

CUTTING CONDITIONS FOR CARBIDE END MILLS

ANTI-VIBRATION LONG CARBIDE END MILL
STANDARD SIDE MILLING 4D
DEPTH OF CUT

AE-VML

Work Material	Mild Steel・Carbon Steel・Cast Iron SS400・S55C・FC250 (～750N/mm²)		Alloy Steel・Tool Steel SCM・SKS・SKD (～30HRC)		Prehardened Steel・Hardened Steel PX5・NAK80 (30～45HRC)		Stainless Steel SUS304・SUS420 (≦200HB)	
Cutting Speed (m/min)	140(120-160)		130(110-150)		120(100-140)		115(90-130)	
Mill Dia. (mm)	Speed (min⁻¹)	Feed (mm/min)	Speed (min⁻¹)	Feed (mm/min)	Speed (min⁻¹)	Feed (mm/min)	Speed (min⁻¹)	Feed (mm/min)
6	7,400	2,010	6,900	1,740	6,400	1,610	6,100	1,420
8	5,600	1,520	5,200	1,310	4,800	1,210	4,600	1,070
10	4,500	1,440	4,100	1,230	3,800	1,140	3,700	960
12	3,700	1,180	3,500	1,050	3,200	960	3,100	810
Depth of Cut	ap: 4D, ae: <0.05D							

HIGH EFFICIENCY SIDE MILLING 4D
DEPTH OF CUT

AE-VML

Work Material	Mild Steel・Carbon Steel・Cast Iron SS400・S55C・FC250 (～750N/mm²)		Alloy Steel・Tool Steel SCM・SKS・SKD (～30HRC)		Prehardened Steel・Hardened Steel PX5・NAK80 (30～45HRC)		Stainless Steel SUS304・SUS420 (≦200HB)	
Cutting Speed (m/min)	200(180-220)		160(140-180)		130(110-150)		125(100-140)	
Mill Dia. (mm)	Speed (min⁻¹)	Feed (mm/min)	Speed (min⁻¹)	Feed (mm/min)	Speed (min⁻¹)	Feed (mm/min)	Speed (min⁻¹)	Feed (mm/min)
6	10,600	2,670	8,500	1,970	6,900	1,600	6,600	1,400
8	8,000	2,020	6,400	1,480	5,200	1,210	5,000	1,060
10	6,400	1,920	5,100	1,330	4,100	1,070	4,000	960
12	5,300	1,590	4,200	1,090	3,500	910	3,300	790
Depth of Cut	ap: 4D, ae: 0.1D							

DEPTH OF CUT

AE-VML

Work Material	Mild Steel・Carbon Steel・Cast Iron SS400・S55C・FC250 (～750N/mm²)		Alloy Steel・Tool Steel SCM・SKS・SKD (～30HRC)		Prehardened Steel・Hardened Steel PX5・NAK80 (30～45HRC)		Stainless Steel SUS304・SUS420 (≦200HB)	
Cutting Speed (m/min)	135(110-150)		115(100-140)		85(60-100)		75(50-90)	
Mill Dia. (mm)	Speed (min⁻¹)	Feed (mm/min)	Speed (min⁻¹)	Feed (mm/min)	Speed (min⁻¹)	Feed (mm/min)	Speed (min⁻¹)	Feed (mm/min)
6	7,200	1,670	6,100	1,290	4,500	950	4,000	770
8	5,400	1,250	4,600	980	3,400	720	3,000	580
10	4,300	1,200	3,700	890	2,700	650	2,400	530
12	3,600	1,010	3,100	740	2,300	550	2,000	440
Depth of Cut	ap: 4D, ae: ≦0.15D							

1. Use a rigid and precise machine and holder.
2. The rotational speed is calculated by the median of the recommended cutting speed. Adjustment may be necessary depending on the rigidity of the workpiece fixture and machine.
3. Please use a suitable fluid with high smoke retardant properties.
4. During dry (no fluid) milling, please use air blow to remove disposable chips from the milling area and to eliminate chip packing.
5. Please use water-soluble coolant when machining stainless steel.

shaping your dreams

CUTTING CONDITIONS FOR CARBIDE END MILLS

AE-BM-H

The machining path is on condition of contouring line operation.

Roughing

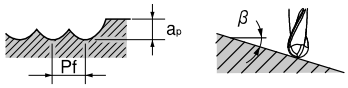
Work Material	Tool Steel ·Hardened Steel Prehardened Steel SKD11·SKD61·NAK80 (~45HRC)		Hardened Steel							
			~55HRC		~62HRC		~66HRC		~70HRC	
RE	Speed (min⁻¹)	Feed (mm/min)	Speed (min⁻¹)	Feed (mm/min)	Speed (min⁻¹)	Feed (mm/min)	Speed (min⁻¹)	Feed (mm/min)	Speed (min⁻¹)	Feed (mm/min)
R1	20,700	3,310	18,300	1,830	15,900	1,590	14,300	1,140	9,600	770
R1.5	13,800	2,760	12,200	1,710	10,600	1,480	9,600	1,150	6,400	770
R2	10,400	2,500	9,200	1,660	8,000	1,440	7,200	1,150	4,800	770
R2.5	8,300	2,660	7,300	1,900	6,400	1,660	5,700	1,370	3,800	910
R3	6,900	2,760	6,100	1,950	5,300	1,700	4,800	1,340	3,200	900
R4	5,200	2,500	4,600	1,840	4,000	1,600	3,600	1,300	2,400	860
R5	4,500	2,340	4,000	1,760	3,500	1,540	3,200	1,280	2,200	850
R6	4,000	2,240	3,600	1,730	3,200	1,540	2,900	1,160	2,100	840

Depth of Cut

	ap	Pf
RE<R3	0.15D	0.2D
R3≦RE	0.1D	0.2D

	ap	Pf
RE<R3	0.12D	0.15D
R3≦RE	0.07D	0.15D

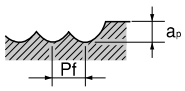
ap	Pf
0.05D	0.15D

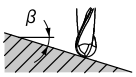


Finishing

Work Material	Tool Steel ·Hardened Steel Prehardened Steel SKD11·SKD61·NAK80 (~45HRC)		Hardened Steel							
			~55HRC		~62HRC		~66HRC		~70HRC	
RE	Speed (min⁻¹)	Feed (mm/min)	Speed (min⁻¹)	Feed (mm/min)	Speed (min⁻¹)	Feed (mm/min)	Speed (min⁻¹)	Feed (mm/min)	Speed (min⁻¹)	Feed (mm/min)
R1	27,100	4,340	24,700	2,470	22,300	1,780	18,300	1,460	13,500	1,080
R1.5	18,000	3,600	16,500	2,310	14,900	1,780	12,200	1,460	9,000	1,080
R2	13,500	3,240	12,300	2,210	11,100	1,780	9,200	1,470	6,800	1,090
R2.5	10,800	3,460	9,900	2,570	8,900	2,140	7,300	1,750	5,400	1,300
R3	9,000	3,600	8,200	2,620	7,400	2,070	6,100	1,710	4,500	1,260
R4	6,800	3,260	6,200	2,480	5,600	1,790	4,600	1,470	3,400	1,090
R5	5,700	2,960	5,300	2,330	4,800	1,730	4,000	1,440	3,000	1,080
R6	5,000	2,800	4,600	2,210	4,200	1,680	3,500	1,400	2,800	1,120

切込深さ
Depth of Cut





p.7の6.参照

ap	Pf
0.02D	0.05D

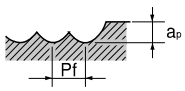
High-Speed Roughing

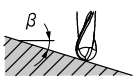
Work Material	Tool Steel ·Hardened Steel Prehardened Steel SKD11·SKD61·NAK80 (~45HRC)		Hardened Steel							
			~55HRC		~62HRC		~66HRC		~70HRC	
RE	Speed (min⁻¹)	Feed (mm/min)	Speed (min⁻¹)	Feed (mm/min)	Speed (min⁻¹)	Feed (mm/min)	Speed (min⁻¹)	Feed (mm/min)	Speed (min⁻¹)	Feed (mm/min)
R1	37,300	5,970	33,000	3,300	28,700	2,870	25,800	2,060	17,200	1,380
R1.5	24,800	4,960	22,000	3,080	19,100	2,670	17,200	2,060	11,500	1,380
R2	20,700	4,970	18,300	3,290	15,900	2,860	14,300	2,290	9,600	1,540
R2.5	16,600	5,310	14,600	3,800	12,700	3,300	11,500	2,760	7,600	1,820
R3	13,800	5,520	12,200	3,900	10,600	3,390	9,600	2,690	6,400	1,790
R4	10,400	4,990	9,200	3,680	8,000	3,200	7,200	2,590	4,800	1,730
R5	8,900	4,630	8,000	3,520	7,000	3,080	6,400	2,560	4,500	1,800
R6	8,000	4,480	7,200	3,460	6,400	3,070	5,800	2,320	4,200	1,680

切込深さ
Depth of Cut

ap	Pf
0.1D	0.2D

ap	Pf
0.08D	0.2D



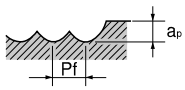
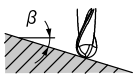


ap	Pf
0.05D	0.1D

CUTTING CONDITIONS FOR CARBIDE END MILLS

AE-BM-H

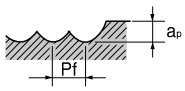
High-Speed Finishing

Work Material	Tool Steel ·Hardened Steel Prehardened Steel SKD11·SKD61·NAK80 (~45HRC)		Hardened Steel							
			~55HRC		~62HRC		~66HRC		~70HRC	
RE	Speed (min⁻¹)	Feed (mm/min)	Speed (min⁻¹)	Feed (mm/min)	Speed (min⁻¹)	Feed (mm/min)	Speed (min⁻¹)	Feed (mm/min)	Speed (min⁻¹)	Feed (mm/min)
R1	40,610	6,500	37,020	3,700	33,440	2,680	27,470	2,200	20,300	1,620
R1.5	27,070	5,410	24,680	3,460	22,290	2,670	18,310	2,200	13,540	1,620
R2	24,360	5,850	22,210	4,000	20,060	3,210	16,480	2,640	12,180	1,950
R2.5	19,490	6,240	17,770	4,620	16,050	3,850	13,180	3,160	9,750	2,340
R3	16,240	6,500	14,810	4,740	13,380	3,750	10,990	3,080	8,120	2,270
R4	12,180	5,850	11,110	4,440	10,030	3,210	8,240	2,640	6,090	1,950
R5	10,320	5,370	9,460	4,160	8,600	3,100	7,170	2,580	5,450	1,960
R6	9,080	5,080	8,360	4,010	7,640	3,060	6,210	2,480	5,020	2,010
Depth of Cut	 									

ap	Pf
0.02D	0.05D

AE-BD-H

Finishing

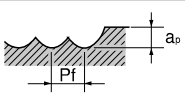
Work Material	Tool Steel ·Hardened Steel Prehardened Steel SKD11·SKD61·NAK80 (~45HRC)		Hardened Steel							
			~55HRC		~62HRC		~66HRC		~70HRC	
RE	Speed (min⁻¹)	Feed (mm/min)	Speed (min⁻¹)	Feed (mm/min)	Speed (min⁻¹)	Feed (mm/min)	Speed (min⁻¹)	Feed (mm/min)	Speed (min⁻¹)	Feed (mm/min)
R0.5	38,400	2,350	38,400	2,350	38,400	2,000	38,400	1,600	38,400	1,450
R0.75	38,400	3,050	38,400	3,050	38,400	2,500	31,800	1,900	25,200	1,450
R1	38,400	3,600	38,400	3,550	28,800	2,200	24,000	1,750	19,200	1,250
R1.5	31,800	4,000	25,200	3,200	19,200	2,000	16,200	1,600	12,600	1,200
R2	24,000	3,650	19,200	2,950	14,400	1,900	11,900	1,500	9,500	1,150
R2.5	19,200	3,500	15,000	2,650	11,500	1,700	9,500	1,350	7,600	1,000
R3	16,200	3,350	12,600	2,300	9,500	1,550	8,000	1,250	6,400	955
R4	11,900	2,850	9,500	2,050	7,100	1,350	5,900	1,050	4,800	830
R5	9,500	2,550	7,600	1,800	5,800	1,150	4,800	875	3,800	700
R6	8,000	2,400	6,400	1,650	4,800	955	4,000	795	3,200	635
Depth of Cut										

ap	Pf
0.05D	0.1D

ap	Pf
0.03D	0.1D

ap	Pf
0.02D	0.5D

High-Speed Finishing

Work Material	Tool Steel ·Hardened Steel Prehardened Steel SKD11·SKD61·NAK80 (~45HRC)		Hardened Steel							
			~55HRC		~62HRC		~66HRC		~70HRC	
RE	Speed (min⁻¹)	Feed (mm/min)	Speed (min⁻¹)	Feed (mm/min)	Speed (min⁻¹)	Feed (mm/min)	Speed (min⁻¹)	Feed (mm/min)	Speed (min⁻¹)	Feed (mm/min)
R0.5	50,000	3,700	50,000	3,700	50,000	3,100	50,000	2,600	50,000	2,400
R0.75	50,000	4,800	50,000	4,800	50,000	3,900	50,000	3,050	38,400	2,300
R1	50,000	5,600	50,000	5,350	48,000	3,650	38,400	2,800	28,800	2,100
R1.5	49,800	6,200	38,400	4,800	31,800	3,350	25,200	2,550	19,200	1,900
R2	37,200	5,700	28,800	4,400	24,000	3,200	19,200	2,400	14,400	1,800
R2.5	30,000	5,450	22,800	4,000	19,200	2,850	15,600	2,150	11,500	1,600
R3	24,600	5,200	19,200	3,450	16,200	2,550	12,600	2,050	9,500	1,550
R4	18,600	4,450	14,400	3,050	11,900	2,250	9,500	1,800	7,100	1,350
R5	15,000	3,950	11,500	2,650	9,500	1,900	7,600	1,550	5,800	1,150
R6	12,600	3,700	9,500	2,500	8,000	1,600	6,400	1,350	4,800	995
Depth of Cut										

ap	Pf
0.02D	0.05D

ap	Pf
0.01D	0.05D

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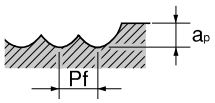
AE-LNBD-H



Work Material		Tool Steel ·Hardened Steel Prehardened Steel SKD11·SKD61·NAK80 (~45HRC)				Hardened Steel															
						~55HRC				~62HRC				~66HRC				~70HRC			
RE	LU (mm)	Speed (min^{-1})	Feed (mm/min)	ap	Pf	Speed (min^{-1})	Feed (mm/min)	ap	Pf	Speed (min^{-1})	Feed (mm/min)	ap	Pf	Speed (min^{-1})	Feed (mm/min)	ap	Pf	Speed (min^{-1})	Feed (mm/min)	ap	Pf
0.05	0.2	50,000	80	0.003	0.003	50,000	70	0.003	0.003	50,000	70	0.003	0.003	50,000	60	0.003	0.003	50,000	50	0.003	0.003
	0.3	50,000	70	0.003	0.003	50,000	60	0.003	0.003	50,000	60	0.003	0.003	50,000	50	0.003	0.003	50,000	40	0.003	0.003
	0.5	50,000	50	0.003	0.003	50,000	40	0.003	0.003	50,000	40	0.003	0.003	50,000	30	0.003	0.003	50,000	20	0.003	0.003
0.1	0.3	50,000	400	0.005	0.005	50,000	280	0.005	0.005	50,000	220	0.004	0.005	50,000	190	0.004	0.005	50,000	140	0.004	0.005
	0.5	50,000	380	0.005	0.005	50,000	260	0.005	0.005	50,000	200	0.004	0.005	50,000	170	0.004	0.005	50,000	130	0.004	0.005
	0.75	50,000	340	0.005	0.005	50,000	230	0.005	0.005	50,000	180	0.004	0.005	50,000	150	0.004	0.005	50,000	110	0.004	0.005
	1	50,000	340	0.005	0.005	50,000	230	0.005	0.005	50,000	180	0.004	0.005	50,000	150	0.004	0.005	45,000	110	0.004	0.005
	1.25	50,000	300	0.005	0.005	50,000	210	0.005	0.005	50,000	150	0.004	0.005	46,500	130	0.004	0.005	37,200	100	0.004	0.005
	1.5	50,000	280	0.005	0.005	50,000	190	0.005	0.005	49,200	130	0.004	0.005	44,300	110	0.004	0.005	35,500	80	0.004	0.005
	1.75	50,000	240	0.005	0.005	50,000	170	0.005	0.005	45,600	120	0.004	0.005	41,100	100	0.004	0.005	32,900	80	0.004	0.005
	2	45,600	210	0.005	0.005	44,500	140	0.005	0.005	39,600	100	0.004	0.005	35,700	90	0.004	0.005	28,600	70	0.004	0.005
	2.5	38,400	160	0.004	0.005	37,200	100	0.004	0.005	37,200	80	0.004	0.005	33,500	70	0.004	0.005	26,800	50	0.004	0.005
	3	38,400	140	0.004	0.005	37,200	90	0.004	0.005	37,200	70	0.004	0.005	33,500	60	0.004	0.005	26,800	50	0.004	0.005
0.15	0.5	50,000	600	0.005	0.1	50,000	400	0.005	0.01	50,000	300	0.005	0.01	50,000	260	0.005	0.01	50,000	200	0.01	0.01
	0.6	50,000	570	0.005	0.1	50,000	390	0.005	0.01	50,000	300	0.005	0.01	50,000	260	0.005	0.01	50,000	200	0.01	0.01
	0.75	50,000	570	0.005	0.1	50,000	390	0.05	0.01	50,000	300	0.005	0.01	50,000	260	0.005	0.01	50,000	200	0.01	0.01
	1	50,000	570	0.005	0.01	50,000	390	0.005	0.01	50,000	300	0.005	0.01	50,000	260	0.005	0.01	50,000	200	0.01	0.01
	1.25	50,000	570	0.005	0.01	50,000	380	0.005	0.01	50,000	300	0.005	0.01	50,000	260	0.005	0.01	50,000	200	0.01	0.01
	1.5	50,000	570	0.005	0.01	50,000	370	0.005	0.01	50,000	290	0.005	0.01	50,000	250	0.005	0.01	46,500	190	0.01	0.01
	1.75	50,000	480	0.005	0.01	50,000	310	0.005	0.01	50,000	220	0.005	0.01	46,500	190	0.005	0.01	37,200	140	0.01	0.01
	2	50,000	450	0.005	0.005	50,000	290	0.005	0.005	49,200	210	0.004	0.005	44,300	180	0.004	0.005	35,500	140	0.004	0.005
	2.25	50,000	380	0.005	0.005	50,000	250	0.005	0.005	49,200	180	0.004	0.005	44,300	150	0.004	0.005	35,500	110	0.004	0.005
	2.5	48,000	280	0.005	0.005	48,000	190	0.005	0.005	43,200	130	0.004	0.005	38,900	110	0.004	0.005	31,200	80	0.004	0.005
	3	45,600	230	0.005	0.005	44,400	150	0.005	0.005	39,600	100	0.004	0.005	35,700	90	0.004	0.005	28,600	70	0.004	0.005
	3.5	40,800	190	0.004	0.005	39,600	120	0.004	0.005	39,600	95	0.004	0.005	35,700	80	0.004	0.005	28,600	60	0.004	0.005
	4	38,400	140	0.004	0.005	37,200	90	0.004	0.005	37,200	70	0.004	0.005	33,500	60	0.004	0.005	26,800	50	0.004	0.005
	4.5	38,400	120	0.004	0.005	37,200	80	0.004	0.005	37,200	60	0.004	0.005	33,500	50	0.004	0.005	26,800	40	0.004	0.005
	5	34,800	95	0.004	0.005	33,600	60	0.004	0.005	33,600	50	0.004	0.005	30,300	40	0.004	0.005	24,200	30	0.004	0.005
0.2	0.5	50,000	900	0.01	0.02	50,000	630	0.01	0.02	50,000	500	0.008	0.015	50,000	430	0.008	0.015	50,000	320	0.008	0.015
	0.75	50,000	850	0.01	0.02	50,000	590	0.01	0.02	50,000	470	0.008	0.015	50,000	400	0.008	0.015	50,000	300	0.008	0.015
	0.8	50,000	850	0.01	0.02	50,000	590	0.01	0.02	50,000	470	0.008	0.015	50,000	400	0.008	0.015	50,000	300	0.008	0.015
	1	50,000	850	0.01	0.02	50,000	550	0.01	0.02	50,000	440	0.008	0.015	50,000	370	0.008	0.015	50,000	280	0.008	0.015
	1.5	50,000	760	0.01	0.02	50,000	520	0.01	0.02	50,000	410	0.008	0.015	50,000	350	0.008	0.015	46,500	260	0.008	0.015
	2	50,000	660	0.01	0.02	50,000	460	0.01	0.02	50,000	330	0.008	0.015	48,600	280	0.008	0.015	38,900	210	0.008	0.015
	2.5	50,000	520	0.008	0.015	50,000	360	0.008	0.015	49,200	260	0.008	0.015	44,300	220	0.008	0.015	35,500	170	0.008	0.015
	3	50,000	470	0.005	0.01	50,000	320	0.005	0.01	45,600	220	0.005	0.01	41,100	190	0.005	0.01	32,900	140	0.005	0.01
	3.5	48,000	400	0.005	0.01	48,000	280	0.005	0.01	43,200	200	0.005	0.01	38,900	170	0.005	0.01	31,200	130	0.005	0.01
	4	43,200	350	0.005	0.005	42,000	230	0.005	0.005	37,200	160	0.005	0.005	33,500	140	0.005	0.005	26,800	110	0.005	0.005
	4.5	38,400	270	0.004	0.005	37,200	180	0.004	0.005	33,600	130	0.004	0.005	30,300	110	0.004	0.005	24,200	80	0.004	0.005
	5	38,400	260	0.004	0.005	37,200	170	0.004	0.005	33,600	120	0.004	0.005	30,300	100	0.004	0.005	24,200	80	0.004	0.005
	5.5	36,000	210	0.004	0.005	34,800	140	0.004	0.005	31,200	100	0.004	0.005	28,100	90	0.004	0.005	22,500	70	0.004	0.005
	6	36,000	190	0.004	0.005	34,800	120	0.004	0.005	31,200	100	0.004	0.005	28,100	90	0.004	0.005	22,500	70	0.004	0.005

AE-LNBD-H

Work Material		Tool Steel · Hardened Steel Prehardened Steel SKD11 · SKD61 · NAK80 (~45HRC)				Hardened Steel															
						~55HRC				~62HRC				~66HRC				~70HRC			
RE	LU (mm)	Speed (min^{-1})	Feed (mm/min)	ap	Pf	Speed (min^{-1})	Feed (mm/min)	ap	Pf	Speed (min^{-1})	Feed (mm/min)	ap	Pf	Speed (min^{-1})	Feed (mm/min)	ap	Pf	Speed (min^{-1})	Feed (mm/min)	ap	Pf
0.25	0.75	50,000	1,100	0.015	0.03	50,000	750	0.015	0.03	50,000	590	0.01	0.02	50,000	500	0.01	0.02	50,000	380	0.01	0.02
	1	50,000	1,050	0.015	0.03	50,000	730	0.015	0.03	50,000	580	0.01	0.02	50,000	490	0.01	0.02	50,000	370	0.01	0.02
	1.5	50,000	1,050	0.015	0.03	50,000	700	0.015	0.03	50,000	560	0.01	0.02	50,000	480	0.01	0.02	48,000	360	0.01	0.02
	2	50,000	950	0.015	0.03	50,000	650	0.015	0.03	50,000	520	0.01	0.02	48,600	440	0.01	0.02	38,900	330	0.01	0.02
	2.5	50,000	950	0.015	0.03	50,000	600	0.015	0.03	50,000	430	0.01	0.02	46,500	370	0.01	0.02	37,200	280	0.01	0.02
	3	50,000	850	0.01	0.02	50,000	550	0.01	0.02	48,000	390	0.01	0.02	43,200	330	0.01	0.02	34,600	250	0.01	0.02
	3.5	50,000	650	0.01	0.02	50,000	450	0.01	0.02	45,600	320	0.01	0.02	41,100	270	0.01	0.02	32,900	200	0.01	0.02
	4	50,000	570	0.01	0.01	50,000	390	0.01	0.01	40,800	270	0.01	0.01	36,800	230	0.01	0.01	29,400	170	0.01	0.01
	4.5	45,600	470	0.01	0.01	45,600	320	0.01	0.01	31,200	220	0.01	0.01	28,100	190	0.01	0.01	22,500	140	0.01	0.01
	5	36,000	380	0.005	0.01	34,800	250	0.005	0.01	28,800	170	0.005	0.01	26,000	140	0.005	0.01	20,800	110	0.005	0.01
	5.5	33,600	280	0.004	0.005	32,400	180	0.004	0.005	26,400	120	0.004	0.005	23,800	100	0.004	0.005	19,100	80	0.004	0.005
	6	31,200	230	0.004	0.005	30,000	150	0.004	0.005	24,000	100	0.004	0.005	21,600	90	0.004	0.005	17,300	70	0.004	0.005
	7	28,800	190	0.004	0.005	27,600	130	0.004	0.005	24,000	100	0.004	0.005	21,600	90	0.004	0.005	17,300	70	0.004	0.005
	8	26,400	150	0.004	0.005	25,200	110	0.004	0.005	24,000	100	0.004	0.005	21,600	90	0.004	0.005	17,300	70	0.004	0.005
	9	24,000	110	0.004	0.005	25,200	100	0.004	0.005	24,000	90	0.004	0.005	21,600	80	0.004	0.005	17,300	60	0.004	0.005
	10	24,000	95	0.004	0.005	25,200	100	0.004	0.005	24,000	90	0.004	0.005	21,600	80	0.004	0.005	17,300	60	0.004	0.005
0.3	0.75	50,000	1,250	0.03	0.05	50,000	880	0.03	0.05	50,000	700	0.01	0.02	50,000	600	0.01	0.02	50,000	450	0.01	0.02
	1	50,000	1,200	0.03	0.05	50,000	840	0.03	0.05	50,000	670	0.01	0.02	50,000	570	0.01	0.02	50,000	430	0.01	0.02
	1.2	50,000	1,200	0.03	0.05	50,000	840	0.03	0.05	50,000	670	0.01	0.02	50,000	570	0.01	0.02	50,000	430	0.01	0.02
	1.5	50,000	1,200	0.03	0.05	50,000	830	0.03	0.05	50,000	660	0.01	0.02	50,000	560	0.01	0.02	50,000	420	0.01	0.02
	2	50,000	1,200	0.03	0.05	50,000	820	0.03	0.05	50,000	650	0.01	0.02	50,000	550	0.01	0.02	50,000	410	0.01	0.02
	2.5	50,000	1,100	0.03	0.05	50,000	770	0.03	0.05	50,000	610	0.01	0.02	50,000	520	0.01	0.02	48,000	390	0.01	0.02
	3	50,000	1,100	0.02	0.03	50,000	750	0.02	0.03	50,000	540	0.01	0.02	48,600	460	0.01	0.02	38,900	350	0.01	0.02
	3.5	50,000	950	0.02	0.03	50,000	660	0.02	0.03	49,200	480	0.01	0.02	44,300	410	0.01	0.02	35,500	310	0.01	0.02
	4	48,000	850	0.01	0.02	48,000	590	0.01	0.02	43,200	420	0.01	0.02	38,900	360	0.01	0.02	31,200	270	0.01	0.02
	4.5	40,800	740	0.01	0.02	40,800	510	0.01	0.02	37,200	370	0.01	0.02	33,500	310	0.01	0.02	26,800	230	0.01	0.02
	5	36,000	640	0.01	0.02	36,000	440	0.01	0.02	32,400	310	0.01	0.02	29,200	260	0.01	0.02	23,400	200	0.01	0.02
	5.5	33,600	610	0.01	0.02	33,600	420	0.01	0.02	30,000	300	0.01	0.02	27,000	260	0.01	0.02	21,600	200	0.01	0.02
	6	31,200	570	0.01	0.02	30,000	380	0.01	0.02	26,400	260	0.01	0.02	23,800	220	0.01	0.02	19,100	170	0.01	0.02
	6.5	28,800	520	0.01	0.01	27,600	340	0.01	0.01	24,000	230	0.01	0.01	21,600	200	0.01	0.01	17,300	150	0.01	0.01
	7	27,600	420	0.01	0.01	26,400	280	0.01	0.01	22,800	190	0.01	0.01	20,600	160	0.01	0.01	16,500	120	0.01	0.01
	7.5	27,600	380	0.01	0.01	26,400	250	0.01	0.01	22,800	170	0.01	0.01	20,600	140	0.01	0.01	16,500	110	0.01	0.01
	8	24,000	300	0.005	0.01	22,800	200	0.005	0.01	20,400	140	0.005	0.01	18,400	120	0.005	0.01	14,700	90	0.005	0.01
	8.5	24,000	280	0.005	0.01	22,800	180	0.005	0.01	20,400	130	0.005	0.01	18,400	110	0.005	0.01	14,700	80	0.005	0.01
	9	24,000	260	0.005	0.01	22,800	170	0.005	0.01	20,400	120	0.005	0.01	18,400	100	0.005	0.01	14,700	80	0.005	0.01
	9.5	24,000	220	0.005	0.008	22,800	140	0.005	0.008	20,400	110	0.005	0.008	18,400	90	0.005	0.008	14,700	70	0.005	0.008
	10	24,000	190	0.005	0.008	22,800	120	0.005	0.008	20,400	100	0.005	0.008	18,400	90	0.005	0.008	14,700	70	0.005	0.008
	11	21,600	140	0.005	0.008	20,400	90	0.005	0.008	20,400	80	0.005	0.008	18,400	70	0.005	0.008	14,700	50	0.005	0.008
	12	21,600	110	0.005	0.005	20,400	80	0.005	0.005	20,400	70	0.004	0.005	18,400	60	0.004	0.005	14,700	50	0.004	0.005

shaping your dreams

CUTTING CONDITIONS FOR CARBIDE END MILLS

AM-EBT

Ball Type

Work Material	Hardened Steel· Prehardened Steel ~45HRC		Hardened Steel ~65HRC		Stainless Steel ≦200HB		Cobalt-Chromium Based Alloy (Stellite)		Titanium Alloy		Ni-Based Alloy (Inconel 718)	
Cutting Speed	50~70m/min		40~60m/min		60~80m/min		50~70m/min		40~60m/min		20~40m/min	
R	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
R3	3,200	960	2,700	800	3,700	1,120	3,200	960	2,700	800	1,600	480
R4	2,400	860	2,000	720	2,800	1,000	2,400	860	2,000	720	1,200	430
R5	1,900	860	1,600	720	2,200	1,000	1,900	860	1,600	720	960	430
R6	1,600	960	1,300	800	1,900	1,120	1,600	960	1,300	800	800	480
R8	1,200	790	1,000	660	1,400	920	1,200	790	1,000	660	600	390
R10	1,000	720	800	600	1,100	840	1,000	720	800	600	480	360
Depth of Cut												

	ap	Pf
R≦6	Max:0.15D	0.05D
8≦R	Max:3mm	

AM-CRE

Radius Type

Work Material	Hardened Steel· Prehardened Steel ~45HRC		Hardened Steel ~65HRC		Stainless Steel ≦200HB		Cobalt-Chromium Based Alloy (Stellite)		Titanium Alloy		Ni-Based Alloy (Inconel 718)	
Cutting Speed	50~70m/min		40~60m/min		60~80m/min		50~70m/min		40~60m/min		20~40m/min	
R	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)	Speed (min^{-1})	Feed (mm/min)
6×R1.5	3,200	960	2,700	800	3,700	1,120	3,200	960	2,700	800	1,600	480
8×R2	2,400	720	2,000	600	2,800	840	2,400	720	2,000	600	1,200	360
10×R2	1,900	920	1,600	760	2,200	1,070	1,900	920	1,600	760	960	460
12×R2	1,600	1,270	1,300	1,060	1,900	1,490	1,600	1,270	1,300	1,060	800	640
16×R3	1,200	1,430	1,000	1,190	1,400	1,670	1,200	1,430	1,000	1,190	600	720
20×R3	1,000	1,530	800	1,270	1,100	1,780	1,000	1,530	800	1,270	480	760
Depth of Cut												

ap	Max:0.5mm
ae	Max:0.5mm

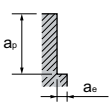
CUTTING CONDITIONS FOR CARBIDE END MILLS

WXL-EMS

WXL 4 FLUTES SHORT SIDE MILLING

Work Material	Copper・Copper Alloy		Mild Steel・Carbon Steel Fc250・Ss400・S55C・NAK55 ~32HRC		Hardened Steel・Prehardened Steel・Stainless Steel SKT・SKD61・NAK80・HPM1・DH＊＊・SUS304 33~41HRC		42~50HRC	
Mill Dia. (mm)	Speed (min-1)	Feed (mm/min)	Speed (min-1)	Feed (mm/min)	Speed (min-1)	Feed (mm/min)	Speed (min-1)	Feed (mm/min)
1	50,000	440	24,000	210	14,000	78	12,500	70
1.5	50,000	975	16,000	310	9,250	115	8,400	105
2	47,500	1,100	12,000	295	7,000	110	6,350	100
2.5	38,000	1,900	9,600	480	6,200	140	5,550	125
3	32,000	1,600	8,150	430	5,300	125	4,750	110
4	24,000	1,700	6,050	450	4,250	135	3,700	115
5	19,000	2,000	4,900	520	3,550	140	3,150	125
6	16,000	2,000	4,100	520	2,950	145	2,650	130
8	12,000	1,900	3,050	505	2,200	145	1,950	130
10	9,500	1,900	2,450	505	1,750	145	1,550	130
12	7,900	1,900	2,050	505	1,450	145	1,300	130
14	6,800	1,900	1,750	495	1,250	145	1,100	125
15	6,300	1,900	1,600	490	1,150	135	1,050	120
16	5,900	1,800	1,500	480	1,100	130	995	115
18	5,300	1,800	1,350	470	990	115	880	105
20	4,700	1,700	1,200	445	890	105	795	95
25	3,800	1,400	970	360	710	85	635	75
30	3,100	1,100	815	300	590	70	530	60
Depth of Cut								

	ap	ae
Dc < φ3	1.5D	0.05D
φ3≦ Dc	1.5D	0.1D



ap	ae
1D	0.02D

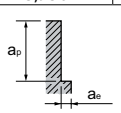
1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed at the same ratio.
3. Use an air blow or a suitable cutting fluid with high smoke retardant properties.
4. Refer to the table above to set the milling conditions in accordance with the actual situation.

WXL 4 FLUTES SHORT HIGH-SPEED SIDE MILLING

Caution: Sparks generated during operation or heat caused by tool breakage can cause fire. Be sure to use all proper fire-prevention measures.

Work Material	Copper・Copper Alloy		Mild Steel・Carbon Steel FC250・SS400・S55C ~ 32HRC		Hardened Steel・Prehardened Steel SKT・SKD61・NAK55・NAK80・HPM1・DH＊＊ 33~41HRC		42 ~ 50HRC	
Mill Dia. (mm)	Speed (min-1)	Feed (mm/min)	Speed (min-1)	Feed (mm/min)	Speed (min-1)	Feed (mm/min)	Speed (min-1)	Feed (mm/min)
6	26,000	2,900	20,000	2,300	13,000	1,500	7,950	795
8	19,500	3,000	14,500	2,300	9,900	1,450	5,950	795
10	15,500	2,900	12,000	2,300	7,950	1,450	4,750	795
12	13,000	3,000	9,900	2,300	6,600	1,450	3,950	790
14	11,100	2,800	8,500	2,200	5,650	1,350	3,400	740
15	10,500	2,800	7,950	2,150	5,250	1,350	3,150	730
16	9,700	2,700	7,450	2,100	4,950	1,350	2,950	715
18	8,600	2,700	6,600	2,100	4,400	1,300	2,650	705
20	7,800	2,600	5,950	2,000	3,950	1,300	2,350	665
25	6,200	2,000	4,750	1,600	3,150	1,050	1,900	560
30	5,200	1,700	3,950	1,350	2,650	890	1,550	455
Depth of Cut								

	ap	ae
Dc< φ8	1.5D	0.01D
φ8≦ Dc	1.5D	0.02D



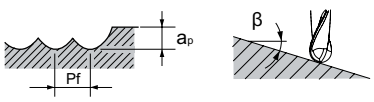
	ap	ae
Dc < φ8	1D	0.01D
φ8≦ Dc	1D	0.02D

1. The indicated speeds and feeds are for high speed light milling with high speed/high precision machining centers.
2. Tools can cause sparks. Do not use flammable fluids.
3. Use an air blow or a suitable cutting fluid with high smoke retardant properties.
4. Refer to the table above to set the milling conditions in accordance with the actual situation.

shaping your dreams

CUTTING CONDITIONS FOR CARBIDE END MILLS

WXL 2 FLUTES BALL-END
REGULAR MILLING

Work Material	Copper・Copper Alloy				Mild Steel・Carbon Steel・FC250・SS400・S55C ～32HRC				Hardened Steel・Prehardened Steel・Stainless Steel SKT・SKD61・NAK80・HPM1・DH＊＊・SUS304 33～41HRC				Hardened Steel・Prehardened Steel・Stainless Steel SKT・SKD61・NAK80・HPM1・DH＊＊・SUS304 42～50HRC			
R	Speed (min-1)	Feed (mm/min)	Depth of Cut (mm) ap	Depth of Cut (mm) Pf	Speed (min-1)	Feed (mm/min)	Depth of Cut (mm) ap	Depth of Cut (mm) Pf	Speed (min-1)	Feed (mm/min)	Depth of Cut (mm) ap	Depth of Cut (mm) Pf	Speed (min-1)	Feed (mm/min)	Depth of Cut (mm) ap	Depth of Cut (mm) Pf
0.05	40,000	150	0.003	0.005	32,000	75	0.005	0.005	32,000	50	0.005	0.005	32,000	35	0.005	0.005
0.1	40,000	300	0.01	0.02	32,000	200	0.01	0.01	32,000	200	0.01	0.01	32,000	200	0.005	0.005
0.2	40,000	490	0.02	0.08	32,000	410	0.02	0.08	32,000	330	0.02	0.08	32,000	205	0.02	0.04
0.3	40,000	580	0.03	0.12	32,000	490	0.03	0.12	32,000	420	0.03	0.12	32,000	265	0.03	0.06
0.4	40,000	660	0.04	0.16	32,000	550	0.04	0.16	31,500	420	0.04	0.16	27,500	290	0.04	0.08
0.5	32,000	750	0.05	0.2	31,500	620	0.05	0.2	25,000	400	0.05	0.2	22,000	285	0.05	0.1
1	19,000	750	0.2	0.4	15,500	620	0.2	0.4	12,500	400	0.2	0.4	11,000	290	0.1	0.2
1.5	12,500	760	0.3	0.6	10,500	630	0.3	0.6	8,450	405	0.3	0.6	7,400	290	0.15	0.3
2	9,500	760	0.4	0.8	7,950	630	0.4	0.8	6,350	445	0.4	0.8	5,550	370	0.2	0.4
3	6,300	800	0.6	1.2	5,300	670	0.6	1.2	4,200	465	0.6	1.2	3,700	390	0.3	0.6
4	4,750	950	0.8	1.6	3,950	790	0.8	1.6	3,150	555	0.8	1.6	2,750	455	0.4	0.8
5	3,800	890	1	2	3,150	745	1	2	2,500	525	1	2	2,200	430	0.5	1
6	3,170	840	1.2	2.4	2,650	700	1.2	2.4	2,100	490	1.2	2.4	1,850	430	0.6	1.2
8	2,400	630	1.6	3.2	1,990	525	1.6	3.2	1,580	370	1.6	3.2	1,390	325	0.8	1.6
10	1,900	500	2	4	1,590	420	2	4	1,260	290	2	4	1,110	260	1	2
Depth of Cut																

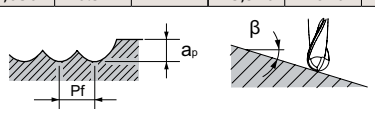
1. Use a rigid and precise machine and holder.
2. Use an air blow or a suitable cutting fluid with high smoke retardant properties.
3. Refer to the table above to set the milling conditions in accordance with the actual situation.

※ When the length of tool extension from the machine is long, reduce the speed and feed.

※※ When β is less than 15°, speed and feed in the above table can be increased 1.5～2 times.

WXL 2 FLUTES BALL-END
HIGH-SPEED LIGHT MILLING

Caution: Sparks generated during operation or heat caused by tool breakage can cause fire. Be sure to use all proper fire-prevention measures.

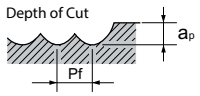
Work Material	Copper・Copper Alloy				Mild Steel・Carbon Steel・FC250・SS400・S55C ～32HRC				Hardened Steel・Prehardened Steel SKT・SKD61・NAK55・NAK80・HPM1・DH＊＊ 33～41HRC				Hardened Steel・Prehardened Steel SKT・SKD61・NAK55・NAK80・HPM1・DH＊＊ 42～50HRC			
R	Speed (min-1)	Feed (mm/min)	Depth of Cut (mm) ap	Depth of Cut (mm) Pf	Speed (min-1)	Feed (mm/min)	Depth of Cut (mm) ap	Depth of Cut (mm) Pf	Speed (min-1)	Feed (mm/min)	Depth of Cut (mm) ap	Depth of Cut (mm) Pf	Speed (min-1)	Feed (mm/min)	Depth of Cut (mm) ap	Depth of Cut (mm) Pf
0.5	50,000	3,350	0.02	0.05	50,000	2,800	0.02	0.05	50,000	2,500	0.02	0.05	47,500	2,250	0.02	0.05
1	31,500	3,350	0.04	0.1	25,000	2,800	0.04	0.1	24,500	2,500	0.04	0.1	23,500	2,250	0.04	0.1
1.5	21,000	3,350	0.06	0.15	16,500	2,800	0.06	0.15	16,000	2,500	0.06	0.15	15,500	2,250	0.06	0.15
2	15,500	4,080	0.08	0.2	15,500	3,400	0.08	0.2	15,000	2,750	0.08	0.2	13,500	2,450	0.08	0.2
3	10,500	5,160	0.12	0.3	13,500	4,300	0.3	0.6	11,500	2,750	0.3	0.6	9,500	2,250	0.12	0.3
4	7,900	3,840	0.16	0.4	10,000	3,200	0.4	0.8	8,950	2,100	0.4	0.8	7,150	1,700	0.16	0.4
5	6,300	3,120	0.2	0.5	8,250	2,600	0.5	1	7,150	1,700	0.5	1	5,700	1,350	0.2	0.5
6	5,250	2,580	0.24	0.6	6,850	2,150	0.5	2.4	5,950	1,400	0.5	2.4	4,750	1,100	0.24	0.6
8	4,950	1,550	0.32	0.8	4,110	1,290	0.5	3.2	4,460	1,050	0.5	3.2	3,560	820	0.32	0.8
10	3,950	1,240	0.4	1	3,290	1,030	0.5	4	3,570	840	0.5	4	2,850	660	0.32	1
Depth of Cut																

1. The indicated speeds and feeds are for high speed light milling with high speed/high precision machining centers.
2. Because tools can cause sparks, do not use flammable fluids.
3. Use an air blow or a suitable cutting fluid with high smoke retardant properties.
4. Refer to the table above to set the milling conditions in accordance with the actual situation.

※ When β is less than 15°, speed and feed in the above table can be increased 1.2～1.5 times.

CUTTING CONDITIONS FOR CARBIDE END MILLS

WXL-LN-EBD



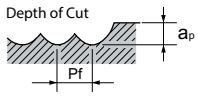
WXL 2 FLUTES BALL-END LONG NECK
REGULAR MILLING

Work Material		Copper・Copper Alloy				Mild Steel・Carbon Steel FC250・SS400・S55C ~32HRC				Hardened Steel・Prehardened Steel SKT・SKD61・NAK55・NAK80・HPM1・DH＊＊ 33~41HRC				Hardened Steel・Prehardened Steel SKT・SKD61・NAK55・NAK80・HPM1・DH＊＊ 42~50HRC			
R	ℓ2 (mm)	Speed (min-1)	Feed (mm/min)	Depth of Cut (mm) ap	Depth of Cut (mm) Pf	Speed (min-1)	Feed (mm/min)	Depth of Cut (mm) ap	Depth of Cut (mm) Pf	Speed (min-1)	Feed (mm/min)	Depth of Cut (mm) ap	Depth of Cut (mm) Pf	Speed (min-1)	Feed (mm/min)	Depth of Cut (mm) ap	Depth of Cut (mm) Pf
0.05	0.3	32,000	150	0.005	0.005	32,000	75	0.005	0.005	32,000	50	0.005	0.005	32,000	35	0.005	0.005
	0.5	32,000	120	0.005	0.005	32,000	60	0.005	0.005	32,000	40	0.005	0.005	32,000	25	0.005	0.005
0.1	0.3	32,000	300	0.02	0.02	32,000	200	0.01	0.01	32,000	200	0.01	0.01	32,000	200	0.005	0.005
	0.5	32,000	300	0.02	0.02	32,000	200	0.01	0.01	32,000	200	0.01	0.01	32,000	200	0.005	0.005
	0.75	32,000	300	0.02	0.02	32,000	200	0.01	0.01	32,000	200	0.01	0.01	32,000	100	0.005	0.005
	1	32,000	150	0.02	0.02	32,000	100	0.01	0.01	32,000	100	0.01	0.01	32,000	80	0.005	0.005
	1.25	32,000	150	0.02	0.02	32,000	100	0.01	0.01	32,000	100	0.01	0.01	32,000	80	0.005	0.005
	1.5	32,000	150	0.02	0.02	32,000	100	0.01	0.01	32,000	100	0.01	0.01	32,000	80	0.005	0.005
	1.75	32,000	150	0.02	0.02	32,000	100	0.01	0.01	32,000	100	0.01	0.01	32,000	80	0.005	0.005
	2	32,000	150	0.01	0.01	32,000	100	0.005	0.005	32,000	100	0.005	0.005	32,000	80	0.005	0.005
	2.5	32,000	75	0.01	0.01	32,000	50	0.005	0.005	32,000	50	0.005	0.005	32,000	40	0.003	0.005
	3	32,000	75	0.01	0.01	32,000	50	0.005	0.005	32,000	50	0.005	0.005	32,000	40	0.003	0.005
0.15	0.5	32,000	600	0.02	0.03	32,000	400	0.01	0.015	32,000	300	0.01	0.015	32,000	300	0.005	0.005
	0.6	32,000	600	0.02	0.03	32,000	400	0.01	0.015	32,000	300	0.01	0.015	32,000	300	0.005	0.005
	0.75	32,000	600	0.02	0.03	32,000	400	0.01	0.015	32,000	300	0.01	0.015	32,000	300	0.005	0.005
	1	32,000	450	0.02	0.03	32,000	300	0.01	0.015	32,000	200	0.01	0.015	32,000	200	0.005	0.005
	1.25	32,000	450	0.02	0.03	32,000	300	0.01	0.015	32,000	200	0.01	0.015	32,000	200	0.005	0.005
	1.5	32,000	450	0.02	0.03	32,000	300	0.01	0.015	32,000	200	0.01	0.015	32,000	200	0.005	0.005
	1.75	32,000	450	0.02	0.03	32,000	300	0.01	0.015	32,000	200	0.01	0.015	32,000	200	0.005	0.005
	2	32,000	450	0.02	0.03	32,000	300	0.01	0.015	32,000	200	0.01	0.015	32,000	200	0.005	0.005
	2.25	32,000	450	0.02	0.02	32,000	300	0.01	0.01	32,000	200	0.01	0.01	32,000	200	0.01	0.01
	2.5	32,000	450	0.02	0.02	32,000	300	0.01	0.01	32,000	200	0.01	0.01	32,000	200	0.01	0.01
	2.75	32,000	450	0.02	0.02	32,000	300	0.01	0.01	32,000	200	0.01	0.01	32,000	200	0.01	0.01
	3	32,000	450	0.02	0.02	32,000	300	0.01	0.01	32,000	200	0.01	0.01	32,000	200	0.005	0.01
	3.5	32,000	270	0.02	0.02	32,000	180	0.01	0.01	32,000	120	0.01	0.01	32,000	120	0.005	0.01
	4	32,000	270	0.02	0.02	32,000	180	0.01	0.01	32,000	120	0.01	0.01	32,000	120	0.005	0.005
	4.5	32,000	270	0.02	0.02	32,000	180	0.01	0.01	32,000	120	0.01	0.01	32,000	120	0.003	0.005
	5	32,000	150	0.01	0.02	32,000	100	0.005	0.01	32,000	70	0.005	0.01	32,000	70	0.003	0.005
0.2	0.5	32,000	750	0.025	0.05	32,000	500	0.015	0.025	32,000	400	0.015	0.02	32,000	400	0.01	0.01
	0.75	32,000	750	0.025	0.05	32,000	500	0.015	0.025	32,000	400	0.015	0.02	32,000	400	0.01	0.01
	1	32,000	600	0.025	0.05	32,000	400	0.015	0.025	32,000	300	0.015	0.02	32,000	300	0.01	0.01
	1.5	32,000	600	0.025	0.05	32,000	400	0.015	0.025	32,000	300	0.015	0.02	32,000	300	0.01	0.01
	2	27,000	450	0.025	0.05	27,000	300	0.015	0.025	27,000	200	0.015	0.02	27,000	200	0.01	0.01
	2.5	27,000	450	0.025	0.05	27,000	300	0.015	0.025	27,000	200	0.015	0.02	27,000	200	0.01	0.01
	3	27,000	450	0.025	0.05	27,000	300	0.015	0.025	27,000	200	0.015	0.02	27,000	200	0.01	0.01
	3.5	27,000	450	0.025	0.05	27,000	300	0.015	0.025	27,000	200	0.015	0.02	27,000	200	0.01	0.01
	4	27,000	450	0.01	0.03	27,000	300	0.005	0.015	27,000	200	0.005	0.012	27,000	200	0.005	0.01
	4.5	24,000	300	0.01	0.03	27,000	200	0.005	0.015	27,000	100	0.005	0.012	27,000	100	0.005	0.01
	5	24,000	300	0.01	0.03	27,000	200	0.005	0.015	27,000	100	0.005	0.012	27,000	100	0.005	0.01
	5.5	21,000	300	0.01	0.02	27,000	200	0.005	0.01	27,000	100	0.005	0.008	27,000	100	0.005	0.005
	6	21,000	150	0.01	0.015	27,000	100	0.005	0.008	27,000	80	0.005	0.006	27,000	80	0.003	0.005
0.25	1	32,000	750	0.04	0.05	32,000	500	0.02	0.025	32,000	400	0.02	0.02	32,000	400	0.01	0.01
	1.5	32,000	750	0.04	0.05	32,000	500	0.02	0.025	32,000	400	0.02	0.02	32,000	400	0.01	0.01
	2	32,000	600	0.04	0.05	32,000	400	0.02	0.025	32,000	300	0.02	0.02	32,000	300	0.01	0.01
	2.5	27,000	450	0.04	0.05	27,000	300	0.02	0.025	27,000	200	0.02	0.02	27,000	200	0.01	0.01
	3	27,000	450	0.04	0.05	27,000	300	0.02	0.025	27,000	200	0.02	0.02	27,000	200	0.01	0.01
	3.5	27,000	450	0.04	0.05	27,000	300	0.02	0.025	27,000	200	0.02	0.02	27,000	200	0.01	0.01
	4	27,000	450	0.04	0.05	27,000	300	0.02	0.025	27,000	200	0.02	0.02	27,000	200	0.01	0.01
	4.5	21,000	300	0.04	0.05	20,000	200	0.02	0.025	20,000	200	0.02	0.02	20,000	200	0.01	0.01
	5	21,000	300	0.04	0.05	20,000	200	0.02	0.025	20,000	150	0.02	0.02	20,000	150	0.01	0.01
	5.5	21,000	300	0.02	0.03	20,000	200	0.01	0.015	20,000	150	0.01	0.01	20,000	150	0.01	0.01
	6	21,000	300	0.02	0.03	20,000	200	0.01	0.015	20,000	150	0.01	0.01	20,000	150	0.01	0.01
	7	21,000	300	0.02	0.03	20,000	200	0.01	0.015	20,000	150	0.01	0.01	20,000	150	0.01	0.01
	8	21,000	300	0.02	0.03	15,000	200	0.01	0.015	15,000	150	0.01	0.01	15,000	150	0.005	0.01
	9	18,000	150	0.02	0.02	15,000	100	0.01	0.01	15,000	80	0.005	0.01	15,000	80	0.005	0.005
	10	18,000	150	0.01	0.01	15,000	100	0.005	0.005	15,000	80	0.005	0.005	15,000	80	0.003	0.005

shaping your dreams

CUTTING CONDITIONS FOR CARBIDE END MILLS

WXL-LN-EBD

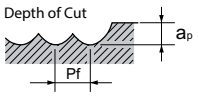


WXL 2 FLUTES BALL-END LONG NECK
REGULAR MILLING

Work Material		Copper・Copper Alloy				Mild Steel・Carbon Steel FC250・SS400・S55C ~32HRC				Hardened Steel・Prehardened Steel SKT・SKD61・NAK55・NAK80・HPM1・DH＊＊ 33~41HRC				Hardened Steel・Prehardened Steel SKT・SKD61・NAK55・NAK80・HPM1・DH＊＊ 42~50HRC			
R	ℓ2 (mm)	Speed (min-1)	Feed (mm/min)	Depth of Cut (mm) ap	Depth of Cut (mm) Pf	Speed (min-1)	Feed (mm/min)	Depth of Cut (mm) ap	Depth of Cut (mm) Pf	Speed (min-1)	Feed (mm/min)	Depth of Cut (mm) ap	Depth of Cut (mm) Pf	Speed (min-1)	Feed (mm/min)	Depth of Cut (mm) ap	Depth of Cut (mm) Pf
0.3	1	32,000	900	0.045	0.12	32,000	600	0.03	0.06	32,000	500	0.03	0.05	32,000	500	0.03	0.03
	1.5	32,000	900	0.045	0.12	32,000	600	0.03	0.06	32,000	500	0.03	0.05	32,000	500	0.03	0.03
	2	32,000	675	0.045	0.12	32,000	450	0.03	0.06	32,000	300	0.03	0.05	32,000	300	0.03	0.03
	2.5	30,000	675	0.045	0.12	32,000	450	0.03	0.06	32,000	300	0.03	0.05	32,000	300	0.03	0.03
	3	30,000	375	0.045	0.12	25,000	250	0.03	0.06	24,000	200	0.03	0.05	24,000	200	0.03	0.03
	3.5	30,000	375	0.045	0.12	25,000	250	0.03	0.06	24,000	200	0.03	0.04	24,000	200	0.03	0.03
	4	30,000	375	0.045	0.12	25,000	250	0.03	0.06	24,000	200	0.03	0.04	24,000	200	0.03	0.03
	4.5	30,000	375	0.045	0.12	25,000	250	0.03	0.06	24,000	200	0.03	0.04	24,000	200	0.03	0.03
	5	30,000	375	0.045	0.12	25,000	250	0.03	0.06	24,000	200	0.03	0.04	24,000	200	0.02	0.02
	5.5	25,000	300	0.045	0.12	20,000	200	0.03	0.06	20,000	200	0.03	0.04	20,000	200	0.02	0.02
	6	25,000	225	0.045	0.12	20,000	150	0.03	0.06	20,000	150	0.03	0.04	20,000	150	0.02	0.02
	6.5	25,000	225	0.045	0.12	20,000	150	0.03	0.06	20,000	150	0.03	0.04	20,000	150	0.02	0.02
	7	25,000	225	0.045	0.12	20,000	150	0.03	0.06	20,000	150	0.03	0.04	20,000	150	0.02	0.02
	7.5	25,000	225	0.045	0.12	20,000	150	0.03	0.06	20,000	150	0.03	0.04	20,000	150	0.02	0.02
	8	25,000	225	0.045	0.12	20,000	150	0.03	0.06	20,000	150	0.03	0.04	20,000	150	0.02	0.02
	8.5	22,000	225	0.045	0.12	20,000	150	0.03	0.06	20,000	150	0.02	0.04	20,000	150	0.01	0.01
	9	22,000	225	0.03	0.1	20,000	150	0.02	0.05	20,000	150	0.02	0.04	20,000	150	0.01	0.01
	9.5	22,000	225	0.03	0.1	17,000	150	0.02	0.05	17,000	150	0.02	0.04	17,000	150	0.01	0.01
	10	20,000	150	0.025	0.05	17,000	100	0.015	0.025	17,000	100	0.015	0.02	17,000	100	0.005	0.005
	11	20,000	150	0.025	0.05	17,000	100	0.015	0.025	17,000	100	0.01	0.02	17,000	100	0.005	0.005
	12	20,000	120	0.025	0.05	17,000	80	0.015	0.025	17,000	80	0.01	0.012	17,000	80	0.005	0.005
0.4	2	27,000	675	0.06	0.16	23,000	450	0.04	0.08	21,000	300	0.04	0.06	21,000	300	0.04	0.04
	3	27,000	675	0.06	0.16	23,000	450	0.04	0.08	21,000	300	0.04	0.06	21,000	300	0.04	0.04
	4	27,000	675	0.06	0.16	23,000	450	0.04	0.08	21,000	300	0.04	0.06	21,000	300	0.04	0.04
	5	24,000	375	0.06	0.12	21,000	250	0.04	0.06	19,000	200	0.04	0.05	19,000	200	0.02	0.025
	6	24,000	375	0.06	0.12	21,000	250	0.04	0.06	19,000	200	0.04	0.05	19,000	200	0.02	0.025
	7	24,000	375	0.06	0.12	21,000	250	0.04	0.06	19,000	200	0.04	0.05	19,000	200	0.02	0.025
	8	22,000	225	0.06	0.12	19,000	150	0.04	0.06	17,000	150	0.04	0.05	17,000	150	0.02	0.025
	9	22,000	225	0.06	0.12	19,000	150	0.04	0.06	17,000	150	0.04	0.05	17,000	150	0.02	0.025
	10	22,000	225	0.06	0.12	19,000	150	0.04	0.06	17,000	150	0.04	0.05	17,000	150	0.02	0.025
	12	20,000	225	0.06	0.12	19,000	150	0.04	0.06	17,000	150	0.04	0.05	17,000	150	0.02	0.025
0.5	2.5	28,000	900	0.075	0.2	25,000	600	0.05	0.1	21,000	400	0.05	0.08	21,000	400	0.05	0.05
	3	28,000	750	0.075	0.2	25,000	500	0.05	0.1	21,000	300	0.05	0.08	21,000	300	0.05	0.05
	4	28,000	750	0.075	0.2	25,000	500	0.05	0.1	21,000	300	0.05	0.08	21,000	300	0.05	0.05
	5	21,000	450	0.075	0.2	19,000	300	0.05	0.1	16,000	200	0.05	0.08	16,000	200	0.05	0.05
	6	21,000	450	0.075	0.2	19,000	300	0.05	0.1	16,000	200	0.05	0.08	16,000	200	0.05	0.05
	7	21,000	450	0.075	0.15	19,000	300	0.05	0.075	16,000	200	0.05	0.06	16,000	200	0.03	0.03
	8	21,000	450	0.075	0.15	19,000	300	0.05	0.075	16,000	200	0.05	0.06	16,000	200	0.03	0.03
	9	21,000	450	0.075	0.15	19,000	300	0.05	0.075	16,000	200	0.05	0.06	16,000	200	0.03	0.03
	10	18,000	300	0.06	0.12	17,000	200	0.03	0.05	14,000	150	0.03	0.04	14,000	150	0.01	0.015
	12	18,000	300	0.06	0.12	17,000	200	0.03	0.05	14,000	150	0.03	0.04	14,000	150	0.01	0.015
	14	18,000	300	0.06	0.12	17,000	200	0.03	0.05	14,000	150	0.03	0.04	14,000	150	0.01	0.015
	16	16,000	300	0.06	0.12	13,000	200	0.03	0.05	10,000	150	0.03	0.04	10,000	150	0.01	0.015
	18	16,000	300	0.06	0.12	13,000	200	0.03	0.05	10,000	150	0.03	0.04	10,000	150	0.01	0.015
	20	16,000	300	0.06	0.12	13,000	200	0.03	0.05	10,000	150	0.03	0.04	10,000	150	0.01	0.015
	22	16,000	225	0.05	0.05	13,000	150	0.02	0.025	10,000	100	0.02	0.02	10,000	100	0.005	0.005
0.6	4	20,000	750	0.09	0.24	17,000	500	0.06	0.12	14,000	300	0.06	0.1	14,000	300	0.06	0.06
	6	20,000	450	0.09	0.24	17,000	300	0.06	0.12	14,000	200	0.06	0.1	14,000	200	0.06	0.06
	8	20,000	450	0.09	0.24	17,000	300	0.06	0.12	14,000	200	0.06	0.1	14,000	200	0.06	0.06
	10	20,000	450	0.09	0.18	17,000	300	0.06	0.09	14,000	200	0.06	0.07	14,000	200	0.03	0.03
	12	16,000	300	0.09	0.18	14,000	200	0.06	0.09	11,000	150	0.06	0.07	11,000	150	0.03	0.03
	14	16,000	300	0.09	0.18	14,000	200	0.06	0.09	11,000	150	0.06	0.07	11,000	150	0.01	0.03
	16	16,000	300	0.09	0.18	14,000	200	0.06	0.09	11,000	150	0.06	0.07	11,000	150	0.01	0.03
	18	16,000	300	0.09	0.18	14,000	200	0.06	0.09	11,000	150	0.06	0.07	11,000	150	0.01	0.03
	20	16,000	300	0.09	0.18	14,000	200	0.06	0.09	11,000	150	0.06	0.07	11,000	150	0.01	0.03
	24	16,000	300	0.09	0.18	14,000	200	0.06	0.09	11,000	150	0.06	0.07	11,000	150	0.01	0.03

CUTTING CONDITIONS FOR CARBIDE END MILLS

WXL-LN-EBD



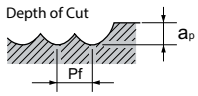
WXL 2 FLUTES BALL-END LONG NECK
REGULAR MILLING

Work Material		Copper・Copper Alloy				Mild Steel・Carbon Steel FC250・SS400・S55C ~32HRC				Hardened Steel・Prehardened Steel SKT・SKD61・NAK55・NAK80・HPM1・DH＊＊ 33~41HRC				Hardened Steel・Prehardened Steel SKT・SKD61・NAK55・NAK80・HPM1・DH＊＊ 42~50HRC			
R	ℓ2 (mm)	Speed (min-1)	Feed (mm/min)	Depth of Cut (mm) ap	Depth of Cut (mm) Pf	Speed (min-1)	Feed (mm/min)	Depth of Cut (mm) ap	Depth of Cut (mm) Pf	Speed (min-1)	Feed (mm/min)	Depth of Cut (mm) ap	Depth of Cut (mm) Pf	Speed (min-1)	Feed (mm/min)	Depth of Cut (mm) ap	Depth of Cut (mm) Pf
0.7	8	18,000	450	0.1	0.28	15,500	300	0.07	0.14	12,000	250	0.07	0.1	12,000	250	0.07	0.07
	12	18,000	450	0.1	0.2	15,500	300	0.07	0.1	12,000	250	0.07	0.08	12,000	250	0.07	0.07
	16	13,000	300	0.09	0.18	12,000	200	0.06	0.09	9,000	150	0.04	0.07	9,000	150	0.01	0.03
0.75	3	20,000	900	0.12	0.3	15,000	600	0.08	0.15	12,000	500	0.08	0.12	12,000	300	0.08	0.1
	4	20,000	900	0.12	0.3	15,000	600	0.08	0.15	12,000	500	0.08	0.12	12,000	300	0.08	0.1
	6	18,000	750	0.12	0.3	15,000	500	0.08	0.15	12,000	350	0.08	0.12	12,000	300	0.08	0.1
	8	17,000	450	0.12	0.3	15,000	300	0.08	0.15	12,000	250	0.08	0.12	12,000	250	0.08	0.1
	10	17,000	450	0.12	0.3	15,000	300	0.08	0.15	12,000	250	0.08	0.12	12,000	250	0.08	0.1
	12	17,000	450	0.12	0.24	15,000	300	0.08	0.12	12,000	250	0.08	0.09	12,000	250	0.05	0.06
	14	17,000	450	0.12	0.24	15,000	300	0.08	0.12	12,000	250	0.08	0.09	12,000	250	0.05	0.06
	16	13,000	300	0.09	0.18	12,000	200	0.06	0.1	9,500	150	0.06	0.07	9,500	150	0.01	0.03
	18	13,000	300	0.09	0.18	12,000	200	0.06	0.1	9,500	150	0.06	0.07	9,500	150	0.01	0.03
	20	13,000	300	0.09	0.18	12,000	200	0.06	0.1	9,500	150	0.06	0.07	9,500	150	0.01	0.03
	22	13,000	300	0.09	0.18	12,000	200	0.06	0.1	9,500	150	0.06	0.07	9,500	150	0.01	0.03
	30	13,000	300	0.09	0.18	12,000	200	0.06	0.1	9,500	150	0.06	0.07	9,500	150	0.01	0.03
0.8	4	20,000	900	0.12	0.32	14,000	600	0.08	0.16	11,000	500	0.08	0.13	11,000	350	0.08	0.1
	8	16,500	450	0.12	0.32	14,000	300	0.08	0.16	11,000	250	0.08	0.13	11,000	250	0.08	0.1
	12	16,500	450	0.12	0.24	14,000	300	0.08	0.12	11,000	250	0.08	0.08	11,000	250	0.05	0.05
	16	11,500	300	0.12	0.24	11,000	200	0.08	0.12	9,000	150	0.08	0.08	9,000	150	0.05	0.05
	20	11,500	300	0.09	0.2	11,000	200	0.06	0.12	9,000	150	0.06	0.075	9,000	150	0.015	0.03
0.9	8	16,500	600	0.13	0.36	14,000	400	0.09	0.18	11,000	300	0.09	0.16	11,000	300	0.09	0.12
	12	16,500	600	0.13	0.36	14,000	400	0.09	0.18	11,000	300	0.09	0.16	11,000	300	0.09	0.12
	16	16,500	600	0.13	0.27	14,000	400	0.09	0.14	11,000	300	0.09	0.12	11,000	300	0.05	0.06
	20	11,000	300	0.1	0.22	11,000	200	0.06	0.13	8,000	200	0.06	0.08	8,000	200	0.02	0.03
1	3	16,500	1,350	0.15	0.56	16,500	900	0.1	0.28	13,500	800	0.1	0.28	13,500	700	0.1	0.2
	4	16,500	1,050	0.15	0.56	16,500	700	0.1	0.28	13,500	500	0.1	0.28	13,500	500	0.1	0.2
	6	16,500	1,050	0.15	0.56	16,500	700	0.1	0.28	13,500	500	0.1	0.28	13,500	500	0.1	0.2
	8	16,500	1,050	0.15	0.56	16,500	700	0.1	0.28	13,500	500	0.1	0.28	13,500	500	0.1	0.2
	10	14,000	750	0.15	0.56	13,000	500	0.1	0.28	10,000	300	0.1	0.28	10,000	300	0.1	0.2
	12	14,000	750	0.15	0.56	13,000	500	0.1	0.28	10,000	300	0.1	0.28	10,000	300	0.1	0.2
	14	14,000	750	0.15	0.56	13,000	500	0.1	0.28	10,000	300	0.1	0.28	10,000	300	0.1	0.2
	16	14,000	750	0.15	0.42	13,000	500	0.1	0.21	10,000	300	0.1	0.18	10,000	300	0.06	0.1
	18	14,000	750	0.15	0.42	13,000	500	0.1	0.21	10,000	300	0.1	0.18	10,000	300	0.06	0.1
	20	11,000	375	0.15	0.42	10,000	250	0.1	0.21	8,000	200	0.1	0.18	8,000	200	0.06	0.1
	22	11,000	375	0.15	0.42	10,000	250	0.1	0.21	8,000	200	0.1	0.18	8,000	200	0.06	0.1
	25	11,000	375	0.15	0.42	10,000	250	0.1	0.21	8,000	200	0.1	0.18	8,000	200	0.06	0.1
	30	11,000	375	0.15	0.42	10,000	250	0.1	0.21	8,000	200	0.1	0.18	8,000	200	0.06	0.1
	35	10,000	375	0.15	0.42	10,000	250	0.1	0.21	8,000	200	0.1	0.18	8,000	200	0.06	0.1
	40	10,000	300	0.15	0.42	10,000	200	0.1	0.21	8,000	160	0.1	0.18	8,000	160	0.06	0.1
1.25	6	16,000	1,050	0.18	0.7	12,000	700	0.12	0.35	10,000	600	0.12	0.3	10,000	600	0.1	0.25
	10	14,000	1,050	0.18	0.7	12,000	700	0.12	0.35	10,000	600	0.12	0.3	10,000	600	0.1	0.25
	15	14,000	600	0.18	0.7	10,000	400	0.12	0.35	8,500	300	0.12	0.3	8,500	300	0.1	0.25
	20	12,000	600	0.18	0.56	10,000	400	0.12	0.28	8,500	300	0.12	0.2	8,500	300	0.08	0.15
	25	12,000	450	0.18	0.56	8,000	300	0.12	0.28	6,500	250	0.12	0.2	6,500	250	0.08	0.15
	30	12,000	375	0.18	0.56	8,000	250	0.12	0.28	6,500	200	0.12	0.2	6,500	200	0.08	0.15
	35	12,000	375	0.18	0.56	8,000	250	0.12	0.28	6,500	200	0.12	0.2	6,500	200	0.08	0.15
1.5	6	15,000	1,200	0.2	0.84	9,500	800	0.15	0.42	7,500	600	0.15	0.42	7,500	600	0.15	0.3
	8	12,000	900	0.2	0.84	9,500	600	0.15	0.42	7,500	400	0.15	0.36	7,500	400	0.15	0.3
	10	12,000	900	0.2	0.84	9,500	600	0.15	0.42	7,500	400	0.15	0.36	7,500	400	0.15	0.3
	12	10,000	900	0.2	0.84	9,500	600	0.15	0.42	7,500	400	0.15	0.36	7,500	400	0.15	0.3
	14	10,000	900	0.2	0.84	9,500	600	0.15	0.42	7,500	400	0.15	0.36	7,500	400	0.15	0.3
	15	10,000	600	0.2	0.84	8,500	400	0.15	0.42	6,500	250	0.15	0.36	6,500	250	0.15	0.3
	16	10,000	450	0.2	0.84	8,500	300	0.15	0.42	6,500	250	0.15	0.36	6,500	250	0.15	0.3
	20	10,000	450	0.2	0.84	8,500	300	0.15	0.42	6,500	250	0.15	0.36	6,500	250	0.15	0.3
	25	10,000	450	0.2	0.84	8,500	300	0.15	0.42	6,500	250	0.15	0.3	6,500	250	0.09	0.15
	30	9,000	375	0.2	0.84	7,500	250	0.15	0.42	6,000	200	0.15	0.3	6,000	200	0.09	0.15

shaping your dreams

CUTTING CONDITIONS FOR CARBIDE END MILLS

WXL-LN-EBD

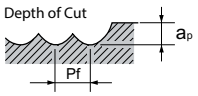


WXL 2 FLUTES BALL-END LONG NECK
REGULAR MILLING

Work Material		Copper・Copper Alloy				Mild Steel・Carbon Steel FC250・SS400・S55C ~32HRC				Hardened Steel・Prehardened Steel SKT・SKD61・NAK55・NAK80・HPM1・DH＊＊ 33~41HRC				Hardened Steel・Prehardened Steel SKT・SKD61・NAK55・NAK80・HPM1・DH＊＊ 42~50HRC			
R	ℓ2 (mm)	Speed (min-1)	Feed (mm/min)	Depth of Cut (mm) ap	Depth of Cut (mm) Pf	Speed (min-1)	Feed (mm/min)	Depth of Cut (mm) ap	Depth of Cut (mm) Pf	Speed (min-1)	Feed (mm/min)	Depth of Cut (mm) ap	Depth of Cut (mm) Pf	Speed (min-1)	Feed (mm/min)	Depth of Cut (mm) ap	Depth of Cut (mm) Pf
1.5	35	9,000	375	0.2	0.84	7,500	250	0.15	0.42	6,000	200	0.15	0.3	6,000	200	0.09	0.15
	40	9,000	375	0.2	0.84	7,500	250	0.15	0.42	6,000	200	0.15	0.3	6,000	200	0.09	0.15
1.75	10	10,000	1,050	0.4	0.98	8,500	700	0.15	0.49	6,500	500	0.15	0.42	6,500	500	0.15	0.35
	15	10,000	900	0.4	0.98	8,500	600	0.15	0.49	6,500	400	0.15	0.42	6,500	400	0.15	0.35
	20	8,000	750	0.4	0.98	7,500	500	0.15	0.49	5,500	300	0.15	0.42	5,500	300	0.15	0.35
	25	8,000	600	0.4	0.98	7,500	400	0.15	0.49	5,500	275	0.15	0.42	5,500	275	0.15	0.35
	30	8,000	450	0.4	0.98	7,500	300	0.15	0.49	5,500	250	0.15	0.35	5,500	250	0.1	0.2
	35	8,000	375	0.4	0.98	6,000	250	0.15	0.49	5,000	200	0.15	0.35	5,000	200	0.1	0.2
	40	6,000	375	0.3	0.98	6,000	250	0.15	0.49	5,000	200	0.15	0.35	5,000	200	0.1	0.2
	45	6,000	375	0.3	0.98	6,000	250	0.15	0.49	5,000	200	0.15	0.35	5,000	200	0.1	0.2
2	8	11,000	1,200	0.5	1.28	7,500	800	0.2	0.64	6,000	700	0.2	0.6	6,000	700	0.2	0.4
	10	9,000	900	0.5	1.28	7,500	600	0.2	0.64	6,000	400	0.2	0.6	6,000	400	0.2	0.4
	12	9,000	900	0.5	1.28	7,500	600	0.2	0.64	6,000	400	0.2	0.6	6,000	400	0.2	0.4
	14	9,000	900	0.5	1.28	7,500	600	0.2	0.64	6,000	400	0.2	0.6	6,000	400	0.2	0.4
	15	9,000	900	0.5	1.28	7,500	600	0.2	0.64	6,000	400	0.2	0.6	6,000	400	0.2	0.4
	16	9,000	900	0.5	1.28	7,500	600	0.2	0.64	6,000	400	0.2	0.6	6,000	400	0.2	0.4
	20	7,000	600	0.5	1.28	6,000	400	0.2	0.64	5,000	250	0.2	0.6	5,000	250	0.2	0.4
	25	7,000	600	0.5	1.28	6,000	400	0.2	0.64	5,000	250	0.2	0.6	5,000	250	0.2	0.4
	30	7,000	600	0.4	1.28	6,000	400	0.2	0.64	5,000	250	0.2	0.56	5,000	250	0.12	0.2
	35	7,000	600	0.4	1.28	6,000	400	0.2	0.64	5,000	250	0.2	0.56	5,000	250	0.12	0.2
	40	5,000	375	0.35	1.28	5,000	250	0.2	0.64	4,000	200	0.2	0.56	4,000	200	0.12	0.2
	45	5,000	375	0.35	1.28	5,000	250	0.2	0.64	4,000	200	0.2	0.56	4,000	200	0.12	0.2
	50	5,000	375	0.35	1.28	5,000	250	0.2	0.64	4,000	200	0.2	0.56	4,000	200	0.12	0.2
2.5	10	9,000	1,350	0.6	1.8	6,500	900	0.25	0.9	5,000	750	0.25	0.7	5,000	750	0.25	0.5
	15	9,000	1,350	0.6	1.8	6,500	900	0.25	0.9	5,000	750	0.25	0.7	5,000	750	0.25	0.5
	20	7,000	750	0.6	1.8	6,500	500	0.25	0.9	5,000	400	0.25	0.7	5,000	400	0.25	0.5
	25	6,000	750	0.6	1.8	5,000	500	0.25	0.9	4,000	250	0.25	0.7	4,000	250	0.25	0.5
	30	6,000	750	0.6	1.8	5,000	500	0.25	0.9	4,000	250	0.25	0.7	4,000	250	0.25	0.5
	35	6,000	750	0.6	1.8	5,000	500	0.25	0.9	4,000	250	0.25	0.7	4,000	250	0.25	0.5
	40	5,000	600	0.4	1.8	4,000	400	0.25	0.9	4,000	200	0.25	0.6	4,000	200	0.2	0.25
	45	5,000	600	0.4	1.8	4,000	400	0.25	0.9	4,000	200	0.25	0.6	4,000	200	0.2	0.25
	50	5,000	450	0.4	1.8	4,000	300	0.25	0.9	4,000	200	0.25	0.6	4,000	200	0.2	0.25
3	10	7,000	1,500	0.75	2.4	5,500	1,000	0.3	1.2	4,500	800	0.3	0.96	4,500	800	0.3	0.6
	20	7,000	1,200	0.75	2.4	5,500	800	0.3	1.2	4,500	600	0.3	0.96	4,500	600	0.3	0.6
	25	6,000	900	0.75	2.4	5,500	600	0.3	1.2	4,500	400	0.3	0.96	4,500	400	0.3	0.6
	30	5,000	600	0.75	2.4	4,000	400	0.3	1.2	4,000	300	0.3	0.96	4,000	300	0.3	0.6
	35	5,000	600	0.75	2.4	4,000	400	0.3	1.2	4,000	300	0.3	0.96	4,000	300	0.3	0.6
	40	5,000	600	0.6	2.4	4,000	400	0.3	1.2	4,000	300	0.3	0.96	4,000	300	0.3	0.6
	45	5,000	600	0.6	2.4	4,000	400	0.3	1.2	4,000	300	0.3	0.96	4,000	300	0.3	0.6
	50	5,000	600	0.6	2.4	4,000	400	0.3	1.2	4,000	300	0.3	0.96	4,000	300	0.3	0.3
0.05	0.3	50,000	280	0.003	0.005	50,000	150	0.003	0.003	50,000	100	0.003	0.003	50,000	70	0.003	0.003
	0.5	50,000	220	0.003	0.005	50,000	120	0.003	0.003	50,000	80	0.003	0.003	50,000	50	0.003	0.003
0.1	0.3	50,000	490	0.0075	0.01	50,000	400	0.005	0.005	50,000	380	0.005	0.005	50,000	380	0.005	0.005
	0.5	50,000	490	0.0075	0.01	50,000	400	0.005	0.005	50,000	380	0.005	0.005	50,000	380	0.005	0.005
	0.75	50,000	440	0.0075	0.01	50,000	360	0.005	0.005	50,000	340	0.005	0.005	50,000	340	0.005	0.005
	1	50,000	440	0.0075	0.01	50,000	360	0.005	0.005	50,000	340	0.005	0.005	50,000	340	0.005	0.005
	1.25	50,000	390	0.0075	0.01	47,000	320	0.005	0.005	47,000	300	0.005	0.005	47,000	300	0.005	0.005
	1.5	50,000	360	0.0075	0.01	45,000	300	0.005	0.005	45,000	280	0.005	0.005	45,000	280	0.005	0.005
	1.75	50,000	350	0.0075	0.01	42,000	260	0.005	0.005	42,000	240	0.005	0.005	42,000	240	0.005	0.005
	2	50,000	320	0.0075	0.01	38,000	230	0.005	0.005	38,000	210	0.005	0.005	37,000	200	0.005	0.005
	2.5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
0.15	0.5	50,000	750	0.0075	0.02	50,000	620	0.005	0.01	50,000	600	0.005	0.01	50,000	600	0.005	0.01
	0.6	50,000	730	0.0075	0.02	50,000	600	0.005	0.01	50,000	570	0.005	0.01	50,000	570	0.005	0.01
	0.75	50,000	730	0.0075	0.02	50,000	600	0.005	0.01	50,000	570	0.005	0.01	50,000	570	0.005	0.01
	1	50,000	730	0.0075	0.02	50,000	600	0.005	0.01	50,000	570	0.005	0.01	50,000	570	0.005	0.01

CUTTING CONDITIONS FOR CARBIDE END MILLS

WXL-LN-EBD



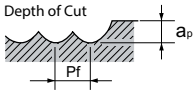
WXL 2 FLUTES BALL-END LONG NECK
REGULAR MILLING

Work Material		Copper・Copper Alloy				Mild Steel・Carbon Steel FC250・SS400・S55C ~32HRC				Hardened Steel・Prehardened Steel SKT・SKD61・NAK55・NAK80・HPM1・DH＊＊ 33~41HRC				Hardened Steel・Prehardened Steel SKT・SKD61・NAK55・NAK80・HPM1・DH＊＊ 42~50HRC			
R	ℓ2 (mm)	Speed (min-1)	Feed (mm/min)	Depth of Cut (mm) ap	Depth of Cut (mm) Pf	Speed (min-1)	Feed (mm/min)	Depth of Cut (mm) ap	Depth of Cut (mm) Pf	Speed (min-1)	Feed (mm/min)	Depth of Cut (mm) ap	Depth of Cut (mm) Pf	Speed (min-1)	Feed (mm/min)	Depth of Cut (mm) ap	Depth of Cut (mm) Pf
0.15	1.25	50,000	730	0.0075	0.02	50,000	600	0.005	0.01	50,000	570	0.005	0.01	50,000	570	0.005	0.01
	1.5	50,000	730	0.0075	0.02	50,000	600	0.005	0.01	50,000	570	0.005	0.01	50,000	570	0.005	0.01
	1.75	50,000	610	0.0075	0.02	47,000	510	0.005	0.01	47,000	480	0.005	0.01	47,000	480	0.005	0.01
	2	50,000	580	0.0075	0.01	45,000	480	0.005	0.005	45,000	450	0.005	0.005	45,000	450	0.005	0.005
	2.25	50,000	490	0.0075	0.01	45,000	400	0.005	0.005	45,000	380	0.005	0.005	45,000	380	0.005	0.005
	2.5	50,000	360	0.0075	0.01	40,000	300	0.005	0.005	40,000	280	0.005	0.005	40,000	280	0.005	0.005
	2.75	50,000	320	0.0075	0.01	38,000	250	0.005	0.005	38,000	230	0.005	0.005	38,000	230	0.005	0.005
	3	50,000	290	0.0075	0.01	38,000	250	0.005	0.005	38,000	230	0.005	0.005	37,000	230	0.005	0.005
	3.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	4.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
0.2	0.5	50,000	1,100	0.015	0.04	50,000	920	0.01	0.02	50,000	870	0.01	0.02	50,000	870	0.01	0.02
	0.75	50,000	1,090	0.015	0.04	50,000	900	0.01	0.02	50,000	850	0.01	0.02	50,000	850	0.01	0.02
	1	50,000	1,090	0.015	0.04	50,000	900	0.01	0.02	50,000	850	0.01	0.02	50,000	850	0.01	0.02
	1.5	50,000	970	0.015	0.04	50,000	800	0.01	0.02	50,000	760	0.01	0.02	50,000	760	0.01	0.02
	2	50,000	850	0.015	0.04	50,000	700	0.01	0.02	50,000	660	0.01	0.02	50,000	660	0.01	0.02
	2.5	50,000	670	0.012	0.03	45,000	550	0.008	0.015	45,000	520	0.008	0.015	45,000	520	0.008	0.015
	3	48,000	540	0.0075	0.02	43,000	500	0.005	0.01	43,000	470	0.005	0.01	43,000	470	0.005	0.01
	3.5	45,000	460	0.0075	0.02	40,000	420	0.005	0.01	40,000	400	0.005	0.01	40,000	400	0.005	0.01
	4	40,000	400	0.0075	0.01	36,000	370	0.005	0.005	36,000	350	0.005	0.005	35,000	340	0.005	0.005
	4.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	5.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
0.25	1	50,000	1,420	0.0225	0.045	50,000	1,100	0.015	0.03	50,000	1,050	0.015	0.03	50,000	1,050	0.015	0.03
	1.5	50,000	1,420	0.0225	0.045	50,000	1,100	0.015	0.03	50,000	1,050	0.015	0.03	50,000	1,050	0.015	0.03
	2	50,000	1,400	0.0225	0.045	50,000	1,000	0.015	0.03	50,000	950	0.015	0.03	50,000	950	0.015	0.03
	2.5	50,000	1,380	0.0225	0.045	50,000	1,000	0.015	0.03	50,000	950	0.015	0.03	50,000	950	0.015	0.03
	3	50,000	1,190	0.015	0.04	48,000	900	0.01	0.02	48,000	850	0.01	0.02	48,000	850	0.01	0.02
	3.5	50,000	1,140	0.015	0.04	45,000	700	0.01	0.02	45,000	650	0.01	0.02	45,000	650	0.01	0.02
	4	45,000	1,000	0.015	0.02	43,000	600	0.01	0.01	43,000	570	0.01	0.01	43,000	570	0.01	0.01
	4.5	38,000	940	0.015	0.02	38,000	500	0.01	0.01	38,000	470	0.01	0.01	38,000	470	0.01	0.01
	5	30,000	760	0.0075	0.02	30,000	400	0.005	0.01	30,000	380	0.005	0.01	29,000	360	0.005	0.01
	5.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	9	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
0.3	1	50,000	1,660	0.045	0.1	50,000	1,400	0.03	0.05	50,000	1,300	0.03	0.05	50,000	1,300	0.03	0.05
	1.5	50,000	1,600	0.045	0.1	50,000	1,300	0.03	0.05	50,000	1,200	0.03	0.05	50,000	1,200	0.03	0.05
	2	50,000	1,600	0.045	0.1	50,000	1,300	0.03	0.05	50,000	1,200	0.03	0.05	50,000	1,200	0.03	0.05
	2.5	50,000	1,550	0.045	0.1	50,000	1,200	0.03	0.05	50,000	1,100	0.03	0.05	50,000	1,100	0.03	0.05
	3	50,000	1,550	0.03	0.06	50,000	1,200	0.02	0.03	50,000	1,100	0.02	0.03	50,000	1,100	0.02	0.03
	3.5	50,000	1,340	0.03	0.06	45,000	1,000	0.02	0.03	45,000	950	0.02	0.03	45,000	950	0.02	0.03
	4	50,000	1,200	0.015	0.04	40,000	900	0.01	0.02	40,000	850	0.01	0.02	40,000	850	0.01	0.02
	4.5	45,000	1,040	0.015	0.04	34,000	780	0.01	0.02	34,000	740	0.01	0.02	34,000	740	0.01	0.02
	5	30,000	960	0.015	0.04	30,000	680	0.01	0.02	30,000	640	0.01	0.02	30,000	640	0.01	0.02
	5.5	30,000	820	0.015	0.04	28,000	650	0.01	0.02	28,000	610	0.01	0.02	28,000	610	0.01	0.02
	6	30,000	720	0.015	0.04	26,000	600	0.01	0.02	26,000	570	0.01	0.02	25,000	540	0.01	0.02
	6.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	7.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	8.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

shaping your dreams

CUTTING CONDITIONS FOR CARBIDE END MILLS

WXL-LN-EBD

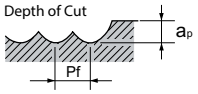


WXL 2 FLUTES BALL-END LONG NECK
REGULAR MILLING

Work Material		Copper・Copper Alloy				Mild Steel・Carbon Steel FC250・SS400・S55C ~32HRC				Hardened Steel・Prehardened Steel SKT・SKD61・NAK55・NAK80・HPM1・DH＊＊ 33~41HRC				Hardened Steel・Prehardened Steel SKT・SKD61・NAK55・NAK80・HPM1・DH＊＊ 42~50HRC			
R	ℓ2 (mm)	Speed (min-1)	Feed (mm/min)	Depth of Cut (mm) ap	Depth of Cut (mm) Pf	Speed (min-1)	Feed (mm/min)	Depth of Cut (mm) ap	Depth of Cut (mm) Pf	Speed (min-1)	Feed (mm/min)	Depth of Cut (mm) ap	Depth of Cut (mm) Pf	Speed (min-1)	Feed (mm/min)	Depth of Cut (mm) ap	Depth of Cut (mm) Pf
0.3	9	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	9.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	11	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	12	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
0.4	2	50,000	2,200	0.06	0.16	50,000	2,000	0.04	0.08	50,000	1,900	0.04	0.08	50,000	1,900	0.04	0.08
	3	50,000	1,740	0.06	0.16	48,000	1,600	0.04	0.08	48,000	1,500	0.04	0.08	48,000	1,500	0.04	0.08
	4	50,000	1,680	0.06	0.16	40,000	1,200	0.04	0.08	40,000	1,100	0.04	0.08	40,000	1,100	0.04	0.08
	5	43,000	1,600	0.045	0.1	34,000	950	0.03	0.05	34,000	900	0.03	0.05	34,000	900	0.03	0.05
	6	32,000	1,260	0.045	0.1	30,000	800	0.03	0.05	30,000	760	0.03	0.05	30,000	760	0.03	0.05
	7	30,000	1,000	0.02	0.08	25,000	600	0.01	0.02	25,000	570	0.01	0.02	25,000	570	0.01	0.02
	8	24,000	720	0.01	0.04	23,000	450	0.005	0.01	23,000	420	0.005	0.01	23,000	420	0.005	0.01
	9	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	12	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
0.5	2.5	50,000	3,270	0.075	0.2	50,000	3,400	0.05	0.1	50,000	3,200	0.05	0.1	50,000	3,200	0.05	0.1
	3	50,000	3,060	0.075	0.2	45,000	3,200	0.05	0.1	45,000	3,000	0.05	0.1	45,000	3,000	0.05	0.1
0.5	4	50,000	3,000	0.075	0.2	40,000	3,000	0.05	0.1	40,000	2,850	0.05	0.1	40,000	2,850	0.05	0.1
	5	47,000	2,870	0.075	0.2	36,000	2,300	0.05	0.1	36,000	2,100	0.05	0.1	36,000	2,100	0.05	0.1
	6	43,000	2,600	0.075	0.2	30,000	2,000	0.05	0.1	30,000	1,900	0.05	0.1	30,000	1,900	0.05	0.1
	7	30,000	2,350	0.075	0.15	27,000	1,700	0.05	0.1	27,000	1,600	0.05	0.1	27,000	1,600	0.05	0.1
	8	27,000	2,000	0.075	0.15	26,000	1,600	0.05	0.1	26,000	1,500	0.05	0.1	26,000	1,500	0.05	0.1
	9	26,000	1,540	0.045	0.075	24,000	1,200	0.03	0.05	24,000	1,100	0.03	0.05	24,000	1,100	0.03	0.05
	10	24,000	1,400	0.015	0.04	22,000	1,100	0.01	0.02	22,000	1,000	0.01	0.02	21,000	950	0.01	0.02
	12	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	14	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	16	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	18	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	20	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	22	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
0.6	4	40,000	3,000	0.12	0.21	40,000	3,000	0.06	0.12	40,000	2,850	0.06	0.12	40,000	2,850	0.06	0.12
	6	35,000	2,600	0.09	0.21	32,000	2,100	0.06	0.12	32,000	2,000	0.06	0.12	32,000	2,000	0.06	0.12
	8	30,000	2,000	0.09	0.21	25,000	1,700	0.06	0.12	25,000	1,600	0.06	0.12	25,000	1,600	0.06	0.12
	10	21,000	1,400	0.075	0.12	20,000	1,200	0.05	0.1	20,000	1,100	0.05	0.1	18,000	990	0.05	0.1
	12	20,000	1,000	0.045	0.1	19,000	900	0.03	0.05	17,000	850	0.03	0.05	16,000	800	0.03	0.05
	14	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	16	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	18	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	20	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	24	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
0.7	8	30,000	2,100	0.14	0.245	25,000	1,700	0.07	0.14	25,000	1,600	0.07	0.14	25,000	1,600	0.07	0.14
	12	22,000	1,210	0.06	0.14	19,000	1,000	0.03	0.07	19,000	950	0.03	0.07	19,000	950	0.03	0.07
	16	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
0.75	3	50,000	5,330	0.15	0.3	50,000	4,800	0.075	0.15	50,000	4,800	0.075	0.15	50,000	4,800	0.075	0.15
	4	42,000	4,110	0.15	0.3	40,000	3,900	0.075	0.15	40,000	3,700	0.075	0.15	40,000	3,700	0.075	0.15
	6	32,000	3,000	0.15	0.3	30,000	2,900	0.075	0.15	30,000	2,700	0.075	0.15	30,000	2,700	0.075	0.15
	8	30,000	2,650	0.15	0.3	24,000	2,300	0.075	0.15	24,000	2,100	0.075	0.15	24,000	2,100	0.075	0.15
	10	30,000	2,400	0.15	0.3	24,000	2,000	0.075	0.15	24,000	1,900	0.075	0.15	24,000	1,900	0.075	0.15
	12	24,000	1,400	0.15	0.2	21,000	1,400	0.075	0.1	21,000	1,300	0.075	0.1	21,000	1,300	0.075	0.1
	14	22,000	1,400	0.1	0.2	18,000	1,200	0.05	0.1	18,000	1,100	0.05	0.1	17,000	1,100	0.05	0.1
	16	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	18	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	20	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	22	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	30	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

CUTTING CONDITIONS FOR CARBIDE END MILLS

WXL-LN-EBD



WXL 2 FLUTES BALL-END LONG NECK
REGULAR MILLING

Work Material		Copper・Copper Alloy				Mild Steel・Carbon Steel FC250・SS400・S55C ~32HRC				Hardened Steel・Prehardened Steel SKT・SKD61・NAK55・NAK80・HPM1・DH＊＊ 33~41HRC				Hardened Steel・Prehardened Steel SKT・SKD61・NAK55・NAK80・HPM1・DH＊＊ 42~50HRC			
R	ℓ2 (mm)	Speed (min-1)	Feed (mm/min)	Depth of Cut (mm) ap	Depth of Cut (mm) Pf	Speed (min-1)	Feed (mm/min)	Depth of Cut (mm) ap	Depth of Cut (mm) Pf	Speed (min-1)	Feed (mm/min)	Depth of Cut (mm) ap	Depth of Cut (mm) Pf	Speed (min-1)	Feed (mm/min)	Depth of Cut (mm) ap	Depth of Cut (mm) Pf
2	15	20,000	4,000	0.4	1	20,000	3,600	0.2	0.5	20,000	3,400	0.2	0.5	16,000	2,700	0.2	0.5
	16	20,000	3,460	0.4	0.6	18,000	3,200	0.2	0.5	18,000	3,000	0.2	0.5	14,000	2,300	0.2	0.5
	20	18,000	3,000	0.4	0.5	16,000	2,800	0.2	0.4	16,000	2,600	0.2	0.4	12,000	1,900	0.2	0.4
	25	18,000	3,000	0.25	0.6	16,000	2,800	0.1	0.3	16,000	2,600	0.1	0.3	12,000	1,900	0.1	0.3
	30	16,000	2,850	0.25	0.4	14,000	2,400	0.1	0.2	14,000	2,200	0.1	0.2	11,000	1,700	0.1	0.2
	35	14,000	2,200	0.25	0.4	12,000	1,800	0.1	0.2	12,000	1,700	0.1	0.2	9,000	1,700	0.1	0.2
	40	12,000	1,600	0.125	0.2	10,000	1,300	0.05	0.1	10,000	1,200	0.05	0.1	7,000	840	0.05	0.1
	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2.5	10	25,000	5,600	0.5	1.25	25,000	5,400	0.25	0.5	25,000	5,400	0.25	0.5	19,000	4,000	0.25	0.5
	15	20,000	4,400	0.5	1.25	20,000	4,200	0.25	0.5	20,000	3,900	0.25	0.5	16,000	3,100	0.25	0.5
	20	18,000	3,800	0.5	1.25	16,000	3,500	0.25	0.5	16,000	3,300	0.25	0.5	12,000	2,400	0.25	0.5
	25	20,000	3,400	0.4	0.75	15,000	3,200	0.2	0.3	15,000	3,000	0.2	0.3	12,000	2,400	0.2	0.3
	30	16,000	2,900	0.25	0.75	14,000	2,500	0.1	0.3	14,000	2,300	0.1	0.3	11,000	1,800	0.1	0.3
	35	14,000	2,200	0.25	0.75	12,000	1,600	0.1	0.3	12,000	1,500	0.1	0.3	9,000	1,100	0.1	0.3
	40	12,000	1,800	0.25	0.5	10,000	1,200	0.1	0.2	10,000	1,100	0.1	0.2	8,000	880	0.1	0.2
	45	9,000	1,200	0.2	0.25	9,000	900	0.1	0.1	9,000	850	0.1	0.1	7,000	660	0.1	0.1
	50	8,000	1,100	0.2	0.25	8,000	800	0.1	0.1	8,000	760	0.1	0.1	6,000	570	0.1	0.1
3	10	22,000	5,900	0.75	1.25	20,000	5,400	0.3	0.5	20,000	5,000	0.3	0.5	15,000	3,750	0.3	0.5
	20	18,000	4,400	0.75	1.25	16,000	4,200	0.3	0.5	16,000	3,900	0.3	0.5	12,000	2,900	0.3	0.5
	25	14,000	4,000	0.6	1.25	12,000	3,200	0.3	0.5	12,000	3,000	0.3	0.5	9,000	2,250	0.3	0.5
	30	10,000	3,200	0.6	1.25	10,000	2,600	0.3	0.5	10,000	2,400	0.3	0.5	8,000	1,900	0.3	0.5
	35	9,000	3,000	0.4	1	9,000	2,300	0.2	0.4	9,000	2,100	0.2	0.4	7,000	1,600	0.2	0.4
	40	9,000	2,800	0.4	0.75	9,000	2,000	0.2	0.3	9,000	1,900	0.2	0.3	7,000	1,400	0.2	0.3
	45	8,000	2,500	0.4	0.75	8,000	1,800	0.2	0.3	8,000	1,700	0.2	0.3	6,500	1,300	0.2	0.3
	50	7,000	2,300	0.4	0.75	7,000	1,600	0.2	0.3	7,000	1,500	0.2	0.3	5,500	1,100	0.2	0.3

1. Use a rigid and precise machine and holder.
2. When machining carbon steels or hardened steels, using MQL (Minimum Quantity Lubrication / oil mist coolant) or air blow is recommended.
3. Use an air blow or a suitable cutting fluid with high smoke retardant properties.
4. The above cutting conditions are for contouring operation with low-load and stable condition. Refer to the table above to set the milling conditions in accordance with the actual situation.
5. Please adjust conditions based on machining accuracy, machining shape and machining path.
6. When using a tool with a diameter of φ 0.5 (R0.25) or less, or L/D (aspect ratio) is greater than 10, high loads can cause tool breakage. Therefore, adjust the cutting conditions based on the machining situation.
7. When RPM are insufficient, please reduce the RPM and feed rates at the same ratio as listed above.

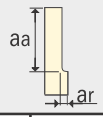
shaping your dreams

CUTTING CONDITIONS FOR CARBIDE END MILLS

Series 402, 404

Side Milling (Metric)

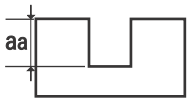
Hardness							Up to 30 HRC		30 to 40 HRC		40 to 50 HRC	
Work Material	Aluminum		Cast Iron		Mild Carbon Steels Mild Steels		Prehardened Steels Die & Alloy Steels		Prehardened Steels Die & Alloy Steels		Hardened Steels	
Cutting Speed	100-120 m/min		30-45 m/min		30-45 m/min		25-35 m/min		25-35 m/min		15 m/min	
Depth of Cut	a_a=1.5D a_r=0.1D											
Mill Dia.	Speed min^{-1}	Feed mm/min	Speed min^{-1}	Feed mm/min	Speed min^{-1}	Feed mm/min	Speed min^{-1}	Feed mm/min	Speed min^{-1}	Feed mm/min	Speed min^{-1}	Feed mm/min
0.5	62,000	450	22,400	125	22,000	60	16,000	35	16,000	18	9,500	10
0.8	40,000	450	16,000	125	14,000	60	10,000	35	10,000	18	6,000	10
1.0	31,500	450	14,000	175	11,000	85	8,000	60	8,000	35	4,800	14
1.5	21,200	450	9,500	175	7,500	85	5,300	60	5,400	35	3,200	14
2.0	16,000	450	7,100	250	5,500	85	4,000	60	4,000	35	2,400	14
3.0	12,500	450	4,750	300	4,500	150	3,550	120	3,150	45	1,600	25
4.0	9,500	475	3,550	300	3,550	175	2,650	120	2,360	45	1,200	25
5.0	7,500	475	2,800	300	2,800	200	2,120	125	1,900	45	950	25
6.0	6,300	475	2,360	300	2,360	200	1,700	125	1,600	45	800	25
8.0	4,750	500	1,800	300	1,800	200	1,320	125	1,180	45	600	25
10	3,750	500	1,400	315	1,400	225	1,060	125	950	45	480	25
12	3,150	560	1,180	315	1,180	225	850	125	800	45	400	25
16	2,360	560	900	375	900	250	670	140	600	45	300	25
20	1,900	560	710	375	710	250	530	150	475	45	240	25
25	1,500	500	560	375	560	250	425	140	375	35	190	20



Slotting (Metric)

Hardness							Up to 30 HRC		30 to 40 HRC		40 to 50 HRC	
Work Material	Aluminum		Cast Iron		Mid Carbon Steels Mid Steeels		Prehardened Steels Die & Alloy Steels		Prehardened Steels Die & Alloy Steels		Hardened Steels	
Cutting Speed	100 - 120 m/min		30 - 45 m/min		30 - 45 m/min		25 - 35 m/min		25 - 35 m/min		15 m/min	
Depth of Cut												
Mill Dia.	Speed min^{-1}	Feed mm/min	Speed min^{-1}	Feed mm/min	Speed min^{-1}	Feed mm/min	Speed min^{-1}	Feed mm/min	Speed min^{-1}	Feed mm/min	Speed min^{-1}	Feed mm/min
0.3	100,000	180	31,500	100	30,000	35	22,400	18	21,200	13	16,000	7
0.5	62,000	200	22,400	125	19,000	40	13,000	20	12,000	15	9,500	8
0.8	40,000	200	16,000	125	14,000	63	8,000	25	8,000	15	6,000	8
1.0	31,500	200	14,000	140	12,500	75	7,500	30	7,000	15	4,800	8
1.5	21,200	200	9,500	140	8,500	90	6,500	35	5,000	20	3,200	11
2.0	16,000	300	7,100	150	6,300	100	5,000	60	4,000	30	2,400	16
3.0	11,200	300	4,750	160	4,250	100	3,200	80	2,600	30	1,600	16
4.0	8,000	300	3,550	160	3,150	100	2,400	80	2,000	30	1,200	16
5.0	6,300	300	2,800	160	2,500	100	2,000	80	1,600	30	950	16
6.0	5,300	300	2,360	200	2,120	100	1,600	80	1,300	30	800	16
8.0	4,000	300	1,800	236	1,600	100	1,200	80	1,000	30	600	16
10	3,150	300	1,400	236	1,250	100	1,000	80	800	30	480	16
12	2,650	300	1,180	236	1,060	100	820	80	700	30	400	16
16	2,000	300	900	236	800	100	640	85	500	37	300	12
20	1,600	300	710	236	630	100	500	85	400	37	240	10
25	1,250	300	560	236	500	100	400	85	320	37	190	8

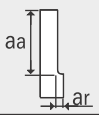
	a_a
D<0.70	.25D
0.8<D<20	.5D
2.5<D1	D



CUTTING CONDITIONS FOR CARBIDE END MILLS

Series 462, 482

Side Milling (Metric)

Hardness							Up to 30 HRC		30 to 40 HRC		40 to 50 HRC	
Work Material	Aluminum		Cast Iron		Mid Carbon Steels Mid Steeels		Prehardened Steels Die & Alloy Steels		Prehardened Steels Die & Alloy Steels		Hardened Steels	
Cutting Speed	100-120 m/min		30-45 m/min		30-45 m/min		25-35 m/min		25-35 m/min		15 m/min	
Depth of Cut	aa=1.5D ar=0.1D											
Mill Dia.	Speed min^{-1}	Feed mm/min	Speed min^{-1}	Feed mm/min	Speed min^{-1}	Feed mm/min	Speed min^{-1}	Feed mm/min	Speed min^{-1}	Feed mm/min	Speed min^{-1}	Feed mm/min
0.3	100,000	400	31,500	100	30,000	50	25,000	30	25,000	15	16,000	8
0.5	62,000	450	22,400	125	22,000	60	16,000	35	16,000	18	9,500	10
0.8	40,000	450	16,000	125	14,000	60	10,000	35	10,000	18	6,000	10
1.0	31,500	450	14,000	175	11,000	85	8,000	60	8,000	35	4,800	14
1.5	21,200	450	9,500	175	7,500	85	5,300	60	5,400	35	3,200	14
2.0	16,000	450	7,100	250	5,500	85	4,000	60	4,000	35	2,400	14
3.0	12,500	450	4,750	300	4,500	150	3,550	120	3,150	45	1,600	25
4.0	9,500	475	3,550	300	3,550	175	2,650	120	2,360	45	1,200	25
5.0	7,500	475	2,800	300	2,800	200	2,120	125	1,900	45	950	25
6.0	6,300	475	2,360	300	2,360	200	1,700	125	1,600	45	800	25
8.0	4,750	500	1,800	300	1,800	200	1,320	125	1,180	45	600	25
10	3,750	500	1,400	315	1,400	225	1,060	125	950	45	480	25
12	3,150	560	1,180	315	1,180	225	850	125	800	45	400	25
16	2,360	560	900	375	900	250	670	140	600	45	300	25
20	1,900	560	710	375	710	250	530	150	475	45	240	25
25	1,500	500	560	375	560	250	425	140	375	35	190	20

Slotting (Metric)

Hardness							Up to 30 HRC		30 to 40 HRC		40 to 50 HRC	
Work Material	Aluminum		Cast Iron		Mid Carbon Steels Mid Steeels		Prehardened Steels Die & Alloy Steels		Prehardened Steels Die & Alloy Steels		Hardened Steels	
Cutting Speed	100 m/min		30-45 m/min		30-40 m/min		20-30 m/min		20-25 m/min		15 m/min	
Depth of Cut												
Mill Dia.	Speed min^{-1}	Feed mm/min	Speed min^{-1}	Feed mm/min	Speed min^{-1}	Feed mm/min	Speed min^{-1}	Feed mm/min	Speed min^{-1}	Feed mm/min	Speed min^{-1}	Feed mm/min
0.3	100,000	180	31,500	100	30,000	35	22,400	18	21,200	13	16,000	7
0.5	62,000	200	22,400	125	19,000	40	13,000	20	12,000	15	9,500	8
0.8	40,000	200	16,000	125	14,000	63	8,000	25	8,000	15	6,000	8
1.0	31,500	200	14,000	140	12,500	75	7,500	30	7,000	15	4,800	8
1.5	21,200	200	9,500	140	8,500	90	6,500	35	5,000	20	3,200	11
2.0	16,000	300	7,100	150	6,300	100	5,000	60	4,000	30	2,400	16
3.0	11,200	300	4,750	160	4,250	100	3,200	80	2,600	30	1,600	16
4.0	8,000	300	3,550	160	3,150	100	2,400	80	2,000	30	1,200	16
5.0	6,300	300	2,800	160	2,500	100	2,000	80	1,600	30	950	16
6.0	5,300	300	2,360	200	2,120	100	1,600	80	1,300	30	800	16
8.0	4,000	300	1,800	236	1,600	100	1,200	80	1,000	30	600	16
10	3, 150	300	1,400	236	1,250	100	1,000	80	800	30	480	16
12	2,650	300	1,180	236	1,060	100	820	80	700	30	400	16
16	2,000	300	900	236	800	100	640	85	500	37	300	12
20	1,600	300	710	236	630	100	500	85	400	37	240	10
25	1,250	300	560	236	500	100	400	85	320	37	190	8

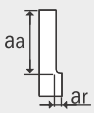
	aa
D<0.70	.25D
0.8<D<20	.5D
2.5< D	1D

shaping your dreams

CUTTING CONDITIONS FOR CARBIDE END MILLS

Series 464, 484

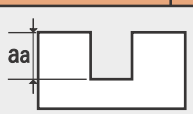
Side Milling (Metric)

Hardness					Up to 30 HRC		30 to 40 HRC		40 to 50 HRC	
Work Material	Aluminum		Cast Iron		Mid Carbon Steels Mid Steeels		Prehardened Steels Die & Alloy Steels		Prehardened Steels Die & Alloy Steels		Hardened Steels	
Cutting Speed	100-120 m/min		30-45 m/min		30-45 m/min		25-35 m/min		25-35 m/min		15 m/min	
Depth of Cut	aa=1.5D ar =0.1D											
Mill Dia.	Speed min^{-1}	Feed mm/min	Speed min^{-1}	Feed mm/min	Speed min^{-1}	Feed mm/min	Speed min^{-1}	Feed mm/min	Speed min^{-1}	Feed mm/min	Speed min^{-1}	Feed mm/min
0.8	40,000	630	16,000	175	14,000	85	10,000	50	10,000	25	6,000	14
1.0	31,500	630	14,000	245	11,000	120	8,000	85	8,000	50	4,800	20
1.5	21,200	630	9,500	245	7,500	120	5,300	85	5,400	50	3,200	20
2.0	16,000	630	7,100	350	5,500	120	4,000	85	4,000	50	2,400	20
3.0	12,500	630	4,750	420	4,500	210	3,550	170	3,150	63	1,600	35
4.0	9,500	665	3,550	420	3,550	245	2,650	170	2,360	63	1,200	35
5.0	7,500	665	2,800	420	2,800	280	2,120	170	1,900	63	950	35
6.0	6,300	665	2,360	420	2,360	280	1,700	170	1,600	63	800	35
8.0	4,750	700	1,800	420	1,800	280	1,320	170	1,180	63	600	35
10	3,750	700	1,400	440	1,400	310	1,060	170	950	63	480	35
12	3,150	780	1,180	440	1,180	310	850	170	800	63	400	35
16	2,360	780	900	525	900	350	670	200	600	63	300	35
20	1,900	780	710	525	710	350	530	210	475	63	240	35
25	1,500	700	560	525	560	350	425	200	375	50	190	28

Slotting (Metric)

Hardness					Up to 30 HRC		30 to 40 HRC		40 to 50 HRC	
Work Material	Aluminum		Cast Iron		Mid Carbon Steels Mid Steeels		Prehardened Steels Die & Alloy Steels		Prehardened Steels Die & Alloy Steels		Hardened Steels	
Cutting Speed	100 m/min		30-45 m/min		30-40 m/min		20-30 m/min		20-25 m/min		15 m/min	
Depth of Cut												
Mill Dia.	Speed min^{-1}	Feed mm/min	Speed min^{-1}	Feed mm/min	Speed min^{-1}	Feed mm/min	Speed min^{-1}	Feed mm/min	Speed min^{-1}	Feed mm/min	Speed min^{-1}	Feed mm/min
0.8	40,000	280	16,000	175	14,000	88	8,000	35	8,000	20	6,000	10
1.0	31,500	280	14,000	200	12,500	105	7,500	42	7,000	20	4,800	10
1.5	21,200	280	9,500	200	8,500	125	6,500	50	5,000	28	3,200	15
2.0	16,000	420	7,100	210	6,300	140	5,000	85	4,000	42	2,400	22
3.0	11,200	420	4,750	225	4,250	140	3,200	110	2,600	42	1,600	22
4.0	8,000	420	3,550	225	3,150	140	2,400	110	2,000	42	1,200	22
5.0	6,300	420	2,800	225	2,500	140	2,000	110	1,600	42	950	22
6.0	5,300	420	2,360	280	2,120	140	1,600	110	1,300	42	800	22
8.0	4,000	420	1,800	330	1,600	140	1,200	110	1,000	42	600	22
10	3,150	420	1,400	330	1,250	140	1,000	110	800	42	480	22
12	2,650	420	1,180	330	1,060	140	820	110	700	42	400	22
16	2,000	420	900	330	800	140	640	120	500	50	300	17
20	1,600	420	710	330	630	140	500	120	400	50	240	14
25	1,250	420	560	330	500	140	400	120	320	50	190	11

	aa
D<0.70	.25D
0.8≤D≤20	.5 D
2.5<D	1D

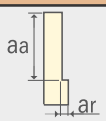


CUTTING CONDITIONS FOR CARBIDE END MILLS

Series 450 & 452

Side Milling (Metric)

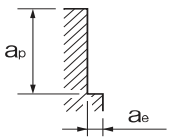
Hardness		Tensile Strength: Up to 750N/mm2		Up to 30 HRC		30 to 38 HRC		38 to 45 HRC			
Work Material	Cast Iron	Mild Steels Carbon Steels		Alloy Steels Tool Steels Ti Alloys (Annealed)		Hardened Steels Prehardened Steels Ti Alloys (Solution Treated and Aged)		Hardened Steels Prehardened Steels Stainless Steels Inconel Ni Based Alloys		Aluminum Alloy	
Cutting Speed	102 m/min	120 m/min		96 m/min		72 m/min		48 m/min		132 m/min	
Depth of Cut	aa=1.5D ar=0.1D										
Mill Dia.	Speed min-1	Feed mm/min	Speed min-1	Feed mm/min	Speed min-1	Feed mm/min	Speed min-1	Feed mm/min	Speed min-1	Feed mm/min	Speed min-1	Feed mm/min
4	8,160	840	9,600	1,800	7,680	1,560	5,760	480	3,840	288	10,560	1,320
6	5,400	960	6,360	2,040	5,040	1,800	3,840	480	2,520	312	6,960	1,560
8	4,080	840	4,800	1,920	3,840	1,680	2,880	744	1,920	492	5,280	1,440
10	3,240	816	3,840	1,680	3,000	1,560	2,280	720	1,560	492	4,200	1,320
12	2,760	792	3,240	1,680	2,520	1,440	1,920	612	1,260	420	3,480	1,200
16	2,040	660	2,400	1,320	1,920	1,140	1,440	468	960	396	2,640	1,080
20	1,620	540	2,160	1,080	1,500	900	1,140	384	780	312	2,100	960



Series 483

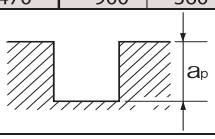
SIDE MILLING

Work Material	Cast Iron FC、FCD		Mild Steel・Carbon Steel SS400、S55C (～750N/mm²)		Alloy Steel・Tool Steel SCM、SKT、SKS、SKD (～30HRC)		Hardened Steel・Prehardened Steel (Free-Cutting) SKT、SKD、NAK55、HPM1		(38～45HRC) Hardened Steel SKD		Stainless Steel SUS304		Titanium Alloy Steel	
Cutting Speed	100～140m/min		80～120m/min		70～100m/min		50～80m/min		35～65m/min		35～65m/min		30～50m/min	
Mill Dia. (mm)	Speed (min-1)	Feed (mm/min)	Speed (min-1)	Feed (mm/min)	Speed (min-1)	Feed (mm/min)	Speed (min-1)	Feed (mm/min)	Speed (min-1)	Feed (mm/min)	Speed (min-1)	Feed (mm/min)	Speed (min-1)	Feed (mm/min)
6	6,350	760	5,300	640	4,500	360	3,450	280	2,650	210	2,650	210	1,800	120
8	4,750	760	4,000	640	3,400	410	2,600	310	2,000	240	2,000	240	1,350	160
10	3,800	760	3,200	640	2,700	430	2,050	330	1,600	260	1,600	260	1,100	170
12	3,200	770	2,650	640	2,250	450	1,700	340	1,350	270	1,350	270	920	180
14	2,750	770	2,250	650	1,950	470	1,500	360	1,150	280	1,150	280	800	190
16	2,400	770	2,000	640	1,700	480	1,300	360	1,000	280	1,000	280	700	190
18	2,100	760	1,750	630	1,500	480	1,150	350	900	270	900	270	620	190
20	1,900	760	1,600	610	1,350	470	1,050	350	800	260	800	260	560	180
22	1,750	770	1,450	580	1,250	470	950	340	750	260	750	260	510	170
25	1,550	740	1,300	550	1,100	440	850	330	650	240	650	240	450	160
Depth of Cut	ap 1.5D, ae 0.4D						ap 1.5D, ae 0.3D							



SLOTTING

Work Material	Cast Iron FC、FCD		Mild Steel・Carbon Steel SS400、S55C (～750N/mm²)		Alloy Steel・Tool Steel SCM、SKT、SKS、SKD (～30HRC)		Hardened Steel・Prehardened Steel (Free-Cutting) SKT、SKD、NAK55、HPM1		(38～45HRC) Hardened Steel SKD		Stainless Steel SUS304		Titanium Alloy Steel	
Cutting Speed	100～140m/min		80～120m/min		70～100m/min		50～80m/min		35～65m/min		35～65m/min		30～50m/min	
Mill Dia. (mm)	Speed (min-1)	Feed (mm/min)	Speed (min-1)	Feed (mm/min)	Speed (min-1)	Feed (mm/min)	Speed (min-1)	Feed (mm/min)	Speed (min-1)	Feed (mm/min)	Speed (min-1)	Feed (mm/min)	Speed (min-1)	Feed (mm/min)
6	5,300	640	4,500	540	3,700	300	2,900	230	2,400	190	2,400	190	1,500	100
8	4,000	640	3,400	540	2,800	340	2,200	260	1,800	220	1,800	220	1,150	130
10	3,200	640	2,700	540	2,250	360	1,750	280	1,450	230	1,450	230	950	150
12	2,650	640	2,250	540	1,850	370	1,450	290	1,200	240	1,200	240	800	160
14	2,250	630	1,950	570	1,600	380	1,250	300	1,000	240	1,000	240	700	170
16	2,000	640	1,700	540	1,400	390	1,100	310	900	250	900	250	600	170
18	1,750	630	1,500	540	1,250	400	950	290	800	240	800	240	540	160
20	1,600	640	1,350	510	1,100	390	900	300	700	230	700	230	480	150
22	1,450	640	1,250	500	1,000	380	800	290	650	220	650	220	440	150
25	1,300	620	1,100	470	900	360	700	270	600	220	600	220	390	140
切込深さ Depth of Cut	ap 0.75D, ap Max=15mm						ap 0.5D							



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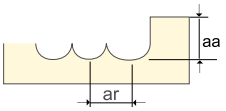
Series 4512

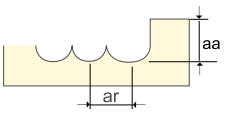
Profile Milling (Metric)



Hardness	Up to 50 HRC		Up to 55 HRC		Up to 65 HRC		Up to 70 HRC	
Material	Die Steel		Die Steel		Die Steel		Die Steel	
Cutting Speed	100 (m/min)		80 (m/min)		60 (m/min)		50 (m/min)	
Depth of Cut	Aa0.05D Ar0.1D		Aa0.03D Ar0.1D		Aa0.02D Ar0.05D			
Mill Dia.	Speed min^{-1}	Feed mm/min	Speed min^{-1}	Feed mm/min	Speed min^{-1}	Feed mm/min	Speed min^{-1}	Feed mm/min
1	31847	1911	25478	1376	19108	917	15924	717
2	15924	1592	12739	1146	9554	764	7962	597
3	10616	1486	8493	1070	6369	713	5308	557
4	7962	1433	6369	1032	4777	688	3981	537
5	6369	1274	5096	917	3822	611	3185	478
6	5308	1168	4246	841	3185	561	2654	438
8	3981	955	3185	688	2389	459	1990	358
10	3185	892	2548	642	1911	428	1592	334
12	2654	796	2123	573	1592	382	1327	299
16	1990	597	1592	430	1194	287	995	224
20	1592	478	1274	344	955	229	796	179

Series 4514

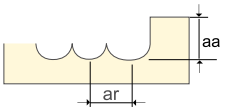
Profile Milling (Metric)



Hardness	Up to 50 HRC		Up to 55 HRC		Up to 65 HRC		Up to 70 HRC	
Material	Die Steel		Die Steel		Die Steel		Die Steel	
Cutting Speed	100 (m/min)		80 (m/min)		60 (m/min)		50 (m/min)	
Depth of Cut	Aa0.04D Ar0.09D		Aa0.02D Ar0.09D		Aa0.015D Ar0.04D			
Mill Dia.	Speed min^{-1}	Feed mm/min	Speed min^{-1}	Feed mm/min	Speed min^{-1}	Feed mm/min	Speed min^{-1}	Feed mm/min
1	31847	2866	25478	2064	19108	1376	15924	1075
2	15924	2389	12739	1720	9554	1146	7962	896
3	10616	2229	8493	1605	6369	1070	5308	836
4	7962	2150	6369	1548	4777	1032	3981	806
5	6369	1911	5096	1376	3822	917	3185	717
6	5308	1752	4246	1261	3185	841	2654	657
8	3981	1433	3185	1032	2389	688	1990	537
10	3185	1338	2548	963	1911	642	1592	502
12	2654	1194	2123	860	1592	573	1327	448
16	1990	896	1592	645	1194	430	995	336
20	1592	717	1274	516	955	344	796	269

Series 4522

Profile Milling (Metric)

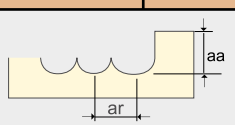


Hardness	Up to 50 HRC		Up to 55 HRC		Up to 65 HRC		Up to 70 HRC	
Material	Die Steel		Die Steel		Die Steel		Die Steel	
Cutting Speed	70 (m/min)		60 (m/min)		45 (m/min)		40 (m/min)	
Depth of Cut	Aa0.04D Ar0.09D		Aa0.02D Ar0.09D		Aa0.015D Ar0.04D			
Mill Dia.	Speed min^{-1}	Feed mm/min	Speed min^{-1}	Feed mm/min	Speed min^{-1}	Feed mm/min	Speed min^{-1}	Feed mm/min
1	22293	1338	19108	1032	14331	688	12739	573
2	11146	1115	9554	860	7166	573	6369	478
3	7431	1040	6369	803	4777	535	4246	446
4	5573	1003	4777	774	3583	516	3185	430
5	4459	892	3822	688	2866	459	2548	382
6	3715	817	3185	631	2389	420	2123	350
8	2787	669	2389	516	1791	344	1592	287
10	2229	624	1911	482	1433	321	1274	268
12	1858	557	1592	430	1194	287	1062	239
16	1393	418	1194	322	896	215	796	179
20	1115	334	955	258	717	172	637	143

Series 402BN, 404BN, 462BN, 464BN, 482BN, 484BN

Profile Milling (Metric)

Hardness							Up to 30 HRC		30 to 40 HRC		40 to 50 HRC	
Work Material	Aluminum		Cast Iron		Mild Carbon Steels Mild Steels		Prehardened Steels Die & Alloy Steels		Prehardened Steels Die & Alloy Steels		Hardened Steels	
Cutting Speed	100 m/min		30-45 m/min		30-40 m/min		20-30 m/min		20-25 m/min		15 m/min	
Depth of Cut	a_a=0.3D a_r=0.7D											
Mill Dia.	Speed min^{-1}	Feed mm/min	Speed min^{-1}	Feed mm/min	Speed min^{-1}	Feed mm/min	Speed min^{-1}	Feed mm/min	Speed min^{-1}	Feed mm/min	Speed min^{-1}	Feed mm/min
1	32,000	226	11,000	126	11,000	112	8,000	63	6,400	33.6	8,000	63
2	16,000	226	5,600	126	5,600	112	4,000	63	3,200	33.6	4,000	63
3	10,000	226	3,700	140	3,700	126	2,600	70	2,100	42	2,600	77
4	8,000	226	2,800	140	2,800	126	2,000	70	1,600	42	2,000	77
5	6,400	226	2,200	140	2,200	126	1,600	70	1,300	42	1,600	77
6	5,300	226	1,900	140	1,900	126	1,320	70	1,000	42	1,320	77
8	4,000	308	1,400	140	1,400	126	1,000	70	800	42	1,000	77
10	3,200	308	1,100	140	1,100	126	800	70	640	42	800	77
12	2,600	308	930	140	930	126	660	70	530	42	660	77
16	2,000	308	700	140	700	126	500	70	400	42	500	77
20	1,600	308	560	140	560	126	400	70	320	42	400	77
25	1,200	308	450	140	450	126	320	70	250	42	320	77



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SCA -ETS
Side Milling (ap : 1.0XD/ ae : 0.1XD)

Work Material	Aluminium Alloy Expanding Material A7075		Alminium Alloy Casting <Si 13%		Copper Alloy C1100	
Mill Dia (mm)	Speed (min-1)	Feed (mm/min)	Speed (min-1)	Feed (mm/min)	Speed (min-1)	Feed (mm/min)
3	21000	950	21000	950	7950	320
4	15500	1100	15500	1100	5950	350
5	12500	1100	12500	1100	4750	380
6	10500	1200	10500	1200	3950	400
8	7950	1300	7950	1300	2950	450
10	6350	1500	6350	1500	2350	480
12	5300	1550	5300	1550	1950	510

SCA -ETS
Slotting (ap : 0.25XD)

Work Material	Aluminium Alloy Expanding Material A7075		Alminium Alloy Casting <Si 13%		Copper Alloy C1100	
Mill Dia (mm)	Speed (min-1)	Feed (mm/min)	Speed (min-1)	Feed (mm/min)	Speed (min-1)	Feed (mm/min)
3	21000	670	21000	670	7950	325
4	15500	700	15500	700	5950	365
5	12500	745	12500	745	4750	385
6	10500	820	10500	820	3950	405
8	7950	865	7950	865	2950	455
10	6350	970	6350	970	2350	475
12	5300	1050	5300	1050	1950	510

1. Use a water soluble cutting fluid
2. Please adjust the speed and feed when the cutting depth is large or when machines with low rigidity are used

CARBIDE DRILLS CUTTING CONDITIONS

Series 3103 & 3105

HPD 3D, 5D

WORK MATERIAL	CARBON STEELS, MILD STEEL 1010,1050, 12L14		ALLOY STEEL 4140,130		SPECIAL ALLOY STEEL , HARDENDED STEELS							
					26-30 HRC		30-34 HRC		34-43 HRC		43-56 HRC	
DRILLING SPEED m/min	73 - 107		70 - 99		49 - 73		34 - 56		30 - 46		23 - 30	
DRILL DIA(mm)	SPEED RPM	FEED mm/rev	SPEED RPM	FEED mm/rev	SPEED RPM	FEED mm/rev	SPEED RPM	FEED mm/rev	SPEED RPM	FEED mm/rev	SPEED RPM	FEED mm/rev
3	9,541	0.05 - 0.13	8,959	0.05 - 0.13	6,469	0.05 - 0.13	4,754	0.05 - 0.08	4,043	0.05 - 0.08	2,814	0.03 - 0.05
4	7,156	0.08 - 0.15	6,719	0.08 - 0.15	4,851	0.08 - 0.15	3,566	0.08 - 0.10	3,032	0.08 - 0.10	2,110	0.05 - 0.08
5	5,725	0.10 - 0.20	5,375	0.10 - 0.20	3,881	0.10 - 0.20	2,853	0.10 - 0.13	2,426	0.10 - 0.13	1,688	0.05 - 0.08
6	4,771	0.13 - 0.23	4,479	0.13 - 0.23	3,234	0.13 - 0.23	2,377	0.13 - 0.15	2,021	0.13 - 0.15	1,407	0.05 - 0.10
7	4,089	0.15 - 0.25	3,840	0.15 - 0.25	2,772	0.15 - 0.25	2,038	0.15 - 0.18	1,733	0.15 - 0.18	1,206	0.08 - 0.13
8	3,578	0.15 - 0.28	3,360	0.15 - 0.28	2,426	0.15 - 0.28	1,783	0.15 - 0.20	1,516	0.15 - 0.20	1,055	0.08 - 0.13
9	3,180	0.18 - 0.30	2,986	0.18 - 0.30	2,156	0.18 - 0.30	1,585	0.18 - 0.23	1,348	0.18 - 0.23	938	0.10 - 0.15
10	2,862	0.20 - 0.30	2,688	0.20 - 0.30	1,941	0.20 - 0.30	1,426	0.20 - 0.25	1,213	0.20 - 0.25	844	0.10 - 0.15
11	2,602	0.20 - 0.30	2,443	0.20 - 0.30	1,764	0.20 - 0.30	1,297	0.23 - 0.28	1,103	0.23 - 0.28	767	0.10 - 0.15
12	2,385	0.20 - 0.30	2,240	0.20 - 0.30	1,617	0.20 - 0.30	1,189	0.23 - 0.30	1,011	0.23 - 0.30	703	0.13 - 0.18
13	2,202	0.20 - 0.30	2,067	0.20 - 0.30	1,493	0.20 - 0.30	1,097	0.25 - 0.33	933	0.25 - 0.33	649	0.13 - 0.18
14	2,045	0.23 - 0.36	1,920	0.23 - 0.36	1,386	0.23 - 0.36	1,019	0.28 - 0.36	866	0.28 - 0.36	603	0.15 - 0.20
16	1,789	0.25 - 0.36	1,680	0.25 - 0.36	1,213	0.25 - 0.36	891	0.33 - 0.41	758	0.33 - 0.41	528	0.15 - 0.20
18	1,590	0.28 - 0.38	1,493	0.28 - 0.38	1,078	0.28 - 0.38	792	0.36 - 0.46	674	0.38 - 0.46	469	0.18 - 0.23
20	1,431	0.30 - 0.41	1,344	0.30 - 0.41	970	0.30 - 0.41	713	0.41 - 5.08	606	0.41 - 0.51	422	0.20 - 0.28

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Series 3103 & 3105

HPD 3D, 5D

WORK MATERIAL	CAST IRON		DUCTILE CAST IRON		STAINLESS STEELS 400SS, 17-4PH		COPPER	
DRILLING SPEED m/min	73 - 117		53 - 91		25 - 40		79 - 195	
DRILL DIA(mm)	SPEED RPM	FEED mm/rev	SPEED RPM	FEED mm/rev	SPEED RPM	FEED mm/rev	SPEED RPM	FEED mm/rev
3	10,091	0.05 - 0.13	7,698	0.05 - 0.13	3,400	0.05 - 0.10	14,554	0.10 - 0.15
4	7,568	0.08 - 0.15	5,773	0.08 - 0.15	2,550	0.08 - 0.13	10,916	0.13 - 0.18
5	6,055	0.10 - 0.20	4,619	0.10 - 0.20	2,040	0.10 - 0.15	8,733	0.18 - 0.23
6	5,045	0.13 - 0.23	3,849	0.13 - 0.23	1,700	0.13 - 0.18	7,277	0.20 - 0.25
7	4,325	0.15 - 0.25	3,299	0.15 - 0.25	1,456	0.15 - 0.20	6,238	0.25 - 0.30
8	3,784	0.15 - 0.28	2,887	0.15 - 0.28	1,274	0.15 - 0.23	5,458	0.30 - 0.36
9	3,364	0.18 - 0.30	2,566	0.18 - 0.30	1,130	0.18 - 0.25	4,851	0.33 - 0.38
10	3,027	0.20 - 0.30	2,309	0.20 - 0.30	1,020	0.20 - 0.25	4,366	0.38 - 0.43
11	2,752	0.20 - 0.30	2,099	0.20 - 0.30	930	0.20 - 0.25	3,969	0.41 - 0.46
12	2,523	0.20 - 0.30	1,924	0.20 - 0.30	850	0.20 - 0.25	3,639	0.46 - 0.51
13	2,329	0.20 - 0.30	1,776	0.20 - 0.30	785	0.20 - 0.25	3,359	0.48 - 0.53
14	2,162	0.23 - 0.36	1,649	0.23 - 0.36	730	0.23 - 0.28	3,119	0.53 - 0.58
16	1,892	0.25 - 0.36	1,443	0.25 - 0.36	640	0.25 - 0.30	2,729	0.61 - 0.66
18	1,682	0.28 - 0.38	1,283	0.28 - 0.38	565	0.28 - 0.33	2,426	0.66 - 0.76
20	1,514	0.30 - 0.41	1,155	0.30 - 0.41	510	0.30 - 0.36	2,183	0.71 - 0.81

Series 3113, 3115, 3118 & SC-HO-HPD-3D

HO-HPD 3D, 5D, 8D

WORK MATERIAL	CARBON STEELS, MILD STEEL 1010,1050, 12L14		ALLOY STEEL 4140,130		SPECIAL ALLOY STEEL , HARDENDED STEELS							
					26-30 HRC		30-34 HRC		34-43 HRC		43-56 HRC	
DRILLING SPEED m/min	95 - 139		81 - 116		56 - 90		40 - 64		37 - 55		24 - 34	
DRILL DIA(mm)	SPEED RPM	FEED mm/rev	SPEED RPM	FEED mm/rev	SPEED RPM	FEED mm/rev	SPEED RPM	FEED mm/rev	SPEED RPM	FEED mm/rev	SPEED RPM	FEED mm/rev
3	11,449	0.05 - 0.13	10,751	0.05 - 0.13	7,762	0.05 - 0.13	5,705	0.05 - 0.08	4,851	0.05 - 0.08	3,095	0.03 - 0.05
4	8,587	0.08 - 0.15	8,063	0.08 - 0.15	5,822	0.08 - 0.15	4,279	0.08 - 0.10	3,639	0.08 - 0.10	2,321	0.05 - 0.08
5	6,870	0.10 - 0.20	6,450	0.10 - 0.20	4,657	0.10 - 0.20	3,423	0.10 - 0.13	2,911	0.10 - 0.13	1,857	0.05 - 0.08
6	5,725	0.13 - 0.23	5,375	0.13 - 0.23	3,881	0.13 - 0.23	2,853	0.13 - 0.15	2,426	0.13 - 0.15	1,548	0.05 - 0.10
7	4,907	0.15 - 0.25	4,607	0.15 - 0.25	3,327	0.15 - 0.25	2,445	0.15 - 0.18	2,079	0.15 - 0.18	1,327	0.08 - 0.13
8	4,293	0.15 - 0.28	4,032	0.15 - 0.28	2,911	0.15 - 0.28	2,139	0.15 - 0.20	1,819	0.15 - 0.20	1,161	0.08 - 0.13
9	3,816	0.18 - 0.30	3,584	0.18 - 0.30	2,587	0.18 - 0.30	1,902	0.18 - 0.23	1,617	0.18 - 0.23	1,032	0.10 - 0.15
10	3,435	0.20 - 0.30	3,225	0.20 - 0.30	2,329	0.20 - 0.30	1,712	0.20 - 0.25	1,376	0.15 - 0.23	878	0.10 - 0.15
11	3,123	0.20 - 0.30	2,932	0.20 - 0.30	2,117	0.20 - 0.30	1,556	0.23 - 0.28	1,145	0.15 - 0.25	731	0.10 - 0.15
12	2,862	0.20 - 0.30	2,688	0.20 - 0.30	1,941	0.20 - 0.30	1,426	0.23 - 0.30	914	0.18 - 0.25	583	0.13 - 0.18
13	2,642	0.20 - 0.30	2,481	0.20 - 0.30	1,791	0.20 - 0.30	1,317	0.25 - 0.33	683	0.15 - 0.28	436	0.13 - 0.18
14	2,453	0.23 - 0.36	2,304	0.23 - 0.36	1,663	0.23 - 0.36	1,223	0.28 - 0.36	452	0.15 - 0.30	289	0.15 - 0.20
16	2,147	0.25 - 0.36	2,016	0.25 - 0.36	1,455	0.25 - 0.36	1,070	0.33 - 0.41	221	0.18 - 0.28	141	0.15 - 0.20
18	1,908	0.28 - 0.38	1,792	0.28 - 0.38	1,294	0.28 - 0.38	951	0.36 - 0.46	809	0.38 - 0.46	516	0.18 - 0.23
20	1,717	0.30 - 0.41	1,613	0.30 - 0.41	1,164	0.30 - 0.41	856	0.41 - 5.08	728	0.41 - 0.51	464	0.20 - 0.28

CARBIDE DRILLS CUTTING CONDITIONS

Series 3113, 3115, & 3118

HO-HPD 3D, 5D, 8D

WORK MATERIAL	CAST IRON		DUCTILE CAST IRON		STAINLESS STEELS 300SS, 400SS, 17-4PH		COPPER		ALLUMINIUM ALLOY		CAST ALLUMINIUM	
DRILLING SPEED m/min	87 - 128		66 - 107		44 - 67		70 - 116		79 - 137		99 - 213	
DRILL DIA(mm)	SPEED RPM	FEED mm/rev	SPEED RPM	FEED mm/rev	SPEED RPM	FEED mm/rev	SPEED RPM	FEED mm/rev	SPEED RPM	FEED mm/rev	SPEED RPM	FEED mm/rev
3	12,614	0.05 - 0.13	9,622	0.05 - 0.13	6,137	0.05 - 0.10	10,722	0.08 - 0.13	13,099	0.08 - 0.13	19,648	0.10 - 0.15
4	9,460	0.08 - 0.15	7,216	0.08 - 0.15	4,603	0.08 - 0.13	7,113	0.10 - 0.15	9,824	0.10 - 0.15	14,736	0.13 - 0.18
5	7,568	0.10 - 0.20	5,773	0.10 - 0.20	3,682	0.10 - 0.15	5,691	0.13 - 0.18	7,859	0.13 - 0.18	11,789	0.18 - 0.23
6	6,307	0.13 - 0.23	4,811	0.13 - 0.23	3,069	0.13 - 0.18	4,742	0.15 - 0.20	6,549	0.15 - 0.20	9,824	0.20 - 0.25
7	5,406	0.15 - 0.25	4,124	0.15 - 0.25	2,630	0.15 - 0.20	4,065	0.18 - 0.23	5,614	0.18 - 0.23	8,421	0.25 - 0.30
8	4,730	0.15 - 0.28	3,608	0.15 - 0.28	2,301	0.15 - 0.23	3,557	0.20 - 0.25	4,912	0.20 - 0.25	7,368	0.30 - 0.36
9	4,205	0.18 - 0.30	3,207	0.18 - 0.30	2,046	0.18 - 0.25	3,161	0.25 - 0.30	4,366	0.25 - 0.30	6,549	0.33 - 0.38
10	3,784	0.20 - 0.30	2,887	0.20 - 0.30	1,841	0.20 - 0.25	2,845	0.28 - 0.33	3,930	0.28 - 0.33	5,894	0.38 - 0.43
11	3,440	0.20 - 0.30	2,624	0.20 - 0.30	1,674	0.20 - 0.25	2,587	0.30 - 0.36	3,572	0.30 - 0.36	5,359	0.41 - 0.46
12	3,153	0.20 - 0.30	2,405	0.20 - 0.30	1,534	0.20 - 0.25	2,371	0.33 - 0.38	3,275	0.33 - 0.38	4,912	0.46 - 0.51
13	2,911	0.20 - 0.30	2,220	0.20 - 0.30	1,416	0.20 - 0.25	2,189	0.36 - 0.41	3,023	0.36 - 0.41	4,534	0.48 - 0.53
14	2,703	0.23 - 0.36	2,062	0.23 - 0.36	1,315	0.23 - 0.28	2,032	0.41 - 0.46	2,807	0.41 - 0.46	4,210	0.53 - 0.58
16	2,365	0.25 - 0.36	1,804	0.25 - 0.36	1,151	0.25 - 0.30	1,778	0.46 - 0.51	2,456	0.46 - 0.51	3,684	0.61 - 0.66
18	2,102	0.28 - 0.38	1,604	0.28 - 0.38	1,023	0.28 - 0.33	1,581	0.51 - 0.56	2,183	0.51 - 0.56	3,275	0.66 - 0.76
20	1,892	0.30 - 0.41	1,443	0.30 - 0.41	921	0.30 - 0.36	1,423	0.56 - 0.61	1,965	0.56 - 0.61	2,947	0.71 - 0.81

1. The indicated speeds and feeds are for drilling with water soluble oil.
2. Suitable cutting fluid is water-emulsifiable high density oil (less than 20 times dilution).
3. When using non-water soluble oil or water-emulsifiable (over 20 times dilution), reduce drilling speed by 30%.
4. These conditions are for drilling depths under 3 times the drill diameter.
5. When attaching drill to the machine, use a collet than does not have any scratch or dust. Also, reduce run-out of drill under 0.02mm.
6. Fasten the work material to reduce the possibility of work deformation, deflection of machined surface, or vibration.
7. This condition could be used on mist lubricant operation.
8. For 8D series, reduce speed by 20%.

Note : 1. For machine that cannot achieve the speeds indicated in the table please set rotation as high as possible. Tool life may be decreased.

CARBIDE DRILLS CUTTING CONDITIONS

AD - 2D / 4D

Work Material	Low Carbon Steel Alloy Steel (C<0.3%) SS400・SCM ~710N/mm²		Carbon Steel S35C・S50C ~210HB ~710N/mm²		Alloy Steel SCM・SCr・SNCM 16~28HRC 710~900N/mm²		Alloy Steel SCM・SCr・SNCM 28~35HRC 900~1,100N/mm²		Cast Iron FC250 ~350N/mm²		Ductile Cast Iron FCD450 400~600N/mm²	
Cutting Speed	70~120m/min		60~120m/min		60~120m/min		50~90m/min		60~120m/min		50~100m/min	
Drill Dia. (mm)	Speed (min⁻¹)	Feed Rate (mm/rev)	Speed (min⁻¹)	Feed Rate (mm/rev)	Speed (min⁻¹)	Feed Rate (mm/rev)	Speed (min⁻¹)	Feed Rate (mm/rev)	Speed (min⁻¹)	Feed Rate (mm/rev)	Speed (min⁻¹)	Feed Rate (mm/rev)
2	12,000	0.06 ~0.08	10,400	0.06 ~0.08	10,400	0.06 ~0.08	8,800	0.06 ~0.08	10,400	0.06 ~0.08	9,600	0.06 ~0.08
4	8,000	0.08 ~0.16	7,200	0.08 ~0.16	7,200	0.08 ~0.16	5,600	0.08 ~0.16	7,200	0.08 ~0.16	6,000	0.08 ~0.16
6	5,300	0.12 ~0.24	4,800	0.12 ~0.24	4,800	0.12 ~0.24	3,700	0.12 ~0.24	4,800	0.12 ~0.24	4,000	0.12 ~0.24
8	4,000	0.16 ~0.28	3,600	0.16 ~0.28	3,600	0.16 ~0.28	2,800	0.16 ~0.28	3,600	0.16 ~0.28	3,000	0.16 ~0.28
10	3,200	0.2 ~ 0.3	2,900	0.2 ~ 0.3	2,900	0.2 ~0.3	2,200	0.2 ~0.3	2,900	0.2 ~0.3	2,400	0.2 ~0.3
12	2,700	0.21 ~0.3	2,400	0.21 ~0.3	2,400	0.21 ~0.3	1,900	0.21 ~0.3	2,400	0.21 ~0.3	2,000	0.21 ~0.3
14	2,300	0.22 ~0.35	2,050	0.22 ~0.35	2,050	0.22 ~0.35	1,400	0.22 ~0.35	2,050	0.22 ~0.35	1,700	0.22 ~0.35
16	2,000	0.25 ~0.36	1,800	0.25 ~0.36	1,800	0.25 ~0.36	1,200	0.25 ~0.36	1,800	0.25 ~0.36	1,500	0.25 ~0.36
18	1,800	0.28 ~0.38	1,600	0.28 ~0.38	1,600	0.28 ~0.38	1,050	0.28 ~0.38	1,600	0.28 ~0.38	1,350	0.28 ~0.38
20	1,600	0.3 ~ 0.4	1,450	0.3 ~ 0.4	1,450	0.3 ~ 0.4	950	0.3 ~ 0.4	1,450	0.3 ~ 0.4	1,200	0.3 ~ 0.4

ADO - 3D / 5D / 8D

Work Material	Mild Steel Low Carbon Steel SS400・S10C ~150HB ~500N/mm²		Carbon Steel S35C・S50C ~210HB ~710N/mm²		Alloy Steel SCM・SCr・SNCM 16~28HRC 710~900N/mm²		Alloy Steel SCM・SCr・SNCM 28~35HRC 900~1,100N/mm²		Cast Iron FC250 ~350N/mm²		Ductile Cast Iron FCD450 FCD600 400~600N/mm²		Stainless Steel SUS300 SUS400 480~800N/mm²		Special Alloy Steel・Hardened Steel・Prehardened Steel SKD61 (Unquenched) 34~40HRC 1,060~1,250N/mm²	
Cutting Speed	80~120m/min		80~160m/min		80~120m/min		60~90m/min		80~120m/min		60~100m/min		40~80m/min		30~60m/min	
Drill Dia. (mm)	Speed (min⁻¹)	Feed (mm/rev)	Speed (min⁻¹)	Feed (mm/rev)	Speed (min⁻¹)	Feed (mm/rev)	Speed (min⁻¹)	Feed (mm/rev)	Speed (min⁻¹)	Feed (mm/rev)	Speed (min⁻¹)	Feed (mm/rev)	Speed (min⁻¹)	Feed (mm/rev)	Speed (min⁻¹)	Feed (mm/rev)
3	10,600	0.06~0.12	10,600	0.06~0.12	10,600	0.06~0.12	7,400	0.06~0.12	10,600	0.06~0.12	8,500	0.06~0.12	6,400	0.06~0.12	4,800	0.06~0.09
4	8,000	0.08~0.16	8,000	0.08~0.16	8,000	0.08~0.16	5,600	0.08~0.16	8,000	0.08~0.16	6,400	0.08~0.16	4,800	0.08~0.16	3,600	0.08~0.12
5	6,400	0.1 ~0.2	6,400	0.1 ~0.2	6,400	0.1 ~0.2	4,500	0.1 ~0.2	6,400	0.1 ~0.2	5,100	0.1 ~0.2	3,800	0.1 ~0.2	2,900	0.1 ~0.15
6	5,300	0.12~0.24	5,300	0.12~0.24	5,300	0.12~0.24	3,700	0.12~0.24	5,300	0.12~0.24	4,200	0.12~0.24	3,200	0.12~0.24	2,400	0.12~0.18
7	4,500	0.14~0.26	4,500	0.14~0.26	4,500	0.14~0.26	3,200	0.14~0.26	4,500	0.14~0.26	3,600	0.14~0.26	2,700	0.14~0.26	2,000	0.14~0.21
8	4,000	0.16~0.28	4,000	0.16~0.28	4,000	0.16~0.28	2,800	0.16~0.28	4,000	0.16~0.28	3,200	0.16~0.28	2,400	0.16~0.28	1,800	0.16~0.24
9	3,500	0.18~0.3	3,500	0.18~0.3	3,500	0.18~0.3	2,500	0.18~0.3	3,500	0.18~0.3	2,800	0.18~0.3	2,100	0.18~0.3	1,600	0.18~0.27
10	3,200	0.2 ~0.3	3,200	0.2 ~0.3	3,200	0.2 ~0.3	2,200	0.2 ~0.3	3,200	0.2 ~0.3	2,500	0.2 ~0.3	1,900	0.2 ~0.3	1,400	0.2 ~0.3
11	2,900	0.2 ~0.3	2,900	0.2 ~0.3	2,900	0.2 ~0.3	2,000	0.2 ~0.3	2,900	0.2 ~0.3	2,300	0.2 ~0.3	1,700	0.2 ~0.3	1,300	0.2 ~0.3
12	2,700	0.21~0.3	2,700	0.21~0.3	2,700	0.21~0.3	1,900	0.21~0.3	2,700	0.21~0.3	2,100	0.21~0.3	1,600	0.21~0.3	1,200	0.21~0.3
13	2,400	0.21~0.33	2,400	0.21~0.33	2,400	0.21~0.33	1,700	0.21~0.33	2,400	0.21~0.33	2,000	0.21~0.33	1,500	0.21~0.33	1,100	0.21~0.33
14	2,300	0.22~0.35	2,300	0.22~0.35	2,300	0.22~0.35	1,600	0.22~0.35	2,300	0.22~0.35	1,800	0.22~0.35	1,400	0.22~0.35	1,000	0.22~0.35
16	2,000	0.25~0.36	2,000	0.25~0.36	2,000	0.25~0.36	1,400	0.25~0.36	2,000	0.25~0.36	1,600	0.25~0.36	1,200	0.25~0.36	900	0.25~0.36
18	1,800	0.28~0.38	1,800	0.28~0.38	1,800	0.28~0.38	1,200	0.28~0.38	1,800	0.28~0.38	1,400	0.28~0.38	1,100	0.28~0.38	800	0.28~0.38
20	1,600	0.3 ~0.4	1,600	0.3 ~0.4	1,600	0.3 ~0.4	1,100	0.3 ~0.4	1,600	0.3 ~0.4	1,300	0.3 ~0.4	1,000	0.3 ~0.4	700	0.3 ~0.4

shaping your dreams

CARBIDE DRILLS CUTTING CONDITIONS

ADO-10D / 15D / 20D / 25D / 30D

Work Material	Mild Steel Low Carbon Steel SS400・S10C ~150HB ~500N/mm²		Carbon Steel S35C・S50C ~210HB ~710N/mm²		Alloy Steel SCM・SCr・SNCM 16~28HRC 710~900N/mm²		Alloy Steel・Prehardened Steel (C≧0.3%) SCM440 28~34HRC 900~1,060N/mm²		Cast Iron FC250 ~350N/mm²		Ductile Cast Iron FCD450 FCD600 400~600N/mm²		Stainless Steel SUS400 480~800N/mm²		Special Alloy Steel・Hardened Steel・Prehardened Steel SKD61 (Unquenched) 34~40HRC 1,060~1,250N/mm²	
Cutting Speed	60~125m/min		60~125m/min		60~125m/min		50~70m/min		60~125m/min		50~80m/min		40~80m/min		30~50m/min	
Drill Dia. (mm)	Speed (min⁻¹)	Feed (mm/rev)	Speed (min⁻¹)	Feed (mm/rev)	Speed (min⁻¹)	Feed (mm/rev)	Speed (min⁻¹)	Feed (mm/rev)	Speed (min⁻¹)	Feed (mm/rev)	Speed (min⁻¹)	Feed (mm/rev)	Speed (min⁻¹)	Feed (mm/rev)	Speed (min⁻¹)	Feed (mm/rev)
3	7,500	0.06~0.12	7,500	0.06~0.12	7,500	0.06~0.12	6,300	0.08~0.11	7,500	0.06~0.12	7,500	0.06~0.12	5,300	0.06~0.12	4,200	0.08~0.11
4	6,400	0.08~0.16	6,400	0.08~0.16	6,400	0.08~0.16	4,700	0.1~0.15	6,400	0.08~0.16	5,600	0.08~0.16	4,400	0.08~0.16	3,100	0.1~0.15
5	5,800	0.1~0.2	5,800	0.1~0.2	5,800	0.1~0.2	3,800	0.12~0.18	5,800	0.1~0.2	4,500	0.1~0.2	3,800	0.1~0.2	2,500	0.12~0.18
6	4,800	0.12~0.24	4,800	0.12~0.24	4,800	0.12~0.24	3,100	0.14~0.2	4,800	0.12~0.24	3,800	0.12~0.24	3,200	0.12~0.24	2,100	0.14~0.2
8	3,600	0.16~0.28	3,600	0.16~0.28	3,600	0.16~0.28	2,300	0.16~0.24	3,600	0.16~0.28	2,800	0.16~0.28	2,400	0.16~0.28	1,500	0.16~0.24
10	2,900	0.2~0.35	2,900	0.2~0.35	2,900	0.2~0.35	1,900	0.18~0.27	2,900	0.2~0.35	2,300	0.2~0.35	1,900	0.2~0.35	1,200	0.18~0.27
12	2,400	0.24~0.42	2,400	0.24~0.42	2,400	0.24~0.42	1,500	0.24~0.3	2,400	0.24~0.42	1,900	0.24~0.42	1,600	0.24~0.42	1,000	0.24~0.3

1. The indicated speeds and feeds are for drilling with water-soluble oil or MQL.
   (We do not recommend mist drilling with stainless steels).
2. Water-soluble oil (20-30 times dilution) is recommended
3. When using non-water-soluble oil, set the cutting speed between 70-100% of the lowest limit.
4. Make a pilot hole before using in accordance with recommended operation.
5. A clogged oil hole can lead to a breakage. Make sure that a filter is attached to the oil feeder.
6. Peck drilling of 1D-2D is strongly recommended.

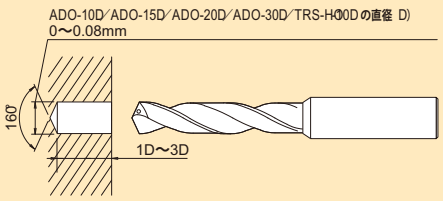
■ADO-10D/15D/20D/30D/TRS-HO-10Dの

Recommended operation for using ADO-10D/15D/20D/30D/TRS-HO-10D

①ADO-PLT, ADO-3D, TRS-HO-3Dにて
ガイド穴加工
Make a pilot hole with ADO-PLT, ADO-3D or TRS-HO-3D

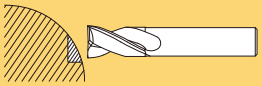
●ガイド穴加工用工具は、ADO-10D／ADO-15D／ADO-20D／ADO-30D／TRS-HO-10Dの直径 (D) 0~0.08mmの範囲でドリル径をお選び下さい。又、穴深さが深い程ガイド穴を深くあける事を推奨します。

For a pilot hole, select 0.02~0.08mm larger size drill than ADO-10D / ADO-15D / ADO-20D / ADO-30D / TRS-HO-10D

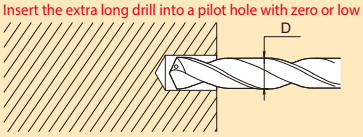


ADO-PLTにサイズが無い製品は、パイロットドリルとして同じドリル直径のADO-3Dまたは TRS-HO-3Dを推奨します。
If the size is not available from standard ADO-PLT, we recommend the same diameter drill from ADO-3D or TRS-HO-3D.

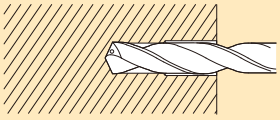
★湾曲部を加工の時は、ガイド穴加工前に座ぐり加工用エンドミルFX-ZDS、超硬フラットドリルADFにて座ぐり加工を行って下さい。
When working on a curved surface, use the FX-ZDS(end mill for counterboring)or the ADF (carbide flat drill) to counterbore a pilot hole



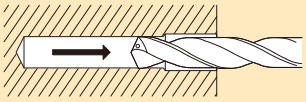
②エキストラロングドリルを停止又は低回転で挿入
Insert the extra long drill into a pilot hole with zero or low revolution.



③所定の回転速度に上げ加工をスタート
Increase the revolution to the designated speed and start drilling.



④加工後、ドリルを穴から抜く時には穴底からドリルを離した後回転速度を下げて抜いて下さい
After drilling, move the drill away from the bottom of the hole; then reduce its speed while pulling it out of the hole.



※加工の際には必ず内部給油方式で加工下さい
Make sure to use an internal coolant supply when drilling.

CARBIDE DRILLS CUTTING CONDITIONS

ADO-PLT

Work Material	Mild Steel Low Carbon Steel SS400・S10C ~150HB ~500N/mm²		Carbon Steel S35C・S50C ~210HB ~710N/mm²		Alloy Steel SCM・SCr・SNCM 16~28HRC 710~900N/mm²		Alloy Steel・Prehardened Steel (C≧ 0.3%) SCM440 28~34HRC 900~1,060N/mm²		Cast Iron FC250 ~350N/mm²		Ductile Cast Iron FCD450 FCD600 400~600N/mm²		Stainless Steel SUS400 480~800N/mm²		Special Alloy Steel・Hardened Steel・Prehardened Steel SKD61 (Unquenched) 34~40HRC 1,060~1,250N/mm²	
Cutting Speed	60~125m/min		60~80m/min		60~80m/min		40~60m/min		60~80m/min		60~80m/min		40~60m/min		30~50m/min	
Drill Dia. (mm)	Speed (min⁻¹)	Feed (mm/rev)	Speed (min⁻¹)	Feed (mm/rev)	Speed (min⁻¹)	Feed (mm/rev)	Speed (min⁻¹)	Feed (mm/rev)	Speed (min⁻¹)	Feed (mm/rev)	Speed (min⁻¹)	Feed (mm/rev)	Speed (min⁻¹)	Feed (mm/rev)	Speed (min⁻¹)	Feed (mm/rev)
3.03	7,400	0.06~0.09	7,400	0.06~0.09	7,400	0.06~0.09	5,200	0.06~0.09	7,400	0.06~0.09	7,400	0.06~0.09	5,200	0.06~0.09	4,200	0.06~0.09
4.03	5,600	0.08~0.12	5,600	0.08~0.12	5,600	0.08~0.12	3,900	0.08~0.12	5,600	0.08~0.12	5,600	0.08~0.12	3,900	0.08~0.12	3,100	0.08~0.12
5.03	4,500	0.1~0.15	4,500	0.1~0.15	4,500	0.1~0.15	3,100	0.1~0.15	4,500	0.1~0.15	4,500	0.1~0.15	3,100	0.1~0.15	2,500	0.1~0.15
6.03	3,700	0.12~0.18	3,700	0.12~0.18	3,700	0.12~0.18	2,600	0.12~0.18	3,700	0.12~0.18	3,700	0.12~0.18	2,600	0.12~0.18	2,100	0.12~0.18
7.03	3,200	0.14~0.2	3,200	0.14~0.2	3,200	0.14~0.2	2,300	0.14~0.2	3,200	0.14~0.2	3,200	0.14~0.2	2,300	0.14~0.2	1,800	0.14~0.2
8.03	2,800	0.14~0.2	2,800	0.14~0.2	2,800	0.14~0.2	2,000	0.14~0.2	2,800	0.14~0.2	2,800	0.14~0.2	2,000	0.14~0.2	1,600	0.14~0.2
9.03	2,500	0.14~0.22	2,500	0.14~0.22	2,500	0.14~0.22	1,800	0.14~0.22	2,500	0.14~0.22	2,500	0.14~0.22	1,800	0.14~0.22	1,400	0.14~0.22
10.03	2,200	0.15~0.24	2,200	0.15~0.24	2,200	0.15~0.24	1,600	0.15~0.24	2,200	0.15~0.24	2,200	0.15~0.24	1,600	0.15~0.24	1,300	0.15~0.24
11.03	2,000	0.16~0.26	2,000	0.16~0.26	2,000	0.16~0.26	1,500	0.17~0.24	2,000	0.16~0.26	2,000	0.16~0.26	1,400	0.16~0.26	1,150	0.17~0.24
12.03	1,800	0.18~0.28	1,800	0.18~0.28	1,800	0.18~0.28	1,350	0.18~0.24	1,800	0.18~0.28	1,800	0.18~0.28	1,300	0.18~0.28	1,100	0.18~0.24

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CARBIDE DRILLS CUTTING CONDITIONS

ADO-MICRO 2D/5D

Work Material	Mild Steel · Low Carbon Steel SS400 · S10C ~150HB ~ 500N/mm²		Carbon Steel S35C · S50C ~210HB ~710N/mm²		Alloy Steel SCM · SCr · SNCM 16 ~ 28HRC 710 ~ 900N/mm²		Alloy Steel SCM · SCr · SNCM 28 ~ 35HRC 900 ~ 1,100N/mm²		Austenitic Stainless Steel SUS303 · SUS304 SUS316 · SUS316L		Special Alloy Steel SUJ2 · SUS440	
Cutting Speed	20~40~60m/min		20~40~60m/min		20~40~60m/min		20~30~40m/min		20~30~70m/min		25~35~45m/min	
Drill Dia. (mm)	Speed (min⁻¹)	Feed Rate (mm/rev)	Speed (min⁻¹)	Feed Rate (mm/rev)	Speed (min⁻¹)	Feed Rate (mm/rev)	Speed (min⁻¹)	Feed Rate (mm/rev)	Speed (min⁻¹)	Feed Rate (mm/rev)	Speed (min⁻¹)	Feed Rate (mm/rev)
0.7	18,200	0.007 ~ 0.021	18,200	0.007 ~ 0.021	18,200	0.014 ~ 0.028	13,600	0.014 ~ 0.028	13,600	0.007 ~ 0.021	15,900	0.007 ~ 0.021
1	12,700	0.01 ~ 0.03	12,700	0.01 ~ 0.03	12,700	0.02 ~ 0.04	9,500	0.02 ~ 0.04	9,500	0.01 ~ 0.03	11,100	0.01 ~ 0.03
1.5	8,500	0.015 ~ 0.045	8,500	0.015 ~ 0.045	8,500	0.03 ~ 0.06	6,400	0.03 ~ 0.06	6,400	0.015 ~ 0.045	7,400	0.015 ~ 0.045
2	6,400	0.02 ~ 0.06	6,400	0.02 ~ 0.06	6,400	0.04 ~ 0.08	4,800	0.04 ~ 0.08	4,800	0.02 ~ 0.06	5,600	0.02 ~ 0.06

Work Material	Cast Iron FC250 ~ 350N/mm²		Ductile Cast Iron FCD450·FCD600 400 ~ 600N/mm²		Aluminum Alloy AC4C · ADC		Aluminum A5052 · A7075		Titanium Alloy		Heat Resistant Alloy Inconel 718	
Cutting Speed	40~50~60m/min		30~40~50m/min		30~50~70m/min		20~40~60m/min		40~50~60m/min		5~10~15m/min	
Drill Dia. (mm)	Speed (min⁻¹)	Feed Rate (mm/rev)	Speed (min⁻¹)	Feed Rate (mm/rev)	Speed (min⁻¹)	Feed Rate (mm/rev)	Speed (min⁻¹)	Feed Rate (mm/rev)	Speed (min⁻¹)	Feed Rate (mm/rev)	Speed (min⁻¹)	Feed Rate (mm/rev)
0.7	22,700	0.014 ~ 0.028	18,200	0.014 ~ 0.028	22,700	0.014 ~ 0.042	18,200	0.007 ~ 0.021	22,700	0.011 ~ 0.018	4,500	0.004 ~ 0.014
1	15,900	0.02 ~ 0.04	12,700	0.02 ~ 0.04	15,900	0.02 ~ 0.06	12,700	0.01 ~ 0.03	15,900	0.015 ~ 0.025	3,200	0.005 ~ 0.02
1.5	10,600	0.03 ~ 0.06	8,500	0.03 ~ 0.06	10,600	0.03 ~ 0.09	8,500	0.015 ~ 0.045	10,600	0.023 ~ 0.038	2,100	0.008 ~ 0.03
2	8,000	0.04 ~ 0.08	6,400	0.04 ~ 0.08	8,000	0.04 ~ 0.12	6,400	0.02 ~ 0.06	8,000	0.03 ~ 0.05	1,600	0.01 ~ 0.04

ADO-MICRO 12D/20D/30D

Work Material	Mild Steel · Low Carbon Steel SS400 · S10C ~150HB ~ 500N/mm²		Carbon Steel S35C · S50C ~210HB ~710N/mm²		Alloy Steel SCM · SCr · SNCM 16 ~ 28HRC 710 ~ 900N/mm²		Alloy Steel SCM · SCr · SNCM 28 ~ 35HRC 900 ~ 1,100N/mm²		Austenitic Stainless Steel SUS303 · SUS304 SUS316 · SUS316L		Special Alloy Steel SUJ2 · SUS440	
Cutting Speed	20~40~60m/min		20~40~60m/min		20~40~60m/min		20~30~40m/min		20~30~70m/min		25~35~45m/min	
Drill Dia. (mm)	Speed (min⁻¹)	Feed Rate (mm/rev)	Speed (min⁻¹)	Feed Rate (mm/rev)	Speed (min⁻¹)	Feed Rate (mm/rev)	Speed (min⁻¹)	Feed Rate (mm/rev)	Speed (min⁻¹)	Feed Rate (mm/rev)	Speed (min⁻¹)	Feed Rate (mm/rev)
1	12,700	0.01 ~ 0.03	12,700	0.01 ~ 0.03	12,700	0.02 ~ 0.04	9,500	0.02 ~ 0.04	9,500	0.01 ~ 0.03	11,100	0.01 ~ 0.03
1.5	8,500	0.015 ~ 0.045	8,500	0.015 ~ 0.045	8,500	0.03 ~ 0.06	6,400	0.03 ~ 0.06	6,400	0.015 ~ 0.045	7,400	0.015 ~ 0.045
2	6,400	0.02 ~ 0.06	6,400	0.02 ~ 0.06	6,400	0.04 ~ 0.08	4,800	0.04 ~ 0.08	4,800	0.02 ~ 0.06	5,600	0.02 ~ 0.06

Work Material	Cast Iron FC250 ~ 350N/mm²		Ductile Cast Iron FCD450·FCD600 400 ~ 600N/mm²		Aluminum Alloy AC4C · ADC		Aluminum A5052 · A7075		Titanium Alloy		Heat Resistant Alloy Inconel 718	
Cutting Speed	40~50~60m/min		30~40~50m/min		30~50~70m/min		20~40~60m/min		40~50~60m/min		5~10~15m/min	
Drill Dia. (mm)	Speed (min⁻¹)	Feed Rate (mm/rev)	Speed (min⁻¹)	Feed Rate (mm/rev)	Speed (min⁻¹)	Feed Rate (mm/rev)	Speed (min⁻¹)	Feed Rate (mm/rev)	Speed (min⁻¹)	Feed Rate (mm/rev)	Speed (min⁻¹)	Feed Rate (mm/rev)
1	15,900	0.02 ~ 0.04	12,700	0.02 ~ 0.04	15,900	0.02 ~ 0.06	12,700	0.01 ~ 0.03	15,900	0.015 ~ 0.025	3,200	0.005 ~ 0.02
1.5	10,600	0.03 ~ 0.06	8,500	0.03 ~ 0.06	10,600	0.03 ~ 0.09	8,500	0.015 ~ 0.045	10,600	0.023 ~ 0.038	2,100	0.008 ~ 0.03
2	8,000	0.04 ~ 0.08	6,400	0.04 ~ 0.08	8,000	0.04 ~ 0.12	6,400	0.02 ~ 0.06	8,000	0.03 ~ 0.05	1,600	0.01 ~ 0.04

CARBIDE DRILLS CUTTING CONDITIONS

ADO-SUS-3D•5D•8D

Work Material	Ferritic Stainless Steel · Martensitic Stainless Steel				Austenitic Stainless Steel				Duplex Stainless Steel			
Hardness	≦200HB		>200HB		≦200HB		>200HB		≦290HB		>290HB	
No. Steel Type	1		2		3		4		5		6	
Cutting Speed	60～80～100m/min		40～60～80m/min		60～80～100m/min		40～60～80m/min		40～60～80m/min		30～40～50m/min	
Drill Dia. (mm)	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed Rate (mm/rev)
2	12,700	0.04～0.08	9,500	0.04～0.08	12,700	0.04～0.08	9,500	0.04～0.08	9,500	0.04～0.08	6,400	0.04～0.08
3	8,500	0.06～0.12	6,400	0.06～0.12	8,500	0.06～0.12	6,400	0.06～0.12	6,400	0.06～0.12	4,200	0.06～0.12
4	6,400	0.08～0.16	4,800	0.08～0.16	6,400	0.08～0.16	4,800	0.08～0.16	4,800	0.08～0.16	3,200	0.08～0.16
6	4,200	0.12～0.21	3,200	0.12～0.21	4,200	0.12～0.21	3,200	0.12～0.21	3,200	0.12～0.21	2,100	0.12～0.21
8	3,200	0.16～0.24	2,400	0.16～0.24	3,200	0.16～0.24	2,400	0.16～0.24	2,400	0.16～0.24	1,600	0.16～0.24
10	2,500	0.17～0.27	1,900	0.17～0.27	2,500	0.2 ～0.3	1,900	0.17～0.27	1,900	0.2 ～0.3	1,300	0.17～0.27
12	2,100	0.19～0.3	1,600	0.19～0.3	2,100	0.21～0.31	1,600	0.19～0.3	1,600	0.21～0.31	1,100	0.19～0.3
16	1,600	0.22～0.32	1,200	0.22～0.32	1,600	0.22～0.32	1,200	0.22～0.32	1,200	0.22～0.32	800	0.22～0.32
20	1,300	0.28～0.4	1,000	0.28～0.4	1,300	0.28～0.4	1,000	0.28～0.4	1,000	0.28～0.4	600	0.28～0.4

Work Material	Precipitation Stainless Steel		Titanium Alloy		Mild Steel · Low Carbon Steel SS400 · S10C		Carbon Steel S35C· S50C		Alloy Steel SCM · SCr · SNCM		Ni Nickel Alloy Inconel 718		Copper Alloy C1020·2600	
Hardness	≦340HB		280HB～340HB		～150HB ～500N/mm^2		～210HB ～710N/mm^2		16～28HRC 710～900N/mm^2		38～45HRC		—	
No. Steel Type	7		—		—		—		—		—		—	
Cutting Speed	40～50～60 m/min		30～40～50 m/min		80～100～120 m/min		80～100～120 m/min		60～75～90 m/min		10～20～30 m/min		140～170～200 m/min	
Drill Dia. (mm)	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed Rate (mm/rev)
2	8,000	0.04～0.08	6,400	0.04～0.08	12,700	0.04～0.08	12,700	0.04～0.08	11,900	0.04～0.08	3,200	0.03～0.05	22,300	0.03～0.05
3	5,300	0.06～0.12	4,200	0.06～0.12	10,600	0.06～0.12	10,600	0.06～0.12	8,000	0.06～0.12	2,100	0.05～0.08	18,000	0.05～0.08
4	4,000	0.08～0.16	3,200	0.08～0.16	8,000	0.08～0.16	8,000	0.08～0.16	6,000	0.08～0.16	1,600	0.06～0.1	13,500	0.06～0.1
6	2,700	0.12～0.21	2,100	0.12～0.21	5,300	0.12～0.24	5,300	0.12～0.24	4,000	0.12～0.24	1,100	0.09～0.15	9,000	0.09～0.15
8	2,000	0.16～0.24	1,600	0.16～0.24	4,000	0.16～0.28	4,000	0.16～0.28	3,000	0.16～0.28	800	0.12～0.2	6,800	0.12～0.2
10	1,600	0.2 ～0.3	1,300	0.17～0.27	3,200	0.2 ～0.3	3,200	0.2 ～0.3	2,400	0.2 ～0.3	640	0.15～0.2	5,500	0.15～0.25
12	1,300	0.21～0.31	1,100	0.19～0.3	2,700	0.21～0.3	2,700	0.21～0.3	2,000	0.21～0.3	530	0.15～0.2	4,500	0.18～0.3
16	1,000	0.22～0.32	800	0.22～0.32	2,000	0.25～0.36	2,000	0.25～0.36	1,500	0.25～0.36	—	—	3,400	0.24～0.32
20	800	0.28～0.4	600	0.28～0.4	1,600	0.3 ～0.4	1,600	0.3 ～0.4	1,200	0.3 ～0.4	—	—	2,700	0.3 ～0.4

1. The above speeds and feeds are for water-soluble coolant and internal coolant supply.
2. Suitable cutting fluid is water-soluble high density coolant (20~30 times dilution).
3. When using non-water-soluble or water-soluble coolant (over 20times dilution), reduce cutting speed by 30%.
4. Equip the drill with a scratch- and dust-free collet and minimize drill deflection to less than 0.02mm.
5. Fasten the work material to reduce the possibility of work deformation, deflection of machined surface, or vibration.
6. A clogged oil hole can lead to a breakage. Make sure that a filter is attached to the oil feeder.
7. Adjust the speed and feed accordingly based on chip shape when machining copper alloy.

※The above cutting conditions are applicable to hole depth under 3D for heat-resistant alloys such as Inconel 718. When necessary please consider step drilling.

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CARBIDE DRILLS CUTTING CONDITIONS

ADO-TRS-3D•5D

Work Material	Mild Steel·Low Carbon Steel SS400、S10C ~150HB ~500N/mm²		Carbon Steel S35C、S50C ~210HB ~710N/mm²		Alloy Steel SCM、SCr、SNCM 16~28HRC 710 ~900N/mm²	
Cutting Speed	80~120m/min		80~120m/min		60~100m/min	
Drill Dia. (mm)	Speed (min⁻¹)	Feed Rate (mm/rev)	Speed (min⁻¹)	Feed Rate (mm/rev)	Speed (min⁻¹)	Feed Rate (mm/rev)
3	10,000	0.11 ~ 0.15	10,000	0.11 ~ 0.15	8,500	0.11 ~ 0.15
4	8,000	0.14 ~ 0.2	8,000	0.14 ~ 0.2	6,400	0.14 ~ 0.2
5	6,400	0.18 ~ 0.25	6,400	0.18 ~ 0.25	5,100	0.18 ~ 0.25
6	5,300	0.21 ~ 0.3	5,300	0.21 ~ 0.3	4,200	0.21 ~ 0.3
7	4,500	0.25 ~ 0.35	4,500	0.25 ~ 0.35	3,600	0.25 ~ 0.35
8	4,000	0.28 ~ 0.4	4,000	0.28 ~ 0.4	3,200	0.28 ~ 0.4
9	3,500	0.32 ~ 0.45	3,500	0.32 ~ 0.45	2,800	0.32 ~ 0.45
10	3,200	0.35 ~ 0.5	3,200	0.35 ~ 0.5	2,500	0.35 ~ 0.5
11	2,900	0.39 ~ 0.55	2,900	0.39 ~ 0.55	2,300	0.39 ~ 0.55
12	2,700	0.42 ~ 0.6	2,700	0.42 ~ 0.6	2,100	0.42 ~ 0.6
13	2,400	0.46 ~ 0.65	2,400	0.46 ~ 0.65	2,000	0.46 ~ 0.65
14	2,300	0.49 ~ 0.7	2,300	0.49 ~ 0.7	1,800	0.49 ~ 0.7
15	2,100	0.53 ~ 0.75	2,100	0.53 ~ 0.7	1,700	0.53 ~ 0.7
16	2,000	0.56 ~ 0.8	2,000	0.56 ~ 0.72	1,600	0.56 ~ 0.72
17	1,900	0.6 ~ 0.85	1,900	0.6 ~ 0.77	1,500	0.6 ~ 0.77
18	1,800	0.63 ~ 0.9	1,800	0.63 ~ 0.81	1,400	0.63 ~ 0.81
19	1,700	0.67 ~ 0.9	1,700	0.67 ~ 0.86	1,300	0.67 ~ 0.86
20	1,600	0.7 ~ 0.9	1,600	0.7 ~ 0.9	1,300	0.7 ~ 0.9

Work Material	Alloy Steel SCM、SCr、SNCM 28~35HRC 900 ~1,100N/mm²		Cast Iron FC250 ~350N/mm²		Ductile Cast Iron FCD450、FCD600 400 ~600N/mm²	
Cutting Speed	60~90m/min		80~120m/min		60~100m/min	
Drill Dia. (mm)	Speed (min⁻¹)	Feed Rate (mm/rev)	Speed (min⁻¹)	Feed Rate (mm/rev)	Speed (min⁻¹)	Feed Rate (mm/rev)
3	8,000	0.11 ~ 0.15	10,000	0.11 ~ 0.18	8,500	0.11 ~ 0.15
4	6,000	0.14 ~ 0.2	8,000	0.14 ~ 0.24	6,400	0.14 ~ 0.2
5	4,800	0.18 ~ 0.25	6,400	0.18 ~ 0.3	5,100	0.18 ~ 0.25
6	4,000	0.21 ~ 0.3	5,300	0.21 ~ 0.36	4,200	0.21 ~ 0.3
7	3,400	0.25 ~ 0.35	4,500	0.25 ~ 0.42	3,600	0.25 ~ 0.35
8	3,000	0.28 ~ 0.4	4,000	0.28 ~ 0.48	3,200	0.28 ~ 0.4
9	2,700	0.32 ~ 0.45	3,500	0.32 ~ 0.54	2,800	0.32 ~ 0.45
10	2,400	0.35 ~ 0.5	3,200	0.35 ~ 0.6	2,500	0.35 ~ 0.5
11	2,200	0.39 ~ 0.55	2,900	0.39 ~ 0.66	2,300	0.39 ~ 0.55
12	2,000	0.42 ~ 0.6	2,700	0.42 ~ 0.72	2,100	0.42 ~ 0.6
13	1,800	0.46 ~ 0.65	2,400	0.46 ~ 0.78	2,000	0.46 ~ 0.65
14	1,700	0.49 ~ 0.7	2,300	0.49 ~ 0.84	1,800	0.49 ~ 0.7
15	1,600	0.53 ~ 0.7	2,100	0.53 ~ 0.75	1,700	0.53 ~ 0.7
16	1,500	0.56 ~ 0.72	2,000	0.56 ~ 0.8	1,600	0.56 ~ 0.72
17	1,400	0.6 ~ 0.77	1,900	0.6 ~ 0.85	1,500	0.6 ~ 0.77
18	1,300	0.63 ~ 0.81	1,800	0.63 ~ 0.9	1,400	0.63 ~ 0.81
19	1,300	0.67 ~ 0.86	1,700	0.67 ~ 0.95	1,300	0.67 ~ 0.86
20	1,200	0.7 ~ 0.9	1,600	0.7 ~ 1	1,300	0.7 ~ 0.9

1. The indicated speeds and feeds are for drilling with water-soluble coolant.
2. Water-soluble high density coolant (less than 20 times dilution) is recommended.
3. When using non-water-soluble or water-soluble coolant (over 20 times dilution), reduce cutting speed by 30%.
4. Equip the drill with a scratch- and dust-free collet and minimize drill deflection to less than 0.02mm.
5. Fasten the work material to reduce the possibility of work deformation, deflection of machined surface, or vibration.
6. A clogged oil hole can lead to breakage. Make sure that a filter is attached to the oil feeder.

CARBIDE DRILLS CUTTING CONDITIONS

WHO55-5D

Work Material	SKD61 Special Alloy Steel· Hardened Steel· Prehardened Steel (unquenched) 40～45HRC		DAC55、DH31S、SKD61、SKD11、STAVAX 45～50HRC		DAC55、DH31S、SKD61、SKD11、STAVAX 50～56HRC		Inconel 38～45HRC	
Cutting Speed	30～50m/min		20～30m/min		20～30m/min		10～30m/min	
Drill Dia. (mm)	Speed (min⁻¹)	Feed Rate (mm/rev)	Speed (min⁻¹)	Feed Rate (mm/rev)	Speed (min⁻¹)	Feed Rate (mm/rev)	Speed (min⁻¹)	Feed Rate (mm/rev)
3.3	3,900	0.033 ～0.066	2,400	0.033 ～0.066	2,400	0.033 ～0.066	1,900	0.03 ～0.07
4	3,200	0.04 ～0.08	2,000	0.04 ～0.08	2,000	0.04 ～0.08	1,600	0.04 ～0.08
5	2,500	0.05 ～0.1	1,600	0.05 ～0.1	1,600	0.05 ～0.1	1,300	0.05 ～0.1
6	2,100	0.06 ～0.12	1,300	0.06 ～0.12	1,300	0.06 ～0.12	1,100	0.06 ～0.12
7	1,800	0.07 ～0.14	1,100	0.07 ～0.14	1,100	0.07 ～0.14	900	0.07 ～0.14
8	1,600	0.08 ～0.16	1,000	0.08 ～0.16	1,000	0.08 ～0.16	800	0.08 ～0.16
9	1,400	0.09 ～0.18	900	0.09 ～0.18	900	0.09 ～0.18	700	0.09 ～0.18
10	1,300	0.1 ～0.2	800	0.1 ～0.2	800	0.1 ～0.2	600	0.1 ～0.2
11	1,150	0.11 ～0.22	720	0.11 ～0.22	720	0.11 ～0.22	600	0.11 ～0.22
12	1,100	0.12 ～0.24	700	0.12 ～0.24	700	0.12 ～0.24	500	0.12 ～0.24

WH70-DRL

Work Material	SKD11・SKT・SUS440 55～60HRC		SKH・SKD11・SKS 60～70HRC	
Cutting Speed	10～16m/min		8～13m/min	
Drill Dia. (mm)	Speed (min⁻¹)	Feed Rate (mm/rev)	Speed (min⁻¹)	Feed Rate (mm/rev)
2	2,000	～0.04	1,900	～0.04
3	1,330	～0.04	1,250	～0.04
4	1,000	～0.04	950	～0.04
5	800	～0.04	750	～0.04
6	670	～0.04	630	～0.04
8	500	～0.04	480	～0.04
10	400	～0.04	380	～0.04
12	330	～0.04	320	～0.04
14.1	280	～0.04	270	～0.04
16.1	250	～0.04	240	～0.04
17.6	235	～0.04	190	～0.04
18.6	220	～0.04	180	～0.04

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CARBIDE DRILLS CUTTING CONDITIONS

ADF-2D

Work Material	Low Carbon Steel· Alloy Steel (C<0.3%) Ss400·SCM ~710N/mm²		Carbon Steel S35€ S50C ~210HB ~710N/mm²		Alloy Steel SCM SCr SNCM 28~35HRC 900~1,100N/mm²		Plastic Mold Steel NAK80 ~40HRC		Special Alloy Steel· Hardened Steel· Prehardened Steel SKD61 ~50HRC		Cast Iron FC250 ~350N/mm²		Ductile Cast Iron FCD600 400~600N/mm²		Aluminum A5052·A7075		Aluminum Alloy AC4C·ADC	
Cutting Speed	60 ~ 100m/min		60 ~ 100m/min		30 ~ 90m/min		20 ~ 40m/min		20 ~ 30m/min		60 ~ 120m/min		50 ~ 80m/min		80 ~ 200m/min		80 ~ 200m/min	
Drill Dia. (mm)	Speed (min-1)	Feed Rate (mm/rev)	Speed (min-1)	Feed Rate (mm/rev)	Speed (min-1)	Feed Rate (mm/rev)	Speed (min-1)	Feed Rate (mm/rev)	Speed (min-1)	Feed Rate (mm/rev)	Speed (min-1)	Feed Rate (mm/rev)	Speed (min-1)	Feed Rate (mm/rev)	Speed (min-1)	Feed Rate (mm/rev)	Speed (min-1)	Feed Rate (mm/rev)
2	12,700	0.01~ 0.06	12,700	0.01~ 0.06	9,550	0.01~ 0.06	4,750	0.01~ 0.04	4,000	0.01~ 0.03	14,300	0.01~ 0.06	10,350	0.01~ 0.06	22,300	0.01~ 0.06	22,300	0.01~ 0.06
3	8,500	0.015~ 0.09	8,500	0.015~ 0.09	6,350	0.015~ 0.09	3,200	0.015~ 0.06	2,650	0.015~ 0.045	9,550	0.015~ 0.09	6,900	0.015~ 0.09	14,850	0.015~ 0.09	14,850	0.015~ 0.09
4	6,350	0.02~ 0.12	6,350	0.02~ 0.12	4,750	0.02~ 0.12	2,400	0.02~ 0.08	2,000	0.02~ 0.06	7,150	0.02~ 0.12	5,150	0.02~ 0.12	11,150	0.02~ 0.12	11,150	0.02~ 0.12
6	4,250	0.03~ 0.18	4,250	0.03~ 0.18	3,200	0.03~ 0.18	1,600	0.03~ 0.12	1,350	0.03~ 0.09	4,750	0.03~ 0.18	3,450	0.03~ 0.18	7,450	0.03~ 0.18	7,450	0.03~ 0.18
8	3,200	0.04~ 0.24	3,200	0.04~ 0.24	2,400	0.04~ 0.24	1,200	0.04~ 0.16	1,000	0.04~ 0.12	3,600	0.04~ 0.24	2,600	0.04~ 0.24	5,550	0.04~ 0.24	5,550	0.04~ 0.24
10	2,550	0.05~ 0.3	2,550	0.05~ 0.3	1,900	0.05~ 0.3	950	0.05~ 0.2	800	0.05~ 0.15	2,850	0.05~ 0.3	2,050	0.05~ 0.3	4,450	0.05~ 0.3	4,450	0.05~ 0.3
12	2,100	0.06~ 0.3	2,100	0.06~ 0.3	1,600	0.06~ 0.3	800	0.06~ 0.24	650	0.06~ 0.18	2,400	0.06~ 0.3	1,700	0.06~ 0.3	3,700	0.06~ 0.36	3,700	0.06~ 0.36
14	1,800	0.07~ 0.35	1,800	0.07~ 0.35	1,350	0.07~ 0.35	700	0.07~ 0.28	550	0.07~ 0.21	2,050	0.07~ 0.35	1,500	0.07~ 0.35	3,200	0.07~ 0.42	3,200	0.07~ 0.42
16	1,600	0.08~ 0.36	1,600	0.08~ 0.36	1,200	0.08~ 0.36	600	0.08~ 0.32	500	0.08~ 0.24	1,800	0.08~ 0.36	1,300	0.08~ 0.36	2,800	0.08~ 0.48	2,800	0.08~ 0.48
18	1,400	0.09~ 0.38	1,400	0.09~ 0.38	1,050	0.09~ 0.38	550	0.09~ 0.36	450	0.09~ 0.27	1,600	0.09~ 0.38	1,150	0.09~ 0.38	2,500	0.09~ 0.54	2,500	0.09~ 0.54
20	1,250	0.1~ 0.4	1,250	0.1~ 0.4	950	0.1~ 0.4	500	0.1~ 0.4	400	0.1~ 0.3	1,450	0.1~ 0.4	1,050	0.1~ 0.4	2,250	0.1~ 0.6	2,250	0.1~ 0.6

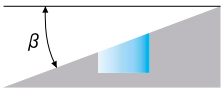
ADFLS-2D

Work Material	Low Carbon Steel· Alloy Steel (C<0.3%) SS400 SCM ~710N/mm²		Carbon Steel S35€ S50C ~210HB ~710N/mm²		Alloy Steel SCM SCr SNCM 28~35HRC 900~1,100N/mm²		Plastic Mold Steel NAK80 ~40HRC		Special Alloy Steel· Hardened Steel· Prehardened Steel SKD61 ~50HRC		Cast Iron FC250 ~350N/mm²		Ductile Cast Iron FCD600 400~600N/mm²		Aluminum A5052·A7075		Aluminum Alloy AC4€ ADC	
Cutting Speed	60 ~ 100m/min		60 ~ 100m/min		30 ~ 90m/min		20 ~ 40m/min		20 ~ 30m/min		60 ~ 120m/min		50 ~ 80m/min		80 ~ 200m/min		80 ~ 200m/min	
Drill Dia. (mm)	Speed (min-1)	Feed Rate (mm/rev)	Speed (min-1)	Feed Rate (mm/rev)	Speed (min-1)	Feed Rate (mm/rev)	Speed (min-1)	Feed Rate (mm/rev)	Speed (min-1)	Feed Rate (mm/rev)	Speed (min-1)	Feed Rate (mm/rev)	Speed (min-1)	Feed Rate (mm/rev)	Speed (min-1)	Feed Rate (mm/rev)	Speed (min-1)	Feed Rate (mm/rev)
3	8,500	0.045~ 0.075	8,500	0.045~ 0.075	6,350	0.045~ 0.075	3,200	0.045~ 0.06	2,650	0.03~ 0.06	9,550	0.06~ 0.09	6,900	0.06~ 0.09	14,850	0.015~ 0.09	14,850	0.015~ 0.09
4	6,350	0.06~ 0.1	6,350	0.06~ 0.1	4,750	0.06~ 0.1	2,400	0.06~ 0.08	2,000	0.04~ 0.08	7,150	0.08~ 0.12	5,150	0.08~ 0.12	11,150	0.02~ 0.12	11,150	0.02~ 0.12
6	4,250	0.09~ 0.15	4,250	0.09~ 0.15	3,200	0.09~ 0.15	1,600	0.09~ 0.12	1,350	0.06~ 0.12	4,750	0.12~ 0.18	3,450	0.12~ 0.18	7,450	0.03~ 0.18	7,450	0.03~ 0.18
8	3,200	0.12~ 0.2	3,200	0.12~ 0.2	2,400	0.12~ 0.2	1,200	0.12~ 0.16	1,000	0.08~ 0.16	3,600	0.16~ 0.24	2,600	0.16~ 0.24	5,550	0.04~ 0.24	5,550	0.04~ 0.24
10	2,550	0.15~ 0.25	2,550	0.15~ 0.25	1,900	0.15~ 0.25	950	0.15~ 0.2	800	0.1~ 0.2	2,850	0.2~ 0.3	2,050	0.2~ 0.3	4,450	0.05~ 0.3	4,450	0.05~ 0.3
12	2,100	0.18~ 0.3	2,100	0.18~ 0.3	1,600	0.18~ 0.3	800	0.18~ 0.24	650	0.12~ 0.24	2,400	0.24~ 0.36	1,700	0.24~ 0.36	3,700	0.06~ 0.36	3,700	0.06~ 0.36
14	1,800	0.21~ 0.35	1,800	0.21~ 0.35	900	0.21~ 0.35	700	0.21~ 0.28	550	0.14~ 0.28	2,050	0.28~ 0.42	1,500	0.28~ 0.42	3,200	0.07~ 0.42	3,200	0.07~ 0.42
16	1,600	0.24~ 0.4	1,600	0.24~ 0.4	800	0.24~ 0.4	600	0.24~ 0.32	500	0.16~ 0.32	1,800	0.32~ 0.48	1,300	0.32~ 0.48	2,800	0.08~ 0.48	2,800	0.08~ 0.48
18	1,400	0.27~ 0.45	1,400	0.27~ 0.45	700	0.27~ 0.45	550	0.27~ 0.36	450	0.18~ 0.36	1,600	0.36~ 0.54	1,150	0.36~ 0.54	2,500	0.09~ 0.54	2,500	0.09~ 0.54
20	1,250	0.3~ 0.5	1,250	0.3~ 0.5	650	0.3~ 0.5	500	0.3~ 0.4	400	0.2~ 0.4	1,450	0.4~ 0.6	1,050	0.4~ 0.6	2,250	0.1~ 0.6	2,250	0.1~ 0.6

CARBIDE DRILLS CUTTING CONDITIONS

ADFO-3D

Work Material	Low Carbon Steel·Alloy Steel (C<0.3%) Ss400·SCM ~710N/mm²		Carbon Steel S35C S50C ~210HB ~710N/mm²		Alloy Steel SCM SCr SNCM 28~35HRC 900~1,100N/mm²		Plastic Mold Steel NAK80 ~40HRC		Stainless Steel SUS304 480~800N/mm²		Special Alloy Steel·Hardened Steel·Prehardened Steel SKD61 ~50HRC		Cast Iron FC250 ~350N/mm²		Ductile Cast Iron FCD600 400~600N/mm²		Aluminum A5052·A7075		Aluminum Alloy AC4C·ADC	
Cutting Speed	80 ~ 120m/min		80 ~ 120m/min		50 ~ 90m/min		20 ~ 40m/min		40 ~ 60m/min		20 ~ 30m/min		80 ~ 120m/min		60 ~ 100m/min		120~ 200m/min		120~200m/min	
Drill Dia. (mm)	Speed (min-1)	Feed Rate (mm/rev)	Speed (min-1)	Feed Rate (mm/rev)	Speed (min-1)	Feed Rate (mm/rev)	Speed (min-1)	Feed Rate (mm/rev)	Speed (min-1)	Feed Rate (mm/rev)	Speed (min-1)	Feed Rate (mm/rev)	Speed (min-1)	Feed Rate (mm/rev)	Speed (min-1)	Feed Rate (mm/rev)	Speed (min-1)	Feed Rate (mm/rev)	Speed (min-1)	Feed Rate (mm/rev)
3	10,600	0.045~0.09	10,600	0.045~0.09	7,450	0.045~0.09	3,200	0.045~0.06	5,300	0.045~0.09	2,650	0.045~0.06	10,600	0.045~0.09	8,500	0.045~0.09	17,000	0.045~0.09	17,000	0.045~0.09
4	8,000	0.045~0.12	8,000	0.045~0.12	5,550	0.045~0.12	2,400	0.045~0.08	4,000	0.045~0.12	2,000	0.045~0.08	8,000	0.045~0.12	6,350	0.045~0.12	12,750	0.045~0.12	12,750	0.045~0.12
6	5,300	0.06~0.18	5,300	0.06~0.18	3,700	0.06~0.18	1,600	0.06~0.12	2,650	0.06~0.18	1,350	0.06~0.12	5,300	0.06~0.18	4,250	0.06~0.18	8,500	0.06~0.18	8,500	0.06~0.18
8	4,000	0.08~0.24	4,000	0.08~0.24	2,800	0.08~0.24	1,200	0.08~0.16	2,000	0.08~0.24	1,000	0.08~0.16	4,000	0.08~0.24	3,200	0.08~0.24	6,350	0.08~0.24	6,350	0.08~0.24
10	3,200	0.1~0.3	3,200	0.1~0.3	2,250	0.1~0.3	950	0.1~0.2	1,600	0.1~0.3	800	0.1~0.2	3,200	0.1~0.3	2,550	0.1~0.3	5,100	0.1~0.3	5,100	0.1~0.3
12	2,650	0.12~0.36	2,650	0.12~0.36	1,850	0.12~0.36	800	0.12~0.24	1,350	0.12~0.36	650	0.12~0.24	2,650	0.12~0.36	2,100	0.12~0.36	4,250	0.12~0.36	4,250	0.12~0.36
14	2,250	0.14~0.42	2,250	0.14~0.42	1,600	0.14~0.42	700	0.14~0.28	1,150	0.14~0.42	550	0.14~0.28	2,250	0.14~0.42	1,800	0.14~0.42	3,650	0.14~0.42	3,650	0.14~0.42
16	2,000	0.16~0.48	2,000	0.16~0.48	1,400	0.16~0.48	600	0.16~0.32	1,000	0.16~0.48	500	0.16~0.32	2,000	0.16~0.48	1,600	0.16~0.48	3,200	0.16~0.48	3,200	0.16~0.48
18	1,750	0.18~0.54	1,750	0.18~0.54	1,250	0.18~0.54	550	0.18~0.36	900	0.18~0.54	450	0.18~0.36	1,750	0.18~0.54	1,400	0.18~0.54	2,850	0.18~0.54	2,850	0.18~0.54
20	1,600	0.2~0.6	1,600	0.2~0.6	1,100	0.2~0.6	500	0.2~0.4	800	0.2~0.6	400	0.2~0.4	1,600	0.2~0.6	1,250	0.2~0.6	2,550	0.2~0.6	2,550	0.2~0.6



1. Water-soluble coolant may be applied as noted in the above table only under the premise that the work surface has been flattened by milling.
2. Use a rigid and precise machine and holder.
3. Please minimize overhang length as much as possible during machining.
4. Adjust the rotational speed and the feed in accordance with conditions such as the machining shape, machine rigidity, or work holding.
5. Please set up the drill so that the runout of the cutting edge is under 0.02 mm.
6. Please select a cutting fluid that is most suitable for the work material with minimal smoke formation.
7. When machining an inclined plane, adjust the rotational speed and the feed in accordance with the angle of the incline (β).
   - When the machining incline angle (β) is less than 30°, please reduce the feed to 40-60%.
   - When the machining incline angle (β) is over 30°, please reduce the speed to 60-80%, the feed to 40-60%.
8. Please use step drilling in pre-drilled holes to improve cutting chip separation.
9. If it is necessary to ensure the locating precision of the hole to be machined, adjust the rotational speed and the feed as indicated above (in accordance with the machining precision requirement).
10. Please always use the appropriate cutting fluid recommended by the cutting fluid manufacturer in the machining of magnesium alloys. Be cautious with the cutting chips as they are highly flammable and may pose a serious fire risk if not properly handled.

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CARBIDE DRILLS CUTTING CONDITIONS

EX - SUS - GDS / EX - SUS - GDR

Work Material	Stainless Steel								Aluminum		Alminum Alloy Castings		Copper Copper Alloy		Low Carbon Steel Mild Steel	
	Austenitic SUS304·200		Martensitic SUS420·440		Ferritic SUS430·405		Precipitation SUS630·631		A5052·7075		AC4C·ADC		C1020·2600		S15C·SS400 ~500n/mm2	
Cutting Speed	12 ~ 15m/min		15 ~ 20m/min		15 ~ 20m/min		8 ~ 12m/min		32 ~ 63m/min		63 ~ 100m/min		25 ~ 50m/min		32 ~ 40m/min	
Drill Dia. (mm)	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed Rate (mm/rev)
1	4,460	0.01 ~ 0.018	5,550	0.02 ~ 0.04	5,550	0.01 ~ 0.03	3,200	0.01 ~ 0.03	15,000	0.02 ~ 0.06	25,000	0.02 ~ 0.06	12,000	0.01 ~ 0.03	10,000	0.02 ~ 0.05
2	2,230	0.02 ~ 0.036	2,850	0.05 ~ 0.07	2,850	0.03 ~ 0.05	1,600	0.03 ~ 0.05	8,000	0.04 ~ 0.12	10,000	0.04 ~ 0.12	5,100	0.04 ~ 0.06	5,700	0.06 ~ 0.09
3	1,490	0.03 ~ 0.054	1,900	0.06 ~ 0.09	1,900	0.04 ~ 0.06	1,100	0.04 ~ 0.06	5,300	0.06 ~ 0.18	6,700	0.06 ~ 0.18	3,400	0.06 ~ 0.09	3,850	0.1 ~ 0.13
4	1,030	0.04 ~ 0.08	1,450	0.08 ~ 0.12	1,450	0.06 ~ 0.08	800	0.06 ~ 0.08	4,000	0.08 ~ 0.24	6,400	0.08 ~ 0.24	2,550	0.08 ~ 0.11	2,900	0.11 ~ 0.15
5	830	0.05 ~ 0.1	1,150	0.12 ~ 0.15	1,150	0.08 ~ 0.1	650	0.08 ~ 0.1	3,200	0.1 ~ 0.3	5,000	0.1 ~ 0.3	2,050	0.1 ~ 0.13	2,260	0.12 ~ 0.18
6	690	0.06 ~ 0.12	950	0.15 ~ 0.18	950	0.09 ~ 0.12	550	0.09 ~ 0.12	2,700	0.12 ~ 0.36	4,200	0.12 ~ 0.36	1,700	0.12 ~ 0.15	1,900	0.13 ~ 0.19
8	480	0.08 ~ 0.16	720	0.2 ~ 0.24	720	0.12 ~ 0.16	400	0.12 ~ 0.16	2,000	0.16 ~ 0.45	3,200	0.16 ~ 0.45	1,250	0.16 ~ 0.2	1,400	0.17 ~ 0.24
10	380	0.10 ~ 0.2	570	0.25 ~ 0.3	570	0.15 ~ 0.2	320	0.15 ~ 0.2	1,600	0.2 ~ 0.55	2,500	0.2 ~ 0.55	1,000	0.2 ~ 0.25	1,120	0.2 ~ 0.28
12	320	0.12 ~ 0.24	480	0.3 ~ 0.36	480	0.18 ~ 0.24	280	0.18 ~ 0.24	1,350	0.24 ~ 0.66	2,100	0.24 ~ 0.66	850	0.24 ~ 0.3	950	0.24 ~ 0.34
13	370	0.26 ~ 0.36	440	0.32 ~ 0.4	440	0.2 ~ 0.26	250	0.2 ~ 0.26	1,250	0.25 ~ 0.72	2,000	0.25 ~ 0.72	780	0.26 ~ 0.32	880	0.26 ~ 0.36
14	340	0.28 ~ 0.39	410	0.35 ~ 0.45	410	0.21 ~ 0.3	225	0.21 ~ 0.3	1,140	0.27 ~ 0.74	1,850	0.27 ~ 0.74	730	0.26 ~ 0.34	820	0.27 ~ 0.39
15	320	0.29 ~ 0.4	380	0.36 ~ 0.48	380	0.22 ~ 0.31	210	0.22 ~ 0.31	1,060	0.29 ~ 0.8	1,700	0.29 ~ 0.8	680	0.26 ~ 0.36	760	0.28 ~ 0.42
16	300	0.3 ~ 0.43	355	0.37 ~ 0.5	355	0.23 ~ 0.32	200	0.23 ~ 0.32	1,000	0.3 ~ 0.83	1,600	0.3 ~ 0.83	640	0.27 ~ 0.37	720	0.29 ~ 0.43
17	280	0.31 ~ 0.45	335	0.38 ~ 0.52	335	0.24 ~ 0.34	185	0.24 ~ 0.34	940	0.31 ~ 0.88	1,500	0.31 ~ 0.88	600	0.28 ~ 0.39	675	0.3 ~ 0.46
18	265	0.32 ~ 0.47	320	0.39 ~ 0.54	320	0.25 ~ 0.36	175	0.25 ~ 0.36	885	0.32 ~ 0.94	1,450	0.32 ~ 0.94	570	0.29 ~ 0.41	640	0.32 ~ 0.49
19	250	0.33 ~ 0.48	300	0.4 ~ 0.55	300	0.25 ~ 0.38	170	0.25 ~ 0.38	840	0.34 ~ 0.97	1,350	0.34 ~ 0.97	540	0.3 ~ 0.43	600	0.33 ~ 0.51
20	240	0.34 ~ 0.5	285	0.4 ~ 0.56	285	0.26 ~ 0.4	160	0.26 ~ 0.4	800	0.36 ~ 1	1,300	0.36 ~ 1	510	0.3 ~ 0.44	570	0.34 ~ 0.52
22	215	0.36 ~ 0.54	260	0.42 ~ 0.61	260	0.28 ~ 0.44	145	0.28 ~ 0.44	730	0.39 ~ 1.08	1,200	0.39 ~ 1.08	460	0.32 ~ 0.48	520	0.37 ~ 0.57
24	200	0.38 ~ 0.57	240	0.43 ~ 0.65	240	0.3 ~ 0.48	135	0.3 ~ 0.48	670	0.41 ~ 1.15	1,100	0.41 ~ 1.15	420	0.33 ~ 0.52	480	0.39 ~ 0.61
26	185	0.4 ~ 0.6	220	0.44 ~ 0.7	220	0.32 ~ 0.52	120	0.32 ~ 0.52	620	0.44 ~ 1.22	1,000	0.44 ~ 1.22	390	0.34 ~ 0.56	450	0.41 ~ 0.66
28	170	0.41 ~ 0.63	200	0.45 ~ 0.74	200	0.34 ~ 0.56	115	0.34 ~ 0.56	570	0.46 ~ 1.29	930	0.46 ~ 1.29	360	0.35 ~ 0.59	410	0.43 ~ 0.71
30	160	0.42 ~ 0.66	190	0.45 ~ 0.78	190	0.36 ~ 0.6	105	0.36 ~ 0.6	530	0.48 ~ 1.35	870	0.48 ~ 1.35	340	0.36 ~ 0.63	380	0.45 ~ 0.75
32	150	0.43 ~ 0.7	180	0.45 ~ 0.82	180	0.37 ~ 0.64	100	0.37 ~ 0.64	500	0.5 ~ 1.42	820	0.5 ~ 1.42	320	0.38 ~ 0.67	360	0.47 ~ 0.8
40	120	0.44 ~ 0.76	140	0.48 ~ 0.88	140	0.4 ~ 0.7	80	0.4 ~ 0.7	400	0.6 ~ 1.4	650	0.6 ~ 1.4	250	0.4 ~ 0.8	280	0.48 ~ 1
50	95	0.45 ~ 0.8	115	0.5 ~ 0.9	115	0.45 ~ 0.75	60	0.45 ~ 0.75	320	0.7 ~ 0.75	500	0.7	200	0.45 ~ 1	230	0.5 ~ 1.2

1. The indicated speeds and feeds are for drilling with water-soluble oil.
2. The most suitable cutting fluid is water-soluble high density oil (5~10 times dilution)
3. When drilling cast surface and black (ie.not ground surface), reduce drilling speed by 20%.
4. For drilling depth>3D.reduce drilling speed (using the table below).
5. Step feeding is required for drilling depth>4D.
6. When using non-water-soluble oil or water-soluble oil (over 10 times dilution), reduce the drilling speed by 20%.

D : drill dia

Depth of Hole	≦4D	≦5D	≦6D
Coefficientforreducingspeed	×0.9	×0.8	×0.8

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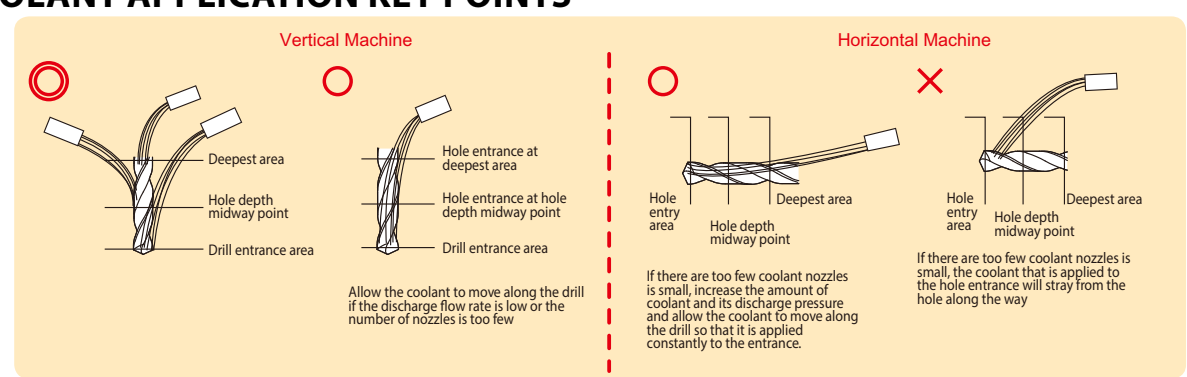
CARBIDE DRILLS CUTTING CONDITIONS

TDXL 10D / 15D / 20D

Work Material	Carbon Steel S35C、S50C ～210HB 500 ～710N/㎟		Alloy Steel SCM、SCr、SNCM 16 ～28HRC 710 ～900N/㎟		Tool Steels Die Steel(unquenched) SKD、SK、DH31、DAC 710 ～900N/㎟		Cast Iron FC250 ～350N/㎟		Ductile Cast Iron FCD450、FCD600 400 ～600N/㎟	
Cutting Speed	20 ~ 24 m /min		18 ~ 22m /min		12 ~ 16m /min		18 ~ 24m /min		16 ~ 20m /min	
Drill Dia. (mm)	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed Rate (mm/rev)	Speed (min^{-1})	Feed Rate (mm/rev)
1.6	4,400	0.016~ 0.03	4,000	0.016~ 0.03	2,800	0.016~ 0.03	4,200	0.03 ~ 0.05	3,600	0.01 ~ 0.03
2	3,500	0.02 ~ 0.05	3,200	0.02 ~ 0.04	2,200	0.02 ~ 0.04	3,300	0.04 ~ 0.06	2,900	0.01 ~ 0.04
3	2,300	0.03 ~ 0.08	2,100	0.03 ~ 0.08	1,500	0.03 ~ 0.07	2,200	0.06 ~ 0.1	1,900	0.02 ~ 0.08
4	1,800	0.04 ~ 0.1	1,600	0.04 ~ 0.1	1,100	0.04 ~ 0.09	1,700	0.08 ~ 0.13	1,400	0.02 ~ 0.1
5	1,400	0.05 ~ 0.13	1,300	0.05 ~ 0.13	900	0.05 ~ 0.12	1,300	0.1 ~ 0.16	1,100	0.03 ~ 0.13
6	1,200	0.06 ~ 0.15	1,100	0.06 ~ 0.15	750	0.06 ~ 0.14	1,100	0.12 ~ 0.19	950	0.04 ~ 0.15
8	900	0.08 ~ 0.2	800	0.08 ~ 0.2	550	0.08 ~ 0.18	850	0.16 ~ 0.26	700	0.05 ~ 0.2
10	700	0.1 ~ 0.25	650	0.1 ~ 0.25	450	0.1 ~ 0.23	650	0.2 ~ 0.32	550	0.06 ~ 0.25
12	600	0.12 ~ 0.3	550	0.12 ~ 0.3	350	0.12 ~ 0.28	550	0.24 ~ 0.38	500	0.07 ~ 0.3

1. The indicated speeds and feeds are for drilling with water-soluble oil. When using non-water-soluble oil, set the drilling speed, reduce the drilling speed by 20-30%.
2. The most suitable cutting fluid is water-soluble oil (10-30 times dilution).
3. If chips evacuation is difficult while non-step drilling, we recommend to add steps.
4. If the number of nozzles on a horizontal machine center is too few or the discharge flow rate is insufficient, perform step-feed drilling. In this case, we recommend a step-feed method in which the drill is retracted to the entrance of the hole.
5. Pilot or centering is necessary.
   1) For a pilot hole, select 0.05mm to 0.1mm larger size drill than TDXL. For deep hole, we recommend drilling a deeper pilot hole, 3 to 5D in depth.
   2) When centering it is recommended leading drill has a 130 degree point angle.
6. 【TDXL 25D, 30D only】Performs 1D-3D step drilling.

COOLANT APPLICATION KEY POINTS

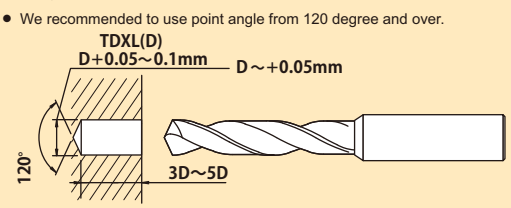


For15D,20D,25Dand30DType

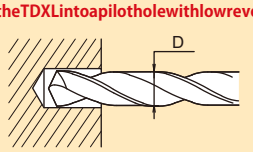
① **Makea pilothole.**

Recommended drill : EX-GDS

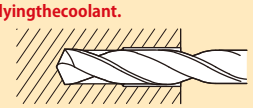
- For a pilot hole, select 0.05mm to 0.1mm larger size drill than TDXL. For deep hole, we recommend to drill deeper pilot hole.
- For a vertical machining center. When drilling many holes in a small area with vertical machining center. We recommend only centering by 130 degree point angle LDS to avoid chips building up in pilot holes, which can cause drill chipping or breakage. When drilling the pilot hole it is recommended to make the hole 3xD in depth, at a feed rate equal to (Drill φ x 0.01) per revolution. Straightness will be less accurate than a comparable operation in a horizontal machining center.
- We recommended to use point angle from 120 degree and over.



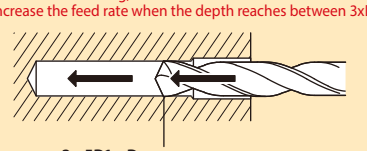
② **InserttheTDXLintoapilotholewithlowrevolution.(～500min⁻¹)**



③ **Startsupplyingthecoolant.**

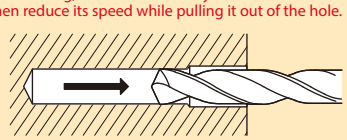


④ Increase the revolution to the designated speed and start drilling. At the start of drilling, set the feed rate to 1% of the drill diameter and increase the feed rate when the depth reaches between 3xD and 5xD.



1～2%D! 3～5D1%D
Increase feed rate to between 1 and 2% at it to 1%D between 3xD and 5xD

⑤ After drilling, move the drill away from the bottom of the hole; then reduce its speed while pulling it out of the hole.



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A SIGMA CUTTING CONDITIONS

A - SIGMA - SFT

(m/min)
Cutting Speed

		0 5 10 15 20 30 40 50 60 70 75
Medium Carbon Steel High Carbon Steel	S45C	5—15 / 15—50 / 50—75
Alloy Steel	SCM	5—10 / 10—15 / 15—30
Mild Steel	SS400	5—20 (*)
Stainless Steel	SUS304 SUS420	5—10 / 10—15
Aluminum	AC ADC	5—50
Ductile Cast iron	FCD	5—50

A - SIGMA - POT

(m/min)
Cutting Speed

		0 5 10 15 20 30 40 50 60 70 75
Medium Carbon Steel High Carbon Steel	S45C	5—15 / 15—50 / 50—75
Alloy Steel	SCM	5—10 / 10—30 / 30—50
Mild Steel	SS400	5—15 / 15—50 / 50—75
Stainless Steel	SUS304 SUS420	5—15 / 15—30
Aluminum	AC ADC	5—50
Ductile Cast iron	FCD	5—50

RECOMMENDED CUTTING SPEEDS AND LUBRICANTS

This chart shows the recommended cutting speeds and cutting fluids. Tap material, type of tap, chamfer length, dimension of drill hole, work materials and cutting fluids are important factors for determining suitable cutting speed.

Lubrication, cooling, capability and adhesion resistance are the three important factors effecting cutting fluid.

RECOMMENDED STANDARD CUTTING SPEEDS AND APPLICATION OF CUTTING FLUIDS

WORK MATERIAL		CUTTING SPEED (m/min)							CUTTING FLUIDS			
		※STRAIGHT FLUTEDTAP	SPIRAL FLUTEDTAP	※SPIRAL POINTEDTAP	※TUNGSTEN CARBIDETAP	※FLUTELESS TAP	HIGHSPEED SYNCHROTAP	PIPE THREADTAP	NON-WATER-SOLUBLE	WATER-SOLUBLE	SEMI -DRY	DRY
LOW TENSILE STRENGTH STEEL	≦ C0.25%	8 ~ 13		15 ~ 25	—	8 ~ 13	27 ~ 32	3 ~ 6	◎	○	—	—
MEDIUM TENSILE STRENGTH STEEL	C0.25 ~ 0.40%	7 ~ 12	7 ~ 12	10 ~ 15	—	7 ~ 10	27 ~ 32	3 ~ 6	◎	○	—	—
HIGH TENSILE STRENGTH STEEL	≧ C0.45%	6 ~ 9		8 ~ 13	—	5 ~ 8	22 ~ 27	2 ~ 5	◎	○	—	—
ALLOY STEEL	SCM	7 ~ 12	7 ~ 12	10 ~ 15	—	5 ~ 8	22 ~ 27	2 ~ 5	◎	△	—	—
HARDENED STEEL		3 ~ 5 (4 ~ 8)		4 ~ 6 (6 ~ 10)	—	—	—	2 ~ 5	◎	△	—	—
STAINLESS STEEL	SUS	4 ~ 7	5 ~ 8	8 ~ 13	—	5 ~ 10	—	3 ~ 6	◎	○	—	—
PRECIPITATION HARDENDED STAINLESS STEEL	SUS630 SUS631	3 ~ 5		4 ~ 6	—	—	—	2 ~ 5	◎	—	—	—
TOOL STEEL	SKD	6 ~ 9	6 ~ 9	7 ~ 10	—	—	—	2 ~ 5	◎	—	—	—
CAST STEEL	SC	6 ~ 11		10 ~ 15	—	—	17 ~ 22	2 ~ 5	◎	○	—	—
CAST IRON	FC	10 ~ 15	—	—	10 ~ 20	—	—	2 ~ 5	◎	○	○	○
DUCTILE CAST IRON		7 ~ 12		10 ~ 20	10 ~ 20	—	—	4 ~ 8	◎	○	○	—
COPPER	Cu	6 ~ 9	6 ~ 11	7 ~ 12	10 ~ 20	7 ~ 12	27 ~ 32	2 ~ 5	○	○	—	—
BRASS BRASS CASTING	Bs· BsC	10 ~ 15		15 ~ 25	15 ~ 25	7 ~ 12	27 ~ 32	5 ~ 10	○	○	○	○
BRONZE BRONZE CASTING		6 ~ 11	6 ~ 11	10 ~ 20	10 ~ 20	7 ~ 12	—	6 ~ 11	○	○	—	—
ALUMINUM ROLLED STEEL	AL	10 ~ 20		15 ~ 25	—	10 ~ 20	100 ~ 300	5 ~ 10	◎	○	—	—
ALUMINUM ALLOY CASTING	AC· ADC	10 ~ 15	10 ~ 15	15 ~ 20	10 ~ 20	10 ~ 15	80 ~ 300	10 ~ 15	◎	○	—	—
MAGNESIUM ALLOY CASTING	MC	7 ~ 12		10 ~ 15	10 ~ 20	—	—	10 ~ 15	◎	○	—	—
ZINC ALLOY CASTING	ZDC	7 ~ 12	7 ~ 12	10 ~ 15	10 ~ 20	7 ~ 12	27 ~ 100	10 ~ 15	◎	○	—	—
THERMO SETTING PLASTIC	BAKELITE PHENOL· EPOXY	10 ~ 20		—	15 ~ 25	—	—	5 ~ 10	—	○	○	○
THERMO PLASTIC	VINYL CHLORIDE NYLON	10 ~ 20	10 ~ 15	10 ~ 20	10 ~ 20	—	27 ~ 32	5 ~ 10	—	○	—	—

◎IDEAL ○GOOD △APPLICABLE —NOTAPPLICABLE

1.These are general recommendations which depending upon conditions, may be altered.
2.To select the best taps, please see TAP selection chart.
3.( ) =recommendation for CPM taps.
※Please apply +30 ~ +50% higher speed for coated tap (Exclude Steam Oxide and Nitride Treatment)

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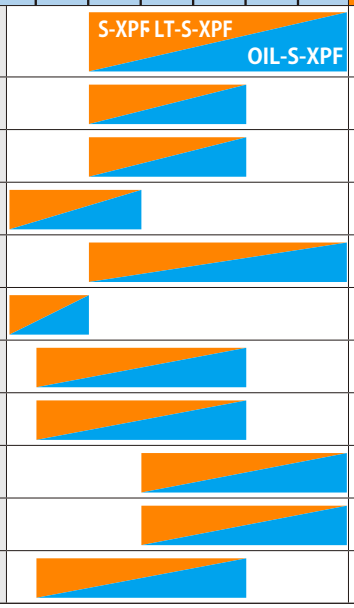
CUTTING CONDITIONS

	WORKMATERIAL		S-XPF・LT-S-XPF・S-OIL-XPF							
			CuttingSpeed(m/min)	OIL-S-XPF	Drill for pilot holes					
				S-XPF・LT-S-XPF	MRS-GDL	WX-MS-GDS	ADO-5D	AD-2D	VPH-GDS
	LOW/MEDIUM TENSILE STRENGTH STEEL	C≦ 0.4%	15～40	◎	—	◎	◎	◎	○
	HIGHTENSILE STRENGTH STEEL	C≧ 0.45%	15～30	◎	—	○	◎	◎	○
	ALLOYSTEEL	SCM	15～30	◎	—	○	◎	○	○
	HARDENEDSTEEL	25～35HRC	5～20	◎	—	—	◎	○	◎
	CASTSTEEL	SC	15～40	○	—	—	◎	○	◎
※	STAINLESSSTEEL	SUS	5～15	◎ *1	◎	○	◎	—	—
※	COPPER	Cu	10～30	◎	—	◎	○	○	—
※	BRASS/BRASS CASTING	Bs BsC	10～30	◎	—	◎	◎	◎	◎
※	ALUMINUM ROLLEDSTELL	AL	20～50	◎	—	◎	○	—	—
※	ALUMINUMALLOY CASTING	AC ADC	20～40	◎	—	○	○	○	—
※	ZINCALLOY CASTING	ZDC	10～30	◎	—	—	○	○	—



Note : The indicated speeds and feeds are for tapping with chlorine-free water-soluble coolant.
: Cutting speed is recommended to be reduced by at least 30% in case of M24 and up.
※ : For Stainless Steel to Zinc Alloy Casting on the above, use EX-SUS and NEXUS drill series.
* 1We recommend using the non-water-soluble fluid or highly lubricated water-soluble fluid for the stainless steels.

Ideal ◎ Good ○

WORK MATERIAL		CC-SFT			
		M2～M6(2FLUTES)		M6(3FLUTES) ～M24	
		Cutting Speed (m/min)	Ideal ◎ Good ○	Cutting Speed (m/min)	Ideal ◎ Good ○
STAINLESS STEEL (AUSTENITIC·FERRITIC)	SUS304・SUS420	6 ~ 10	◎	6 ~ 10	◎
MEDIUM TENSILE STRENGTH STEEL	S45C	25 ~ 35	○	15 ~ 25	○
ALLOY STEEL	SCM (30HRC)	15 ~ 30	◎	—	—
MILD STEEL	SS400	30 ~ 40	○	—	—

・When machining steels, please do cynclonised feeding.

WORK MATERIAL		WHR-NI-SFT										
		Cutting Speed (m/min)							CUTTING FLUIDS			
		STRAIGHT FLUTED TAP	SPIRAL FLUTED TAP	SPIRAL POINTED TAP	TUNGSTEN CARBIDE TAP	FLUTELESS TAP	HIGH SPEED SYNCHRO TAP	PIPE THREAD TAP	NON-WATER-SOLUBLE	WATER-SOLUBLE	SEMI-DRY	DRY
NICKEL ALLOY	Inconel®	—	1 ~ 3	2 ~ 4	—	—	—	—	◎	—	—	—

・To machine 3B class internal threads, use synchronized feeding and a milling chuck as measures against the problem of enlarged internal threads.

WORK MATERIAL		V-TI-SFT,V-TI-POT										
		Cutting Speed (m/min)							CUTTING FLUIDS			
		STRAIGHT FLUTED TAP	SPIRAL FLUTED TAP	SPIRAL POINTED TAP	TUNGSTEN CARBIDE TAP	FLUTELESS TAP	HIGH SPEED SYNCHRO TAP	PIPE THREAD TAP	NON-WATER-SOLUBLE	WATER-SOLUBLE	SEMI-DRY	DRY
TITANIUM ALLOY		—	3 ~ 5	4 ~ 6	—	—	—	—	◎	○	—	—

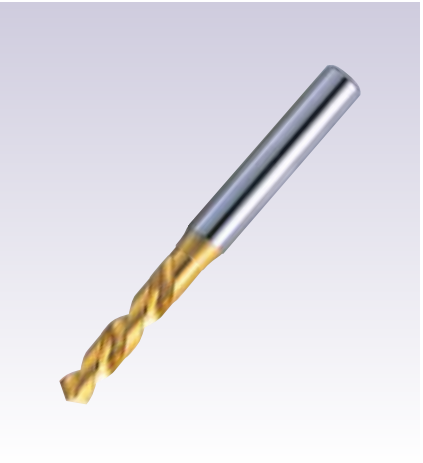
WORK MATERIAL		V-XPM-HT		
		Cutting Speed (m/min)	CUTTING FLUIDS	MACHINE
HIGH HARDENED STEEL	40 ~ 50HRC	2 ~ 4	Water-Soluble, Non-Water-Soluble	Machining Center
HIGH HARDENED STEEL	50 ~ 55HRC	1 ~ 3	Water-Soluble, Non-Water-Soluble	Machining Center

1.Make sure to select the correct cutting speed and cutting fluids. Tapping paste is not recommended.
2.When you use water-soluble coolant, please select a coolant with better lubrication character.
3.The WH55-OT is designed for machine use only. Tapping by hand will cause chips to get stuck between the tool and the work material, and result in chipping of the taps.

SPECIAL MADE TOOLS

STEP DRILL

STEP BURNISHING DRILL



LEFT HAND HELIX DRILL

CARBIDE REAMER

SLOT CUTTER

NICKS AND CORNER RADIUS

FORMING DIES

FIR-TREE CUTTER

TORUS/TAPER BALL CUTTER

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