



2026 ► 2027

WIDIN PRODUCTS

ENG

2026 ► 2027

WIDIN PRODUCTS

Dynamic WIDIN

For Creation of Superier Customer Value



WIDIN continues to expand its presence in global markets and develops cutting-tool solutions aligned with customer requirements. Through superior quality and service, WIDIN enhances productivity across a wide range of machining applications.

Guided by the philosophy “Dynamic WIDIN,” WIDIN develops products that deliver quality with cost competitiveness, strengthening its global brand presence.



· Homepage ·



· YOUTUBE ·

WIDIN HISTORY

- 
- 1988.10 ● Established Hana Cutting Tools Co., Ltd
 - 2001.07 ● Certified in ISO 9001 Quality Management System
 - 2002.03 ● Authorized R&D Center
 - 2006.10 ● The 10th Small and Medium Business Awards (Technology Innovation Division) Award
 - 2007.07 ● Changing the name of company from HANA TOOLS CO., LTD to WIDIN CO. LTD
 - 2008.03 ● Establishment of a U.S. sales corporation (WIDIN.Inc) CHICAGO
 - 2008.07 ● Observed the 20th anniversary of the foundation with opening new Office in Changwon
 - 2010.05 ● Awarded Global Standards Management Award in 2010
 - 2012.01 ● Appointed as A Global Hidden Champions by Small & Medium Business Corporation
 - 2012.06 ● Moved to new office and factory(expended)
 - 2015.06 ● Establishment of a Vietnam sales corporation (WIDIN.Inc)
 - 2017.08 ● Vietnam Factory Established
 - 2017.11 ● Received the USD 10 Million Export Tower
 - 2018.09 ● The inauguration ceremony of the new CEO (Chairman Yoon Hye-seop / President Han Jae-geun)
 - 2020.01 ● Changwon Mayor Award as CEO (honorary)
 - 2025.01 ● The inauguration ceremony of the new CEO (Chairman Yoon Hye-seop / President Lee Seung Soo)

Global Networks



Head Quarter

172, Sahwa-ro, Uichang-gu, Changwon-si, Gyeongsangnam-do, Korea [51389]
T. 055-286-0905 F. 055-286-0978

WIDIN USA

1261 Wiley Rd. Unit F, Schaumburg, IL 60173
T. +1-847-947-8320 F. +1-847-947-8322 E-mail. customerservice@widinus.com



WIDIN Viet Nam(Office & Factory)

└ Viet Nam, Ha Noi Office

Lot CN5, Hop Thinh Industrial Zone, Hop Thinh Commune, Hiep Hoa District,
Bac Giang Province, Viet Nam T. +84-20-4248-4883

└ Viet Nam, Ho Chi Minh Office

Floor 8, Pearl Plaza Building, 561 Dien Bien Phu, Ward 25, Binh Thanh District,
Ho chi minh City T. +84-39-5238-309

Guide Line To Icons

Section	Icon	Name	Description
Tool Material		CARBIDE	Carbide
		HSSE	HSSE
Surface Treatment		AlTiN	Excellent wear resistance and heat resistance
		TiAlN	Excellent oxidation resistance for high-speed processing
		AlCrN	Excellent wear resistance and heat resistance
		D.L.C	High surface hardness and excellent wear resistance
		Diamond	Good wear resistance
		CrN	Excellent wear resistance and welding resistance to copper and non-ferrous metals
		TiN	Excellent welding resistance and wear resistance
		TiCN	Excellent welding resistance, wear resistance, and heat resistance
		Steam HOMO	Surface treatment with excellent welding resistance
		Nitride	High hardness and excellent wear resistance
		Bright	Non coated

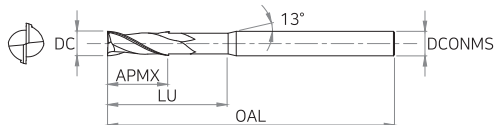
Section	Icon	Name	Description
DIN Standard		DIN 671-374 376	DIN371, 374, 376
		DIN 6537K	DIN6537K
		DIN 6537L	DIN6537L
Roughing Shape		FINE PITCH	For roughing
		COARSE PITCH	For roughing (Wide pitch)
		CHAMFERED PITCH	For finishing
Helix Angle		-	The helix angle of the end mill
		-	the helix angle of end mill and the variable helix angle
		-	The helix angle of the drill
End Face Shape / Tolerance of Radius		Ball Shape / R tolerance	R tolerance of ball end mill
		Corner R Shape / R tolerance	Corner R tolerance of radius end mill
		Chamfered end face	Chamfered end face
Depth		-	This indicates the drilling depth * 3D, 4D, 5D, 8D, 10D, 20D

Section	Icon	Name	Description
No. of Flute		-	Indicates the number of flutes of the tool
			
			
			
			
			
			

Section	Icon	Name	Description
Point Angle		-	Point angle on flute
Cutting Condition		DATA	Refers to the indicated page for the cutting conditions reference table

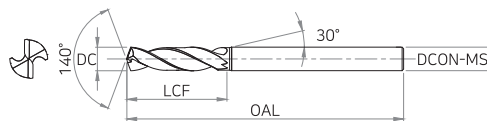
ISO13399 Terminology

End Mill



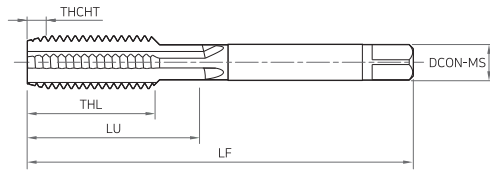
ISO13399 Property Symbols	Property Name
AP	Axial depth
APMX	Depth of cut Maximum
BHTA	Body half taper angle
CA	Collision Angle
CHW	Corner chamfer width
DC	Cutting diameter
DCON-MS	Connection diameter machine side
DCX	Cutting diameter Maximum
DN	Neck diameter
FHA	Flute helix angle
KCH	Corner chamfer
L	Length
LF	Functional length
LS	Shank length
LU	Usable length (max. recommended)
LUX	Usable length maximum
NOF	Flute count
OAL	Overall length
PSIR	Tool lead angle
RE	Corner radius
WT	Weight of item

Drill, Reamer, Centering Tool



ISO13399 Property Symbols	Property Name
CW	Cutting width
DC	Cutting diameter
DCN	Cutting diameter minimum
DCON-MS	Contact surface diameter machine side
L	Cutting edge length
LCF	Length chip flute
LF	Functional length
LH	Head length
LS	Shank length
LU	Usable length (max. recommended)
LUX	Usable length maximum
NOF	Flute count
OAL	Overall length
PL	Point length
SDL	Step diameter length
SIG	Point angle
ULDR	Usable length diameter ratio
RE	Corner radius
WT	Weight of item
ZEFP	Peripheral effective cutting edge count

Tap



ISO13399 Property Symbols	Property Name
TDZ	Thread diameter size
TP	Thread pitch
LU	Usable length(max. recommended)
CZC-MS	Connection size code machine side
DCON-WS	Connection diameter workpiece side
DCON-MS	Connection diameter machine side
TD	Thread diameter
LF	Functional length
THL	Thread length
NOF	Flute count
PHD	Premachined hole diameter
BSG	Basic standard group
THCHT	Threading chamfer type
TCTR	Thread tolerance class

Contents

End Mill Series

P. 25



Drill Series

P. 411



Tap Series

P. 505



Centering Tool Series

P. 597



Reamer Series

P. 611



Technical Data

P. 620

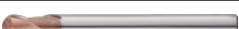
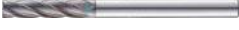


End Mill Series

Series	Section		EDP No	Geometry	Material						Diameter(DC)		Multi Helix	Page
	Shape	Flute			H	P	K	N	M	S	Min	Max		
ZAMUS STAR	Square	2F	ZE702		⊙	○					0.1	20		28
		4F	ZE704		⊙	○					1	20		29
		2F	ZE712		⊙	○					1	12		30
		4F	ZE714		⊙	○					1	12		31
		6F	ZE716		⊙	○					6	20		32
		4F&6F	ZE724(6)		⊙	○					1	12		33
		4F	ZS124		⊙	○					2	12	○	34
		2F	ZSLNS20		⊙	○					0.1	5		35
		4F	ZSLNS40		⊙	○					1	5		40
	Radius	2F	ZR702		⊙	○					1	12		43
		4F	ZR704		⊙	○					1	12		49
		6F	ZR706		⊙	○					6	12		53
		4F	ZR714		⊙	○					3	12		54
		4F	ZR724		⊙	○					6	12		55
		2F	ZR732		⊙	○					1	12		56
		4F	ZR734		⊙	○					1	12		58
		6F	ZR736		⊙	○					6	12		60
		4F	ZS1(2)04		⊙	○					1	12	○	61
		4F	ZS204		⊙	○					2	12	○	62
		2F	ZSLNR20		⊙	○					0.2	3		64
		2F	ZSTNR20		⊙	○					0.2	3		68
		4F	ZSPM4		⊙	○					3	12		71
	Ball	2F	DB702		⊙	○					0.1	12		72
		3F	DB703		⊙	○					2.5	12		73
		2F	DB712		⊙	○					1	12		74
		4F	DB734		⊙	○					2	10		75
		2F	ZSLNB20		⊙	○					0.1	5		76

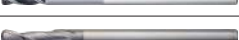
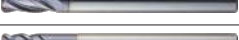
End Mill Series

Series	Section		EDP No	Geometry	Material						Diameter(DC)		Multi Helix	Page
	Shape	Flute			H	P	K	N	M	S	Min	Max		
ZAMUS STAR	Ball	2F	ZSTNB20		⊙	○					0.2	10		81
		3F	ZSTNB30		⊙	○					2	5		86
E-Star	Square	2F	ESE702		⊙	⊙					0.1	20		93
		4F	ESE704		⊙	⊙					1	20		94
		2F	ESE712		⊙	⊙					1	12		95
		4F	ESE714		⊙	⊙					1	12		96
		6F	ESE716		⊙	⊙					6	20		97
		4F&6F	ESE724(6)		⊙	⊙					1	12		98
		4F	ESE744		⊙	⊙					1	12		99
		2F	ESRE712		⊙	⊙					0.1	12		100
		4F	ESRE714		⊙	⊙					0.5	12		104
		4F	ESXE704		⊙	⊙					1	12	○	107
		4F	ESXE714		⊙	⊙					2	12	○	108
		2F	ESLNS20		⊙	⊙					0.1	5		109
		4F	ESLNS40		⊙	⊙					1	5		114
	Radius	2F	ESR702		⊙	⊙					1	12		117
		4F	ESR704		⊙	⊙					1	12		120
		6F	ESR706		⊙	⊙					6	12		122
		4F	ESR714		⊙	⊙					3	12		123
		4F	ESR724		⊙	⊙					6	12		124
		2F	ESR732		⊙	⊙					1	12		125
		4F	ESR734		⊙	⊙					1	12		127
		6F	ESR736		⊙	⊙					6	12		129
		2F	ESRR712		⊙	⊙					0.2	16		130
		4F	ESRR714		⊙	⊙					0.5	20		137
		4F	ESXR704		⊙	⊙					1	12	○	145
		2F	ESLNR20		⊙	⊙					0.2	3		147

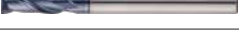
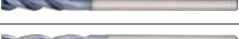
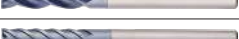
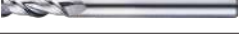
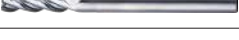
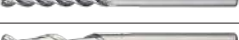
Series	Section		EDP No	Geometry	Material						Diameter(DC)		Multi Helix	Page
	Shape	Flute			H	P	K	N	M	S	Min	Max		
E-Star	Radius	2F	ESTNR20		⊙	⊙					0.2	3		151
		4F	ESPM4		⊙	⊙					3	12		154
	Ball	2F	ESB702		⊙	⊙					0.1	12		155
		3F	ESB703		⊙	⊙					2	12		156
		2F	ESB712		⊙	⊙					1	12		157
		4F	ESB734		⊙	⊙					2	10		158
		2F	ESRB712		⊙	⊙					0.1	12		159
		2F	ESLNB20		⊙	⊙					0.1	5		164
		2F	ESTNB20		⊙	⊙					0.2	10		169
		3F	ESTNB30		⊙	⊙					2	5		174
NEW U-Wing	Square	2F	UE502		○	⊙	○				0.1	25		183
		4F	UE504		○	⊙	○				0.8	25	○	185
		4F	UE504H		○	⊙	○				1	20		186
		6F	UE506		○	⊙	○				6	25		187
		2F	UE512		○	⊙	○				0.1	12		188
		4F	UE514		○	⊙	○				1	12		191
		2F	UE522		○	⊙	○				1	25		193
		4F	UE524		○	⊙	○				1	25		196
		4F	ULE504		○	⊙	○				3	16		199
		2F	UXE502		○	⊙	○				0.1	20		200
		4F	UXE504		○	⊙	○				1	20	○	202
		2F	UTE502		○	⊙	○				0.3	10		204
		4F	UTE504		○	⊙	○				0.8	10		207
	Radius	2F	UR502		○	⊙	○				0.2	20		211
		4F	UR504		○	⊙	○				3	20	○	215
		6F	UR506		○	⊙	○				6	20		217
		2F	UR512		○	⊙	○				0.2	20		218

End Mill Series

Series	Section		EDP No	Geometry	Material						Diameter(DC)		Multi Helix	Page
	Shape	Flute			H	P	K	N	M	S	Min	Max		
NEW U-Wing	Radius	2F	UR542		○	◎	○				0.2	4		225
		4F	UR544		○	◎	○				1	4		236
		4F	UXR504		○	◎	○				1	20	○	245
		4F	UXR514		○	◎	○				1	20	○	248
		3F	UDR503		○	◎	○				6	20		254
		4F	USPM4		○	◎	○				1	20		255
		4F	UTR504		○	◎	○				0.8	2.5		257
	Ball	2F	UB502		○	◎	○				0.1	25		262
		2F	UB502-P		○	◎	○				0.1	12		265
		3F	UB503		○	◎	○				1	12		266
		4F	UB504		○	◎	○				1	12		267
		2F	UB512		○	◎	○				0.1	12		268
		2F	UB512 S6		○	◎	○				0.5	2		272
		2F	UB532		○	◎	○				3	12		274
		2F	UB542		○	◎	○				0.1	12		275
		2F	UTB502		○	◎	○				0.3	2		289
		2F	USB502		○	◎	○				3	20		292
	Roughing	3~5F	UF50		○	◎	○				3	25		293
		3~5F	UF51		○	◎	○				3	25		294
		3~5F	UF51-H		○	◎	○				3	25		295
Zamus Thunder	Square	2F	TX202			◎					1	20		299
		4F	TX204			◎					1	20		300
		2F	TX222			◎					3	20		301
		4F	TX224			◎					3	20		302
		2F	TX302			◎					1	20		303
		4F	TX304			◎					1	20		304
		4F	TX304H			◎					3	20		305

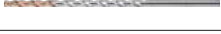
Series	Section		EDP No	Geometry	Material						Diameter(DC)		Multi Helix	Page
	Shape	Flute			H	P	K	N	M	S	Min	Max		
Zamus Thunder	Square	2F	ZE302P			⊙					1	20		306
		4F	ZE304P			⊙					1	20		307
		2F	ZE322			⊙					3	20		308
		4F	ZE324			⊙					3	20		309
	Radius	4F	ZR304H			⊙					3	12		310
		2F	ZR322			⊙					3	12		311
		4F	ZR324			⊙					3	12		312
		4F	ZR324H			⊙					6	12		313
	Ball	2F	DB312			⊙					1	20		314
		2F	DB342			⊙					1	12		315
		2F	TXB202			⊙					1	20		316
		4F	TXB204			⊙					2	20		317
		2F	TXB222			⊙					3	20		318
		2F	TXB232			⊙					3	20		319
		2F	TXB302			⊙					1	20		320
		4F	TXB304			⊙					1	20		321
X-Star	Square	3F	XCE503			○			⊙		2	25	○	325
		4F	XCE504			○			⊙		6	25	○	326
		4F	XE504			○			⊙		1	25	○	327
		5F	XE505			○			⊙		6	25	○	328
		4F	XE514			○			⊙		1	20	○	329
		5F	XE515			○			⊙		6	20	○	330
		4F	XE524			○			⊙		6	16	○	331
	Radius	3F	XCR503			○			⊙		5	25	○	332
		4F	XCR504			○			⊙		6	25	○	333
		4F	XR504			○			⊙		2	25	○	334
		5F	XR505			○			⊙		6	25	○	335

End Mill Series

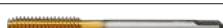
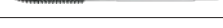
Series	Section		EDP No	Geometry	Material						Diameter(DC)		Multi Helix	Page
	Shape	Flute			H	P	K	N	M	S	Min	Max		
X-Star	Radius	4F	XR514			○			⊙		2	20	○	336
	Ball	4F	XXB504			○			⊙		4	12	○	337
	Chamfer	3F	XCC503			○			⊙		2	25	○	338
		4F	XCC504			○			⊙		6	25	○	339
NEW S-Wing	Square	2F	SE502			○			⊙	○	1	20	○	343
		3F	SE503			○			⊙	○	1	20	○	344
		4F	SE504			○			⊙	○	1	20	○	345
		6F	SE506			○			⊙	○	6	20	○	347
	Radius	4F	SR504			○			⊙	○	1	20	○	348
		5F	SR505			○			⊙	○	6	20	○	350
		7F	SR507			○			⊙	○	6	20	○	351
	Ball	2F	SB502			○			⊙	○	1	12	○	352
		4F	SB504			○			⊙	○	3	20	○	353
	Roughing	3~5F	SF51H			○			⊙	○	3	20	○	354
NEW A-Wing	Square	1F	AWE311					○			1	12		359
			AWE311...C					○			1	20		361
		2F	AWE312					○			1	20		363
			AWE312...C					○			1.5	20		366
		3F	AWE313					○			1	20		368
	Radius	2F	AWR312					○			1	20		370
			AWR312...C					○			1	20		372
		3F	AWR313					○			1	20		374
	Ball	2F	AWB312					○			6	20		376
			AWB312...C					○			6	20		377
	Chip Breaker (Nick)	3F	AWN513					○			3	20		379
	Roughing	3F	AWF513					○			4	20		381
			AWF513...C					○			4	20		382
		3F	AWF583					○			4	20		383
		AWF583...C												
Standard	Square	2F	E302			○					1	25		380
		4F	E304			○					2	25		381
		2F	E322			○					3	20		382

Series	Section		EDP No	Geometry	Material						Diameter(DC)		Multi Helix	Page
	Shape	Flute			H	P	K	N	M	S	Min	Max		
Standard	Square	4F	E324			○					3	20		383
		2F	EL422			○					3	10		384
		2F	EB302-W			○					14	50		385
		4F	EB304-W			○					14	50		386
		2F	EB322-W			○					14	26		388
		4F	EB324-W			○					14	50		389
	Ball	2F	B302			○					1	25		390
		4F	B304			○					3	25		391
		2F	BL422			○					3	20		392
		2F	BB302-W			○					15	32		393
Copper-Mate	Radius	2F	RC502			○		○			2	12		395
	Ball	2F	BC502			○		○			1	12		396
Gra-Mate	Square	2F	GE					◎			0.5	12		399
		4F	WGE504					◎			2	20		400
	Radius	2F	WGR502					◎			0.2	6		401
		4F	WGR504					◎			3	20		403
	Ball	2F	G					◎			0.5	12		405
		4F	WGB504					◎			1	20		408

Drill Series

Series	EDP No	Geometry	Length								Material					Internal coolant	Cutting Edge Tolerance	Page
			3D	4D	5D	7D	8D	10D	20D	H	P	K	N	M	S			
NEW Dolphin Drill	NDPG503		○								◎	○	○	○		External	h7	415
	NDPG504			○							◎	○	○	○		External	h7	418
	NDPG507					○					◎	○	○	○		External	h7	422
	NDPK504			○							○	◎				External	h7	426
	NDPK507					○					○	◎				External	h7	429
NEW Dolphin Oil Hole Drill	NDPGH503		○								◎	○	○	◎		Internal	m7	435
	NDPGH505				○						◎	○	○	◎		Internal	m7	441
	NDPGH508						○				◎	○	○	◎		Internal	m7	447
Power Max	PF503		○								○	◎	◎			External	h8	454
	PF505				○						○	◎	◎			External	h8	458
	SF503		○								○	◎	◎			Internal	h8	461
	SF505				○						○	◎	◎			Internal	h8	464
	SF508						○				○	◎	◎			Internal	h8	467
	SF510							○			○	◎	◎			Internal	h8	470
	SF520								○		○	◎	◎			Internal	h8	472
	HP503		○								○	◎	◎			External	m7	474
	HPI503		○								○	◎	◎			Internal	m7	476
	HPI505				○						○	◎	◎			Internal	m7	479
	HPI508-N						○				○	◎	◎			Internal	m7	483
	P503A(F)		○								○	◎	◎			External	m7	486
	P505A(F)				○						○	◎	◎			External	m7	489
Solid Spiral	SSD			○							○		◎			External	h8	494
	SSDL					○					○		◎			External	h8	497
	SSTD			○							○		◎			External	h8	499
	SSTDL					○					○		◎			External	h8	502
	APF505				○						○		◎			External	0 ~ -0.012	504

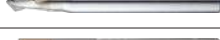
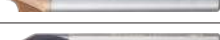
Tap Series

Series		Shape	EDP No	Geometry	Coated		Diameter(mm)		Page
					Coated	Uncoated	Min	Max	
NEW Tap-Star	DIN / HSSE	Spiral	SVQAM		TiAlN		M2	M24	512
			SVQNM		Nitride		M2	M24	514
			SVQHM		Homo		M2	M24	516
			SVQOM			Bright	M2	M24	518
		Point	SVDAM		TiAlN		M2	M24	520
			SVDNM		Nitride		M2	M24	522
			SVDHM		Homo		M2	M24	524
			SVDOM			Bright	M2	M24	526
		Straight	SVGAM		TiAlN		M3	M24	528
		Roll	SVMOM			Bright	M3	M12	530
			SVMTM		TiN		M3	M12	532
			SVMCM		TiCN		M3	M12	534
	DIN / Carbide	Spiral	SWQOM			Bright	M3	M12	536
			SWQCM		TiCN		M3	M12	537
		Straight	SWGOM			Bright	M3	M12	538
			SWGCM		TiCN		M3	M12	540
		Roll	SWMOM			Bright	M3	M12	542
			SWMCM		TiCN		M3	M12	544
	JIS / HSSE	Spiral	SVPAM		TiAlN		M2	M24	546
			SVPNM		Nitride		M2	M24	548
			SVPHM		Homo		M2	M24	550
			SVPOM			Bright	M2	M24	552
		Point	SVNAM		TiAlN		M2	M24	554
			SVNNM		Nitride		M2	M24	556
			SVNHM		Homo		M2	M24	558
			SVNOM			Bright	M2	M24	560
		Straight	SVSAM		TiAlN		M3	M24	562

Tap Series

Series		Shape	EDP No	Geometry	Coated		Diameter(mm)		Page
					Coated	Uncoated	Min	Max	
NEW Tap-Star	JIS / HSSE	Roll	SVROM			Bright	M3	M12	564
			SVRTM		TiN		M3	M12	566
			SVRCM		TiCN		M3	M12	568
	JIS / Carbide	Spiral	SWPOM			Bright	M3	M12	570
			SWPCM		TiCN		M3	M12	571
		Straight	SWSOM			Bright	M3	M12	572
			SWSCM		TiCN		M3	M12	574
		Roll	SWROM			Bright	M3	M12	576
			SWRCM		TiCN		M3	M12	578

Centering Tool & Reamer Series

Series	Section		EDP No	Geometry	Material						Diameter(DC)		Page
	Shape	Flute			H	P	K	N	M	S	Min	Max	
Centering Tool	-	2F	CDS			○	○	○	○		1	5	583
	-	2F	LDS			○	○	○	○		3	20	584
	-	2F	LDF---W			○	○	○	○		3	12	586
	-	2F	CES302 (60°)			○	○	○	○		3	12	587
	-	2F	CES302 (90°)			○	○	○	○		3	20	588
	-	2F	CEM---W			○	○	○	○		10	20	589
	-	2F	CRC			○	○	○	○		2	20	590
	-	3~4F	CFT---W			○	○	○	○		6	12	591
	-	2F	CCT			○	○	○	○		3	12	592
	-	2F	CCF			○	○	○	○		2	12	593
Reamer	Straight	4&6F	SSR			○	○	○	○		2	12	596
	7° Left Helix	4&6F	SHR			○	○	○	○		2	12	597
		4&6F	HRS---W			○	○	○	○		1.98	12.05	598
	60° Left Helix	4&6F	SBR			○	○	○	○		3	20	601

End Mill Series

Zamus Star End Mill High Hardness HRc 50~70	P. 25
E-Star End Mill High Hardness HRc 50~63	P. 88
U-Wing End Mill NEW Mid Hardness HRc 30~50	P. 176
Zamus Thunder End Mill Low Hardness HRc 10~30	P. 296
X-Star End Mill Difficult To Cut Material and Low Hardness Material HRc ~35	P. 322
S-Wing End Mill NEW Stainless Steels	P. 340
A-Wing End Mill NEW Aluminum, Aluminum Alloy and Non-ferrous Materials	P. 356
Standard End Mill Low Hardness Materials under HRc 30	P. 378
Copper-Mate End Mill Copper, Bronze and Non-ferrous Materials	P. 394
Gra-Mate End Mill Graphite, Reinforced Plastics, Non-ferrous Materials	P. 398

Zamus Star End Mill

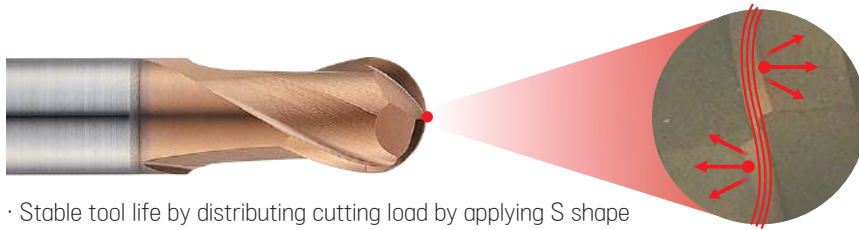
High Hardness HRc 50~70

Characteristics

- Suitable for high-speed processing of high-hardness workpieces (recommended: HRc 50 ~ 70) such as heat treated steel, alloy steel, and carbon steel
- Suitable for various type of machining with diverse specifications such as long neck, rib, and tapered neck

Features

- Enhanced cutting-edge wear resistance through ultra-fine grain carbide
- Maintains hardness of the blade and has high temperature oxidation resistance and during high-speed processing by applying AlTiN coating
- Stable performance with designed cutting edge suitable for high-speed machining of high-hardness workpieces



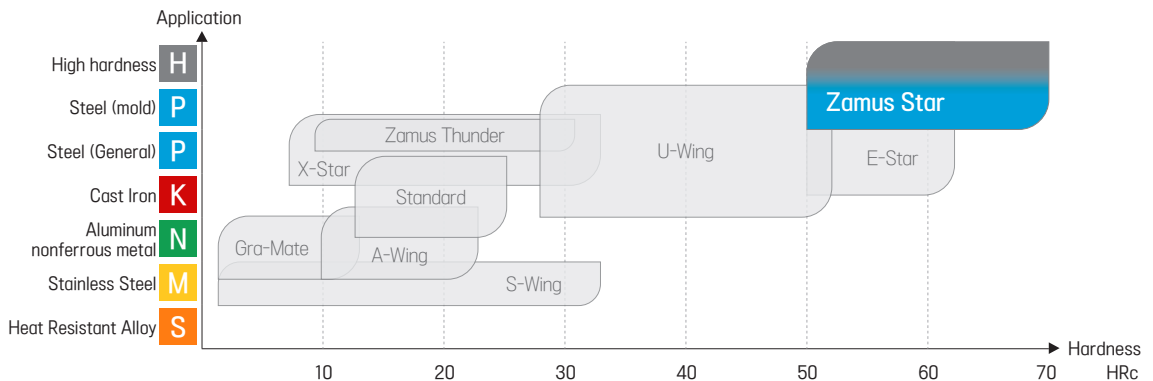
- Stable tool life by distributing cutting load by applying S shape
- Improved machining precision with 0.005mm radius Tolerance

Case Study

Geometry	Zamus Star	Competitor
Ball		
· Test tool : DB702120 · Material : SKD11 Heat treatment / RPM : 5,950 / FEED : 1,870 / ap : 0.25 / ae : 0.6		

Geometry	Zamus Star	Competitor
Corner Radius		
· Test tool : ZS2041001032 · Material : SKD11 Heat treatment / RPM : 5,500 / FEED : 1,100 / ap : 10 / ae : 0.5		

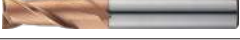
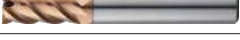
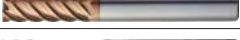
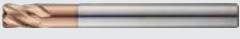
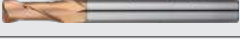
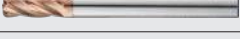
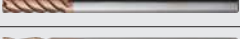
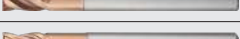
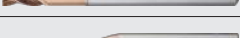
Applications



Zamus Star End Mill

High Hardness HRc 50~70

Contents

Section		EDP No	Geometry	Product	Diameter(DC)		Page
Shape	Flute				Min	Max	
Square	2F	ZE702		2 Flutes Neck Square End Mill	0.1	20	28
	4F	ZE704		4 Flutes Neck Square End Mill	1	20	29
	2F	ZE712		2 Flutes Square End Mill	1	12	30
	4F	ZE714		4 Flutes Square End Mill	1	12	31
	6F	ZE716		6 Flutes Square End Mill	6	20	32
	4F&6F	ZE724(6)		4&6 Flutes Neck Square End Mill	1	12	33
	4F	ZS124		4 Flutes Square End Mill	2	12	34
	2F	ZSLNS20		2 Flutes Long Neck Square End Mill	0.1	5	35
	4F	ZSLNS40		4 Flutes Long Neck Square End Mill	1	5	40
Radius	2F	ZR702		2 Flutes Neck Radius End Mill	1	12	43
	4F	ZR704		4 Flutes Neck Radius End Mill	1	12	49
	6F	ZR706		6 Flutes Neck Radius End Mill	6	12	53
	4F	ZR714		4 Flutes Radius End Mill	3	12	54
	4F	ZR724		4 Flutes Neck Radius End Mill	6	12	55
	2F	ZR732		2 Flutes Long Shank Radius End Mill	1	12	56
	4F	ZR734		4 Flutes Long Shank Radius End Mill	1	12	58
	6F	ZR736		6 Flutes Radius End Mill	6	12	60
	4F	ZS1(2)04		4 Flutes Neck Radius End Mill	1	12	61
	4F	ZS204		4 Flutes Neck Radius End Mill	2	12	62
	2F	ZSLNR20		2 Flutes Long Neck Radius End Mill	0.2	3	64
	2F	ZSTNR20		2 Flutes Tapered Neck Radius End Mill	0.2	3	68
	4F	ZSPM4		4 Flutes Neck Radius End Mill For High Speed Machining	3	12	71
	2F	DB702		2 Flutes Neck Ball End Mill	0.1	12	72
Ball	3F	DB703		3 Flutes Neck Ball End Mill	2.5	12	73
	2F	DB712		2 Flutes Ball End Mill	1	12	74

Section		EDP No	Geometry	Product	Diameter(DC)		Page
Shape	Flute				Min	Max	
Ball	4F	DB734		4Flutes 15° Helix Ball End Mill	2	10	75
	2F	ZSLNB20		2 Flutes Long Neck Ball End Mill	0.1	5	76
	2F	ZSTNB20		2 Flutes Tapered Neck Ball End Mill	0.2	10	81
	3F	ZSTNB30		3 Flutes Tapered Neck Ball End Mill	2	5	86

EDP No System

*If expressed as an integer, the decimal point is omitted.

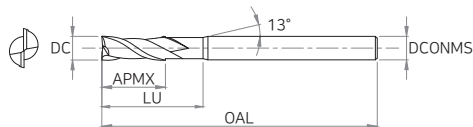
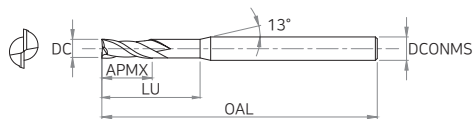
Z	R	7	0	4	020	03	06	S04
①	②	③	④	⑤	⑥	⑦	⑧	⑨

①	②	③	④	⑤	⑥	⑦	⑧	⑨
Section	Appearance	Grade	Length, Shank Type	Flutes	Cutting Dia	Corner R	Effective Length	Shank Dia
Z : Zamus	E : Square	7 : Grade	0 : Neck	2 : 2Flutes	0.05	0.05	For more information, Refer to the detail pages.	4
D : Dynamic	R : Radius		1 : Straight, Neck	3 : 3Flutes	~	~		~
ZS : Zamus Star	B : Ball		2 : Long Neck	4 : 4Flutes	20	3		20
	LNS : Long Neck Square		3 : Long Shank	5 : 5Flutes				
	LNR : Long Neck Radius							
	LNB : Long Neck Ball							
	PM : Power Mill							

EX) 4 Flutes / Cutting Dia $\varnothing 2$ / Corner R 0.3 / Effective Length 6mm / Shank Dia 4 / 70 Grade / Corner Radius Neck Type Zamus End Mill

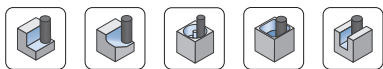
ZE702 2 Flutes Neck Square End Mill

Endmill



► Tolerance

DC		Shank Dia
~ Ø6	0 ~ -0.012	h5
Ø8 ~ Ø20	0 ~ -0.015	



EDP No	DC	APMX	LU	OAL	DCON MS	EDP No	DC	APMX	LU	OAL	DCON MS
ZE702 001	0.1	0.2	-	40	4	ZE702 020	2	3	6	40	6
ZE702 002	0.2	0.4	-	40	4	ZE702 025	2.5	4	6	40	6
ZE702 003	0.3	0.5	-	40	4	ZE702 030	3	4	7	45	6
ZE702 004	0.4	0.7	-	40	4	ZE702 035	3.5	6	9	45	6
ZE702 005	0.5	1	-	40	4	ZE702 040	4	6	9	45	6
ZE702 006	0.6	1.2	-	40	4	ZE702 045	4.5	6	10	45	6
ZE702 007	0.7	1.4	-	40	4	ZE702 050	5	6	11	50	6
ZE702 008	0.8	1.6	-	40	4	ZE702 060	6	7	14	50	6
ZE702 009	0.9	2	-	40	4	ZE702 080	8	9	18	60	8
ZE702 010 S4	1	1.5	-	40	4	ZE702 100	10	12	25	75	10
ZE702 010	1	1.5	-	40	6	ZE702 120	12	15	30	75	12
ZE702 015	1.5	2.2	-	40	6	ZE702 160	16	18	38	90	16
ZE702 020 S4	2	3	6	40	4	ZE702 200	20	24	45	100	20

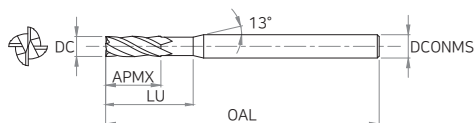
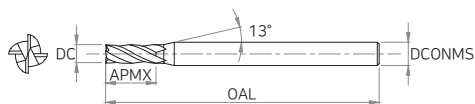
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
◎	◎		○	○						

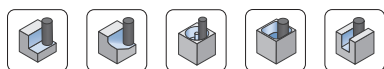
ZE704

4 Flutes Neck Square End Mill



► Tolerance

DC		Shank Dia
~ Ø6	0 ~ -0.012	h5
Ø8 ~ Ø20	0 ~ -0.015	



EDP No	DC	APMX	LU	OAL	DCONMS
ZE704 010 S4	1	1.5	-	40	4
ZE704 010	1	1.5	-	40	6
ZE704 015	1.5	2.2	-	40	6
ZE704 020 S4	2	3	6	40	4
ZE704 020	2	3	6	40	6
ZE704 025	2.5	4	6	40	6
ZE704 030	3	4	7	45	6
ZE704 035	3.5	5	9	45	6
ZE704 040	4	5	9	45	6
ZE704 045	4.5	6	10	45	6
ZE704 050	5	6	11	50	6
ZE704 060	6	7	14	50	6
ZE704 080	8	9	18	60	8
ZE704 100	10	12	25	75	10
ZE704 120	12	15	30	75	12
ZE704 160	16	18	38	90	16
ZE704 200	20	24	45	100	20

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	~325	HRc30~50	~FCD500					
◎	◎		○	○						

Endmill

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

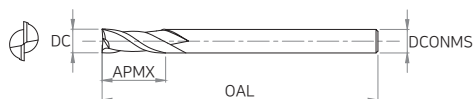
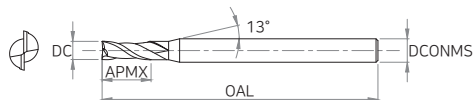
Standard

Copper
-Mate

Gra
-Mate

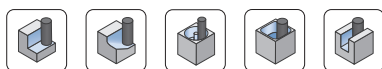
ZE712 2 Flutes Square End Mill

Endmill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.02	h5



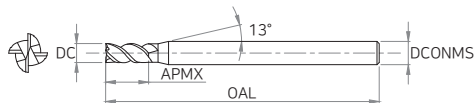
EDP No	DC	APMX	OAL	DCON MS	EDP No	DC	APMX	OAL	DCON MS
ZE712 010-02	1	2	40	6	ZE712 040	4	10	45	6
ZE712 010	1	3	40	6	ZE712 040-12	4	12	50	6
ZE712 010-04	1	4	40	6	ZE712 040-16	4	16	60	6
ZE712 012	1.2	3	40	6	ZE712 045	4.5	11	45	6
ZE712 015	1.5	4	40	6	ZE712 050	5	13	50	6
ZE712 015-06	1.5	6	40	6	ZE712 055	5.5	13	50	6
ZE712 015-08	1.5	8	40	6	ZE712 060	6	13	50	6
ZE712 020	2	5	40	6	ZE712 060-15	6	15	60	6
ZE712 020-08	2	8	40	6	ZE712 065	6.5	16	60	8
ZE712 020-10	2	10	50	6	ZE712 070	7	18	60	8
ZE712 025	2.5	6	40	6	ZE712 080	8	19	60	8
ZE712 030	3	8	45	6	ZE712 100	10	22	70	10
ZE712 030-10	3	10	50	6	ZE712 120	12	26	75	12
ZE712 030-12	3	12	50	6	ZE712 120-30	12	30	75	12
ZE712 035	3.5	10	45	6					

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
◎	◎		○	○						

ZE714 4 Flutes Square End Mill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.02	h5



EDP No	DC	APMX	OAL	DCONMS
ZE714 010	1	2.5	40	6
ZE714 012	1.2	3	40	6
ZE714 015	1.5	4	40	6
ZE714 020	2	5	40	6
ZE714 025	2.5	6	40	6
ZE714 030	3	8	45	6
ZE714 035	3.5	9	45	6
ZE714 040	4	10	45	6
ZE714 050	5	13	50	6
ZE714 060	6	13	50	6
ZE714 060-15	6	15	60	6
ZE714 080	8	19	60	8
ZE714 100	10	22	70	10
ZE714 100-25	10	25	70	10
ZE714 120	12	26	75	12
ZE714 120-30	12	30	80	12

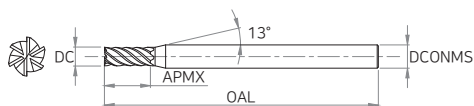
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	~325	HRc30~50	~FCD500					
◎	◎		○	○						

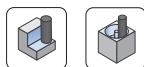
ZE716 6 Flutes Square End Mill

Endmill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.02	h5



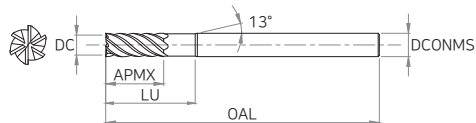
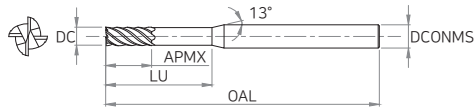
EDP No	DC	APMX	OAL	DCONMS
ZE716 060	6	13	50	6
ZE716 080	8	18	60	8
ZE716 100	10	22	70	10
ZE716 120	12	16	75	12
ZE716 160	16	35	90	16
ZE716 200	20	44	100	20

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	◎		○	○						

ZE724(6) 4&6 Flutes Neck Square End Mill



► Tolerance

DC		Shank Dia
~ Ø6	0 ~ -0.012	h5
Ø8 ~ Ø12	0 ~ -0.015	



NOF=4

NOF=6

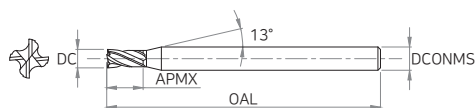
EDP No	DC	APMX	LU	OAL	DCONMS	NOF
ZE724 010	1	1.5	5	45	6	4
ZE724 015	1.5	2.2	6	45	6	4
ZE724 020	2	3	8	45	6	4
ZE724 030	3	4	9	50	6	4
ZE724 040	4	5	12	50	6	4
ZE724 050	5	6	15	50	6	4
ZE726 060	6	7	20	60	6	6
ZE726 080	8	9	25	70	8	6
ZE726 100	10	12	32	75	10	6
ZE726 120	12	15	38	80	12	6

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

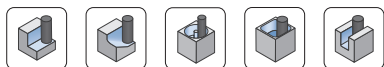
H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	◎		○	○						

ZS124 4 Flutes Square End Mill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.02	h5



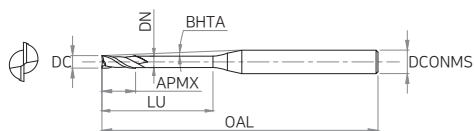
EDP No	DC	APMX	OAL	DCONMS
ZS124 020	2	5	45	4
ZS124 030	3	8	45	6
ZS124 040	4	10	45	6
ZS124 060	6	16	50	6
ZS124 080	8	20	60	8
ZS124 100	10	25	75	10
ZS124 120	12	35	85	12

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

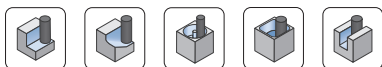
H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	◎		○	○						

ZSLNS20 2 Flutes Long Neck Square End Mill



► Tolerance

DC		Shank Dia
Ø0.1 ~ Ø0.5	0 ~ -0.012	h5
Ø0.6 ~ Ø5	0 ~ -0.015	



EDP No	DC	APMX	LU	DN	OAL	DCONMS	BHTA	Effective length by inclination angle				
								0.5°	1°	1.5°	2°	3°
ZSLNS20 01-0.3	0.1	0.15	0.3	0.08	45	4	11.6	0.4	0.4	0.5	0.5	0.5
ZSLNS20 01-0.5	0.1	0.15	0.5	0.08	45	4	11.4	0.6	0.7	0.7	0.7	0.8
ZSLNS20 01-1	0.1	0.15	1	0.08	45	4	10.9	1.2	1.2	1.2	1.3	1.4
ZSLNS20 02-0.5	0.2	0.3	0.5	0.17	50	4	11.3	1.2	1.3	1.5	1.7	2
ZSLNS20 02-1	0.2	0.3	1	0.17	50	4	10.8	1.7	1.9	2.2	2.4	2.7
ZSLNS20 02-1.5	0.2	0.3	1.5	0.17	50	4	10.3	2.3	2.5	2.8	3	3.4
ZSLNS20 03-1	0.3	0.45	1	0.27	50	4	10.8	1.7	1.9	2.2	2.4	2.7
ZSLNS20 03-1.5	0.3	0.45	1.5	0.27	50	4	10.3	2.3	2.5	2.8	3	3.4
ZSLNS20 03-2	0.3	0.45	2	0.27	50	4	9.8	2.8	3.1	3.4	3.6	4.1
ZSLNS20 03-2.5	0.3	0.45	2.5	0.27	50	4	9.4	3.4	3.7	4	4.3	4.7
ZSLNS20 03-3	0.3	0.45	3	0.27	50	4	9	3.9	4.3	4.6	4.9	5.4
ZSLNS20 04-1	0.4	0.6	1	0.37	50	4	10.7	1.7	1.9	2.2	2.4	2.7
ZSLNS20 04-1.5	0.4	0.6	1.5	0.37	50	4	10.2	2.3	2.5	2.8	3	3.4
ZSLNS20 04-2	0.4	0.6	2	0.37	50	4	9.7	2.8	3.1	3.4	3.6	4.1
ZSLNS20 04-2.5	0.4	0.6	2.5	0.37	50	4	9.3	3.4	3.7	4	4.3	4.7
ZSLNS20 04-3	0.4	0.6	3	0.37	50	4	8.9	3.9	4.3	4.6	4.9	5.4
ZSLNS20 04-3.5	0.4	0.6	3.5	0.37	50	4	8.6	4.5	4.9	5.2	5.5	6
ZSLNS20 04-4	0.4	0.6	4	0.37	50	4	8.2	5	5.4	5.8	6.1	6.6
ZSLNS20 04-5	0.4	0.6	5	0.37	50	4	7.6	6.1	6.6	6.9	7.3	7.8
ZSLNS20 04-6	0.4	0.6	6	0.37	50	4	7.1	7.2	7.7	8.1	8.4	9

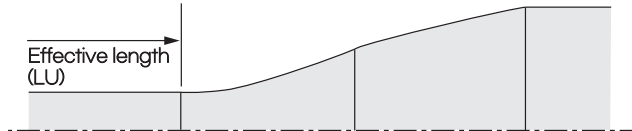
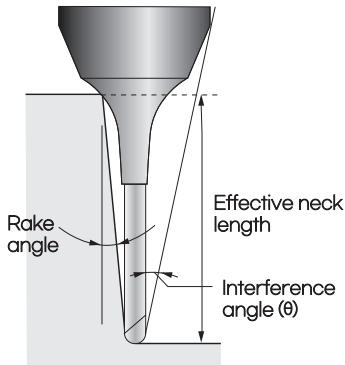
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	◎		○	○						

ZSLNS20

2 Flutes Long Neck Square End Mill



※ The marked effective neck length is the default value to prevent interference with the workpiece.

EDP No	DC	APMX	LU	DN	OAL	DCON MS	BHTA	Effective length by inclination angle				
								0.5°	1°	1.5°	2°	3°
ZSLNS20 05-1	0.5	0.75	1	0.47	50	4	10.7	1.7	1.9	2.2	2.4	2.7
ZSLNS20 05-1.5	0.5	0.75	1.5	0.47	50	4	10.2	2.3	2.5	2.8	3	3.4
ZSLNS20 05-2	0.5	0.75	2	0.47	50	4	9.7	2.8	3.1	3.4	3.6	4.1
ZSLNS20 05-2.5	0.5	0.75	2.5	0.47	50	4	9.3	3.4	3.7	4	4.3	4.7
ZSLNS20 05-3	0.5	0.75	3	0.47	50	4	8.9	3.9	4.3	4.6	4.9	5.4
ZSLNS20 05-4	0.5	0.75	4	0.47	50	4	8.1	5	5.4	5.8	6.1	6.6
ZSLNS20 05-5	0.5	0.75	5	0.47	50	4	7.5	6.1	6.6	6.9	7.3	7.8
ZSLNS20 05-6	0.5	0.75	6	0.47	50	4	7	7.2	7.7	8.1	8.4	9
ZSLNS20 05-8	0.5	0.75	8	0.47	50	4	6.2	9.3	9.9	10.3	10.7	11.4
ZSLNS20 06-2	0.6	0.9	2	0.57	50	4	9.6	2.8	3.1	3.4	3.6	4.1
ZSLNS20 06-4	0.6	0.9	4	0.57	50	4	8.1	5	5.4	5.8	6.1	6.6
ZSLNS20 06-6	0.6	0.9	6	0.57	50	4	6.9	7.2	7.7	8.1	8.4	9
ZSLNS20 06-8	0.6	0.9	8	0.57	50	4	6.1	9.3	9.9	10.3	10.7	11.4
ZSLNS20 06-10	0.6	0.9	10	0.57	50	4	5.4	11.5	12.1	12.6	13	13.7
ZSLNS20 07-2	0.7	1.05	2	0.67	50	4	9.6	2.8	3.1	3.4	3.6	4.1
ZSLNS20 07-4	0.7	1.05	4	0.67	50	4	8	5	5.4	5.8	6.1	6.6
ZSLNS20 07-6	0.7	1.05	6	0.67	50	4	6.9	7.2	7.7	8.1	8.4	9
ZSLNS20 07-8	0.7	1.05	8	0.67	50	4	6	9.3	9.9	10.3	10.7	11.4
ZSLNS20 07-10	0.7	1.05	10	0.67	50	4	5.3	11.5	12.1	12.6	13	13.7
ZSLNS20 08-4	0.8	1.2	4	0.77	50	4	7.9	5	5.4	5.8	6.1	6.6

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	~325	HRC30~50	~FCD500					
◎	◎		○	○						

ZSLNS20

2 Flutes Long Neck Square End Mill

Endmill

EDP No	DC	APMX	LU	DN	OAL	DCON MS	BHTA	Effective length by inclination angle				
								0.5°	1°	1.5°	2°	3°
ZSLNS20 08-6	0.8	1.2	6	0.77	50	4	6.8	7.2	7.7	8.1	8.4	9
ZSLNS20 08-8	0.8	1.2	8	0.77	50	4	5.9	9.3	9.9	10.3	10.7	11.4
ZSLNS20 08-10	0.8	1.2	10	0.77	50	4	5.2	11.5	12.1	12.6	13	13.7
ZSLNS20 08-12	0.8	1.2	12	0.77	55	4	4.7	13.6	14.2	14.8	15.2	16
ZSLNS20 09-6	0.9	1.35	6	0.86	50	4	6.7	7.2	7.7	8.1	8.4	9.1
ZSLNS20 09-8	0.9	1.35	8	0.86	50	4	5.8	9.4	9.9	10.4	10.7	11.4
ZSLNS20 09-10	0.9	1.35	10	0.86	50	4	5.1	11.5	12.1	12.6	13	13.7
ZSLNS20 09-12	0.9	1.35	12	0.86	55	4	4.6	13.6	14.3	14.8	15.2	16
ZSLNS20 10-2	1	1.5	2	0.96	50	4	9.4	2.9	3.2	3.4	3.7	4.1
ZSLNS20 10-4	1	1.5	4	0.96	50	4	7.7	5.1	5.5	5.8	6.1	6.6
ZSLNS20 10-6	1	1.5	6	0.96	50	4	6.6	7.2	7.7	8.1	8.4	9.1
ZSLNS20 10-8	1	1.5	8	0.96	50	4	5.7	9.4	9.9	10.4	10.7	11.4
ZSLNS20 10-10	1	1.5	10	0.96	50	4	5	11.5	12.1	12.6	13	13.7
ZSLNS20 10-12	1	1.5	12	0.96	55	4	4.5	13.6	14.3	14.8	15.2	16
ZSLNS20 10-14	1	1.5	14	0.96	55	4	4.1	15.7	16.4	17	17.4	18.7
ZSLNS20 10-16	1	1.5	16	0.96	60	4	3.8	17.8	18.6	19.1	19.6	21.3
ZSLNS20 10-20	1	1.5	20	0.96	60	4	3.2	22	22.8	23.5	24	26.6
ZSLNS20 12-6	1.2	1.8	6	1.15	50	4	6.3	7.3	7.7	8.1	8.5	9.1
ZSLNS20 12-8	1.2	1.8	8	1.15	50	4	5.5	9.4	9.9	10.4	10.8	11.4
ZSLNS20 12-10	1.2	1.8	10	1.15	50	4	4.8	11.5	12.1	12.6	13	13.7
ZSLNS20 12-12	1.2	1.8	12	1.15	55	4	4.3	13.6	14.3	14.8	15.2	16
ZSLNS20 12-16	1.2	1.8	16	1.15	55	4	3.6	17.8	18.6	19.2	19.7	21.3
ZSLNS20 14-6	1.4	2.1	6	1.34	50	4	6.1	7.3	7.8	8.1	8.5	9.1
ZSLNS20 14-8	1.4	2.1	8	1.34	50	4	5.3	9.4	10	10.4	10.8	11.5
ZSLNS20 14-10	1.4	2.1	10	1.34	50	4	4.6	11.6	12.1	12.6	13	13.8
ZSLNS20 14-12	1.4	2.1	12	1.34	55	4	4.1	13.7	14.3	14.8	15.3	16.1
ZSLNS20 14-14	1.4	2.1	14	1.34	55	4	3.7	15.8	16.5	17	17.5	18.7
ZSLNS20 14-16	1.4	2.1	16	1.34	55	4	3.4	17.9	18.6	19.2	19.7	21.4
ZSLNS20 15-4	1.5	2.25	4	1.44	50	4	7.2	5.2	5.5	5.9	6.2	6.7
ZSLNS20 15-6	1.5	2.25	6	1.44	50	4	6	7.3	7.8	8.1	8.5	9.1
ZSLNS20 15-8	1.5	2.25	8	1.44	50	4	5.1	9.4	10	10.4	10.8	11.5
ZSLNS20 15-10	1.5	2.25	10	1.44	50	4	4.5	11.6	12.1	12.6	13	13.8
ZSLNS20 15-12	1.5	2.25	12	1.44	55	4	4	13.7	14.3	14.8	15.3	16.1
ZSLNS20 15-14	1.5	2.25	14	1.44	55	4	3.6	15.8	16.5	17	17.5	18.7

Zamus Star

E-Star

U-Wing

Zamus Thunder

X-Star

S-Wing

A-Wing

Standard

Copper-Mate

Gra-Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	◎		○	○						

ZSLNS20

2 Flutes Long Neck Square End Mill

Endmill

	EDP No	DC	APMX	LU	DN	OAL	DCON MS	BHTA	Effective length by inclination angle				
									0.5°	1°	1.5°	2°	3°
Zamus Star	ZSLNS20 15-16	1.5	2.25	16	1.44	55	4	3.3	17.9	18.6	19.2	19.7	-
	ZSLNS20 15-18	1.5	2.25	18	1.44	60	4	3	20	20.7	21.3	21.9	-
	ZSLNS20 15-20	1.5	2.25	20	1.44	60	4	2.8	22	22.9	23.5	24.1	-
	ZSLNS20 15-25	1.5	2.25	25	1.44	65	4	2.4	27.3	28.1	28.8	30	-
	ZSLNS20 16-6	1.6	2.4	6	1.54	50	4	5.9	7.3	7.8	8.1	8.5	9.1
E-Star	ZSLNS20 16-8	1.6	2.4	8	1.54	50	4	5	9.4	10	10.4	10.8	11.5
	ZSLNS20 16-10	1.6	2.4	10	1.54	50	4	4.4	11.6	12.1	12.6	13	13.8
	ZSLNS20 16-12	1.6	2.4	12	1.54	55	4	3.9	13.7	14.3	14.8	15.3	16.1
U-Wing	ZSLNS20 16-14	1.6	2.4	14	1.54	55	4	3.5	15.8	16.5	17	17.5	18.7
	ZSLNS20 16-16	1.6	2.4	16	1.54	55	4	3.2	17.9	18.6	19.2	19.7	21.4
	ZSLNS20 16-18	1.6	2.4	18	1.54	60	4	2.9	20	20.7	21.3	21.9	-
Zamus Thunder	ZSLNS20 16-20	1.6	2.4	20	1.54	60	4	2.7	22	22.9	23.5	24.1	-
	ZSLNS20 18-6	1.8	2.7	6	1.73	50	4	5.6	7.4	7.8	8.2	8.5	9.1
	ZSLNS20 18-8	1.8	2.7	8	1.73	50	4	4.8	9.5	10	10.4	10.8	11.5
X-Star	ZSLNS20 18-10	1.8	2.7	10	1.73	50	4	4.2	11.6	12.2	12.6	13	13.8
	ZSLNS20 18-12	1.8	2.7	12	1.73	55	4	3.7	13.7	14.3	14.8	15.3	16.1
	ZSLNS20 18-14	1.8	2.7	14	1.73	55	4	3.3	15.8	16.5	17	17.5	18.8
S-Wing	ZSLNS20 18-16	1.8	2.7	16	1.73	55	4	3	17.9	18.6	19.2	19.7	-
	ZSLNS20 18-18	1.8	2.7	18	1.73	60	4	2.7	20	20.7	21.3	21.9	-
	ZSLNS20 18-20	1.8	2.7	20	1.73	60	4	2.5	22.1	22.9	23.5	24.1	-
A-Wing	ZSLNS20 20-4	2	3	4	1.92	50	4	6.5	5.3	5.6	5.9	6.2	6.7
	ZSLNS20 20-6	2	3	6	1.92	50	4	5.3	7.4	7.8	8.2	8.5	9.1
	ZSLNS20 20-8	2	3	8	1.92	50	4	4.5	9.5	10	10.4	10.8	11.5
Standard	ZSLNS20 20-10	2	3	10	1.92	50	4	3.9	11.6	12.2	12.7	13.1	13.8
	ZSLNS20 20-12	2	3	12	1.92	55	4	3.4	13.7	14.3	14.9	15.3	16.1
	ZSLNS20 20-14	2	3	14	1.92	55	4	3.1	15.8	16.5	17	17.5	18.8
Copper -Mate	ZSLNS20 20-16	2	3	16	1.92	55	4	2.8	17.9	18.6	19.2	19.7	-
	ZSLNS20 20-18	2	3	18	1.92	60	4	2.6	20	20.8	21.4	21.9	-
	ZSLNS20 20-20	2	3	20	1.92	60	4	2.4	22.1	22.9	23.5	24.1	-
Gra -Mate	ZSLNS20 20-25	2	3	25	1.92	65	4	2	27.3	28.2	28.9	-	-
	ZSLNS20 20-30	2	3	30	1.92	70	4	1.7	32.5	33.4	34.4	-	-
	ZSLNS20 25-8	2.5	3.75	8	2.4	50	4	3.7	9.6	10.1	10.5	10.9	11.5
	ZSLNS20 25-10	2.5	3.75	10	2.4	50	4	3.1	11.7	12.2	12.7	13.1	13.8
	ZSLNS20 25-12	2.5	3.75	12	2.4	55	4	2.7	13.8	14.4	14.9	15.3	-

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	~325	HRC30~50	~FCD500					
◎	◎		○	○						

ZSLNS20

2 Flutes Long Neck Square End Mill

Endmill

EDP No	DC	APMX	LU	DN	OAL	DCON MS	BHTA	Effective length by inclination angle				
								0.5°	1°	1.5°	2°	3°
ZSLNS20 25-14	2.5	3.75	14	2.4	55	4	2.4	15.9	16.5	17.1	17.5	-
ZSLNS20 25-16	2.5	3.75	16	2.4	55	4	2.2	18	18.7	19.2	19.7	-
ZSLNS20 25-18	2.5	3.75	18	2.4	60	4	2	20.1	20.8	21.4	-	-
ZSLNS20 25-20	2.5	3.75	20	2.4	60	4	1.8	22.1	22.9	23.5	-	-
ZSLNS20 25-25	2.5	3.75	25	2.4	65	4	1.5	27.3	28.2	-	-	-
ZSLNS20 25-30	2.5	3.75	30	2.4	70	4	1.3	32.6	33.5	-	-	-
ZSLNS20 30-8	3	4.5	8	2.88	55	6	5.6	9.6	10.1	10.5	10.9	11.5
ZSLNS20 30-10	3	4.5	10	2.88	55	6	5	11.7	12.3	12.7	13.1	13.8
ZSLNS20 30-12	3	4.5	12	2.88	60	6	4.5	13.8	14.4	14.9	15.4	16.3
ZSLNS20 30-14	3	4.5	14	2.88	60	6	4.1	15.9	16.6	17.1	17.6	18.9
ZSLNS20 30-16	3	4.5	16	2.88	60	6	3.7	18	18.7	19.3	19.8	21.6
ZSLNS20 30-18	3	4.5	18	2.88	60	6	3.4	20.1	20.8	21.4	21.9	24.2
ZSLNS20 30-20	3	4.5	20	2.88	65	6	3.2	22.2	23	23.6	24.2	26.9
ZSLNS20 30-25	3	4.5	25	2.88	70	6	2.7	27.4	28.2	28.9	30.2	-
ZSLNS20 30-30	3	4.5	30	2.88	75	6	2.4	32.6	33.5	34.5	36.2	-
ZSLNS20 30-35	3	4.5	35	2.88	80	6	2.1	37.7	38.7	40.2	42.2	-
ZSLNS20 30-40	3	4.5	40	2.88	90	6	1.9	42.9	43.9	45.9	-	-
ZSLNS20 40-12	4	6	12	3.85	60	6	3.4	13.9	14.5	15	15.4	16.3
ZSLNS20 40-16	4	6	16	3.85	60	6	2.8	18.1	18.8	19.3	19.8	-
ZSLNS20 40-20	4	6	20	3.85	70	6	2.3	22.3	23	23.6	24.3	-
ZSLNS20 40-25	4	6	25	3.85	70	6	2	27.4	28.3	28.9	-	-
ZSLNS20 40-30	4	6	30	3.85	80	6	1.7	32.6	33.5	34.6	-	-
ZSLNS20 40-35	4	6	35	3.85	80	6	1.5	37.8	38.8	-	-	-
ZSLNS20 40-40	4	6	40	3.85	90	6	1.3	42.9	44	-	-	-
ZSLNS20 40-45	4	6	45	3.85	90	6	1.2	48.1	49.4	-	-	-
ZSLNS20 40-50	4	6	50	3.85	100	6	1.1	53.2	54.8	-	-	-
ZSLNS20 50-16	5	7.5	16	4.85	60	6	1.5	18.1	18.8	-	-	-
ZSLNS20 50-20	5	7.5	20	4.85	60	6	1.3	22.3	23	-	-	-
ZSLNS20 50-25	5	7.5	25	4.85	70	6	1.1	27.4	28.3	-	-	-
ZSLNS20 50-30	5	7.5	30	4.85	70	6	0.9	32.6	-	-	-	-
ZSLNS20 50-35	5	7.5	35	4.85	80	6	0.8	37.8	-	-	-	-
ZSLNS20 50-40	5	7.5	40	4.85	90	6	0.7	42.9	-	-	-	-
ZSLNS20 50-50	5	7.5	50	4.85	100	6	0.6	53.2	-	-	-	-

Zamus Star

E-Star

U-Wing

Zamus Thunder

X-Star

S-Wing

A-Wing

Standard

Copper -Mate

Gra -Mate

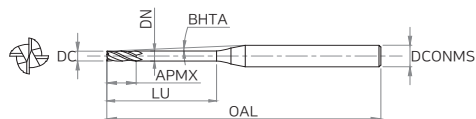
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	◎		○	○						

ZSLNS40

4 Flutes Long Neck Square End Mill



► Tolerance

DC		Shank Dia
Ø1 ~ Ø5	0 ~ -0.015	h5



EDP No	DC	APMX	LU	DN	OAL	DCONMS	BHTA	Effective length by inclination angle				
								0.5°	1°	1.5°	2°	3°
ZSLNS40 10-4	1	1.5	4	0.96	50	4	7.7	5.1	5.5	5.8	6.1	6.6
ZSLNS40 10-6	1	1.5	6	0.96	50	4	6.6	7.2	7.7	8.1	8.4	9.1
ZSLNS40 10-8	1	1.5	8	0.96	50	4	5.7	9.4	9.9	10.4	10.7	11.4
ZSLNS40 10-10	1	1.5	10	0.96	50	4	5	11.5	12.1	12.6	13	13.7
ZSLNS40 15-4	1.5	2.25	4	1.44	50	4	7.2	5.2	5.5	5.9	6.2	6.7
ZSLNS40 15-6	1.5	2.25	6	1.44	50	4	6	7.3	7.8	8.1	8.5	9.1
ZSLNS40 15-8	1.5	2.25	8	1.44	50	4	5.1	9.4	10	10.4	10.8	11.5
ZSLNS40 15-10	1.5	2.25	10	1.44	50	4	4.5	11.6	12.1	12.6	13	13.8
ZSLNS40 15-12	1.5	2.25	12	1.44	55	4	4	13.7	14.3	14.8	15.3	16.1
ZSLNS40 15-14	1.5	2.25	14	1.44	55	4	3.6	15.8	16.5	17	17.5	18.7
ZSLNS40 15-16	1.5	2.25	16	1.44	55	4	3.3	17.9	18.6	19.2	19.7	-
ZSLNS40 15-18	1.5	2.25	18	1.44	60	4	3	20	20.7	21.3	21.9	-
ZSLNS40 15-20	1.5	2.25	20	1.44	60	4	2.8	22	22.9	23.5	24.1	-
ZSLNS40 15-25	1.5	2.25	25	1.44	65	4	2.4	27.3	28.1	28.8	30	-
ZSLNS40 20-4	2	3	4	1.92	50	4	6.5	5.3	5.6	5.9	6.2	6.7
ZSLNS40 20-6	2	3	6	1.92	50	4	5.3	7.4	7.8	8.2	8.5	9.1
ZSLNS40 20-8	2	3	8	1.92	50	4	4.5	9.5	10	10.4	10.8	11.5
ZSLNS40 20-10	2	3	10	1.92	50	4	3.9	11.6	12.2	12.7	13.1	13.8
ZSLNS40 20-12	2	3	12	1.92	55	4	3.4	13.7	14.3	14.9	15.3	16.1
ZSLNS40 20-14	2	3	14	1.92	55	4	3.1	15.8	16.5	17	17.5	18.8

► Applicable Working Material

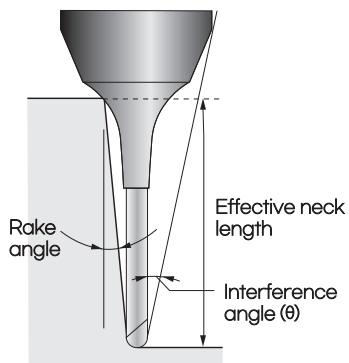
○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FC500					
◎	◎		○	○						

ZSLNS40

4 Flutes Long Neck Square End Mill

Endmill



※ The marked effective neck length is the default value to prevent interference with the workpiece.

EDP No	DC	APMX	LU	DN	OAL	DCON MS	BHTA	Effective length by inclination angle				
								0.5°	1°	1.5°	2°	3°
ZSLNS40 20-16	2	3	16	1.92	55	4	2.8	17.9	18.6	19.2	19.7	-
ZSLNS40 20-18	2	3	18	1.92	60	4	2.6	20	20.8	21.4	21.9	-
ZSLNS40 20-20	2	3	20	1.92	60	4	2.4	22.1	22.9	23.5	24.1	-
ZSLNS40 20-25	2	3	25	1.92	65	4	2	27.3	28.2	28.9	-	-
ZSLNS40 20-30	2	3	30	1.92	70	4	1.7	32.5	33.4	34.4	-	-
ZSLNS40 25-8	2.5	3.75	8	2.4	50	4	3.7	9.6	10.1	10.5	10.9	11.5
ZSLNS40 25-10	2.5	3.75	10	2.4	50	4	3.1	11.7	12.2	12.7	13.1	13.8
ZSLNS40 25-12	2.5	3.75	12	2.4	55	4	2.7	13.8	14.4	14.9	15.3	-
ZSLNS40 25-14	2.5	3.75	14	2.4	55	4	2.4	15.9	16.5	17.1	17.5	-
ZSLNS40 25-16	2.5	3.75	16	2.4	55	4	2.2	18	18.7	19.2	19.7	-
ZSLNS40 25-18	2.5	3.75	18	2.4	60	4	2	20.1	20.8	21.4	-	-
ZSLNS40 25-20	2.5	3.75	20	2.4	60	4	1.8	22.1	22.9	23.5	-	-
ZSLNS40 25-25	2.5	3.75	25	2.4	65	4	1.5	27.3	28.2	-	-	-
ZSLNS40 25-30	2.5	3.75	30	2.4	70	4	1.3	32.6	33.5	-	-	-
ZSLNS40 30-8	3	4.5	8	2.88	55	6	5.6	9.6	10.1	10.5	10.9	11.5
ZSLNS40 30-10	3	4.5	10	2.88	55	6	5	11.7	12.3	12.7	13.1	13.8
ZSLNS40 30-12	3	4.5	12	2.88	60	6	4.5	13.8	14.4	14.9	15.4	16.3
ZSLNS40 30-14	3	4.5	14	2.88	60	6	4.1	15.9	16.6	17.1	17.6	18.9
ZSLNS40 30-16	3	4.5	16	2.88	60	6	3.7	18	18.7	19.3	19.8	21.6
ZSLNS40 30-18	3	4.5	18	2.88	60	6	3.4	20.1	20.8	21.4	21.9	24.2

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	◎		○	○						

ZSLNS40

4 Flutes Long Neck Square End Mill

Endmill

	EDP No	DC	APMX	LU	DN	OAL	DCON MS	BHTA	Effective length by inclination angle				
									0.5°	1°	1.5°	2°	3°
Zamus Star	ZSLNS40 30-20	3	4.5	20	2.88	65	6	3.2	22.2	23	23.6	24.2	26.9
	ZSLNS40 30-25	3	4.5	25	2.88	70	6	2.7	27.4	28.2	28.9	30.2	-
	ZSLNS40 30-30	3	4.5	30	2.88	75	6	2.4	32.6	33.5	34.5	36.2	-
	ZSLNS40 30-35	3	4.5	35	2.88	80	6	2.1	37.7	38.7	40.2	42.2	-
	ZSLNS40 30-40	3	4.5	40	2.88	90	6	1.9	42.9	43.9	45.9	-	-
E-Star	ZSLNS40 40-12	4	6	12	3.85	60	6	3.4	13.9	14.5	15	15.4	16.3
	ZSLNS40 40-16	4	6	16	3.85	60	6	2.8	18.1	18.8	19.3	19.8	-
	ZSLNS40 40-20	4	6	20	3.85	70	6	2.3	22.3	23	23.6	24.3	-
U-Wing	ZSLNS40 40-25	4	6	25	3.85	70	6	2	27.4	28.3	28.9	-	-
	ZSLNS40 40-30	4	6	30	3.85	80	6	1.7	32.6	33.5	34.6	-	-
	ZSLNS40 40-35	4	6	35	3.85	80	6	1.5	37.8	38.8	-	-	-
Zamus Thunder	ZSLNS40 40-40	4	6	40	3.85	90	6	1.3	42.9	44	-	-	-
	ZSLNS40 40-45	4	6	45	3.85	90	6	1.2	48.1	49.4	-	-	-
	ZSLNS40 40-50	4	6	50	3.85	100	6	1.1	53.2	54.8	-	-	-
X-Star	ZSLNS40 50-16	5	7.5	16	4.85	60	6	1.5	18.1	18.8	-	-	-
	ZSLNS40 50-20	5	7.5	20	4.85	60	6	1.3	22.3	23	-	-	-
	ZSLNS40 50-25	5	7.5	25	4.85	70	6	1.1	27.4	28.3	-	-	-
	ZSLNS40 50-30	5	7.5	30	4.85	60	6	0.9	32.6	-	-	-	-
	ZSLNS40 50-35	5	7.5	35	4.85	80	6	0.8	37.8	-	-	-	-
S-Wing	ZSLNS40 50-40	5	7.5	40	4.85	90	6	0.7	42.9	-	-	-	-
	ZSLNS40 50-50	5	7.5	50	4.85	100	6	0.6	53.2	-	-	-	-

A-Wing

Standard

Copper
-Mate

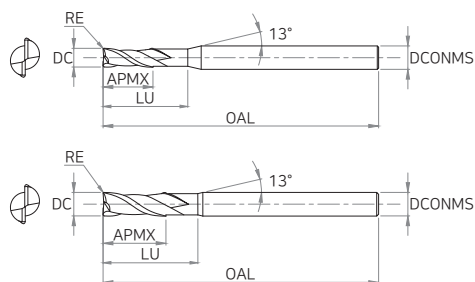
Gra
-Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

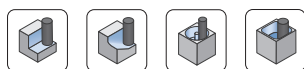
H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	◎		○	○						

ZR702 2 Flutes Neck Radius End Mill



► Tolerance

DC		Shank Dia
~ Ø6	0 ~ -0.012	h5
Ø8 ~ Ø12	0 ~ -0.015	



EDP No	DC	RE	APMX	LU	OAL	DCONMS
ZR702 01000503S4	1	0.05	1.5	3	50	4
ZR702 01000504S4	1	0.05	1.5	4	50	4
ZR702 01000506S4	1	0.05	1.5	6	50	4
ZR702 01000508S4	1	0.05	1.5	8	50	4
ZR702 01000510S4	1	0.05	1.5	10	50	4
ZR702 0100103S4	1	0.1	1.5	3	50	4
ZR702 0100104S4	1	0.1	1.5	4	50	4
ZR702 0100106S4	1	0.1	1.5	6	50	4
ZR702 0100108S4	1	0.1	1.5	8	50	4
ZR702 0100110S4	1	0.1	1.5	10	50	4
ZR702 0100203S4	1	0.2	1.5	3	50	4
ZR702 0100204S4	1	0.2	1.5	4	50	4
ZR702 0100206S4	1	0.2	1.5	6	50	4
ZR702 0100208S4	1	0.2	1.5	8	50	4
ZR702 0100210S4	1	0.2	1.5	10	50	4
ZR702 0100303S4	1	0.3	1.5	3	50	4
ZR702 0100304S4	1	0.3	1.5	4	50	4
ZR702 0100306S4	1	0.3	1.5	6	50	4
ZR702 0100308S4	1	0.3	1.5	8	50	4
ZR702 0100310S4	1	0.3	1.5	10	50	4

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	~325	HRc30~50	~FCD500					
◎	◎		○	○						

Endmill

Zamus Star

E-Star

U-Wing

Zamus Thunder

X-Star

S-Wing

A-Wing

Standard

Copper-Mate

Gra-Mate

ZR702

2 Flutes Neck Radius End Mill

Endmill

	EDP No	DC	RE	APMX	LU	OAL	DCONMS
Zamus Star	ZR702 0100104	1	0.1	1.5	4	50	6
	ZR702 0100106	1	0.1	1.5	6	50	6
	ZR702 0100204	1	0.2	1.5	4	50	6
	ZR702 0100206	1	0.2	1.5	6	50	6
	ZR702 0100210	1	0.2	1.5	10	50	6
	ZR702 0100212	1	0.2	1.5	12	50	6
E-Star	ZR702 0120208	1.2	0.2	2	8	50	6
	ZR702 0120212	1.2	0.2	2	12	50	6
U-Wing	ZR702 01500504S4	1.5	0.05	2.5	4	50	4
	ZR702 01500506S4	1.5	0.05	2.5	6	50	4
	ZR702 01500508S4	1.5	0.05	2.5	8	50	4
	ZR702 01500510S4	1.5	0.05	2.5	10	50	4
Zamus Thunder	ZR702 01500512S4	1.5	0.05	2.5	12	50	4
	ZR702 0150104S4	1.5	0.1	2.5	4	50	4
	ZR702 0150106S4	1.5	0.1	2.5	6	50	4
	ZR702 0150108S4	1.5	0.1	2.5	8	50	4
X-Star	ZR702 0150110S4	1.5	0.1	2.5	10	50	4
	ZR702 0150112S4	1.5	0.1	2.5	12	50	4
S-Wing	ZR702 0150204S4	1.5	0.2	2.5	4	50	4
	ZR702 0150206S4	1.5	0.2	2.5	6	50	4
	ZR702 0150208S4	1.5	0.2	2.5	8	50	4
	ZR702 0150210S4	1.5	0.2	2.5	10	50	4
A-Wing	ZR702 0150212S4	1.5	0.2	2.5	12	50	4
	ZR702 0150304S4	1.5	0.3	2.5	4	50	4
	ZR702 0150306S4	1.5	0.3	2.5	6	50	4
	ZR702 0150308S4	1.5	0.3	2.5	8	50	4
Standard	ZR702 0150310S4	1.5	0.3	2.5	10	50	4
	ZR702 0150312S4	1.5	0.3	2.5	12	50	4
	ZR702 0150504S4	1.5	0.5	2.5	4	50	4
	ZR702 0150506S4	1.5	0.5	2.5	6	50	4
Copper -Mate	ZR702 0150508S4	1.5	0.5	2.5	8	50	4
	ZR702 0150510S4	1.5	0.5	2.5	10	50	4
Gra -Mate	ZR702 0150512S4	1.5	0.5	2.5	12	50	4
	ZR702 0150204	1.5	0.2	2.5	4	50	6

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
◎	◎		○	○						

ZR702

2 Flutes Neck Radius End Mill

Endmill

EDP No	DC	RE	APMX	LU	OAL	DCONMS
ZR702 0150206	1.5	0.2	2.5	6	50	6
ZR702 0150208	1.5	0.2	2.5	8	50	6
ZR702 0150210	1.5	0.2	2.5	10	50	6
ZR702 0150215	1.5	0.2	2.5	15	50	6
ZR702 0200106S4	2	0.1	3	6	50	4
ZR702 0200108S4	2	0.1	3	8	50	4
ZR702 0200110S4	2	0.1	3	10	50	4
ZR702 0200112S4	2	0.1	3	12	50	4
ZR702 0200116S4	2	0.1	3	16	50	4
ZR702 0200120S4	2	0.1	3	20	50	4
ZR702 0200206S4	2	0.2	3	6	50	4
ZR702 0200208S4	2	0.2	3	8	50	4
ZR702 0200210S4	2	0.2	3	10	50	4
ZR702 0200212S4	2	0.2	3	12	50	4
ZR702 0200216S4	2	0.2	3	16	50	4
ZR702 0200220S4	2	0.2	3	20	50	4
ZR702 0200306S4	2	0.3	3	6	50	4
ZR702 0200308S4	2	0.3	3	8	50	4
ZR702 0200310S4	2	0.3	3	10	50	4
ZR702 0200312S4	2	0.3	3	12	50	4
ZR702 0200316S4	2	0.3	3	16	50	4
ZR702 0200320S4	2	0.3	3	20	50	4
ZR702 0200506S4	2	0.5	3	6	50	4
ZR702 0200508S4	2	0.5	3	8	50	4
ZR702 0200510S4	2	0.5	3	10	50	4
ZR702 0200512S4	2	0.5	3	12	50	4
ZR702 0200516S4	2	0.5	3	16	50	4
ZR702 0200520S4	2	0.5	3	20	50	4
ZR702 0200108	2	0.1	3	8	50	6
ZR702 0200112	2	0.1	3	12	50	6
ZR702 0200206	2	0.2	3	6	50	6
ZR702 0200209	2	0.2	3	9	50	6
ZR702 0200216	2	0.2	3	16	50	6
ZR702 0200306	2	0.3	3	6	50	6

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	◎		○	○						

ZR702

2 Flutes Neck Radius End Mill

Endmill

	EDP No	DC	RE	APMX	LU	OAL	DCONMS
Zamus Star	ZR702 0200506	2	0.5	3	6	50	6
	ZR702 0200509	2	0.5	3	9	50	6
	ZR702 0200512	2	0.5	3	12	50	6
	ZR702 0200516	2	0.5	3	16	50	6
E-Star	ZR702 0250208S4	2.5	0.2	3.5	8	50	4
	ZR702 0250210S4	2.5	0.2	3.5	10	50	4
	ZR702 0250212S4	2.5	0.2	3.5	12	50	4
	ZR702 0250216S4	2.5	0.2	3.5	16	50	4
U-Wing	ZR702 0250308S4	2.5	0.3	3.5	8	50	4
	ZR702 0250310S4	2.5	0.3	3.5	10	50	4
	ZR702 0250312S4	2.5	0.3	3.5	12	50	4
	ZR702 0250316S4	2.5	0.3	3.5	16	50	4
Zamus Thunder	ZR702 0250508S4	2.5	0.5	3.5	8	50	4
	ZR702 0250510S4	2.5	0.5	3.5	10	50	4
	ZR702 0250512S4	2.5	0.5	3.5	12	50	4
	ZR702 0250516S4	2.5	0.5	3.5	16	50	4
X-Star	ZR702 0300108	3	0.1	4.5	8	55	6
	ZR702 0300110	3	0.1	4.5	10	55	6
	ZR702 0300112	3	0.1	4.5	12	55	6
	ZR702 0300116	3	0.1	4.5	16	55	6
S-Wing	ZR702 0300120	3	0.1	4.5	20	60	6
	ZR702 0300208	3	0.2	4.5	8	55	6
	ZR702 0300209	3	0.2	4.5	9	55	6
	ZR702 0300210	3	0.2	4.5	10	55	6
A-Wing	ZR702 0300212	3	0.2	4.5	12	55	6
	ZR702 0300216	3	0.2	4.5	16	55	6
	ZR702 0300220	3	0.2	4.5	20	60	6
	ZR702 0300308	3	0.3	4.5	8	55	6
Standard	ZR702 0300309	3	0.3	4.5	9	55	6
	ZR702 0300310	3	0.3	4.5	10	55	6
	ZR702 0300312	3	0.3	4.5	12	55	6
	ZR702 0300314	3	0.3	4.5	14	55	6
Copper -Mate	ZR702 0300316	3	0.3	4.5	16	55	6
	ZR702 0300320	3	0.3	4.5	20	60	6

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	◎		○	○						

ZR702

2 Flutes Neck Radius End Mill

Endmill

EDP No	DC	RE	APMX	LU	OAL	DCONMS
ZR702 0300508	3	0.5	4.5	8	55	6
ZR702 0300509	3	0.5	4.5	9	55	6
ZR702 0300510	3	0.5	4.5	10	55	6
ZR702 0300512	3	0.5	4.5	12	55	6
ZR702 0300516	3	0.5	4.5	16	55	6
ZR702 0300520	3	0.5	4.5	20	60	6
ZR702 0301008	3	1	4.5	8	55	6
ZR702 0301010	3	1	4.5	10	55	6
ZR702 0301012	3	1	4.5	12	55	6
ZR702 0301016	3	1	4.5	16	55	6
ZR702 0301020	3	1	4.5	20	60	6
ZR702 0301025	3	1	4.5	25	60	6
ZR702 0400110	4	0.1	6	10	55	6
ZR702 0400112	4	0.1	6	12	55	6
ZR702 0400116	4	0.1	6	16	55	6
ZR702 0400120	4	0.1	6	20	60	6
ZR702 0400125	4	0.1	6	25	60	6
ZR702 0400210	4	0.2	6	10	55	6
ZR702 0400212	4	0.2	6	12	55	6
ZR702 0400216	4	0.2	6	16	55	6
ZR702 0400220	4	0.2	6	20	60	6
ZR702 0400225	4	0.2	6	25	60	6
ZR702 0400310	4	0.3	6	10	55	6
ZR702 0400312	4	0.3	6	12	55	6
ZR702 0400316	4	0.3	6	16	55	6
ZR702 0400320	4	0.3	6	20	60	6
ZR702 0400325	4	0.3	6	25	60	6
ZR702 0400510	4	0.5	6	10	55	6
ZR702 0400512	4	0.5	6	12	55	6
ZR702 0400516	4	0.5	6	16	55	6
ZR702 0400520	4	0.5	6	20	60	6
ZR702 0400525	4	0.5	6	25	60	6
ZR702 0400530	4	0.5	6	30	70	6
ZR702 0401010	4	1	6	10	55	6

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	◎		○	○						

ZR702

2 Flutes Neck Radius End Mill

Endmill

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

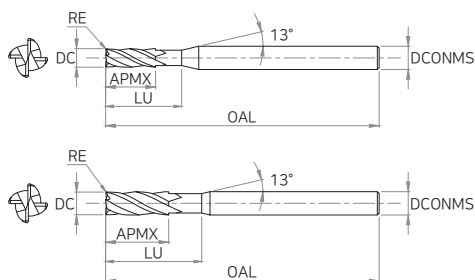
EDP No	DC	RE	APMX	LU	OAL	DCONMS
ZR702 0401012	4	1	6	12	55	6
ZR702 0401016	4	1	6	16	55	6
ZR702 0401020	4	1	6	20	60	6
ZR702 0401025	4	1	6	25	60	6
ZR702 0401030	4	1	6	30	70	6
ZR702 0500318	5	0.3	8	18	60	6
ZR702 0600220	6	0.2	9	20	60	6
ZR702 0600320	6	0.3	9	20	60	6
ZR702 0600520	6	0.5	9	20	60	6
ZR702 0601020	6	1	9	20	60	6
ZR702 0601520	6	1.5	9	20	60	6
ZR702 0602020	6	2	9	20	60	6
ZR702 0800225	8	0.2	12	25	60	8
ZR702 0800325	8	0.3	12	25	60	8
ZR702 0800525	8	0.5	12	25	60	8
ZR702 0801025	8	1	12	25	60	8
ZR702 0801525	8	1.5	12	25	60	8
ZR702 1000232	10	0.2	15	32	70	10
ZR702 1000332	10	0.3	15	32	70	10
ZR702 1000532	10	0.5	15	32	70	10
ZR702 1001032	10	1	15	32	70	10
ZR702 1001532	10	1.5	15	32	70	10
ZR702 1002032	10	2	15	32	70	10
ZR702 1200338	12	0.3	18	38	80	12
ZR702 1200538	12	0.5	18	38	80	12
ZR702 1201038	12	1	18	38	80	12
ZR702 1201538	12	1.5	18	38	80	12
ZR702 1202038	12	2	18	38	80	12

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

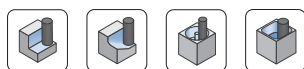
H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	◎		○	○						

ZR704 4 Flutes Neck Radius End Mill



► Tolerance

DC		Shank Dia
~ Ø6	0 ~ -0.012	h5
Ø8 ~ Ø12	0 ~ -0.015	



Ø6 OR UNDER ABOVE Ø6

EDP No	DC	RE	APMX	LU	OAL	DCONMS
ZR704 0100103S4	1	0.1	2	3	50	4
ZR704 0100104S4	1	0.1	2	4	50	4
ZR704 0100106S4	1	0.1	2	6	50	4
ZR704 0100203S4	1	0.2	2	3	50	4
ZR704 0100204S4	1	0.2	2	4	50	4
ZR704 0100206S4	1	0.2	2	6	50	4
ZR704 0100303S4	1	0.3	2	3	50	4
ZR704 0100304S4	1	0.3	2	4	50	4
ZR704 0100306S4	1	0.3	2	6	50	4
ZR704 0150104S4	1.5	0.1	2.5	4	50	4
ZR704 0150106S4	1.5	0.1	2.5	6	50	4
ZR704 0150204S4	1.5	0.2	2.5	4	50	4
ZR704 0150206S4	1.5	0.2	2.5	6	50	4
ZR704 0150304S4	1.5	0.3	2.5	4	50	4
ZR704 0150306S4	1.5	0.3	2.5	6	50	4
ZR704 0200106S4	2	0.1	3	6	50	4
ZR704 0200108S4	2	0.1	3	8	50	4
ZR704 0200206S4	2	0.2	3	6	50	4
ZR704 0200208S4	2	0.2	3	8	50	4
ZR704 0200306S4	2	0.3	3	6	50	4

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	◎		○	○						

Endmill

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

ZR704 4 Flutes Neck Radius End Mill

Endmill

	EDP No	DC	RE	APMX	LU	OAL	DCONMS
Zamus Star	ZR704 0200308S4	2	0.3	3	8	50	4
	ZR704 0200506S4	2	0.5	3	6	50	4
	ZR704 0200508S4	2	0.5	3	8	50	4
	ZR704 0200208	2	0.2	3	8	50	6
	ZR704 0200210	2	0.2	3	10	50	6
E-Star	ZR704 0200212	2	0.2	3	12	50	6
	ZR704 0250106S4	2.5	0.1	3.5	6	50	4
	ZR704 0300108	3	0.1	4	8	55	6
U-Wing	ZR704 0300110	3	0.1	4	10	55	6
	ZR704 0300112	3	0.1	4	12	55	6
	ZR704 0300116	3	0.1	4	16	55	6
Zamus Thunder	ZR704 0300120	3	0.1	4	20	60	6
	ZR704 0300208	3	0.2	4	8	55	6
	ZR704 0300210	3	0.2	4	10	55	6
	ZR704 0300212	3	0.2	4	12	55	6
	ZR704 0300216	3	0.2	4	16	55	6
X-Star	ZR704 0300220	3	0.2	4	20	60	6
	ZR704 0300308	3	0.3	4	8	55	6
	ZR704 0300309	3	0.3	4	9	55	6
S-Wing	ZR704 0300310	3	0.3	4	10	55	6
	ZR704 0300312	3	0.3	4	12	55	6
	ZR704 0300316	3	0.3	4	16	55	6
A-Wing	ZR704 0300320	3	0.3	4	20	60	6
	ZR704 0300508	3	0.5	4	8	55	6
	ZR704 0300509	3	0.5	4	9	55	6
Standard	ZR704 0300510	3	0.5	4	10	55	6
	ZR704 0300512	3	0.5	4	12	55	6
	ZR704 0300516	3	0.5	4	16	55	6
Copper -Mate	ZR704 0300520	3	0.5	4	20	60	6
	ZR704 0301008	3	1	4	8	55	6
	ZR704 0301010	3	1	4	10	55	6
Gra -Mate	ZR704 0301012	3	1	4	12	55	6
	ZR704 0301016	3	1	4	16	55	6
	ZR704 0301020	3	1	4	20	60	6

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	◎		○	○						

ZR704

4 Flutes Neck Radius End Mill

Endmill

EDP No	DC	RE	APMX	LU	OAL	DCONMS
ZR704 0400110	4	0.1	6	10	55	6
ZR704 0400112	4	0.1	6	12	55	6
ZR704 0400116	4	0.1	6	16	55	6
ZR704 0400120	4	0.1	6	20	60	6
ZR704 0400125	4	0.1	6	25	60	6
ZR704 0400210	4	0.2	6	10	55	6
ZR704 0400212	4	0.2	6	12	55	6
ZR704 0400216	4	0.2	6	16	55	6
ZR704 0400220	4	0.2	6	20	60	6
ZR704 0400225	4	0.2	6	25	60	6
ZR704 0400310	4	0.3	6	10	55	6
ZR704 0400312	4	0.3	6	12	55	6
ZR704 0400316	4	0.3	6	16	55	6
ZR704 0400320	4	0.3	6	20	60	6
ZR704 0400325	4	0.3	6	25	55	6
ZR704 0400510	4	0.5	6	10	55	6
ZR704 0400512	4	0.5	6	12	55	6
ZR704 0400516	4	0.5	6	16	55	6
ZR704 0400520	4	0.5	6	20	60	6
ZR704 0400525	4	0.5	6	25	60	6
ZR704 0401010	4	1	6	10	55	6
ZR704 0401012	4	1	6	12	55	6
ZR704 0401016	4	1	6	16	55	6
ZR704 0401020	4	1	6	20	60	6
ZR704 0401025	4	1	6	25	60	6
ZR704 0600220	6	0.2	9	20	60	6
ZR704 0600320	6	0.3	9	20	60	6
ZR704 0600520	6	0.5	9	20	60	6
ZR704 0601020	6	1	9	20	60	6
ZR704 0601520	6	1.5	9	20	60	6
ZR704 0602020	6	2	9	20	60	6
ZR704 0800225	8	0.2	12	25	60	8
ZR704 0800325	8	0.3	12	25	60	8
ZR704 0800525	8	0.5	12	25	60	8

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	◎		○	○						

ZR704 4 Flutes Neck Radius End Mill

Endmill

EDP No	DC	RE	APMX	LU	OAL	DCONMS
ZR704 0801025	8	1	12	25	60	8
ZR704 0801525	8	1.5	12	25	60	8
ZR704 0802025	8	2	12	25	60	8
ZR704 1000232	10	0.2	15	32	70	10
ZR704 1000332	10	0.3	15	32	70	10
ZR704 1000532	10	0.5	15	32	70	10
ZR704 1001032	10	1	15	32	70	10
ZR704 1001532	10	1.5	15	32	70	10
ZR704 1002032	10	2	15	32	70	10
ZR704 1200338	12	0.3	18	38	80	12
ZR704 1200538	12	0.5	18	38	80	12
ZR704 1201038	12	1	18	38	80	12
ZR704 1201538	12	1.5	18	38	80	12
ZR704 1202038	12	2	18	38	80	12

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

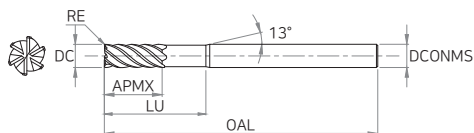
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	◎		○	○						

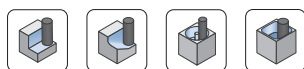
ZR706

6 Flutes Neck Radius End Mill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.02	h5



EDP No	DC	RE	APMX	LU	OAL	DCONMS
ZR706 0600314	6	0.3	6	14	50	6
ZR706 0600514	6	0.5	6	14	50	6
ZR706 0800524	8	0.5	8	24	60	8
ZR706 0801024	8	1	8	24	60	8
ZR706 1000530	10	0.5	10	30	70	10
ZR706 1001030	10	1	10	30	70	10
ZR706 1200530	12	0.5	12	30	75	12
ZR706 1201030	12	1	12	30	75	12

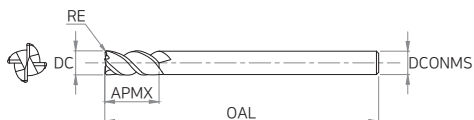
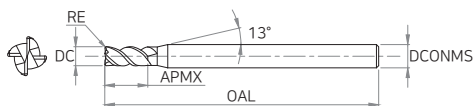
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	Steel HRc30~50	~FCD500					
◎	◎		○	○						

ZR714 4 Flutes Radius End Mill

Endmill



► Tolerance

DC		Shank Dia
~ Ø6	0 ~ -0.012	h5
Ø8 ~ Ø12	0 ~ -0.015	



CARBIDE

AITIN



Ø6 OR UNDER

ABOVE Ø6

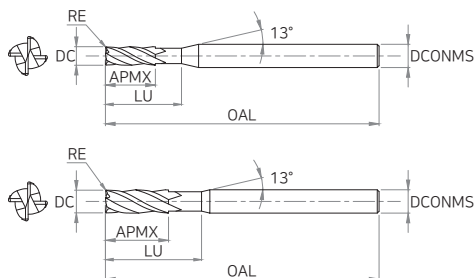
EDP No	DC	RE	APMX	OAL	DCON MS	EDP No	DC	RE	APMX	OAL	DCON MS
ZR714 0303	3	0.3	8	50	6	ZR714 1005	10	0.5	25	70	10
ZR714 0305	3	0.5	8	50	6	ZR714 1010	10	1	25	70	10
ZR714 0403	4	0.3	11	50	6	ZR714 1015	10	1.5	25	70	10
ZR714 0405	4	0.5	11	50	6	ZR714 1020	10	2	25	70	10
ZR714 0410	4	1	11	50	6	ZR714 1025	10	2.5	25	70	10
ZR714 0603	6	0.3	15	60	6	ZR714 1030	10	3	25	70	10
ZR714 0605	6	0.5	15	60	6	ZR714 1203	12	0.3	30	80	12
ZR714 0610	6	1	15	60	6	ZR714 1205	12	0.5	30	80	12
ZR714 0803	8	0.3	20	60	8	ZR714 1210	12	1	30	80	12
ZR714 0805	8	0.5	20	60	8	ZR714 1215	12	1.5	30	80	12
ZR714 0810	8	1	20	60	8	ZR714 1220	12	2	30	80	12
ZR714 0815	8	1.5	20	60	8	ZR714 1225	12	2.5	30	80	12
ZR714 0820	8	2	20	60	8	ZR714 1230	12	3	30	80	12
ZR714 1003	10	0.3	25	70	10						

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FC500					
◎	◎		○	○						

ZR724 4 Flutes Neck Radius End Mill



► Tolerance

DC		Shank Dia
~ Ø6	0 ~ -0.012	h5
Ø8 ~ Ø12	0 ~ -0.015	



EDP No	DC	RE	APMX	LU	OAL	DCONMS
ZR724 0600520	6	0.5	9	20	90	6
ZR724 0601020	6	1	9	20	90	6
ZR724 0800525	8	0.5	12	25	100	8
ZR724 0801025	8	1	12	25	100	8
ZR724 1000532	10	0.5	15	32	100	10
ZR724 1001032	10	1	15	32	100	10
ZR724 1002032	10	2	15	32	100	10
ZR724 1200538	12	0.5	18	38	110	12
ZR724 1201038	12	1	18	38	110	12
ZR724 1202038	12	2	18	38	110	12

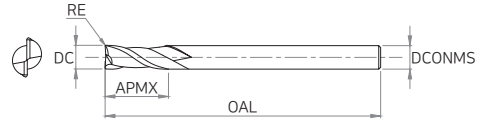
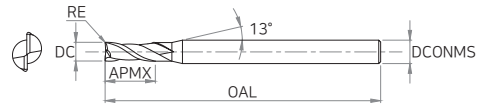
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	Steel HRc30~50	~FCD500					
◎	◎		○	○						

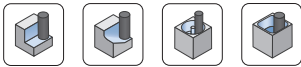
ZR732

2 Flutes Long Shank Radius End Mill



► Tolerance

DC		Shank Dia
~ Ø6	0 ~ -0.012	h5
Ø8 ~ Ø12	0 ~ -0.015	



Ø6 OR UNDER ABOVE Ø6

EDP No	DC	RE	APMX	OAL	DCONMS
ZR732 01001	1	0.1	2	50	6
ZR732 01002	1	0.2	2	50	6
ZR732 01003	1	0.3	2	50	6
ZR732 01501	1.5	0.1	3	50	6
ZR732 01502	1.5	0.2	3	50	6
ZR732 01503	1.5	0.3	3	50	6
ZR732 01505	1.5	0.5	3	50	6
ZR732 02001	2	0.1	5	50	6
ZR732 02002	2	0.2	5	50	6
ZR732 02003	2	0.3	5	50	6
ZR732 02005	2	0.5	5	50	6
ZR732 02501	2.5	0.1	7	60	6
ZR732 02502	2.5	0.2	7	60	6
ZR732 02503	2.5	0.3	7	60	6
ZR732 02505	2.5	0.5	7	60	6
ZR732 03001	3	0.1	8	60	6
ZR732 03002	3	0.2	8	60	6
ZR732 03003	3	0.3	8	60	6
ZR732 03005	3	0.5	8	60	6
ZR732 04001	4	0.1	10	70	6

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FC500					
◎	◎		○	○						

ZR732

2 Flutes Long Shank Radius End Mill

Endmill

EDP No	DC	RE	APMX	OAL	DCONMS
ZR732 04002	4	0.2	10	70	6
ZR732 04003	4	0.3	10	70	6
ZR732 04005	4	0.5	10	70	6
ZR732 04010	4	1	10	70	6
ZR732 05001	5	0.1	13	80	6
ZR732 05002	5	0.2	13	80	6
ZR732 05003	5	0.3	13	80	6
ZR732 05005	5	0.5	13	80	6
ZR732 05010	5	1	13	80	6
ZR732 06001	6	0.1	15	90	6
ZR732 06002	6	0.2	15	90	6
ZR732 06003	6	0.3	15	90	6
ZR732 06005	6	0.5	15	90	6
ZR732 06010	6	1	15	90	6
ZR732 08001	8	0.1	20	100	8
ZR732 08002	8	0.2	20	100	8
ZR732 08003	8	0.3	20	100	8
ZR732 08005	8	0.5	20	100	8
ZR732 08010	8	1	20	100	8
ZR732 08020	8	2	20	100	8
ZR732 10002	10	0.2	25	100	10
ZR732 10003	10	0.3	25	100	10
ZR732 10005	10	0.5	25	100	10
ZR732 10010	10	1	25	100	10
ZR732 10020	10	2	25	100	10
ZR732 12002	12	0.2	30	110	12
ZR732 12003	12	0.3	30	110	12
ZR732 12005	12	0.5	30	110	12
ZR732 12010	12	1	30	110	12
ZR732 12020	12	2	30	110	12

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

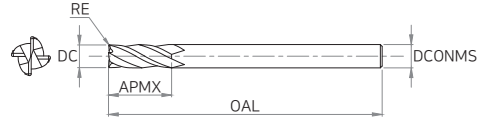
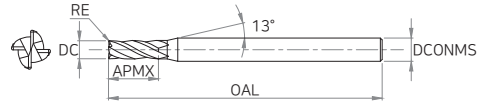
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	◎		○	○						

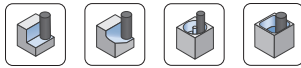
ZR734

4 Flutes Long Shank Radius End Mill



► Tolerance

DC		Shank Dia
~ Ø6	0 ~ -0.012	h5
Ø8 ~ Ø12	0 ~ -0.015	



Ø6 OR UNDER ABOVE Ø6

EDP No	DC	RE	APMX	OAL	DCON MS
ZR734 01001	1	0.1	2	50	6
ZR734 01002	1	0.2	2	50	6
ZR734 01003	1	0.3	2	50	6
ZR734 01501	1.5	0.1	3	50	6
ZR734 01502	1.5	0.2	3	50	6
ZR734 01503	1.5	0.3	3	50	6
ZR734 01505	1.5	0.5	3	50	6
ZR734 02001	2	0.1	5	50	6
ZR734 02002	2	0.2	5	50	6
ZR734 02003	2	0.3	5	50	6
ZR734 02005	2	0.5	5	50	6
ZR734 02501	2.5	0.1	7	60	6
ZR734 02502	2.5	0.2	7	60	6
ZR734 02503	2.5	0.3	7	60	6
ZR734 02505	2.5	0.5	7	60	6
ZR734 03001	3	0.1	8	60	6
ZR734 03002	3	0.2	8	60	6
ZR734 03003	3	0.3	8	60	6
ZR734 03005	3	0.5	8	60	6
ZR734 04001	4	0.1	10	70	6

EDP No	DC	RE	APMX	OAL	DCON MS
ZR734 04002	4	0.2	10	70	6
ZR734 04003	4	0.3	10	70	6
ZR734 04005	4	0.5	10	70	6
ZR734 04010	4	1	10	70	6
ZR734 05001	5	0.1	13	80	6
ZR734 05002	5	0.2	13	80	6
ZR734 05003	5	0.3	13	80	6
ZR734 05005	5	0.5	13	80	6
ZR734 05010	5	1	13	80	6
ZR734 06001	6	0.1	15	90	6
ZR734 06002	6	0.2	15	90	6
ZR734 06003	6	0.3	15	90	6
ZR734 06005	6	0.5	15	90	6
ZR734 06010	6	1	15	90	6
ZR734 08001	8	0.1	20	100	8
ZR734 08002	8	0.2	20	100	8
ZR734 08003	8	0.3	20	100	8
ZR734 08005	8	0.5	20	100	8
ZR734 08010	8	1	20	100	8
ZR734 08020	8	2	20	100	8

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
◎	◎		○	○						

ZR734

4 Flutes Long Shank Radius End Mill

Endmill

EDP No	DC	RE	APMX	OAL	DCON MS
ZR734 10002	10	0.2	25	100	10
ZR734 10003	10	0.3	25	100	10
ZR734 10005	10	0.5	25	100	10
ZR734 10010	10	1	25	100	10
ZR734 10020	10	2	25	100	10

EDP No	DC	RE	APMX	OAL	DCON MS
ZR734 12002	12	0.2	30	110	12
ZR734 12003	12	0.3	30	110	12
ZR734 12005	12	0.5	30	110	12
ZR734 12010	12	1	30	110	12
ZR734 12020	12	2	30	110	12

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	◎		○	○						

ZR736 6 Flutes Radius End Mill

Endmill



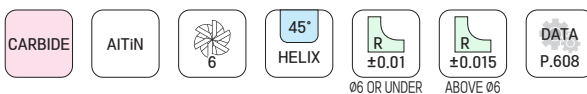
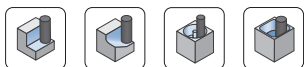
Zamus
Star

E-Star

► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.02	h5

U-Wing



Zamus
Thunder

EDP No	DC	RE	APMX	OAL	DCONMS
ZR736 06005	6	0.5	15	90	6
ZR736 06010	6	1	15	90	6
ZR736 08005	8	0.5	20	100	8
ZR736 08010	8	1	20	100	8
ZR736 10005	10	0.5	25	100	10
ZR736 10010	10	1	25	100	10
ZR736 12005	12	0.5	30	110	12
ZR736 12010	12	1	30	110	12

A-Wing

Standard

Copper
-Mate

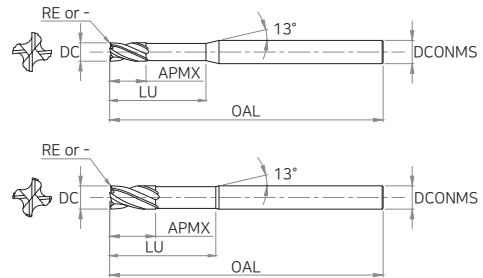
Gra
-Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

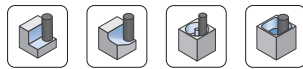
H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	◎		○	○						

ZS1(2)04 4 Flutes Neck Radius End Mill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.02	h5



EDP No	DC	RE	APMX	LU	OAL	DCONMS
ZS104 010	1	-	1.5	4	45	4
ZS204 010	1	0.05	1.5	4	45	4
ZS104 020	2	-	3	6	45	4
ZS204 020	2	0.05	3	6	45	4
ZS104 030	3	-	4	7	45	6
ZS204 030	3	0.1	4	7	45	6
ZS104 040	4	-	5	9	45	6
ZS204 040	4	0.1	5	9	45	6
ZS104 060	6	-	7	14	50	6
ZS204 060	6	0.2	7	14	50	6
ZS104 080	8	-	9	18	60	8
ZS204 080	8	0.2	9	18	60	8
ZS104 100	10	-	12	25	75	10
ZS204 100	10	0.2	12	25	75	10
ZS104 120	12	-	15	30	75	12
ZS204 120	12	0.3	15	30	75	12

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	~325	HRc30~50	~FCD500					
◎	◎		○	○						

ZS204 4 Flutes Neck Radius End Mill

Endmill

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

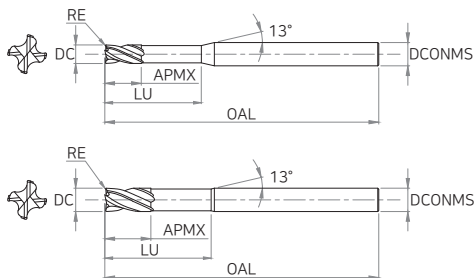
S-Wing

A-Wing

Standard

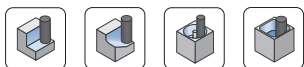
Copper
-Mate

Gra
-Mate



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.02	h5



Ø6 OR UNDER ABOVE Ø6

EDP No	DC	RE	APMX	LU	OAL	DCONMS
ZS204 02000507	2	0.05	2.5	7	50	4
ZS204 0200107	2	0.1	2.5	7	50	4
ZS204 0300109	3	0.1	4	9	55	6
ZS204 0300209	3	0.2	4	9	55	6
ZS204 0300309	3	0.3	4	9	55	6
ZS204 0300312	3	0.3	4	12	55	6
ZS204 0300316	3	0.3	4	16	55	6
ZS204 0400212	4	0.2	5	12	55	6
ZS204 0400312	4	0.3	5	12	55	6
ZS204 0400316	4	0.3	5	16	55	6
ZS204 0400320	4	0.3	5	20	55	6
ZS204 0400512	4	0.5	5	12	55	6
ZS204 0400516	4	0.5	5	16	55	6
ZS204 0400520	4	0.5	5	20	55	6
ZS204 0401012	4	1	5	12	55	6
ZS204 0500116	5	0.1	6	16	60	6
ZS204 0500216	5	0.2	6	16	60	6
ZS204 0500316	5	0.3	6	16	60	6
ZS204 0500516	5	0.5	6	16	60	6
ZS204 0501016	5	1	6	16	60	6

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
◎	◎		○	○						

ZS204

4 Flutes Neck Radius End Mill

Endmill

EDP No	DC	RE	APMX	LU	OAL	DCONMS
ZS204 0600120	6	0.1	7	20	60	6
ZS204 0600220	6	0.2	7	20	60	6
ZS204 0600320	6	0.3	7	20	60	6
ZS204 0600520	6	0.5	7	20	60	6
ZS204 0601020	6	1	7	20	60	6
ZS204 0601520	6	1.5	7	20	60	6
ZS204 0800125	8	0.1	9	25	60	8
ZS204 0800225	8	0.2	9	25	60	8
ZS204 0800325	8	0.3	9	25	60	8
ZS204 0800525	8	0.5	9	25	60	8
ZS204 0801025	8	1	9	25	60	8
ZS204 0801525	8	1.5	9	25	60	8
ZS204 0802025	8	2	9	25	60	8
ZS204 1000232	10	0.2	11	32	75	10
ZS204 1000332	10	0.3	11	32	75	10
ZS204 1000532	10	0.5	11	32	75	10
ZS204 1001032	10	1	11	32	75	10
ZS204 1001532	10	1.5	11	32	75	10
ZS204 1002032	10	2	11	32	75	10
ZS204 1200238	12	0.2	12	38	75	12
ZS204 1200338	12	0.3	12	38	75	12
ZS204 1200538	12	0.5	12	38	75	12
ZS204 1201038	12	1	12	38	75	12
ZS204 1201538	12	1.5	12	38	75	12
ZS204 1202038	12	2	12	38	75	12

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

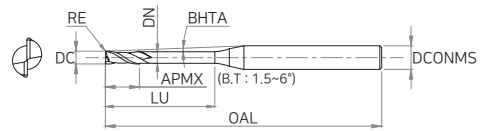
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	◎		○	○						

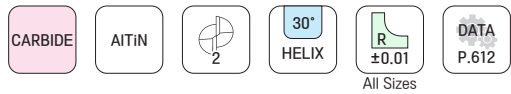
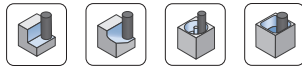
ZSLNR20

2 Flutes Long Neck Radius End Mill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.015	h5



All Sizes

EDP No	DC	RE	APMX	LU	DN	OAL	DCON MS	BHTA	Effective length by inclination angle				
									0.5°	1°	1.5°	2°	3°
ZSLNR20 02-0.5-005	0.2	0.05	0.15	0.5	0.17	50	4	11.4	0.9	1	1	1.1	12
ZSLNR20 02-1-005	0.2	0.05	0.15	1	0.17	50	4	10.9	1.6	1.7	1.9	2	2.3
ZSLNR20 02-1.5-005	0.2	0.05	0.15	1.5	0.17	50	4	10.3	2.1	2.3	2.5	2.7	3
ZSLNR20 02-2-005	0.2	0.05	0.15	2	0.17	50	4	9.9	2.8	3.1	3.4	3.6	4.1
ZSLNR20 03-1-005	0.3	0.05	0.25	1	0.27	50	4	10.8	1.4	1.5	1.6	1.7	1.9
ZSLNR20 03-1.5-005	0.3	0.05	0.25	1.5	0.27	50	4	10.3	2.1	2.3	2.5	2.7	3
ZSLNR20 03-2-005	0.3	0.05	0.25	2	0.27	50	4	9.8	2.7	2.9	3.1	3.3	3.6
ZSLNR20 03-2.5-005	0.3	0.05	0.25	2.5	0.27	50	4	9.4	3.2	3.5	3.7	3.9	4.3
ZSLNR20 03-3-005	0.3	0.05	0.25	3	0.27	50	4	9	3.9	4.3	4.6	4.9	5.4
ZSLNR20 04-1-005	0.4	0.05	0.3	1	0.37	50	4	10.8	1.4	1.5	1.6	1.7	1.9
ZSLNR20 04-1.5-005	0.4	0.05	0.3	1.5	0.37	50	4	10.3	2	2.1	2.2	2.3	2.5
ZSLNR20 04-2-005	0.4	0.05	0.3	2	0.37	50	4	9.8	2.7	2.9	3.1	3.3	3.6
ZSLNR20 04-2.5-005	0.4	0.05	0.3	2.5	0.37	50	4	9.4	3.2	3.5	3.7	3.9	4.3
ZSLNR20 04-3-005	0.4	0.05	0.3	3	0.37	50	4	9	3.8	4	4.3	4.5	4.9
ZSLNR20 04-3.5-005	0.4	0.05	0.3	3.5	0.37	50	4	8.6	4.3	4.6	4.9	5.1	5.5
ZSLNR20 04-4-005	0.4	0.05	0.3	4	0.37	50	4	8.3	5	5.4	5.8	6.1	6.6
ZSLNR20 04-2-01	0.4	0.1	0.3	2	0.37	50	4	9.8	2.7	2.9	3.1	3.3	3.6
ZSLNR20 04-3-01	0.4	0.1	0.3	3	0.37	50	4	9	3.8	4	4.3	4.5	4.9
ZSLNR20 04-4-01	0.4	0.1	0.3	4	0.37	50	4	8.3	5	5.4	5.8	6.1	6.6
ZSLNR20 05-1-005	0.5	0.05	0.35	1	0.47	50	4	10.8	1.4	1.5	1.6	1.7	1.9

► Applicable Working Material

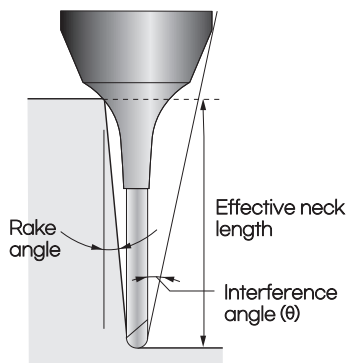
○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	~325	HRC30~50	~FC500					
◎	◎		○	○						

ZSLNR20

2 Flutes Long Neck Radius End Mill

Endmill



※ The marked effective neck length is the default value to prevent interference with the workpiece.

EDP No	DC	RE	APMX	LU	DN	OAL	DCON MS	BHTA	Effective length by inclination angle				
									0.5°	1°	1.5°	2°	3°
ZSLNR20 05-2-005	0.5	0.05	0.35	2	0.47	50	4	9.7	2.5	2.6	2.8	2.9	3.1
ZSLNR20 05-3-005	0.5	0.05	0.35	3	0.47	50	4	8.9	3.8	4	4.3	4.5	4.9
ZSLNR20 05-4-005	0.5	0.05	0.35	4	0.47	50	4	8.2	4.8	5.2	5.4	5.7	6.1
ZSLNR20 05-5-005	0.5	0.05	0.35	5	0.47	50	4	7.6	6.1	6.6	6.9	7.3	7.8
ZSLNR20 05-6-005	0.5	0.05	0.35	6	0.47	50	4	7	7.2	7.7	8.1	8.4	9
ZSLNR20 05-1-01	0.5	0.1	0.35	1	0.47	50	4	10.8	1.4	1.5	1.6	1.7	1.9
ZSLNR20 05-2-01	0.5	0.1	0.35	2	0.47	50	4	9.8	2.5	2.6	2.8	2.9	3.1
ZSLNR20 05-3-01	0.5	0.1	0.35	3	0.47	50	4	8.9	3.8	4	4.3	4.5	4.9
ZSLNR20 05-4-01	0.5	0.1	0.35	4	0.47	50	4	8.2	4.8	5.2	5.4	5.7	6.1
ZSLNR20 05-5-01	0.5	0.1	0.35	5	0.47	50	4	7.6	6.1	6.5	6.9	7.2	7.8
ZSLNR20 05-6-01	0.5	0.1	0.35	6	0.47	50	4	7.1	7.2	7.7	8.1	8.4	9
ZSLNR20 06-2-01	0.6	0.1	0.4	2	0.57	50	4	9.7	2.5	2.6	2.8	2.9	3.1
ZSLNR20 06-4-01	0.6	0.1	0.4	4	0.57	50	4	8.1	4.8	5.2	5.4	5.7	6.1
ZSLNR20 06-6-01	0.6	0.1	0.4	6	0.57	50	4	7	7.2	7.7	8.1	8.4	9
ZSLNR20 06-8-01	0.6	0.1	0.4	8	0.57	50	4	6.1	9.3	9.9	10.3	10.7	11
ZSLNR20 06-10-01	0.6	0.1	0.4	10	0.57	50	4	5.5	11.5	12.1	12.5	13	13.7
ZSLNR20 08-4-01	0.8	0.1	0.5	4	0.77	50	4	8	4.8	5.2	5.4	5.7	6.1
ZSLNR20 08-6-01	0.8	0.1	0.5	6	0.77	50	4	6.8	7	7.4	7.7	7.9	8.4
ZSLNR20 08-8-01	0.8	0.1	0.5	8	0.77	50	4	5.9	9.3	9.9	10.3	10.7	11.4
ZSLNR20 08-12-01	0.8	0.1	0.5	12	0.77	50	4	4.7	13.6	14.2	14.7	15.2	16

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	~325	HRc30~50	~FCD500					
◎	◎		○	○						

ZSLNR20

2 Flutes Long Neck Radius End Mill

Endmill

	EDP No	DC	RE	APMX	LU	DN	OAL	DCON MS	BHTA	Effective length by inclination angle				
										0.5°	1°	1.5°	2°	3°
Zamus Star	ZSLNR20 08-4-02	0.8	0.2	0.5	4	0.77	50	4	8	4.8	5.1	5.4	5.6	6.1
	ZSLNR20 08-6-02	0.8	0.2	0.5	6	0.77	50	4	6.9	7	7.3	7.7	7.9	8.4
	ZSLNR20 10-4-01	1	0.1	0.8	4	0.94	50	4	7.7°	4.7	4.9	5.1	5.2	5.5
	ZSLNR20 10-6-01	1	0.1	0.8	6	0.94	50	4	6.6°	7.1	7.4	7.7	8	8.5
	ZSLNR20 10-8-01	1	0.1	0.8	8	0.94	50	4	5.7°	9.2	9.6	9.9	10.2	10.8
E-Star	ZSLNR20 10-10-01	1	0.1	0.8	10	0.94	50	4	5.1°	11.6	12.1	12.6	13	13.7
	ZSLNR20 10-4-02	1	0.2	0.8	4	0.94	50	4	7.8°	4.7	4.9	5.1	5.2	5.5
	ZSLNR20 10-6-02	1	0.2	0.8	6	0.94	50	4	6.6°	7.1	7.4	7.7	8	8.5
U-Wing	ZSLNR20 10-8-02	1	0.2	0.8	8	0.94	50	4	5.8°	9.2	9.6	9.9	10.2	10.8
	ZSLNR20 10-10-02	1	0.2	0.8	10	0.94	50	4	5.1°	11.6	12.1	12.6	13	13.7
	ZSLNR20 10-6-03	1	0.3	0.8	6	0.94	50	4	6.7°	7.1	7.4	7.7	8	8.4
Zamus Thunder	ZSLNR20 10-10-03	1	0.3	0.8	10	0.94	50	4	5.1°	11.5	12.1	12.6	13	13.7
	ZSLNR20 10-12-01	1	0.1	0.8	12	0.94	55	4	4.5°	13.7	14.3	14.8	15.3	16
	ZSLNR20 10-12-02	1	0.2	0.8	12	0.94	55	4	4.6°	13.7	14.3	14.8	15.2	16
X-Star	ZSLNR20 10-16-01	1	0.1	0.8	16	0.94	60	4	3.8°	17.9	18.6	19.2	19.7	21.3
	ZSLNR20 10-20-01	1	0.1	0.8	20	0.94	60	4	3.2°	22	22.8	23.5	24	26.7
	ZSLNR20 10-16-02	1	0.2	0.8	16	0.94	60	4	3.8°	17.9	18.6	19.2	19.7	21.3
S-Wing	ZSLNR20 10-20-02	1	0.2	0.8	20	0.94	60	4	3.2°	22	22.8	23.5	24	26.6
	ZSLNR20 10-16-03	1	0.3	0.8	16	0.94	60	4	3.8°	17.9	18.6	19.1	19.6	21.3
	ZSLNR20 10-20-03	1	0.3	0.8	20	0.94	60	4	3.2°	22	22.8	23.5	24	26.6
A-Wing	ZSLNR20 15-4-01	1.5	0.1	1.35	4	1.42	50	4	7.2	4.8	4.9	5.1	5.3	5.5
	ZSLNR20 15-8-01	1.5	0.1	1.35	8	1.42	50	4	5.2	9.2	9.6	10	10.3	10.8
	ZSLNR20 15-12-01	1.5	0.1	1.35	12	1.42	55	4	4	13.4	13.9	14.3	14.7	16.1
Standard	ZSLNR20 15-15-01	1.5	0.1	1.35	15	1.42	55	4	3.5	16.9	17.6	18.1	18.6	20.1
	ZSLNR20 15-20-01	1.5	0.1	1.35	20	1.42	60	4	2.8	22.1	22.9	23.5	24.1	-
	ZSLNR20 15-4-02	1.5	0.2	1.35	4	1.42	50	4	7.3	4.7	4.9	5.1	5.3	5.5
Copper -Mate	ZSLNR20 15-8-02	1.5	0.2	1.35	8	1.42	50	4	5.2	9.2	9.6	10	10.3	10.8
	ZSLNR20 15-12-02	1.5	0.2	1.35	12	1.42	55	4	4.1	13.4	13.9	14.3	14.7	16.1
	ZSLNR20 15-15-02	1.5	0.2	1.35	15	1.42	55	4	3.5	16.9	17.5	18.1	18.6	20
Gra -Mate	ZSLNR20 15-20-02	1.5	0.2	1.35	20	1.42	60	4	2.8	22.1	22.9	23.5	24.1	-
	ZSLNR20 15-8-03	1.5	0.3	1.35	8	1.42	50	4	5.2	9.2	9.6	10	10.3	10.8
	ZSLNR20 15-15-03	1.5	0.3	1.35	15	1.42	55	4	3.5	16.9	17.5	18.1	18.6	20
	ZSLNR20 15-20-03	1.5	0.3	1.35	20	1.42	60	4	2.8	22.1	22.9	23.5	24	-
	ZSLNR20 20-6-02	2	0.2	1.7	6	1.92	50	4	5.4	6.8	7.1	7.3	7.5	8.1

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
◎	◎		○	○						

ZSLNR20

2 Flutes Long Neck Radius End Mill

Endmill

EDP No	DC	RE	APMX	LU	DN	OAL	DCON MS	BHTA	Effective length by inclination angle				
									0.5°	1°	1.5°	2°	3°
ZSLNR20 20-8-02	2	0.2	1.7	8	1.92	50	4	4.6	8.9	9.2	9.4	9.7	10.8
ZSLNR20 20-12-02	2	0.2	1.7	12	1.92	55	4	3.5	13.4	13.9	14.3	14.7	16.1
ZSLNR20 20-16-02	2	0.2	1.7	16	1.92	55	4	2.8	17.6	18.1	18.6	19.3	-
ZSLNR20 20-20-02	2	0.2	1.7	20	1.92	60	4	2.4	22.1	22.9	23.5	24.1	-
ZSLNR20 20-25-02	2	0.2	1.7	25	1.92	65	4	2	27.3	28.2	28.8	-	-
ZSLNR20 20-30-02	2	0.2	1.7	30	1.92	70	4	1.7	32.5	33.4	34.4	-	-
ZSLNR20 20-8-03	2	0.3	1.7	8	1.92	50	4	4.6	8.9	9.2	9.4	9.7	10.7
ZSLNR20 20-16-03	2	0.3	1.7	16	1.92	55	4	2.8	17.6	18.1	18.6	19.3	-
ZSLNR20 20-20-03	2	0.3	1.7	20	1.92	60	4	2.4	22.1	22.9	23.5	24	-
ZSLNR20 20-6-05	2	0.5	1.7	6	1.92	50	4	5.5	6.8	7.1	7.3	7.4	8
ZSLNR20 20-8-05	2	0.5	1.7	8	1.92	50	4	4.7	8.9	9.2	9.4	9.6	10.7
ZSLNR20 20-12-05	2	0.5	1.7	12	1.92	55	4	3.5	13.4	13.9	14.3	14.6	16
ZSLNR20 20-16-05	2	0.5	1.7	16	1.92	55	4	2.9	17.6	18.1	18.6	19.2	-
ZSLNR20 20-20-05	2	0.5	1.7	20	1.92	60	4	2.4	22.1	22.9	23.5	24	-
ZSLNR20 20-25-05	2	0.5	1.7	25	1.92	65	4	2	27.3	28.1	28.8	-	-
ZSLNR20 20-30-05	2	0.5	1.7	30	1.92	70	4	1.7	32.5	33.4	34.3	-	-
ZSLNR20 20-8-08	2	0.8	1.7	8	1.92	50	4	4.8	8.9	9.2	9.4	9.6	10.6
ZSLNR20 20-16-08	2	0.8	1.7	16	1.92	55	4	2.9	17.6	18.1	18.6	19.2	-
ZSLNR20 20-20-08	2	0.8	1.7	20	1.92	60	4	2.4	22.1	22.8	23.5	24	-
ZSLNR20 30-8-02	3	0.2	2.5	8	2.86	55	6	5.7	9	9.3	9.5	9.9	10.9
ZSLNR20 30-12-02	3	0.2	2.5	12	2.86	60	6	4.5	13.1	13.5	14	14.7	16.2
ZSLNR20 30-16-02	3	0.2	2.5	16	2.86	60	6	3.8	17.7	18.2	18.7	19.5	21.6
ZSLNR20 30-20-02	3	0.2	2.5	20	2.86	65	6	3.2	21.8	22.4	23.1	24.2	26.9
ZSLNR20 30-30-02	3	0.2	2.5	30	2.86	75	6	2.4	32.6	33.5	34.5	36.2	-
ZSLNR20 30-35-02	3	0.2	2.5	35	2.86	80	6	2.1	37.7	38.7	40.2	42.2	-
ZSLNR20 30-8-03	3	0.3	2.5	8	2.86	55	6	5.7	9	9.3	9.5	9.9	10.9
ZSLNR20 30-16-03	3	0.3	2.5	16	2.86	60	6	3.8	17.7	18.2	18.7	19.4	21.5
ZSLNR20 30-20-03	3	0.3	2.5	20	2.86	65	6	3.2	21.8	22.4	23.1	24.2	26.8
ZSLNR20 30-30-03	3	0.3	2.5	30	2.86	75	6	2.4	32.6	33.5	34.5	36.2	-
ZSLNR20 30-8-05	3	0.5	2.5	8	2.86	55	6	5.8	9	9.3	9.5	9.8	10.8
ZSLNR20 30-12-05	3	0.5	2.5	12	2.86	60	6	4.6	13.1	13.5	13.9	14.6	16.2
ZSLNR20 30-16-05	3	0.5	2.5	16	2.86	60	6	3.8	17.7	18.2	18.7	19.4	21.5
ZSLNR20 30-20-05	3	0.5	2.5	20	2.86	65	6	3.2	21.8	22.4	23.1	24.2	26.8
ZSLNR20 30-30-05	3	0.5	2.5	30	2.86	75	6	2.4	32.6	33.5	34.5	36.1	-
ZSLNR20 30-35-05	3	0.5	2.5	35	2.86	80	6	2.1	37.7	38.7	40.2	42.1	-

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

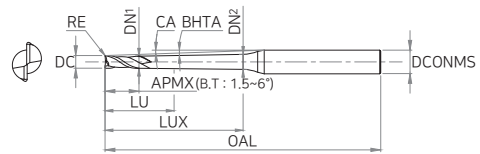
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	◎		○	○						

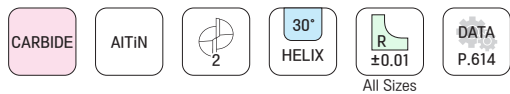
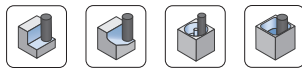
ZSTNR20

2 Flutes Tapered Neck Radius End Mill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.015	h5



All Sizes

EDP No	DC	RE	APMX	LUX	CA	DN ¹	DN ²	OAL	DCONMS	LU	BHTA	Effective length by inclination angle				
												0.5°	1°	1.5°	2°	3°
ZSTNR20 02-2-09005	0.2	0.05	0.15	2	0.9	0.17	0.23	50	4	1.1	10	x	2.8	3.1	3.4	3.9
ZSTNR20 04-4-09005	0.4	0.05	0.3	4	0.9	0.37	0.49	50	4	1.25	8.4	x	4.9	5.3	5.7	6.3
ZSTNR20 04-5-09005	0.4	0.05	0.3	5	0.9	0.37	0.52	50	4	1.25	7.8	x	5.9	6.4	6.8	7.5
ZSTNR20 04-4-0901	0.4	0.1	0.3	4	0.9	0.37	0.49	50	4	1.25	8.5	x	4.9	5.3	5.7	6.3
ZSTNR20 04-5-0901	0.4	0.1	0.3	5	0.9	0.37	0.52	50	4	1.25	7.9	x	5.9	6.4	6.8	7.5
ZSTNR20 05-5-0901	0.5	0.1	0.35	5	0.9	0.47	0.62	50	4	1.3	7.8	x	5.9	6.4	6.8	7.5
ZSTNR20 05-8-0901	0.5	0.1	0.35	8	0.9	0.47	0.71	50	4	1.3	6.4	x	9	9.7	10.2	11
ZSTNR20 05-10-0901	0.5	0.1	0.35	10	0.9	0.47	0.77	55	4	1.3	5.8	x	11	11.8	12.4	13.2
ZSTNR20 06-12-0901	0.6	0.1	0.4	12	0.9	0.57	0.93	55	4	1.35	5.1	x	13	13.9	14.5	15.5
ZSTNR20 06-15-0901	0.6	0.1	0.4	15	0.9	0.57	1.03	55	4	1.35	4.5	x	16.1	17.1	17.8	18.8
ZSTNR20 08-6-0402	0.8	0.2	0.5	6	0.4	0.77	0.85	50	4	2.64	7	6.6	7.1	7.5	7.8	8.3
ZSTNR20 08-12-0902	0.8	0.2	0.5	12	0.9	0.77	1.13	55	4	1.45	5	x	13	13.9	14.5	15.5
ZSTNR20 10-8-0402	1	0.2	0.8	8	0.4	0.94	1.04	55	6	5.09	7.4	8.8	9.3	9.7	10.1	10.6
ZSTNR20 10-10-0902	1	0.2	0.8	10	0.9	0.94	1.23	55	6	5.09	6.8	x	11.2	11.9	12.4	13.3
ZSTNR20 10-15-0902	1	0.2	0.8	15	0.9	0.94	1.39	60	6	2.7	5.6	x	16.3	17.2	17.8	18.8
ZSTNR20 10-20-0902	1	0.2	0.8	20	0.9	0.94	1.54	65	6	2.7	4.8	x	21.3	22.4	23.2	24.7
ZSTNR20 10-25-0902	1	0.2	0.8	25	0.9	0.94	1.7	70	6	2.7	4.1	x	26.4	27.6	28.5	30.9
ZSTNR20 10-30-0902	1	0.2	0.8	30	0.9	0.94	1.86	75	6	2.7	3.7	x	31.5	32.8	33.7	37
ZSTNR20 10-35-0902	1	0.2	0.8	35	0.9	0.94	2.02	80	6	2.7	3.3	x	36.5	38	39	43.2
ZSTNR20 10-8-0403	1	0.3	0.8	8	0.4	0.94	1.04	55	6	2.7	7.4	8.8	9.3	9.7	10	10.6

► Applicable Working Material

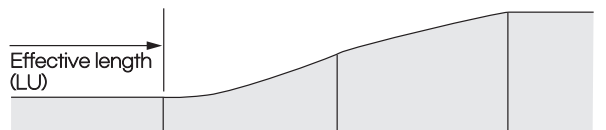
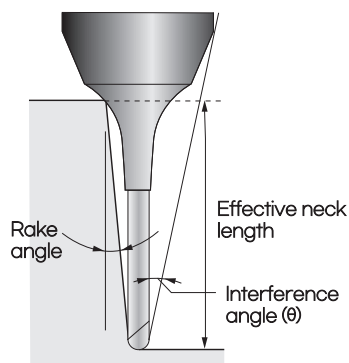
○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
◎	◎		○	○						

ZSTNR20

2 Flutes Tapered Neck Radius End Mill

Endmill



※ The marked effective neck length is the default value to prevent interference with the workpiece.

EDP No	DC	RE	APMX	LUX	CA	DN ¹	DN ²	OAL	DCON MS	LU	BHTA	Effective length by inclination angle				
												0.5°	1°	1.5°	2°	3°
ZSTNR20 10-15-0903	1	0.3	0.8	15	0.9	0.94	1.39	60	6	2.7	5.6	x	16.3	17.2	17.8	18.8
ZSTNR20 10-25-0903	1	0.3	0.8	25	0.9	0.94	1.7	70	6	2.7	4.2	x	26.4	27.6	28.5	30.8
ZSTNR20 10-30-0903	1	0.3	0.8	30	0.9	0.94	1.86	75	6	2.7	3.7	x	31.5	32.8	33.7	37
ZSTNR20 15-10-0402	1.5	0.2	1.35	10	0.4	1.42	1.54	55	6	7.07	6.4	11	11.5	11.9	12.3	13
ZSTNR20 15-15-0902	1.5	0.2	1.35	15	0.9	1.42	1.85	60	6	7.07	5.3	x	16.4	17.3	17.9	18.9
ZSTNR20 15-20-0902	1.5	0.2	1.35	20	0.9	1.42	2.01	65	6	3.89	4.5	x	21.5	22.5	23.2	24.9
ZSTNR20 15-25-0902	1.5	0.2	1.35	25	0.9	1.42	2.16	70	6	3.89	3.9	x	26.6	27.7	28.5	31
ZSTNR20 15-30-0902	1.5	0.2	1.35	30	0.9	1.42	2.32	75	6	3.89	3.4	x	31.6	32.9	33.8	37.1
ZSTNR20 15-10-0403	1.5	0.3	1.35	10	0.4	1.42	1.54	55	6	3.89	6.4	11	11.5	11.9	12.3	13
ZSTNR20 15-20-0903	1.5	0.3	1.35	20	0.9	1.42	2.01	65	6	3.89	4.5	x	21.5	22.5	23.2	24.8
ZSTNR20 15-25-0903	1.5	0.3	1.35	25	0.9	1.42	2.16	70	6	3.89	3.9	x	26.5	27.7	28.5	31
ZSTNR20 15-30-0903	1.5	0.3	1.35	30	0.9	1.42	2.32	75	6	3.89	3.4	x	31.6	32.9	33.8	37.1
ZSTNR20 20-30-0902	2	0.2	1.7	30	0.9	1.92	2.81	70	6	7.42	3.1	x	31.6	32.9	33.8	37.2
ZSTNR20 20-40-0902	2	0.2	1.7	40	0.9	1.92	3.12	80	6	7.42	2.5	x	41.8	43.3	44.6	-
ZSTNR20 20-50-0902	2	0.2	1.7	50	0.9	1.92	3.44	90	6	7.42	2.1	x	51.9	53.6	55.7	-
ZSTNR20 20-12-0403	2	0.3	1.7	12	0.4	1.92	2.06	55	6	7.42	5.5	13	13.6	14.1	14.5	15.6
ZSTNR20 20-20-0903	2	0.3	1.7	20	0.9	1.92	2.5	65	6	4.24	4.1	x	21.5	22.5	23.2	24.9
ZSTNR20 20-30-0903	2	0.3	1.7	30	0.9	1.92	2.81	70	6	4.24	3.1	x	31.6	32.9	33.8	37.1
ZSTNR20 20-40-0903	2	0.3	1.7	40	0.9	1.92	3.12	80	6	4.24	2.5	x	41.7	43.3	44.6	-
ZSTNR20 20-50-0903	2	0.3	1.7	50	0.9	1.92	3.44	90	6	4.24	2.1	x	51.8	53.6	55.7	-

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	~HB225	HRc30~50	~FCD500					
◎	◎		○	○						

ZSTNR20

2 Flutes Tapered Neck Radius End Mill

Endmill

EDP No	DC	RE	APMX	LUX	CA	DN ¹	DN ²	OAL	DCON MS	LU	BHTA	Effective length by inclination angle				
												0.5°	1°	1.5°	2°	3°
ZSTNR20 20-8-0405	2	0.5	1.7	8	0.4	1.92	2.01	50	6	4.24	6.8	8.7	9	9.3	9.5	10.4
ZSTNR20 20-12-0405	2	0.5	1.7	12	0.4	1.92	2.06	55	6	4.24	5.6	13	13.6	14.1	14.4	15.5
ZSTNR20 20-16-0405	2	0.5	1.7	16	0.4	1.92	2.12	60	6	4.24	4.7	17	17.8	18.3	18.7	20.7
ZSTNR20 20-20-0905	2	0.5	1.7	20	0.9	1.92	2.5	65	6	4.24	4.2	x	21.5	22.5	23.2	24.8
ZSTNR20 20-25-0905	2	0.5	1.7	25	0.9	1.92	2.65	65	6	4.24	3.6	x	26.6	27.7	28.5	30.9
ZSTNR20 20-30-0905	2	0.5	1.7	30	0.9	1.92	2.81	70	6	4.24	3.1	x	31.6	32.9	33.8	37.1
ZSTNR20 20-40-0905	2	0.5	1.7	40	0.9	1.92	3.12	80	6	4.24	2.5	x	41.7	43.2	44.6	-
ZSTNR20 20-50-0905	2	0.5	1.7	50	0.9	1.92	3.44	90	6	4.24	2.1	x	51.8	53.6	55.6	-
ZSTNR20 30-40-0902	3	0.2	2.5	40	0.9	2.86	4.04	80	6	6.95	2	x	42	43.4	-	-
ZSTNR20 30-50-0902	3	0.2	2.5	50	0.9	2.86	4.35	90	6	6.95	1.6	x	52.1	53.7	-	-
ZSTNR20 30-60-0902	3	0.2	2.5	60	0.9	2.86	4.67	100	6	6.95	1.4	x	62.2	-	-	-
ZSTNR20 30-40-0903	3	0.3	2.5	40	0.9	2.86	4.04	80	6	6.95	2	x	42	43.4	-	-
ZSTNR20 30-50-0903	3	0.3	2.5	50	0.9	2.86	4.35	90	6	6.95	1.7	x	52.1	53.7	-	-
ZSTNR20 30-60-0903	3	0.3	2.5	60	0.9	2.86	4.67	100	6	6.95	1.4	x	62.2	-	-	-
ZSTNR20 30-40-0905	3	0.5	2.5	40	0.9	2.86	4.04	80	6	6.95	2	x	42	43.4	-	-
ZSTNR20 30-50-0905	3	0.5	2.5	50	0.9	2.86	4.35	90	6	6.95	1.7	x	52.1	53.7	-	-
ZSTNR20 30-60-0905	3	0.5	2.5	60	0.9	2.86	4.67	100	6	6.95	1.4	x	62.1	-	-	-

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

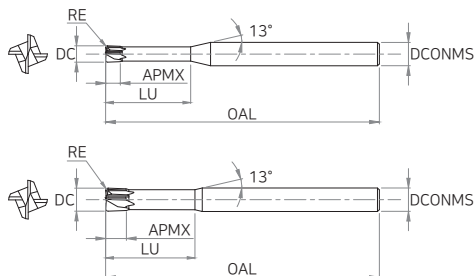
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
◎	◎		○	○						

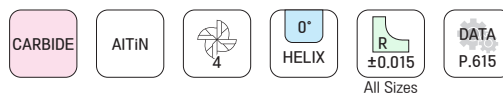
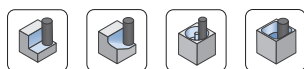
ZSPM4

4 Flutes Neck Radius End Mill For High Speed Machining



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.02	h5



EDP No	DC	RE	APMX	LU	OAL	DCONMS
ZSPM4 030-05	3	0.5	1.2	8	50	6
ZSPM4 040-05	4	0.5	1.5	10	50	6
ZSPM4 060-05	6	0.5	2.5	12	60	6
ZSPM4 060-10	6	1	2.5	12	60	6
ZSPM4 060-15	6	1.5	2.5	12	60	6
ZSPM4 060-15L	6	1.5	2.5	12	90	6
ZSPM4 080-10	8	1	3.5	16	60	8
ZSPM4 080-20	8	2	3.5	16	60	8
ZSPM4 080-20L	8	2	3.5	16	100	8
ZSPM4 100-10	10	1	4	20	70	10
ZSPM4 100-20	10	2	4	20	70	10
ZSPM4 100-20L	10	2	4	20	100	10
ZSPM4 120-20	12	2	5	25	80	12
ZSPM4 120-30	12	3	5	25	80	12
ZSPM4 120-30L	12	3	5	25	110	12

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	◎		○	○						

Endmill

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

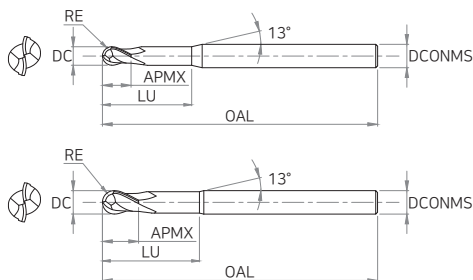
Standard

Copper
-Mate

Gra
-Mate

DB702 2 Flutes Neck Ball End Mill

Endmill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.02	h5



EDP No	DC	RE	APMX	LU	OAL	DCON MS
DB702 001	0.1	0.05	0.15	-	40	4
DB702 002	0.2	0.1	0.3	-	40	4
DB702 003	0.3	0.15	0.5	-	40	4
DB702 004	0.4	0.2	0.6	-	40	4
DB702 005	0.5	0.25	0.7	-	40	4
DB702 006	0.6	0.3	0.9	-	40	4
DB702 007	0.7	0.35	1.1	-	40	4
DB702 008	0.8	0.4	1.2	-	40	4
DB702 009	0.9	0.45	1.4	-	40	4
DB702 010 S4	1	0.5	1.5	-	45	4
DB702 010	1	0.5	1.5	3	50	6
DB702 015 S4	1.5	0.75	2	-	45	4
DB702 015	1.5	0.75	2	4	50	6
DB702 020 S4	2	1	2.5	-	45	4
DB702 020	2	1	2.5	5	50	6
DB702 025	2.5	1.25	3	7	50	6
DB702 030S4	3	1.5	4	-	45	4

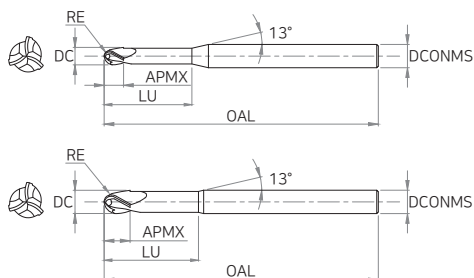
EDP No	DC	RE	APMX	LU	OAL	DCON MS
DB702 030S	3	1.5	4	10	50	6
DB702 030	3	1.5	4	10	60	6
DB702 031	3	1.5	4	10	70	6
DB702 040 S4	4	2	5	-	45	4
DB702 040 S	4	2	5	10	50	6
DB702 040	4	2	5	10	60	6
DB702 041	4	2	5	10	70	6
DB702 050	5	2.5	6	12	60	6
DB702 060	6	3	7	12	60	6
DB702 061	6	3	7	12	90	6
DB702 080	8	4	9	15	70	8
DB702 081	8	4	9	15	100	8
DB702 100	10	5	11	25	75	10
DB702 101	10	5	11	25	100	10
DB702 120	12	6	12	25	80	12
DB702 121	12	6	12	25	110	12

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
◎	◎		○	○						

DB703 3 Flutes Neck Ball End Mill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.015	h5



CARBIDE

AlTiN

3

30°
HELIX

R
±0.005
R3 OR UNDER

R
±0.01
ABOVE R3

DATA
P.616

EDP No	DC	RE	APMX	LU	OAL	DCONMS
DB703 025	2.5	1.25	3	7	50	6
DB703 030S	3	1.5	4	10	50	6
DB703 030	3	1.5	4	10	60	6
DB703 031	3	1.5	4	10	70	6
DB703 040S	4	2	5	10	50	6
DB703 040	4	2	5	10	60	6
DB703 041	4	2	5	10	70	6
DB703 050	5	2.5	6	12	60	6
DB703 060	6	3	7	12	60	6
DB703 061	6	3	7	12	90	6
DB703 080	8	4	9	15	70	8
DB703 081	8	4	9	15	100	8
DB703 100	10	5	11	25	75	10
DB703 101	10	5	11	25	100	10
DB703 120	12	6	12	25	80	12
DB703 121	12	6	12	25	110	12

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	◎		○	○						

Endmill

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

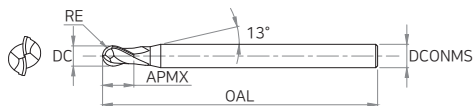
Standard

Copper
-Mate

Gra
-Mate

DB712 2 Flutes Ball End Mill

Endmill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.02	h5



CARBIDE

AITIN

2

30°
HELIX

R
±0.005
R3 OR UNDER

R
±0.01
ABOVE R3

DATA
P.616

EDP No	DC	RE	APMX	OAL	DCON MS	EDP No	DC	RE	APMX	OAL	DCON MS
DB712 010S	1	0.5	1.5	40	6	DB712 030	3	1.5	8	60	6
DB712 010S4	1	0.5	2.5	50	4	DB712 040S	4	2	6	50	6
DB712 010	1	0.5	2.5	50	6	DB712 040	4	2	8	70	6
DB712 012	1.2	0.6	3	50	6	DB712 050S	5	2.5	7.5	50	6
DB712 015S	1.5	0.75	2.5	40	6	DB712 050	5	2.5	10	80	6
DB712 015S4	1.5	0.75	4	50	4	DB712 060S	6	3	9	50	6
DB712 015	1.5	0.75	4	50	6	DB712 060	6	3	12	90	6
DB712 020S	2	1	3	40	6	DB712 080S	8	4	12	50	8
DB712 020S4	2	1	5	50	4	DB712 081	8	4	14	100	8
DB712 020	2	1	5	50	6	DB712 100S	10	5	15	60	10
DB712 025	2.5	1.25	7	60	6	DB712 100	10	5	18	100	10
DB712 030S	3	1.5	4.5	50	6	DB712 120S	12	6	18	60	12
DB712 030S4	3	1.5	8	60	4	DB712 120	12	6	22	110	12

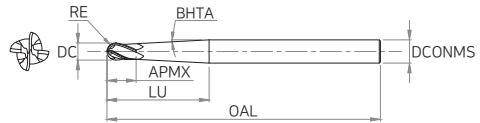
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
◎	◎		○	○						

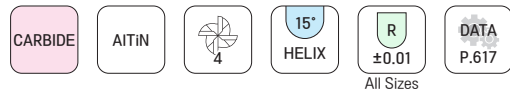
DB734

4Flutes 15° Helix Ball End Mill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.015	h5



EDP No	DC	RE	APMX	LU	OAL	BHTA	DCONMS
DB734 020-2.5	2	1	2	25	60	2.5	4
DB734 020-3.5	2	1	2	18	60	3.5	4
DB734 025-2.5	2.5	1.25	3	20	60	2.5	4
DB734 025-3.0	2.5	1.25	3	17	60	3	4
DB734 030-2.0	3	1.5	3	46	70	2	6
DB734 030-2.5	3	1.5	3	37	70	2.5	6
DB734 040-2.0	4	2	4	33	70	2	6
DB734 040-2.5	4	2	4	27	70	2.5	6
DB734 050-2.5	5	2.5	5	16	70	2.5	6
DB734 060-1.5	6	3	6	44	100	1.5	8
DB734 060-2.5	6	3	6	29	100	2.5	8
DB734 080-1.5	8	4	8	46	100	1.5	10
DB734 080-2.5	8	4	8	31	100	2.5	10
DB734 100-1.5	10	5	10	48	110	1.5	12
DB734 100-2.5	10	5	10	33	110	2.5	12

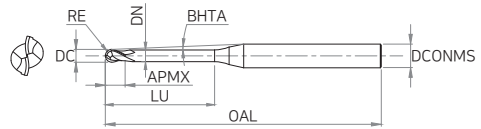
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	◎		○	○						

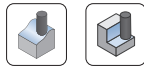
ZSLNB20

2 Flutes Long Neck Ball End Mill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.015	h5



All Sizes

EDP No	DC	RE	APMX	LU	DN	OAL	DCONMS	BHTA	Effective length by inclination angle				
									0.5°	1°	1.5°	2°	3°
ZSLNB20 01-0.2	0.1	0.05	0.08	0.2	0.08	45	4	11.8	0.3	0.3	0.3	0.4	0.4
ZSLNB20 01-0.3	0.1	0.05	0.08	0.3	0.08	45	4	11.7	0.4	0.4	0.5	0.5	0.5
ZSLNB20 01-0.5	0.1	0.05	0.08	0.5	0.08	45	4	11.4	0.6	0.7	0.7	0.7	0.8
ZSLNB20 02-0.5	0.2	0.1	0.15	0.5	0.17	50	4	11.5	1.2	1.3	1.5	1.6	2
ZSLNB20 02-1	0.2	0.1	0.15	1	0.17	50	4	10.9	1.7	1.9	2.1	2.3	2.7
ZSLNB20 02-1.5	0.2	0.1	0.15	1.5	0.17	50	4	10.4	2.3	2.5	2.8	3	3.4
ZSLNB20 02-2	0.2	0.1	0.15	2	0.17	50	4	9.9	2.8	3.1	3.4	3.6	4.1
ZSLNB20 02-2.5	0.2	0.1	0.15	2.5	0.17	50	4	9.5	3.4	3.7	4	4.2	4.7
ZSLNB20 02-3.0	0.2	0.1	0.15	3	0.17	50	4	9.1	3.9	4.3	4.6	4.9	5.4
ZSLNB20 03-1	0.3	0.15	0.25	1	0.27	50	4	10.9	1.7	1.9	2.1	2.3	5.4
ZSLNB20 03-1.5	0.3	0.15	0.25	1.5	0.27	50	4	10.4	2.3	2.5	2.7	3	3.4
ZSLNB20 03-2	0.3	0.15	0.25	2	0.27	50	4	9.9	2.8	3.1	3.4	3.6	4
ZSLNB20 03-2.5	0.3	0.15	0.25	2.5	0.27	50	4	9.5	3.4	3.7	4	4.2	4.7
ZSLNB20 03-3	0.3	0.15	0.25	3	0.27	50	4	9.1	3.9	4.3	4.6	4.8	5.3
ZSLNB20 04-1	0.4	0.2	0.3	1	0.37	50	4	11	1.7	1.9	2.1	2.3	2.7
ZSLNB20 04-1.5	0.4	0.2	0.3	1.5	0.37	50	4	10.4	2.3	2.5	2.7	2.9	3.4
ZSLNB20 04-2	0.4	0.2	0.3	2	0.37	50	4	9.9	2.8	3.1	3.4	3.6	4
ZSLNB20 04-2.5	0.4	0.2	0.3	2.5	0.37	50	4	9.5	3.4	3.7	4	4.2	4.7
ZSLNB20 04-3	0.4	0.2	0.3	3	0.37	50	4	9.1	3.9	4.3	4.6	4.8	5.3
ZSLNB20 04-3.5	0.4	0.2	0.3	3.5	0.37	50	4	8.7	4.5	4.8	5.2	5.4	6

► Applicable Working Material

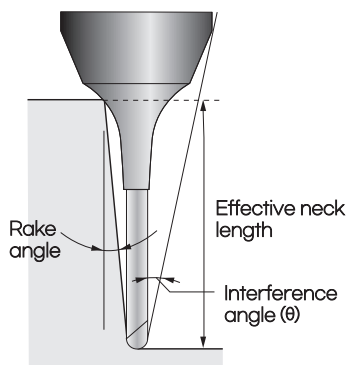
○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
◎	◎		○	○						

ZSLNB20

2 Flutes Long Neck Ball End Mill

Endmill



※ The marked effective neck length is the default value to prevent interference with the workpiece.

EDP No	DC	RE	APMX	LU	DN	OAL	DCON MS	BHTA	Effective length by inclination angle				
									0.5°	1°	1.5°	2°	3°
ZSLNB20 04-4	0.4	0.2	0.3	4	0.37	50	4	8.3	5	5.4	5.7	6	6.6
ZSLNB20 04-4.5	0.4	0.2	0.3	4.5	0.37	50	4	8	5.6	6	6.3	6.6	7.2
ZSLNB20 05-1	0.5	0.25	0.35	1	0.47	50	4	11	1.7	1.9	2.1	2.3	2.6
ZSLNB20 05-2	0.5	0.25	0.35	2	0.47	50	4	9.9	2.8	3.1	3.3	3.6	4
ZSLNB20 05-3	0.5	0.25	0.35	3	0.47	50	4	9	3.9	4.3	4.6	4.8	5.3
ZSLNB20 05-4	0.5	0.25	0.35	4	0.47	50	4	8.3	5	5.4	5.7	6	6.6
ZSLNB20 05-5	0.5	0.25	0.35	5	0.47	50	4	7.7	6.1	6.5	6.9	7.2	7.8
ZSLNB20 05-6	0.5	0.25	0.35	6	0.47	50	4	7.1	7.2	7.6	8	8.4	9
ZSLNB20 05-8	0.5	0.25	0.35	8	0.47	50	4	6.3	9.3	9.9	10.3	10.7	11.4
ZSLNB20 06-1	0.6	0.3	0.4	1	0.57	50	4	11	1.7	1.9	2.1	2.3	2.6
ZSLNB20 06-2	0.6	0.3	0.4	2	0.57	50	4	9.9	2.8	3.1	3.3	3.6	4
ZSLNB20 06-3	0.6	0.3	0.4	3	0.57	50	4	9	3.9	4.3	4.5	4.8	5.3
ZSLNB20 06-4	0.6	0.3	0.4	4	0.57	50	4	8.3	5	5.4	5.7	6	6.6
ZSLNB20 06-5	0.6	0.3	0.4	5	0.57	50	4	7.6	6.1	6.5	6.9	7.2	7.8
ZSLNB20 06-6	0.6	0.3	0.4	6	0.57	50	4	7.1	7.2	7.6	8	8.4	9
ZSLNB20 06-7	0.6	0.3	0.4	7	0.57	50	4	6.6	8.3	8.8	9.2	9.5	10.2
ZSLNB20 06-8	0.6	0.3	0.4	8	0.57	50	4	6.2	9.3	9.9	10.3	10.7	11.4
ZSLNB20 06-9	0.6	0.3	0.4	9	0.57	50	4	5.8	10.4	10.9	11.4	11.8	12.5
ZSLNB20 06-10	0.6	0.3	0.4	10	0.57	50	4	5.5	11.4	12	12.5	12.9	13.7
ZSLNB20 06-12	0.6	0.3	0.4	12	0.57	50	4	5	13.6	14.2	14.7	15.2	16

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	~325	HRc30~50	~FCD500					
◎	◎		○	○						

ZSLNB20

2 Flutes Long Neck Ball End Mill

Endmill

	EDP No	DC	RE	APMX	LU	DN	OAL	DCON MS	BHTA	Effective length by inclination angle				
										0.5°	1°	1.5°	2°	3°
Zamus Star	ZSLNB20 08-2	0.8	0.4	0.5	2	0.77	50	4	9.9	2.8	3.1	3.3	3.5	4
	ZSLNB20 08-4	0.8	0.4	0.5	4	0.77	50	4	8.2	5	5.4	5.7	6	6.5
	ZSLNB20 08-5	0.8	0.4	0.5	5	0.77	50	4	7.5	6.1	6.5	6.9	7.2	7.8
	ZSLNB20 08-6	0.8	0.4	0.5	6	0.77	50	4	7	7.2	7.6	8	8.4	9
	ZSLNB20 08-8	0.8	0.4	0.5	8	0.77	50	4	6.1	9.3	9.8	10.3	10.7	11.3
	ZSLNB20 08-10	0.8	0.4	0.5	10	0.77	50	4	5.4	11.4	12	12.5	12.9	13.7
E-Star	ZSLNB20 10-2	1	0.5	0.8	2	0.96	50	4	9.9	2.9	3.1	3.3	3.5	4
	ZSLNB20 10-3	1	0.5	0.8	3	0.96	50	4	8.9	4	4.3	4.5	4.8	5.3
U-Wing	ZSLNB20 10-4	1	0.5	0.8	4	0.96	50	4	8.1	5	5.4	5.7	6	6.5
	ZSLNB20 10-5	1	0.5	0.8	5	0.96	50	4	7.4	6.1	6.5	6.9	7.2	7.8
	ZSLNB20 10-6	1	0.5	0.8	6	0.96	50	4	6.8	7.2	7.7	8	8.4	9
Zamus Thunder	ZSLNB20 10-7	1	0.5	0.8	7	0.96	50	4	6.3	8.3	8.8	9.2	9.5	10.2
	ZSLNB20 10-8	1	0.5	0.8	8	0.96	50	4	5.9	9.3	9.9	10.3	10.7	11.3
	ZSLNB20 10-9	1	0.5	0.8	9	0.96	50	4	5.5	10.4	11	11.4	11.8	12.5
	ZSLNB20 10-10	1	0.5	0.8	10	0.96	50	4	5.2	11.5	12	12.5	12.9	13.7
X-Star	ZSLNB20 10-12	1	0.5	0.8	12	0.96	55	4	4.6	13.6	14.2	14.7	15.2	15.9
	ZSLNB20 10-14	1	0.5	0.8	14	0.96	55	4	4.2	15.7	16.4	16.9	17.4	18.5
	ZSLNB20 10-16	1	0.5	0.8	16	0.96	55	4	3.8	17.8	18.5	19.1	19.6	21.2
	ZSLNB20 10-18	1	0.5	0.8	18	0.96	60	4	3.5	19.9	20.7	21.3	21.8	23.8
S-Wing	ZSLNB20 10-20	1	0.5	0.8	20	0.96	60	4	3.3	22	22.8	23.4	24	26.5
	ZSLNB20 12-4	1.2	0.6	1.1	4	1.15	50	4	7.9	5.1	5.4	5.7	6	6.5
A-Wing	ZSLNB20 12-6	1.2	0.6	1.1	6	1.15	50	4	6.6	7.2	7.7	8	8.4	9
	ZSLNB20 12-8	1.2	0.6	1.1	8	1.15	50	4	5.7	9.4	9.9	10.3	10.7	11.3
	ZSLNB20 12-10	1.2	0.6	1.1	10	1.15	50	4	5	11.5	12.1	12.5	12.9	13.7
	ZSLNB20 12-12	1.2	0.6	1.1	12	1.15	55	4	4.5	13.6	14.2	14.7	15.2	15.9
Standard	ZSLNB20 14-8	1.4	0.7	1.3	8	1.34	50	4	5.5	9.4	9.9	10.3	10.7	11.3
	ZSLNB20 14-12	1.4	0.7	1.3	12	1.34	55	4	4.3	13.6	14.2	14.7	15.2	15.9
	ZSLNB20 14-16	1.4	0.7	1.3	16	1.34	55	4	3.5	17.8	18.5	19.1	19.6	21.2
Copper -Mate	ZSLNB20 15-4	1.5	0.75	1.35	4	1.44	50	4	7.7	5.1	5.4	5.7	6	6.5
	ZSLNB20 15-6	1.5	0.75	1.35	6	1.44	50	4	6.4	7.3	7.7	8	8.4	9
	ZSLNB20 15-8	1.5	0.75	1.35	8	1.44	50	4	5.4	9.4	9.9	10.3	10.7	11.3
	ZSLNB20 15-10	1.5	0.75	1.35	10	1.44	50	4	4.7	11.5	12.1	12.5	12.9	13.7
Gra -Mate	ZSLNB20 15-12	1.5	0.75	1.35	12	1.44	55	4	4.2	13.6	14.2	14.7	15.2	15.9
	ZSLNB20 15-14	1.5	0.75	1.35	14	1.44	55	4	3.8	15.7	16.4	16.9	17.4	18.5

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
◎	◎		○	○						

ZSLNB20

2 Flutes Long Neck Ball End Mill

Endmill

EDP No	DC	RE	APMX	LU	DN	OAL	DCON MS	BHTA	Effective length by inclination angle				
									0.5°	1°	1.5°	2°	3°
ZSLNB20 15-16	1.5	0.75	1.35	16	1.44	55	4	3.4	17.8	18.5	19.1	19.6	21.1
ZSLNB20 15-20	1.5	0.75	1.35	20	1.44	60	4	2.9	22	22.8	23.4	24	-
ZSLNB20 16-8	1.6	0.8	1.4	8	1.54	50	4	5.3	9.4	9.9	10.3	10.7	11.3
ZSLNB20 16-10	1.6	0.8	1.4	10	1.54	50	4	4.6	11.5	12.1	12.5	12.9	13.7
ZSLNB20 16-12	1.6	0.8	1.4	12	1.54	55	4	4.1	13.6	14.2	14.7	15.2	15.9
ZSLNB20 16-16	1.6	0.8	1.4	16	1.54	55	4	3.3	17.8	18.5	19.1	19.6	21.1
ZSLNB20 16-20	1.6	0.8	1.4	20	1.54	60	4	2.8	22	22.8	23.4	24	-
ZSLNB20 18-8	1.8	0.9	1.6	8	1.73	50	4	5.1	9.4	9.9	10.3	10.7	11.3
ZSLNB20 18-12	1.8	0.9	1.6	12	1.73	55	4	3.9	13.7	14.3	14.7	15.2	15.9
ZSLNB20 18-16	1.8	0.9	1.6	16	1.73	55	4	3.1	17.9	18.6	19.1	19.6	21.1
ZSLNB20 18-20	1.8	0.9	1.6	20	1.73	60	4	2.6	22	22.8	23.4	24	-
ZSLNB20 20-3	2	1	1.7	3	1.92	50	4	8.3	4.1	4.4	4.6	4.8	5.2
ZSLNB20 20-4	2	1	3	4	1.92	50	4	7.3	5.2	5.5	5.8	6	6.5
ZSLNB20 20-6	2	1	3	6	1.92	50	4	5.8	7.3	7.7	8.1	8.4	9
ZSLNB20 20-8	2	1	3	8	1.92	50	4	4.9	9.5	9.9	10.3	10.7	11.3
ZSLNB20 20-10	2	1	3	10	1.92	50	4	4.2	11.6	12.1	12.6	12.9	13.6
ZSLNB20 20-12	2	1	3	12	1.92	55	4	3.7	13.7	14.3	14.8	15.2	15.9
ZSLNB20 20-14	2	1	3	14	1.92	55	4	3.2	15.8	16.4	16.9	17.4	18.5
ZSLNB20 20-16	2	1	3	16	1.92	55	4	2.9	17.9	18.6	19.1	19.6	-
ZSLNB20 20-18	2	1	3	18	1.92	60	4	2.7	20	20.7	21.3	21.8	-
ZSLNB20 20-20	2	1	3	20	1.92	60	4	2.4	22.1	22.8	23.4	24	-
ZSLNB20 20-22	2	1	3	22	1.92	60	4	2.3	24.1	24.9	25.6	26.3	-
ZSLNB20 20-25	2	1	3	25	1.92	65	4	2	27.3	28.1	28.8	-	-
ZSLNB20 20-30	2	1	3	30	1.92	70	4	1.7	32.4	33.4	34.2	-	-
ZSLNB20 20-35	2	1	3	35	1.92	75	4	1.5	37.6	38.6	-	-	-
ZSLNB20 20-40	2	1	3	40	1.92	80	4	1.4	42.8	43.8	-	-	-
ZSLNB20 25-10	2.5	1.25	4	10	2.4	50	4	3.4	11.6	12.1	12.6	13	13.6
ZSLNB20 25-16	2.5	1.25	4	16	2.4	55	4	2.3	17.9	18.6	19.1	19.6	-
ZSLNB20 25-20	2.5	1.25	4	20	2.4	60	4	1.9	22.1	22.8	23.5	-	-
ZSLNB20 30-8	3	1.5	4	8	2.88	55	6	6.2	9.6	10	10.4	10.7	11.3
ZSLNB20 30-10	3	1.5	4	10	2.88	55	6	5.5	11.7	12.2	12.6	13	13.6
ZSLNB20 30-13	3	1.5	4	13	2.88	60	6	4.6	14.8	15.4	15.9	16.3	17.1
ZSLNB20 30-16	3	1.5	4	16	2.88	60	6	4	18	18.6	19.1	19.6	21.1
ZSLNB20 30-18	3	1.5	4	18	2.88	60	6	3.6	20	20.7	21.3	21.8	23.7

Zamus Star

E-Star

U-Wing

Zamus Thunder

X-Star

S-Wing

A-Wing

Standard

Copper-Mate

Gra-Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	◎		○	○						

ZSLNB20

2 Flutes Long Neck Ball End Mill

Endmill

	EDP No	DC	RE	APMX	LU	DN	OAL	DCON MS	BHTA	Effective length by inclination angle				
										0.5°	1°	1.5°	2°	3°
Zamus Star	ZSLNB20 30-20	3	1.5	4	20	2.88	65	6	3.4	22.1	22.9	23.5	24	26.4
	ZSLNB20 30-25	3	1.5	4	25	2.88	70	6	2.8	27.3	28.2	28.8	29.9	-
	ZSLNB20 30-30	3	1.5	4	30	2.88	75	6	2.5	32.5	33.4	34.3	35.9	-
	ZSLNB20 30-35	3	1.5	4	35	2.88	80	6	2.2	37.7	38.7	40	41.9	-
	ZSLNB20 40-10	4	2	5	10	3.9	55	6	4.5	11.6	12.1	12.5	12.9	13.5
E-Star	ZSLNB20 40-13	4	2	5	13	3.9	60	6	3.6	14.7	15.3	15.8	16.2	17
	ZSLNB20 40-16	4	2	5	16	3.9	60	6	3.1	17.9	18.5	19.1	19.5	20.9
	ZSLNB20 40-20	4	2	5	20	3.9	65	6	2.5	22.1	22.8	23.4	23.9	-
U-Wing	ZSLNB20 40-25	4	2	5	25	3.9	70	6	2.1	27.3	28.1	28.8	29.8	-
	ZSLNB20 40-30	4	2	5	30	3.9	75	6	1.8	32.4	33.4	34.2	-	-
	ZSLNB20 40-35	4	2	5	35	3.9	80	6	1.6	37.6	38.6	39.9	-	-
	ZSLNB20 40-40	4	2	5	40	3.9	80	6	1.4	42.8	43.8	-	-	-
Zamus Thunder	ZSLNB20 40-45	4	2	5	45	3.9	90	6	1.2	47.9	49.1	-	-	-
	ZSLNB20 40-50	4	2	5	50	3.9	100	6	1.1	53.1	54.5	-	-	-
X-Star	ZSLNB20 50-20	5	2.5	6	20	4.9	65	6	1.4	22	22.8	-	-	-
	ZSLNB20 50-25	5	2.5	6	25	4.9	70	6	1.2	27.2	28.1	-	-	-
	ZSLNB20 50-30	5	2.5	6	30	4.9	75	6	1	32.4	-	-	-	-
	ZSLNB20 50-35	5	2.5	6	35	4.9	80	6	0.8	42.8	-	-	-	-
	ZSLNB20 50-40	5	2.5	6	40	4.9	90	6	0.7	42.8	-	-	-	-

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

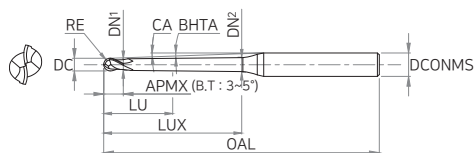
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	◎		○	○						

ZSTNB20

2 Flutes Tapered Neck Ball End Mill



* R2 and below are not back draft Type

► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.015	h5



R3 OR UNDER ABOVE R3

EDP No	DC	RE	APMX	LUX	CA	DN ¹	DN ²	OAL	DCON MS	LU	BHTA	Effective length by inclination angle				
												0.5°	1°	1.5°	2°	3°
ZSTNB 2002-1-04	0.2	0.1	0.15	1	0.4	0.17	0.18	50	4	1.35	10.9	1.5	1.7	1.8	2	2.3
ZSTNB 2002-1.5-04	0.2	0.1	0.15	1.5	0.4	0.17	0.19	50	4	1.77	10.4	2	2.2	2.4	2.6	2.9
ZSTNB 2002-2-09	0.2	0.1	0.15	2	0.9	0.17	0.23	50	4	1.1	10.1	x	2.8	3.1	3.4	3.9
ZSTNB 2002-2.5-09	0.2	0.1	0.15	2.5	0.9	0.17	0.24	50	4	1.1	9.6	x	3.3	3.7	4	4.5
ZSTNB 2003-2-04	0.3	0.15	0.25	2	0.4	0.27	0.29	50	4	2.19	10	2.5	2.8	3	3.2	3.5
ZSTNB 2003-3-09	0.3	0.15	0.25	3	0.9	0.27	0.36	50	4	1.2	9.3	x	3.8	4.2	4.5	5.1
ZSTNB 2003-4-09	0.3	0.15	0.25	4	0.9	0.27	0.39	50	4	1.2	8.6	x	4.8	5.3	5.7	6.3
ZSTNB 2004-2-04	0.4	0.2	0.3	2	0.4	0.37	0.39	50	4	2.2	10	2.5	2.8	3	3.2	3.5
ZSTNB 2004-3-04	0.4	0.2	0.3	3	0.4	0.37	0.41	50	4	2.44	9.1	3.6	3.9	4.1	4.4	4.8
ZSTNB 2004-4-04	0.4	0.2	0.3	4	0.4	0.37	0.42	50	4	2.44	8.4	4.7	5.2	5.6	5.9	6.5
ZSTNB 2004-4-09	0.4	0.2	0.3	4	0.9	0.37	0.49	50	4	1.25	8.5	x	4.8	5.3	5.7	6.3
ZSTNB 2004-5-04	0.4	0.2	0.3	5	0.4	0.37	0.44	50	4	2.44	7.8	5.7	6.3	6.7	7.1	7.7
ZSTNB 2004-5-09	0.4	0.2	0.3	5	0.9	0.37	0.52	50	4	1.25	7.9	x	5.9	6.4	6.8	7.5
ZSTNB 2005-4-04	0.5	0.25	0.35	4	0.4	0.47	0.52	50	4	2.49	8.4	4.6	5	5.3	5.5	5.9
ZSTNB 2005-8-09	0.5	0.25	0.35	8	0.9	0.47	0.71	50	4	1.3	6.5	x	8.9	9.6	10.1	10.9
ZSTNB 2005-12-09	0.5	0.25	0.35	12	0.9	0.47	0.84	50	4	1.3	5.3	x	13	13.9	14.5	15.4
ZSTNB 20054-2-04	0.54	0.27	0.37	2	0.4	0.51	0.53	50	4	1.8	10	2.3	2.5	2.7	2.8	3
ZSTNB 20054-4-04	0.54	0.27	0.37	4	0.4	0.51	0.56	50	4	1.8	8.4	4.5	4.9	5.2	5.5	5.9
ZSTNB 20054-5-04	0.54	0.27	0.37	5	0.4	0.51	0.58	50	4	1.8	7.8	5.5	6	6.3	6.6	7.1
ZSTNB 20054-6-04	0.54	0.27	0.37	6	0.4	0.51	0.59	50	4	1.8	7.2	6.7	7.3	7.8	8.2	8.8

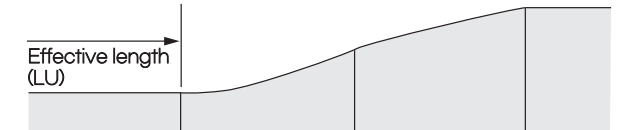
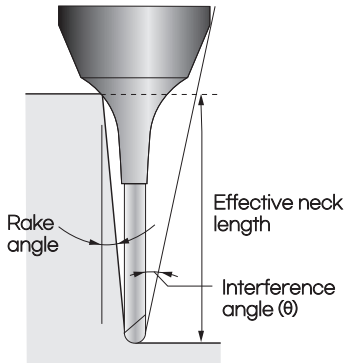
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	◎		○	○						

ZSTNB20

2 Flutes Tapered Neck Ball End Mill



※ The marked effective neck length is the default value to prevent interference with the workpiece.

EDP No	DC	RE	APMX	LUX	CA	DN ¹	DN ²	OAL	DCON MS	LU	BHTA	Effective length by inclination angle				
												0.5°	1°	1.5°	2°	3°
ZSTNB 20054-6.5-04	0.54	0.27	0.37	6.5	0.4	0.51	0.6	50	4	1.8	7	7.2	7.9	8.3	8.7	9.4
ZSTNB 20054-7-04	0.54	0.27	0.37	7	0.4	0.51	0.6	50	4	1.8	6.8	7.7	8.4	8.9	9.3	10
ZSTNB 2006-2-04	0.6	0.3	0.4	2	0.4	0.57	0.59	50	4	2.17	10	2.4	2.5	2.7	2.8	3
ZSTNB 2006-4-04	0.6	0.3	0.4	4	0.4	0.57	0.62	50	4	2.54	8.4	4.6	5	5.2	5.5	5.9
ZSTNB 2006-6-04	0.6	0.3	0.4	6	0.4	0.57	0.65	50	4	2.54	7.2	6.8	7.4	7.8	8.2	8.8
ZSTNB 2006-6-09	0.6	0.3	0.4	6	0.9	0.57	0.75	50	4	1.35	7.3	x	6.9	7.5	7.9	8.6
ZSTNB 2006-8-09	0.6	0.3	0.4	8	0.9	0.57	0.81	50	4	1.35	6.4	x	8.9	9.6	10.1	10.9
ZSTNB 2006-10-04	0.6	0.3	0.4	10	0.4	0.57	0.7	50	4	2.54	5.6	10.8	11.7	12.2	12.7	13.5
ZSTNB 2006-10-09	0.6	0.3	0.4	10	0.9	0.57	0.87	50	4	1.35	5.7	x	11	11.8	12.3	13.2
ZSTNB 2006-12-09	0.6	0.3	0.4	12	0.9	0.57	0.93	55	4	1.35	5.2	x	13	13.9	14.5	15.4
ZSTNB 2006-15-04	0.6	0.3	0.4	15	0.4	0.57	0.77	55	4	2.54	4.4	15.9	17	17.6	18.2	19.2
ZSTNB 2006-15-09	0.6	0.3	0.4	15	0.9	0.57	1.03	55	4	1.35	4.5	x	16.1	17.1	17.7	18.8
ZSTNB 2008-4-04	0.8	0.4	0.5	4	0.4	0.77	0.82	50	4	2.64	8.3	4.6	4.9	5.2	5.5	5.9
ZSTNB 2008-6-04	0.8	0.4	0.5	6	0.4	0.77	0.85	50	4	2.64	7.1	6.6	7.1	7.5	7.7	8.3
ZSTNB 2008-8-09	0.8	0.4	0.5	8	0.9	0.77	1.01	50	4	1.45	6.3	x	8.9	9.6	10.1	10.9
ZSTNB 2008-12-09	0.8	0.4	0.5	12	0.9	0.77	1.13	55	4	1.45	5	x	13	13.9	14.5	15.4
ZSTNB 2008-16-09	0.8	0.4	0.5	16	0.9	0.77	1.26	55	4	1.45	4.2	x	17.1	18.1	18.8	19.9
ZSTNB 2009-4-04	0.9	0.45	0.6	4	0.4	0.86	0.91	50	4	3.46	8.2	4.5	4.7	4.9	5.1	5.4
ZSTNB 2009-8-04	0.9	0.45	0.6	8	0.4	0.86	0.96	55	4	3.46	6.1	8.7	9.3	9.7	10	10.6
ZSTNB 2009-12-04	0.9	0.45	0.6	12	0.4	0.86	1.02	55	4	3.46	4.8	12.9	13.8	14.4	14.9	15.7

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	~325	HRC30~50	~FCD500					
◎	◎		○	○						

ZSTNB20

2 Flutes Tapered Neck Ball End Mill

Endmill

EDP No	DC	RE	APMX	LUX	CA	DN ¹	DN ²	OAL	DCON MS	LU	BHTA	Effective length by inclination angle				
												0.5°	1°	1.5°	2°	3°
ZSTNB 2009-16-04	0.9	0.45	0.6	16	0.4	0.86	1.08	60	4	3.46	4	17	18	18.7	19.3	20.5
ZSTNB 2009-18-04	0.9	0.45	0.6	18	0.4	0.86	1.1	65	4	3.46	3.7	19.1	20.1	20.9	21.5	23.1
ZSTNB 2009-20-04	0.9	0.45	0.6	20	0.4	0.86	1.13	65	4	3.46	3.4	21.1	22.2	23	23.6	25.6
ZSTNB 2009-22-04	0.9	0.45	0.6	22	0.4	0.86	1.16	65	4	3.46	3.2	23.1	24.3	25.1	25.8	28.2
ZSTNB 2009-24-04	0.9	0.45	0.6	24	0.4	0.86	1.19	70	4	3.46	3	25.2	26.4	27.2	27.9	-
ZSTNB 2010-6-04	1	0.5	0.8	6	0.4	0.94	1.01	50	6	5.09	8.3	6.8	7.2	7.5	7.8	8.3
ZSTNB 2010-8-04	1	0.5	0.8	8	0.4	0.94	1.04	55	6	5.09	7.5	8.8	9.3	9.7	10	10.6
ZSTNB 2010-10-04	1	0.5	0.8	10	0.4	0.94	1.07	55	6	5.09	6.8	11	11.7	12.3	12.7	13.5
ZSTNB 2010-10-09	1	0.5	0.8	10	0.9	0.94	1.23	55	6	2.7	6.9	x	11.2	11.9	12.4	13.2
ZSTNB 2010-15-09	1	0.5	0.8	15	0.9	0.94	1.39	60	6	2.7	5.7	x	16.2	17.1	17.8	18.8
ZSTNB 2010-20-04	1	0.5	0.8	20	0.4	0.94	1.21	65	6	5.09	4.7	21.2	22.3	23	23.6	25.7
ZSTNB 2010-20-09	1	0.5	0.8	20	0.4	0.94	1.54	65	6	2.7	4.8	x	21.3	22.4	23.1	24.6
ZSTNB 2010-25-09	1	0.5	0.8	25	0.4	0.94	1.7	70	6	2.7	4.2	x	26.4	27.6	28.4	30.8
ZSTNB 2010-30-04	1	0.5	0.8	30	0.4	0.94	1.35	75	6	5.09	3.6	31.3	32.7	33.6	34.8	38.5
ZSTNB 2010-30-09	1	0.5	0.8	30	0.9	0.94	1.86	75	6	2.7	3.7	x	31.4	32.8	33.7	36.9
ZSTNB 2010-35-09	1	0.5	0.8	35	0.9	0.94	2.02	80	6	2.7	3.3	x	36.5	38	39	43.1
ZSTNB 2010-40-09	1	0.5	0.8	40	0.9	0.94	2.17	85	6	2.7	3	x	41.6	43.2	44.4	-
ZSTNB 2010-50-09	1	0.5	0.8	50	0.9	0.94	2.49	95	6	2.7	2.5	x	51.7	53.5	55.5	-
ZSTNB 2010-60-09	1	0.5	0.8	60	0.9	0.94	2.8	105	6	2.7	2.2	x	61.8	63.8	66.6	-
ZSTNB 2010-70-09	1	0.5	0.8	70	0.9	0.94	3.11	115	6	2.7	1.9	x	71.9	74	-	-
ZSTNB 2015-8-04	1.5	0.75	1.35	8	0.4	1.42	1.51	55	6	7.07	7.3	8.9	9.4	9.7	10	10.6
ZSTNB 2015-10-04	1.5	0.75	1.35	10	0.4	1.42	1.54	55	6	7.07	6.6	10.9	11.5	11.9	12.2	12.9
ZSTNB 2015-12-04	1.5	0.75	1.35	12	0.4	1.42	1.57	55	6	7.07	6	13	13.6	14	14.4	15.4
ZSTNB 2015-15-09	1.5	0.75	1.35	15	0.9	1.42	1.85	60	6	3.89	5.4	x	16.4	17.2	17.8	18.8
ZSTNB 2015-20-09	1.5	0.75	1.35	20	0.9	1.42	2.01	65	6	3.89	4.5	x	21.4	22.4	23.2	24.7
ZSTNB 2015-30-09	1.5	0.75	1.35	30	0.9	1.42	2.32	75	6	3.89	3.4	x	31.5	32.9	33.7	37
ZSTNB 2018-4-04	1.8	0.9	1.6	4	0.4	1.73	1.76	50	6	4.38	9.2	4.6	4.8	4.9	5.1	5.4
ZSTNB 2018-8-04	1.8	0.9	1.6	8	0.4	1.73	1.82	50	6	6.61	7.1	8.6	9	9.2	9.4	10.2
ZSTNB 2018-12-04	1.8	0.9	1.6	12	0.4	1.73	1.88	55	6	6.61	5.8	12.9	13.5	14	14.4	15.4
ZSTNB 2018-16-04	1.8	0.9	1.6	16	0.4	1.73	1.93	60	6	6.61	4.9	17	17.7	18.3	18.7	20.5
ZSTNB 2018-20-04	1.8	0.9	1.6	20	0.4	1.73	1.99	65	6	6.61	4.3	21.2	22.3	23	23.6	25.6
ZSTNB 2018-24-04	1.8	0.9	1.6	24	0.4	1.73	2.04	65	6	6.61	3.8	25.3	26.5	27.3	27.9	30.8
ZSTNB 2018-28-04	1.8	0.9	1.6	28	0.4	1.73	2.1	70	6	6.61	3.4	29.4	30.6	31.5	32.4	35.9
ZSTNB 2018-32-04	1.8	0.9	1.6	32	0.4	1.73	2.15	70	6	6.61	3	33.4	34.8	35.7	37.1	-

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	◎		○	○						

ZSTNB20

2 Flutes Tapered Neck Ball End Mill

Endmill

	EDP No	DC	RE	APMX	LUX	CA	DN ¹	DN ²	OAL	DCON MS	LU	BHTA	Effective length by inclination angle				
													0.5°	1°	1.5°	2°	3°
Zamus Star	ZSTNB 2018-36-04	1.8	0.9	1.6	36	0.4	1.73	2.21	75	6	6.61	2.8	37.5	38.9	39.9	41.7	-
	ZSTNB 2018-38-04	1.8	0.9	1.6	38	0.4	1.73	2.24	80	6	6.61	2.7	39.5	41	42	44	-
	ZSTNB 2018-40-04	1.8	0.9	1.6	40	0.4	1.73	2.27	80	6	6.61	2.6	41.5	43.1	44.2	46.3	-
	ZSTNB 2020-8-04	2	1	1.7	8	0.4	1.92	2.01	50	6	7.42	7	8.7	9	9.2	9.5	10.2
	ZSTNB 2020-12-04	2	1	1.7	12	0.4	1.92	2.06	55	6	7.42	5.7	13	13.6	14	14.4	15.4
E-Star	ZSTNB 2020-16-04	2	1	1.7	16	0.4	1.92	2.12	60	6	7.42	4.8	17	17.7	18.3	18.7	20.5
	ZSTNB 2020-20-04	2	1	1.7	20	0.4	1.92	2.18	65	6	7.42	4.1	21.3	22.3	23	23.6	25.6
	ZSTNB 2020-20-09	2	1	1.7	20	0.9	1.92	2.5	65	6	4.24	4.2	x	21.4	22.4	23.2	24.6
U-Wing	ZSTNB 2020-25-09	2	1	1.7	25	0.9	1.92	2.65	65	6	4.24	3.6	x	26.5	27.7	28.5	30.8
	ZSTNB 2020-30-04	2	1	1.7	30	0.4	1.92	2.32	70	6	7.42	3.1	31.4	32.7	33.6	34.8	38.5
	ZSTNB 2020-30-09	2	1	1.7	30	0.9	1.92	2.81	70	6	4.24	3.2	x	31.6	32.9	33.7	36.9
	ZSTNB 2020-35-09	2	1	1.7	35	0.9	1.92	2.97	75	6	4.24	2.8	x	36.6	38	39	-
Zamus Thunder	ZSTNB 2020-40-04	2	1	1.7	40	0.4	1.92	2.46	80	6	7.42	2.5	41.5	43.1	44.2	46.3	-
	ZSTNB 2020-40-09	2	1	1.7	40	0.9	1.92	3.12	80	6	4.24	2.6	x	41.7	43.2	44.5	-
	ZSTNB 2020-50-09	2	1	1.7	50	0.9	1.92	3.44	90	6	4.24	2.1	x	51.5	53.5	55.5	-
X-Star	ZSTNB 2020-60-09	2	1	1.7	60	0.9	1.92	3.75	100	6	4.24	1.8	x	61.9	63.8	-	-
	ZSTNB 2020-70-09	2	1	1.7	70	0.9	1.92	4.07	110	6	4.24	1.8	x	72	74.1	-	-
	ZSTNB 2030-8-04	3	1.5	2.5	8	0.4	2.86	2.94	50	6	8.5	6.3	8.8	9.1	9.3	9.5	10.3
	ZSTNB 2030-16-04	3	1.5	2.5	16	0.4	2.86	3.05	55	6	12.52	4.1	17.2	17.8	18.3	18.7	20.6
S-Wing	ZSTNB 2030-20-04	3	1.5	2.5	20	0.4	2.86	3.1	60	6	12.52	3.4	21.2	22	22.6	23.3	25.7
	ZSTNB 2030-30-04	3	1.5	2.5	30	0.4	2.86	3.24	70	6	12.52	2.5	31.6	32.8	33.7	34.9	-
	ZSTNB 2030-30-09	3	1.5	2.5	30	0.9	2.86	3.72	70	6	6.95	2.6	x	31.8	33	33.8	-
A-Wing	ZSTNB 2030-40-04	3	1.5	2.5	40	0.4	2.86	3.38	80	6	12.52	2	41.7	43.2	44.3	-	-
	ZSTNB 2030-40-09	3	1.5	2.5	40	0.9	2.86	4.04	80	6	6.95	2	x	41.9	43.3	-	-
	ZSTNB 2030-50-09	3	1.5	2.5	50	0.9	2.86	4.35	90	6	6.95	1.7	x	52	53.6	-	-
	ZSTNB 2030-60-09	3	1.5	2.5	60	0.9	2.86	4.67	100	6	6.95	1.4	x	62.1	-	-	-
Standard	ZSTNB 2030-70-09	3	1.5	2.5	70	0.9	2.86	4.98	110	6	6.95	1.2	x	72.1	-	-	-
	ZSTNB 2040-20-10	4	2	8	20	1	3.86	4.28	70	8	12.01	5	20.5	21.6	22.3	22.8	23.5
	ZSTNB 2040-30-10	4	2	8	30	1	3.86	4.63	80	8	12.01	3.51	22	31.6	32.5	33.2	34.16
Copper -Mate	ZSTNB 2040-40-10	4	2	8	40	1	3.86	4.98	90	8	12.01	2.7	22	42	43.4	44.3	-
	ZSTNB 2040-50-10	4	2	8	50	1	3.86	5.33	100	8	12.01	2.2	22	52	53.6	54.7	-
	ZSTNB 2040-60-10	4	2	8	60	1	3.86	5.68	110	8	12.01	1.9	22	62	63.8	-	-
Gra -Mate	ZSTNB 2050-30-10	5	2.5	10	30	1	4.86	5.56	80	8	14.01	2.8	25.5	31.7	32.6	33.2	-
	ZSTNB 2050-40-10	5	2.5	10	40	1	4.86	5.91	90	8	14.01	2.1	25.5	41.7	42.8	43.5	-

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
◎	◎		○	○						

ZSTNB20

2 Flutes Tapered Neck Ball End Mill

Endmill

EDP No	DC	RE	APMX	LUX	CA	DN ¹	DN ²	OAL	DCON MS	LU	BHTA	Effective length by inclination angle				
												0.5°	1°	1.5°	2°	3°
ZSTNB 2050-60-10	5	2.5	10	60	1	4.86	6.61	110	8	14.01	1.5	25.5	62.1	-	-	-
ZSTNB 2060-30-10	6	3	12	30	1	5.86	6.49	80	8	16.01	1.9	29	31.8	32.6	-	-
ZSTNB 2060-40-10	6	3	12	40	1	5.86	6.84	90	8	16.01	1.5	29	41.8	-	-	-
ZSTNB 2060-50-10	6	3	12	50	1	5.86	7.19	100	8	16.01	1.2	29	51.8	-	-	-
ZSTNB 2060-60-10	6	3	12	60	1	5.86	7.54	110	10	16.01	1.9	29	62.2	63.9	-	-
ZSTNB 2060-70-10	6	3	12	70	1	5.86	7.89	120	10	16.01	1.7	29	72.2	74.1	-	-
ZSTNB 2060-80-10	6	3	12	80	1	5.86	8.23	130	10	16.01	1.5	29	82.2	-	-	-
ZSTNB 2080-50-10	8	4	14	50	1	7.86	9.12	110	10	18.01	1.2	32	51.9	-	-	-
ZSTNB 2080-60-10	8	4	14	60	1	7.86	9.47	120	10	18.01	1	32	-	-	-	-
ZSTNB 2080-70-10	8	4	14	70	1	7.86	9.82	130	10	18.01	0.9	32	-	-	-	-
ZSTNB 2080-80-10	8	4	14	80	1	7.86	10.16	140	12	18.01	1.5	32	82.3	-	-	-
ZSTNB 2100-60-10	10	5	18	60	1	9.86	11.33	130	12	22.01	1.1	39	62.1	-	-	-
ZSTNB 2100-75-10	10	5	18	75	1	9.86	11.85	140	12	22.01	0.9	39	-	-	-	-

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

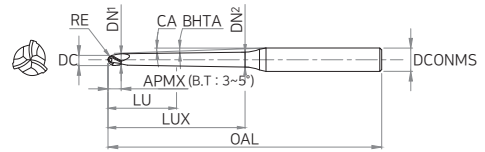
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	Steel HRc30~50	~FCD500					
◎	◎		○	○						

ZSTNB30

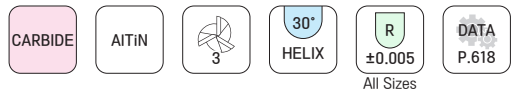
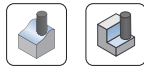
3 Flutes Tapered Neck Ball End Mill



* R2 and below are not back draft Type

► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.015	h5



EDP No	DC	RE	APMX	LUX	CA	DN ¹	DN ²	OAL	DCONMS	LU	BHTA	Effective length by inclination angle				
												0.5°	1°	1.5°	2°	3°
ZSTNB 3020-8-04	2	1	1.7	8	0.4	1.92	2.01	50	6	7.42	7	8.7	9	9.2	9.5	10.2
ZSTNB 3020-12-04	2	1	1.7	12	0.4	1.92	2.06	55	6	7.42	5.7	13	13.6	14	14.4	15.4
ZSTNB 3020-16-04	2	1	1.7	16	0.4	1.92	2.12	60	6	7.42	4.8	17	17.7	18.3	18.7	20.5
ZSTNB 3020-20-04	2	1	1.7	20	0.4	1.92	2.18	65	6	7.42	4.1	21.3	22.3	23	23.6	25.6
ZSTNB 3020-20-09	2	1	1.7	20	0.9	1.92	2.5	65	6	4.24	4.2	x	21.4	22.4	23.2	24.6
ZSTNB 3020-25-09	2	1	1.7	25	0.9	1.92	2.65	65	6	4.24	3.6	x	26.5	27.7	28.5	30.8
ZSTNB 3020-30-04	2	1	1.7	30	0.4	1.92	2.32	70	6	7.42	3.1	31.4	32.7	33.6	34.8	38.5
ZSTNB 3020-30-09	2	1	1.7	30	0.9	1.92	2.81	70	6	4.24	3.2	x	31.6	32.9	33.7	36.9
ZSTNB 3020-35-09	2	1	1.7	35	0.9	1.92	2.97	75	6	4.24	2.8	x	36.6	38	39	-
ZSTNB 3020-40-04	2	1	1.7	40	0.4	1.92	2.46	80	6	7.42	2.5	41.5	43.1	44.2	46.3	-
ZSTNB 3020-40-09	2	1	1.7	40	0.9	1.92	3.12	80	6	4.24	2.6	x	41.7	43.2	44.5	-
ZSTNB 3020-50-09	2	1	1.7	50	0.9	1.92	3.44	90	6	4.24	2.1	x	51.8	53.5	55.5	-
ZSTNB 3020-60-09	2	1	1.7	60	0.9	1.92	3.75	100	6	4.24	1.8	x	61.9	63.8	-	-
ZSTNB 3020-70-09	2	1	1.7	70	0.9	1.92	4.07	110	6	4.24	1.6	x	72	74.1	-	-
ZSTNB 3030-8-04	3	1.5	2.5	8	0.4	2.86	2.94	50	6	8.5	6.3	8.8	9.1	9.3	9.5	10.3
ZSTNB 3030-16-04	3	1.5	2.5	16	0.4	2.86	3.05	55	6	12.52	4.1	17.2	17.8	18.3	18.7	20.6
ZSTNB 3030-20-04	3	1.5	2.5	20	0.4	2.86	3.1	60	6	12.52	3.4	21.2	22	22.6	23.3	25.7
ZSTNB 3030-30-04	3	1.5	2.5	30	0.4	2.86	3.24	70	6	12.52	2.5	31.6	32.8	33.7	34.9	-
ZSTNB 3030-30-09	3	1.5	2.5	30	0.9	2.86	3.72	70	6	6.95	2.6	x	31.8	33	33.8	-
ZSTNB 3030-40-04	3	1.5	2.5	40	0.4	2.86	3.38	80	6	12.52	2	41.7	43.2	44.3	-	-

► Applicable Working Material

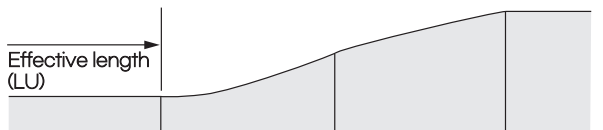
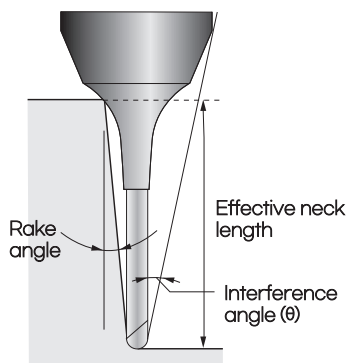
○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	~325	HRC30~50	~FCD500					
◎	◎		○	○						

ZSTNB30

3 Flutes Tapered Neck Ball End Mill

Endmill



※ The marked effective neck length is the default value to prevent interference with the workpiece.

EDP No	DC	RE	APMX	LUX	CA	DN ¹	DN ²	OAL	DCON MS	LU	BHTA	Effective length by inclination angle				
												0.5°	1°	1.5°	2°	3°
ZSTNB 3030-40-09	3	1.5	2.5	40	0.9	2.86	4.04	80	6	6.95	2	x	41.9	43.3	-	-
ZSTNB 3030-50-09	3	1.5	2.5	50	0.9	2.86	4.35	90	6	6.95	1.7	x	52	53.6	-	-
ZSTNB 3030-60-09	3	1.5	2.5	60	0.9	2.86	4.67	100	6	6.95	1.4	x	62.1	-	-	-
ZSTNB 3030-70-09	3	1.5	2.5	70	0.9	2.86	4.98	110	6	6.95	1.2	x	72.1	-	-	-
ZSTNB 3040-20-10	4	2	8	20	1	3.86	4.28	70	8	12.01	5	20.5	21.6	22.3	22.8	23.5
ZSTNB 3040-30-10	4	2	8	30	1	3.86	4.63	80	8	12.01	3.6	22	31.6	32.5	33.2	34.1
ZSTNB 3040-40-10	4	2	8	40	1	3.86	4.98	90	8	12.01	2.7	22	42	43.4	44.3	-
ZSTNB 3040-50-10	4	2	8	50	1	3.86	5.33	100	8	12.01	2.2	22	52	53.6	54.7	-
ZSTNB 3040-60-10	4	2	8	60	1	3.86	5.68	110	8	12.01	1.9	22	62	63.8	-	-
ZSTNB 3050-30-10	5	2.5	10	30	1	4.86	5.56	80	8	14.01	2.8	25.5	31.7	32.6	33.2	-
ZSTNB 3050-40-10	5	2.5	10	40	1	4.86	5.91	90	8	14.01	2.1	25.5	41.7	42.8	43.5	-
ZSTNB 3050-60-10	5	2.5	10	60	1	4.86	6.61	110	8	12.52	1.5	25.5	62.1	-	-	-

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	~325	HRc30~50	~FCD500					
◎	◎		○	○						

E-Star End Mill

High Hardness HRc 50~63

Characteristics

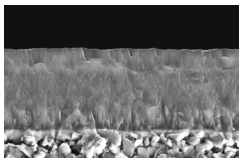
- Suitable for High Hardness HRc 50 ~ 63
- Excellent Coating in high temperature hardness and heat resistance
- High precision Tolerance for precision machining

Features

- HRc50~63 Carbide endmill for high hardness steel
- Appropriate for precision machining by applying high precision tolerance on Cutting Diameter and radius

Adopt a high hardness coating

- Improved wear resistance
- Improved heat resistance



Adopt a high hardness raw-material

- Expansion of versatility by special toughness

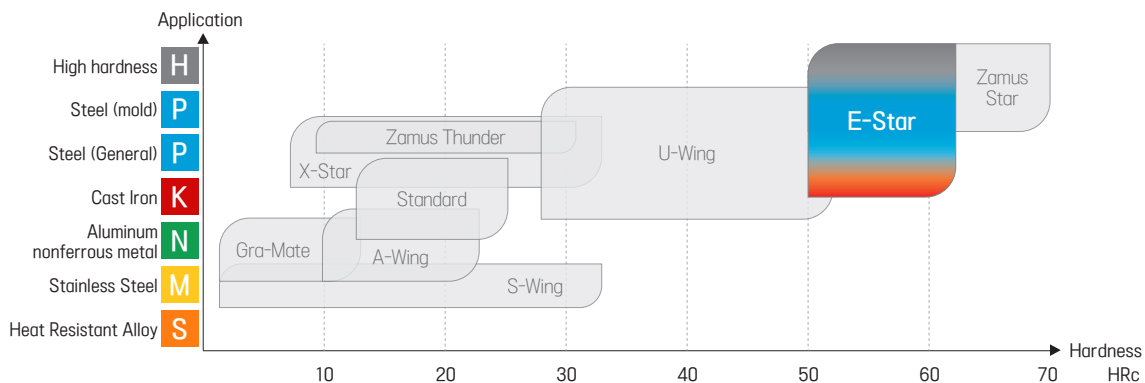


Treatment of Cutting Edge

- Improved chipping resistance
- Improved wear resistance, induce to stable work



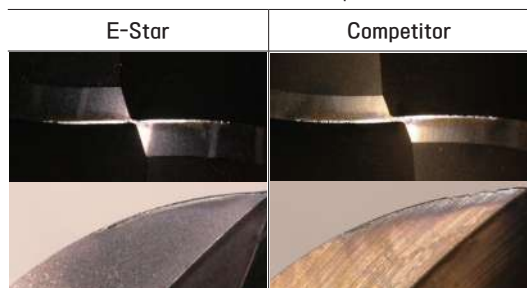
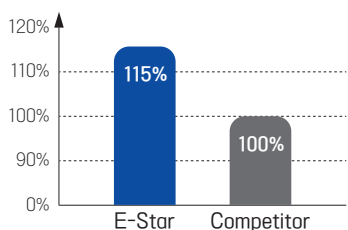
Applications



Case Study

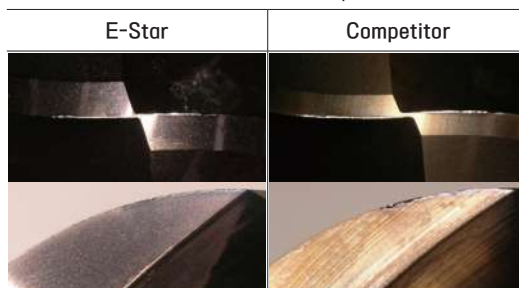
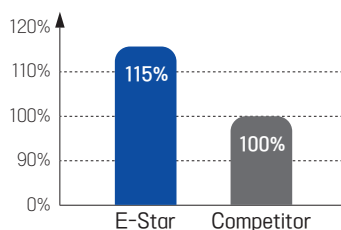
► 2F D12.0 Ball End Mill

STD61(HRc50~55)



· Cutting Condition : rpm : 3,450 / vc : 130 / vf : 828 / fz : 0.06
/ ap : 12 / ae : 0.4 / o claont : AIR

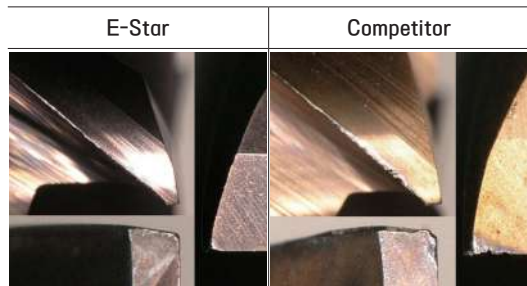
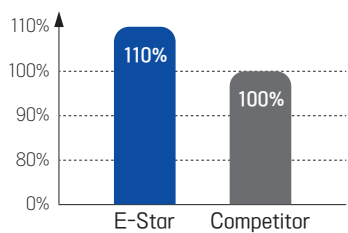
STD11(HRc60~63)



· Cutting Condition : rpm : 3,981 / vc : 150 / vf : 955 / fz : 0.12
/ ap : 0.4 / ae : 0.6 / o claont : AIR

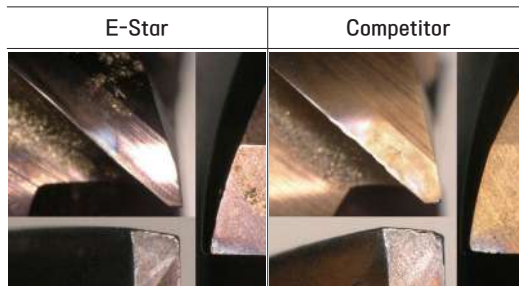
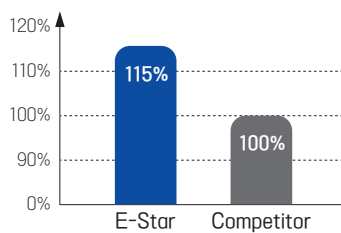
► 4F D12.0 Square End Mill

STD61(HRc50~55)



· Cutting Condition : rpm : 3,450 / vc : 130 / vf : 828 / fz : 0.06
/ ap : 12 / ae : 0.4 / o claont : AIR

STD11(HRc60~63)

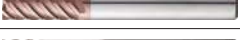
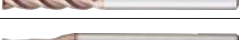
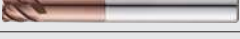
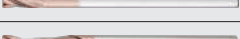
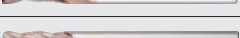
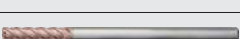
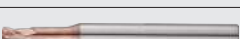
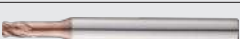


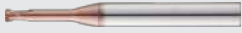
· Cutting Condition : rpm : 1,858 / vc : 70 / vf : 297 / fz : 0.04
/ ap : 12 / ae : 0.4 / o claont : AIR

E-Star Endmill

High Hardness HRc 50~63

Contents

Section		EDP No	Geometry	Product	Diameter(DC)		Page
Shape	Flute				Min	Max	
Square	2F	ESE702		2 Flutes Neck Square End Mill	0.1	20	93
	4F	ESE704		4 Flutes Neck Square End Mill	1	20	94
	2F	ESE712		2 Flutes Square End Mill	1	12	95
	4F	ESE714		4 Flutes High Helix Square End Mill	1	12	96
	6F	ESE716		6 Flutes High Helix Square End Mill	6	20	97
	4F&6F	ESE724(6)		4&6 Flutes Neck Square End Mill	1	12	98
	4F	ESE744		4 Flutes High Helix Square End Mill	1	12	99
	2F	ESRE712		2 Flutes Rib Square End Mill	0.1	12	100
	4F	ESRE714		4 Flutes Rib Square End Mill	0.5	12	104
	4F	ESXE704		4 Flutes Neck Square End Mill	1	12	107
	4F	ESXE714		4 Flutes Square End Mill	2	12	108
	2F	ESLNS20		2 Flutes Long Neck Square End Mill	0.1	5	109
	4F	ESLNS40		4 Flutes Long Neck Square End Mill	1	5	114
Radius	2F	ESR702		2 Flutes Neck Radius End Mill	1	12	117
	4F	ESR704		4 Flutes Neck Radius End Mill	1	12	120
	6F	ESR706		6 Flutes Neck Radius End Mill	6	12	122
	4F	ESR714		4 Flutes Radius End Mill	3	12	123
	4F	ESR724		4 Flutes Neck Radius End Mill	6	12	124
	2F	ESR732		2 Flutes Long Shank Radius End Mill	1	12	125
	4F	ESR734		4 Flutes Long Shank Radius End Mill	1	12	127
	6F	ESR736		6 Flutes Radius End Mill	6	12	129
	2F	ESRR712		2 Flutes Rib Radius End Mill	0.2	16	130
	4F	ESRR714		4 Flutes Rib Radius End Mill	0.5	20	137
	4F	ESXR704		4 Flutes Neck Radius End Mill	1	12	145
	2F	ESLNR20		2 Flutes Long Neck Radius End Mill	0.2	3	147

Section		EDP No	Geometry	Product	Diameter(DC)		Page
Shape	Flute				Min	Max	
Radius	2F	ESTNR20		2 Flutes Tapered Neck Radius End Mill	0.2	3	151
	4F	ESPM4		4 Flutes Neck Radius End Mill For High Speed Machining	3	12	154
Ball	2F	ESB702		2 Flutes Neck Ball End Mill	0.1	12	155
	3F	ESB703		3 Flutes Neck Ball End Mill	2	12	156
	2F	ESB712		2 Flutes Ball End Mill	1	12	157
	4F	ESB734		4 Flutes 15° Helix Ball End Mill	2	10	158
	2F	ESRB712		2 Flutes Rib Ball End Mill	0.1	12	159
	2F	ESLNB20		2 Flutes Long Neck Ball End Mill	0.1	5	164
	2F	ESTNB20		2 Flutes Tapered Neck Ball End Mill	0.2	10	169
	3F	ESTNB30		3 Flutes Tapered Neck Ball End Mill	2	5	174

E-Star Endmill

High Hardness HRc 50~63

EDP No. System

*If expressed as an integer, the decimal point is omitted.

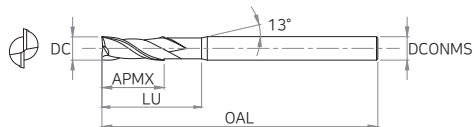
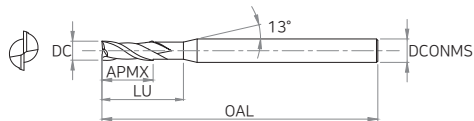
ES	R	7	0	4	100	15	32	10
①	②	③	④	⑤	⑥	⑦	⑧	⑨

① Section	② Appearance	③ Grade	④ Length, Shank Type	⑤ Flutes	⑥ Cutting Dia	⑦ Corner R	⑧ Effective length	⑨ Shank Dia
ES : E-Star	E : Square	7 : Grade	0 : Neck	2 : 2Flutes	010 : Ø1.0	05 : R0.5	10 : 10mm	06 : Ø6.0
	R : Radius		1 : Straight, Neck	3 : 3Flutes	060 : Ø6.0	15 : R1.5	12 : 12mm	10 : Ø10.0
	B : Ball		2 : Long Shank Neck	4 : 4Flutes	065 : Ø6.5	20 : R2.0	32 : 32mm	12 : Ø12.0
	XE : Square (Unequal)		3 : Long Shank	6 : 6Flutes	100 : Ø10.0			
	XR : Radius (Unequal)		4 : High Helix					
	PM : Power Mill							
	RE : Rib Square							
	RR : Rib Radius							
	RB : Rib Ball							
	LNB : Long Neck Ball							
	TNB : Taper Neck Ball							
	LNS : Long Neck Square							
	LNR : Long Neck Radius							

EX) 4 Flute / Cutting Dia Ø2 / Corner R 0.3 / Neck Length 6mm / Shank Dia 10 / 70Grade / Corner Radius Neck Type E-Star End Mill

ESE702

2 Flutes Neck Square End Mill



► Tolerance

DC		Shank Dia
~ Ø6	0 ~ -0.012	h5
Ø8 ~ Ø20	0 ~ -0.015	



EDP No	DC	APMX	LU	OAL	DCON MS
ESE702 001	0.1	0.2	-	40	4
ESE702 002	0.2	0.4	-	40	4
ESE702 003	0.3	0.5	-	40	4
ESE702 004	0.4	0.7	-	40	4
ESE702 005	0.5	1	-	40	4
ESE702 006	0.6	1.2	-	40	4
ESE702 007	0.7	1.4	-	40	4
ESE702 008	0.8	1.6	-	40	4
ESE702 009	0.9	2	-	40	4
ESE702 010	1	1.5	-	40	6
ESE702 010S4	1	1.5	-	40	4
ESE702 015	1.5	2.2	-	40	6
ESE702 020	2	3	6	40	6

EDP No	DC	APMX	LU	OAL	DCON MS
ESE702 020S4	2	3	6	40	4
ESE702 025	2.5	4	6	40	6
ESE702 030	3	4	7	45	6
ESE702 035	3.5	6	9	45	6
ESE702 040	4	6	9	45	6
ESE702 045	4.5	6	10	45	6
ESE702 050	5	6	11	50	6
ESE702 060	6	7	14	50	6
ESE702 080	8	9	18	60	8
ESE702 100	10	12	25	75	10
ESE702 120	12	15	30	75	12
ESE702 160	16	18	38	90	16
ESE702 200	20	24	45	100	20

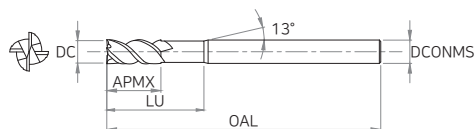
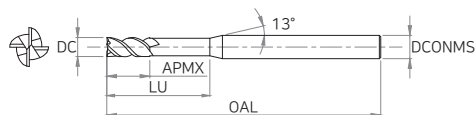
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	○		○	◎						

ESE704 4 Flutes Neck Square End Mill

Endmill



► Tolerance

DC		Shank Dia
~ Ø6	0 ~ -0.012	h5
Ø8 ~ Ø20	0 ~ -0.015	



EDP No	DC	APMX	LU	OAL	DCONMS
ESE704 010	1	1.5	-	40	6
ESE704 010S4	1	1.5	-	40	4
ESE704 015	1.5	2.2	-	40	6
ESE704 015S4	1.5	2.2	-	40	4
ESE704 020	2	3	6	40	6
ESE704 020S4	2	3	6	40	4
ESE704 025	2.5	4	6	40	6
ESE704 025S4	2.5	4	6	40	4
ESE704 030	3	4	7	45	6
ESE704 030S4	3	4	7	45	4
ESE704 035	3.5	5	9	45	6
ESE704 040	4	5	9	45	6
ESE704 040S4	4	5	9	45	4
ESE704 045	4.5	6	10	45	6
ESE704 050	5	6	11	50	6
ESE704 060	6	7	14	50	6
ESE704 080	8	9	18	60	8
ESE704 100	10	12	25	75	10
ESE704 120	12	15	30	75	12
ESE704 160	16	18	38	90	16
ESE704 200	20	24	45	100	20

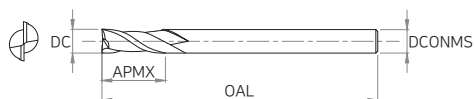
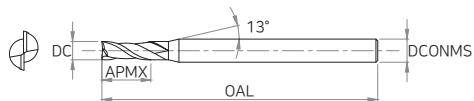
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
◎	○		○	◎						

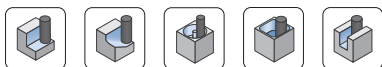
ESE712

2 Flutes Square End Mill



► Tolerance

DC		Shank Dia
~ Ø6	0 ~ -0.012	h5
Ø6.5 ~ Ø12	0 ~ -0.015	



EDP No	DC	APMX	OAL	DCON MS	EDP No	DC	APMX	OAL	DCON MS
ESE712 010	1	3	40	6	ESE712 030-12	3	12	50	6
ESE712 010-02	1	2	40	6	ESE712 035	3.5	10	45	6
ESE712 010-02S4	1	2	40	4	ESE712 040	4	10	45	6
ESE712 010-04	1	4	40	6	ESE712 040S4	4	10	45	4
ESE712 012	1.2	3	40	6	ESE712 040-12	4	12	50	6
ESE712 015	1.5	4	40	6	ESE712 040-16	4	16	60	6
ESE712 015S4	1.5	4	40	4	ESE712 045	4.5	11	45	6
ESE712 015-06	1.5	6	40	6	ESE712 050	5	13	50	6
ESE712 015-08	1.5	8	40	6	ESE712 055	5.5	13	50	6
ESE712 020	2	5	40	6	ESE712 060	6	13	50	6
ESE712 020S4	2	5	40	4	ESE712 060-15	6	15	60	6
ESE712 020-08	2	8	40	6	ESE712 065	6.5	16	60	8
ESE712 020-10	2	10	50	6	ESE712 070	7	18	60	8
ESE712 025	2.5	6	40	6	ESE712 080	8	19	60	8
ESE712 025S4	2.5	6	40	4	ESE712 100	10	22	70	10
ESE712 030	3	8	45	6	ESE712 100-25	10	25	70	10
ESE712 030S4	3	8	45	4	ESE712 120	12	26	75	12
ESE712 030-10	3	10	50	6	ESE712 120-30	12	30	75	12

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	○		○	◎						

Endmill

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

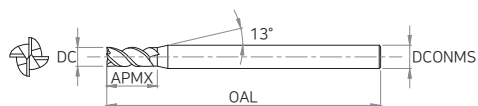
Standard

Copper
-Mate

Gra
-Mate

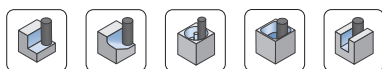
ESE714 4 Flutes High Helix Square End Mill

Endmill



► Tolerance

DC		Shank Dia
~ Ø6	0 ~ -0.012	h5
Ø8 ~ Ø12	0 ~ -0.015	



EDP No	DC	APMX	OAL	DCON MS	EDP No	DC	APMX	OAL	DCON MS
ESE714 010	1	2.5	40	6	ESE714 040S4	4	10	45	4
ESE714 010S4	1	2.5	40	4	ESE714 050	5	13	50	6
ESE714 012	1.2	3	40	6	ESE714 060	6	13	50	6
ESE714 015	1.5	4	40	6	ESE714 060-15	6	15	60	6
ESE714 015S4	1.5	4	40	4	ESE714 060-15L	6	15	90	6
ESE714 020	2	5	40	6	ESE714 080	8	19	60	8
ESE714 020S4	2	5	40	4	ESE714 080L	8	19	100	8
ESE714 025	2.5	6	40	6	ESE714 100	10	22	70	10
ESE714 025S4	2.5	6	40	4	ESE714 100-25	10	25	70	10
ESE714 030	3	8	45	6	ESE714 100-25L	10	25	100	10
ESE714 030S4	3	8	45	4	ESE714 120	12	26	75	12
ESE714 035	3.5	9	45	6	ESE714 120-30	12	30	80	12
ESE714 040	4	10	45	6	ESE714 120-30L	12	30	100	12

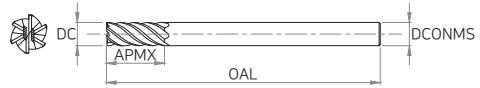
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	~325	HRC30~50	~FCD500					
◎	○		○	◎						

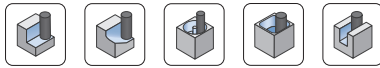
ESE716

6 Flutes High Helix Square End Mill



► Tolerance

DC		Shank Dia
~ Ø6	0 ~ -0.012	h5
Ø8 ~ Ø20	0 ~ -0.015	



EDP No	DC	APMX	OAL	DCONMS
ESE716 060	6	13	50	6
ESE716 080	8	18	60	8
ESE716 100	10	22	70	10
ESE716 120	12	26	75	12
ESE716 160	16	35	90	16
ESE716 200	20	44	100	20

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	○		○	◎						

Endmill

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

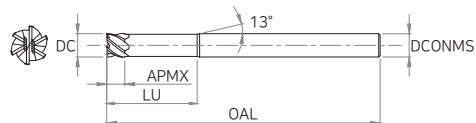
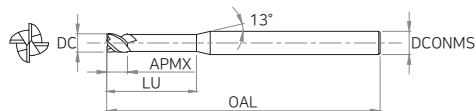
Standard

Copper
-Mate

Gra
-Mate

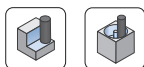
ESE724(6)

4&6 Flutes Neck Square End Mill



► Tolerance

DC		Shank Dia
~ Ø6	0 ~ -0.012	h5
Ø8 ~ Ø12	0 ~ -0.015	



CARBIDE

AITIN

4

6

45°
HELIX

60°
HELIX

DATA
P.624

EDP No	DC	APMX	LU	OAL	DCONMS	NOF
ESE724 010	1	1.5	5	45	6	4
ESE724 015	1.5	2.2	6	45	6	4
ESE724 020	2	3	8	45	6	4
ESE724 030	3	4	9	50	6	4
ESE724 040	4	5	12	50	6	4
ESE724 040S4L	4	5	12	75	4	4
ESE724 050	5	6	15	50	6	4
ESE726 060	6	7	20	60	6	6
ESE726 080	8	9	25	70	8	6
ESE726 100	10	12	32	75	10	6
ESE726 120	12	15	38	80	12	6

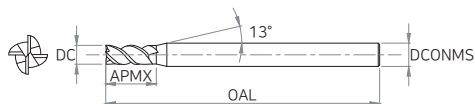
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	○		○	◎						

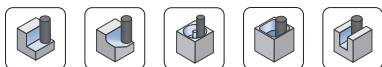
ESE744

4 Flutes High Helix Square End Mill



► Tolerance

DC		Shank Dia
~ Ø6	0 ~ -0.012	h5
Ø8 ~ Ø12	0 ~ -0.015	



EDP No	DC	APMX	OAL	DCON MS
ESE744 010S3	1	2.5	40	3
ESE744 010S4	1	2.5	40	4
ESE744 010	1	2.5	40	6
ESE744 012S3	1.2	3	40	3
ESE744 012S4	1.2	3	40	4
ESE744 015S3	1.5	4	40	3
ESE744 015S4	1.5	4	40	4
ESE744 015	1.5	4	40	6
ESE744 020S3	2	6	40	3
ESE744 020S4	2	6	40	4
ESE744 020	2	6	40	6
ESE744 025S3	2.5	8	45	3
ESE744 025S4	2.5	8	45	4
ESE744 025	2.5	8	45	6

EDP No	DC	APMX	OAL	DCON MS
ESE744 030S3	3	8	50	3
ESE744 030S4	3	8	45	4
ESE744 030	3	8	45	6
ESE744 035	3.5	10	45	6
ESE744 040S4	4	11	45	4
ESE744 040	4	11	45	6
ESE744 045	4.5	11	45	6
ESE744 050	5	13	50	6
ESE744 055	5.5	13	50	6
ESE744 060	6	13	50	6
ESE744 080	8	19	60	8
ESE744 100	10	22	70	10
ESE744 120	12	26	75	12

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	~325	HRc30~50	~FCD500					
◎	○		○	◎						

Endmill

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

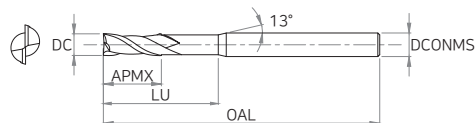
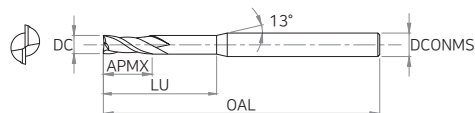
Standard

Copper
-Mate

Gra
-Mate

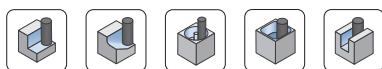
ESRE712 2 Flutes Rib Square End Mill

Endmill



► Tolerance

DC		Shank Dia
~ Ø6	0 ~ -0.012	h5
Ø8 ~ Ø12	0 ~ -0.015	



EDP No	DC	APMX	LU	OAL	DCON MS	EDP No	DC	APMX	LU	OAL	DCON MS
ESRE712 001003	0.1	0.15	0.3	40	4	ESRE712 00405	0.4	0.6	5	40	4
ESRE712 001005	0.1	0.15	0.5	40	4	ESRE712 00406	0.4	0.6	6	40	4
ESRE712 00101	0.1	0.15	1	40	4	ESRE712 00408	0.4	0.6	8	40	4
ESRE712 002005	0.2	0.3	0.5	40	4	ESRE712 00410	0.4	0.6	10	40	4
ESRE712 002015	0.2	0.3	1.5	40	4	ESRE712 005015	0.5	0.7	1.5	45	4
ESRE712 00201	0.2	0.3	1	40	4	ESRE712 00501	0.5	0.7	1	45	4
ESRE712 00202	0.2	0.3	2	40	4	ESRE712 005025	0.5	0.7	2.5	45	4
ESRE712 003015	0.3	0.5	1.5	40	4	ESRE712 00502	0.5	0.7	2	45	4
ESRE712 00301	0.3	0.5	1	40	4	ESRE712 00503	0.5	0.7	3	45	4
ESRE712 003025	0.3	0.5	2.5	40	4	ESRE712 00504	0.5	0.7	4	45	4
ESRE712 00302	0.3	0.5	2	40	4	ESRE712 00505	0.5	0.7	5	45	4
ESRE712 00303	0.3	0.5	3	40	4	ESRE712 00506	0.5	0.7	6	45	4
ESRE712 00304	0.3	0.5	4	40	4	ESRE712 00508	0.5	0.7	8	45	4
ESRE712 00305	0.3	0.5	5	40	4	ESRE712 00510	0.5	0.7	10	45	4
ESRE712 004015	0.4	0.6	1.5	40	4	ESRE712 00512	0.5	0.7	12	45	4
ESRE712 00401	0.4	0.6	1	40	4	ESRE712 00514	0.5	0.7	14	45	4
ESRE712 004025	0.4	0.6	2.5	40	4	ESRE712 00516	0.5	0.7	16	45	4
ESRE712 00402	0.4	0.6	2	40	4	ESRE712 00602	0.6	0.9	2	45	4
ESRE712 00403	0.4	0.6	3	40	4	ESRE712 00603	0.6	0.9	3	45	4
ESRE712 00404	0.4	0.6	4	40	4	ESRE712 00604	0.6	0.9	4	45	4

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	~325	HRC30~50	~FCD500					
◎	○		○	◎						

ESRE712 2 Flutes Rib Square End Mill

Endmill

EDP No	DC	APMX	LU	OAL	DCON MS	EDP No	DC	APMX	LU	OAL	DCON MS
ESRE712 00605	0.6	0.9	5	45	4	ESRE712 01010	1	1.5	10	50	4
ESRE712 00606	0.6	0.9	6	45	4	ESRE712 01012	1	1.5	12	50	4
ESRE712 00608	0.6	0.9	8	45	4	ESRE712 01014	1	1.5	14	50	4
ESRE712 00610	0.6	0.9	10	45	4	ESRE712 01016	1	1.5	16	50	4
ESRE712 00612	0.6	0.9	12	45	4	ESRE712 01018	1	1.5	18	50	4
ESRE712 00614	0.6	0.9	14	45	4	ESRE712 01020	1	1.5	20	50	4
ESRE712 00616	0.6	0.9	16	45	4	ESRE712 01022	1	1.5	22	60	4
ESRE712 00702	0.7	1.2	2	45	4	ESRE712 01026	1	1.5	26	60	4
ESRE712 00704	0.7	1.2	4	45	4	ESRE712 01030	1	1.5	30	70	4
ESRE712 00706	0.7	1.2	6	45	4	ESRE712 01040	1	1.5	40	80	4
ESRE712 00708	0.7	1.2	8	45	4	ESRE712 01050	1	1.5	50	100	4
ESRE712 00710	0.7	1.2	10	45	4	ESRE712 01204	1.2	1.8	4	50	4
ESRE712 00712	0.7	1.2	12	45	4	ESRE712 01206	1.2	1.8	6	50	4
ESRE712 00802	0.8	1.2	2	45	4	ESRE712 01208	1.2	1.8	8	50	4
ESRE712 00803	0.8	1.2	3	45	4	ESRE712 01210	1.2	1.8	10	50	4
ESRE712 00804	0.8	1.2	4	45	4	ESRE712 01212	1.2	1.8	12	50	4
ESRE712 00805	0.8	1.2	5	45	4	ESRE712 01214	1.2	1.8	14	50	4
ESRE712 00806	0.8	1.2	6	45	4	ESRE712 01216	1.2	1.8	16	50	4
ESRE712 00808	0.8	1.2	8	45	4	ESRE712 01220	1.2	1.8	20	50	4
ESRE712 00810	0.8	1.2	10	45	4	ESRE712 01226	1.2	1.8	26	60	4
ESRE712 00812	0.8	1.2	12	45	4	ESRE712 01230	1.2	1.8	30	70	4
ESRE712 00814	0.8	1.2	14	45	4	ESRE712 01406	1.4	2.1	6	50	4
ESRE712 00816	0.8	1.2	16	45	4	ESRE712 01408	1.4	2.1	8	50	4
ESRE712 00820	0.8	1.2	20	50	4	ESRE712 01410	1.4	2.1	10	50	4
ESRE712 00906	0.9	1.3	6	45	4	ESRE712 01414	1.4	2.1	14	50	4
ESRE712 00908	0.9	1.3	8	45	4	ESRE712 01416	1.4	2.1	16	50	4
ESRE712 00910	0.9	1.3	10	45	4	ESRE712 01420	1.4	2.1	20	50	4
ESRE712 01002	1	1.5	2	50	4	ESRE712 01504	1.5	2.3	4	50	4
ESRE712 01003	1	1.5	3	50	4	ESRE712 01505	1.5	2.3	5	50	4
ESRE712 01004	1	1.5	4	50	4	ESRE712 01506	1.5	2.3	6	50	4
ESRE712 01005	1	1.5	5	50	4	ESRE712 01507	1.5	2.3	7	50	4
ESRE712 01006	1	1.5	6	50	4	ESRE712 01508	1.5	2.3	8	50	4
ESRE712 01007	1	1.5	7	50	4	ESRE712 01510	1.5	2.3	10	50	4
ESRE712 01008	1	1.5	8	50	4	ESRE712 01512	1.5	2.3	12	50	4

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N				M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy	
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500						
◎	○		○	◎							

ESRE712

2 Flutes Rib Square End Mill

Endmill

	EDP No	DC	APMX	LU	OAL	DCON MS		EDP No	DC	APMX	LU	OAL	DCON MS
Zamus Star	ESRE712 01514	1.5	2.3	14	50	4		ESRE712 02510	2.5	4	10	50	4
	ESRE712 01516	1.5	2.3	16	50	4		ESRE712 02512	2.5	4	12	50	4
	ESRE712 01518	1.5	2.3	18	50	4		ESRE712 02514	2.5	4	14	50	4
	ESRE712 01520	1.5	2.3	20	50	4		ESRE712 02516	2.5	4	16	50	4
	ESRE712 01522	1.5	2.3	22	60	4		ESRE712 02518	2.5	4	18	50	4
E-Star	ESRE712 01526	1.5	2.3	26	60	4		ESRE712 02520	2.5	4	20	50	4
	ESRE712 01530	1.5	2.3	30	70	4		ESRE712 02522	2.5	4	22	60	4
	ESRE712 01608	1.6	2.3	8	50	4		ESRE712 02526	2.5	4	26	60	4
	ESRE712 01610	1.6	2.3	10	50	4		ESRE712 02530	2.5	4	30	70	4
	ESRE712 01612	1.6	2.3	12	50	4		ESRE712 02535	2.5	4	35	70	4
U-Wing	ESRE712 01616	1.6	2.3	16	50	4		ESRE712 02540	2.5	4	40	80	4
	ESRE712 01620	1.6	2.3	20	50	4		ESRE712 02545	2.5	4	45	90	4
	ESRE712 01808	1.8	2.7	8	50	4		ESRE712 02550	2.5	4	50	100	4
	ESRE712 01810	1.8	2.7	10	50	4		ESRE712 03006	3	4.5	6	50	6
	ESRE712 01812	1.8	2.7	12	50	4		ESRE712 03008	3	4.5	8	50	6
Zamus Thunder	ESRE712 01816	1.8	2.7	16	50	4		ESRE712 03010	3	4.5	10	50	6
	ESRE712 01820	1.8	2.7	20	50	4		ESRE712 03012	3	4.5	12	50	6
	ESRE712 02006	2	3	6	50	4		ESRE712 03014	3	4.5	14	60	6
	ESRE712 02008	2	3	8	50	4		ESRE712 03016	3	4.5	16	60	6
	ESRE712 02010	2	3	10	50	4		ESRE712 03018	3	4.5	18	60	6
S-Wing	ESRE712 02012	2	3	12	50	4		ESRE712 03020	3	4.5	20	60	6
	ESRE712 02014	2	3	14	50	4		ESRE712 03022	3	4.5	22	65	6
	ESRE712 02016	2	3	16	50	4		ESRE712 03026	3	4.5	26	65	6
	ESRE712 02018	2	3	18	50	4		ESRE712 03030	3	4.5	30	70	6
	ESRE712 02020	2	3	20	50	4		ESRE712 03035	3	4.5	35	70	6
A-Wing	ESRE712 02022	2	3	22	60	4		ESRE712 03040	3	4.5	40	80	6
	ESRE712 02026	2	3	26	60	4		ESRE712 03045	3	4.5	45	90	6
	ESRE712 02030	2	3	30	70	4		ESRE712 03050	3	4.5	50	100	6
	ESRE712 02035	2	3	35	70	4		ESRE712 03060	3	4.5	60	100	6
	ESRE712 02040	2	3	40	80	4		ESRE712 04008	4	6	8	50	6
Standard	ESRE712 02045	2	3	45	90	4		ESRE712 04010	4	6	10	50	6
	ESRE712 02050	2	3	50	100	4		ESRE712 04012	4	6	12	50	6
	ESRE712 02060	2	3	60	110	4		ESRE712 04014	4	6	14	60	6
	ESRE712 02508	2.5	4	8	50	4		ESRE712 04016	4	6	16	60	6

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	Steel ~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	○		○	◎						

ESRE712

2 Flutes Rib Square End Mill

Endmill

EDP No	DC	APMX	LU	OAL	DCON MS	EDP No	DC	APMX	LU	OAL	DCON MS
ESRE712 04018	4	6	18	60	6	ESRE712 05050	5	8	50	90	6
ESRE712 04020	4	6	20	60	6	ESRE712 05060	5	8	60	100	6
ESRE712 04022	4	6	22	65	6	ESRE712 06015	6	9	15	60	6
ESRE712 04026	4	6	26	65	6	ESRE712 06020	6	9	20	60	6
ESRE712 04030	4	6	30	70	6	ESRE712 06030	6	9	30	70	6
ESRE712 04035	4	6	35	70	6	ESRE712 06032	6	9	32	90	6
ESRE712 04040	4	6	40	80	6	ESRE712 08025	8	12	25	70	8
ESRE712 04045	4	6	45	90	6	ESRE712 08030	8	12	30	80	8
ESRE712 04050	4	6	50	100	6	ESRE712 08042	8	12	42	100	8
ESRE712 04060	4	6	60	100	6	ESRE712 10030	10	15	30	75	10
ESRE712 05016	5	8	16	60	6	ESRE712 10035	10	15	35	80	10
ESRE712 05020	5	8	20	60	6	ESRE712 10045	10	15	45	100	10
ESRE712 05026	5	8	26	65	6	ESRE712 12035	12	20	35	80	12
ESRE712 05030	5	8	30	70	6	ESRE712 12040	12	20	40	90	12
ESRE712 05035	5	8	35	75	6	ESRE712 12050	12	20	50	110	12
ESRE712 05040	5	8	40	80	6						

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

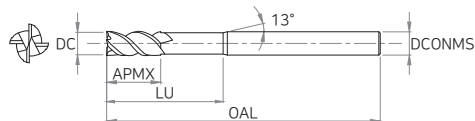
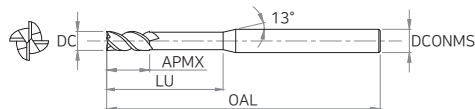
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	○		○	◎						

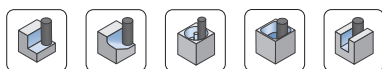
ESRE714 4 Flutes Rib Square End Mill

Endmill



► Tolerance

DC		Shank Dia
~ Ø6	0 ~ -0.012	h5
Ø8 ~ Ø12	0 ~ -0.015	



EDP No	DC	APMX	LU	OAL	DCON MS	EDP No	DC	APMX	LU	OAL	DCON MS
ESRE714 00501	0.5	0.5	1	40	4	ESRE714 00708	0.7	0.7	8	45	4
ESRE714 00502	0.5	0.5	2	40	4	ESRE714 00710	0.7	0.7	10	50	4
ESRE714 00503	0.5	0.5	3	45	4	ESRE714 00801	0.8	0.8	1	40	4
ESRE714 00504	0.5	0.5	4	45	4	ESRE714 00802	0.8	0.8	2	40	4
ESRE714 00505	0.5	0.5	5	45	4	ESRE714 00803	0.8	0.8	3	40	4
ESRE714 00506	0.5	0.5	6	45	4	ESRE714 00804	0.8	0.8	4	40	4
ESRE714 00508	0.5	0.5	8	45	4	ESRE714 00805	0.8	0.8	5	40	4
ESRE714 00510	0.5	0.5	10	50	4	ESRE714 00806	0.8	0.8	6	40	4
ESRE714 00601	0.6	0.6	1	45	4	ESRE714 00808	0.8	0.8	8	40	4
ESRE714 00602	0.6	0.6	2	45	4	ESRE714 00810	0.8	0.8	10	50	4
ESRE714 00603	0.6	0.6	3	45	4	ESRE714 00812	0.8	0.8	12	50	4
ESRE714 00604	0.6	0.6	4	45	4	ESRE714 00816	0.8	0.8	16	50	4
ESRE714 00605	0.6	0.6	5	45	4	ESRE714 01002	1	1	2	45	4
ESRE714 00606	0.6	0.6	6	45	4	ESRE714 01003	1	1	3	45	4
ESRE714 00608	0.6	0.6	8	45	4	ESRE714 01004	1	1	4	45	4
ESRE714 00610	0.6	0.6	10	50	4	ESRE714 01006	1	1	6	45	4
ESRE714 00612	0.6	0.6	12	50	4	ESRE714 01008	1	1	8	45	4
ESRE714 00702	0.7	0.7	2	45	4	ESRE714 01010	1	1	10	50	4
ESRE714 00704	0.7	0.7	4	45	4	ESRE714 01012	1	1	12	50	4
ESRE714 00706	0.7	0.7	6	45	4	ESRE714 01014	1	1	14	50	4

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
◎	○		○	◎						

ESRE714 4 Flutes Rib Square End Mill

Endmill

EDP No	DC	APMX	LU	OAL	DCON MS	EDP No	DC	APMX	LU	OAL	DCON MS
ESRE714 01016	1	1	16	50	4	ESRE714 01620	1.6	1.6	20	60	4
ESRE714 01018	1	1	18	60	4	ESRE714 01625	1.6	1.6	25	70	4
ESRE714 01020	1	1	20	60	4	ESRE714 01806	1.8	1.8	6	45	4
ESRE714 01204	1.2	1.2	4	45	4	ESRE714 01808	1.8	1.8	8	45	4
ESRE714 01206	1.2	1.2	6	45	4	ESRE714 01810	1.8	1.8	10	50	4
ESRE714 01208	1.2	1.2	8	45	4	ESRE714 01812	1.8	1.8	12	50	4
ESRE714 01210	1.2	1.2	10	50	4	ESRE714 01816	1.8	1.8	16	50	4
ESRE714 01212	1.2	1.2	12	50	4	ESRE714 01820	1.8	1.8	20	60	4
ESRE714 01216	1.2	1.2	16	50	4	ESRE714 01825	1.8	1.8	25	70	4
ESRE714 01218	1.2	1.2	18	60	4	ESRE714 02004	2	2	4	45	4
ESRE714 01220	1.2	1.2	20	60	4	ESRE714 02006	2	2	6	45	4
ESRE714 01406	1.4	1.4	6	45	4	ESRE714 02008	2	2	8	45	4
ESRE714 01408	1.4	1.4	8	45	4	ESRE714 02010	2	2	10	50	4
ESRE714 01410	1.4	1.4	10	50	4	ESRE714 02012	2	2	12	50	4
ESRE714 01412	1.4	1.4	12	50	4	ESRE714 02014	2	2	14	50	4
ESRE714 01414	1.4	1.4	14	50	4	ESRE714 02016	2	2	16	50	4
ESRE714 01416	1.4	1.4	16	50	4	ESRE714 02018	2	2	18	50	4
ESRE714 01504	1.5	1.5	4	45	4	ESRE714 02020	2	2	20	50	4
ESRE714 01506	1.5	1.5	6	45	4	ESRE714 02022	2	2	22	60	4
ESRE714 01508	1.5	1.5	8	45	4	ESRE714 02025	2	2	25	60	4
ESRE714 01510	1.5	1.5	10	50	4	ESRE714 02030	2	2	30	70	4
ESRE714 01512	1.5	1.5	12	50	4	ESRE714 02510	2.5	2.5	10	50	4
ESRE714 01516	1.5	1.5	16	50	4	ESRE714 02512	2.5	2.5	12	50	4
ESRE714 01518	1.5	1.5	18	60	4	ESRE714 02516	2.5	2.5	16	50	4
ESRE714 01520	1.5	1.5	20	60	4	ESRE714 02520	2.5	2.5	20	50	4
ESRE714 01525	1.5	1.5	25	60	4	ESRE714 02525	2.5	2.5	25	60	4
ESRE714 01530	1.5	1.5	30	70	4	ESRE714 02530	2.5	2.5	30	70	4
ESRE714 01606	1.6	1.6	6	45	4	ESRE714 03006	3	3	6	45	6
ESRE714 01608	1.6	1.6	8	45	4	ESRE714 03008	3	3	8	45	6
ESRE714 01610	1.6	1.6	10	50	4	ESRE714 03010	3	3	10	50	6
ESRE714 01612	1.6	1.6	12	50	4	ESRE714 03012	3	3	12	50	6
ESRE714 01614	1.6	1.6	14	50	4	ESRE714 03016	3	3	16	55	6
ESRE714 01616	1.6	1.6	16	50	4	ESRE714 03020	3	3	20	60	6
ESRE714 01618	1.6	1.6	18	60	4	ESRE714 03025	3	3	25	65	6

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	○		○	◎						

ESRE714 4 Flutes Rib Square End Mill

Endmill

EDP No	DC	APMX	LU	OAL	DCON MS	EDP No	DC	APMX	LU	OAL	DCON MS
ESRE714 03030	3	3	30	70	6	ESRE714 04516	4.5	4.5	16	55	6
ESRE714 03035	3	3	35	75	6	ESRE714 04520	4.5	4.5	20	60	6
ESRE714 03040	3	3	40	80	6	ESRE714 04525	4.5	4.5	25	65	6
ESRE714 03045	3	3	45	90	6	ESRE714 04530	4.5	4.5	30	70	6
ESRE714 03050	3	3	50	100	6	ESRE714 04540	4.5	4.5	40	80	6
ESRE714 03060	3	3	60	110	6	ESRE714 05016	5	5	16	60	6
ESRE714 03512	3.5	3.5	12	50	6	ESRE714 05020	5	5	20	60	6
ESRE714 03516	3.5	3.5	16	55	6	ESRE714 05025	5	5	25	65	6
ESRE714 03520	3.5	3.5	20	60	6	ESRE714 05030	5	5	30	70	6
ESRE714 03525	3.5	3.5	25	65	6	ESRE714 05040	5	5	40	80	6
ESRE714 03530	3.5	3.5	30	70	6	ESRE714 05050	5	5	50	100	6
ESRE714 03535	3.5	3.5	35	75	6	ESRE714 05060	5	5	60	110	6
ESRE714 03540	3.5	3.5	40	80	6	ESRE714 06020	6	6	20	60	6
ESRE714 04006	4	4	6	50	6	ESRE714 06030	6	6	30	75	6
ESRE714 04008	4	4	8	50	6	ESRE714 06040	6	6	40	80	6
ESRE714 04010	4	4	10	50	6	ESRE714 06050	6	6	50	90	6
ESRE714 04012	4	4	12	50	6	ESRE714 06060	6	6	60	100	6
ESRE714 04016	4	4	16	55	6	ESRE714 08025	8	12	25	65	8
ESRE714 04020	4	4	20	60	6	ESRE714 08040	8	12	40	100	8
ESRE714 04025	4	4	25	65	6	ESRE714 08050	8	12	50	110	8
ESRE714 04030	4	4	30	70	6	ESRE714 10030	10	15	30	70	10
ESRE714 04040	4	4	40	80	6	ESRE714 10050	10	15	50	100	10
ESRE714 04045	4	4	45	90	6	ESRE714 10060	10	15	60	120	10
ESRE714 04050	4	4	50	100	6	ESRE714 12040	12	18	40	80	12
ESRE714 04060	4	4	60	110	6	ESRE714 12060	12	18	60	110	12
ESRE714 04512	4.5	4.5	12	50	6	ESRE714 12070	12	18	70	130	12

Standard

Copper
-Mate

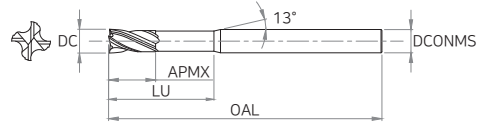
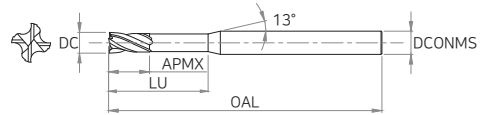
Gra
-Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

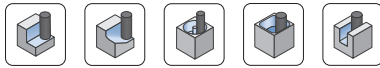
H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
◎	○		○	◎						

ESXE704 4 Flutes Neck Square End Mill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.02	h5



EDP No	DC	APMX	LU	OAL	DCONMS
ESXE704 010	1	1.5	4	45	4
ESXE704 020	2	3	6	45	4
ESXE704 030	3	4	7	45	6
ESXE704 040	4	5	9	45	6
ESXE704 060	6	7	14	50	6
ESXE704 080	8	9	18	60	8
ESXE704 100	10	12	25	75	10
ESXE704 120	12	15	30	75	12

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	~325	HRc30~50	~FCD500					
◎	○		○	◎						

Endmill

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

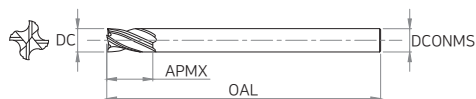
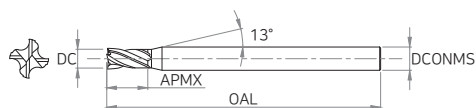
A-Wing

Standard

Copper
-Mate

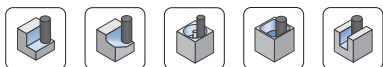
Gra
-Mate

ESXE714 4 Flutes Square End Mill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.02	h5



EDP No	DC	APMX	OAL	DCONMS
ESXE714 020	2	5	45	4
ESXE714 030	3	8	45	6
ESXE714 040	4	10	45	6
ESXE714 040S4	4	10	45	4
ESXE714 060	6	16	50	6
ESXE714 080	8	20	60	8
ESXE714 100	10	25	75	10
ESXE714 120	12	35	85	12

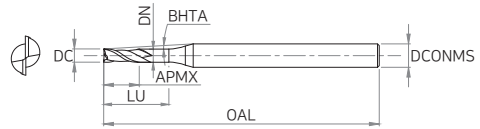
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	○		○	◎						

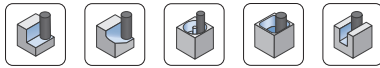
ESLNS20

2 Flutes Long Neck Square End Mill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.012	h5



EDP No	DC	APMX	LU	DN	OAL	DCONMS	BHTA	Effective length by inclination angle				
								0.5°	1°	1.5°	2°	3°
ESLNS20 01-0.3	0.1	0.15	0.3	0.08	45	4	11.6	0.4	0.4	0.5	0.5	0.5
ESLNS20 01-0.5	0.1	0.15	0.5	0.08	45	4	11.4	0.6	0.7	0.7	0.7	0.8
ESLNS20 01-1	0.1	0.15	1	0.08	45	4	10.9	1.2	1.2	1.2	1.3	1.4
ESLNS20 02-0.5	0.2	0.3	0.5	0.17	50	4	11.3	1.2	1.3	1.5	1.7	2
ESLNS20 02-1	0.2	0.3	1	0.17	50	4	10.8	1.7	1.9	2.2	2.4	2.7
ESLNS20 02-1.5	0.2	0.3	1.5	0.17	50	4	10.3	2.3	2.5	2.8	3	3.4
ESLNS20 03-1	0.3	0.45	1	0.27	50	4	10.8	1.7	1.9	2.2	2.4	2.7
ESLNS20 03-1.5	0.3	0.45	1.5	0.27	50	4	10.3	2.3	2.5	2.8	3	3.4
ESLNS20 03-2	0.3	0.45	2	0.27	50	4	9.8	2.8	3.1	3.4	3.6	4.1
ESLNS20 03-2.5	0.3	0.45	2.5	0.27	50	4	9.4	3.4	3.7	4	4.3	4.7
ESLNS20 03-3	0.3	0.45	3	0.27	50	4	9	3.9	4.3	4.6	4.9	5.4
ESLNS20 04-1	0.4	0.6	1	0.37	50	4	10.7	1.7	1.9	2.2	2.4	2.7
ESLNS20 04-1.5	0.4	0.6	1.5	0.37	50	4	10.2	2.3	2.5	2.8	3	3.4
ESLNS20 04-2	0.4	0.6	2	0.37	50	4	9.7	2.8	3.1	3.4	3.6	4.1
ESLNS20 04-2.5	0.4	0.6	2.5	0.37	50	4	9.3	3.4	3.7	4	4.3	4.7
ESLNS20 04-3	0.4	0.6	3	0.37	50	4	8.9	3.9	4.3	4.6	4.9	5.4
ESLNS20 04-3.5	0.4	0.6	3.5	0.37	50	4	8.6	4.5	4.9	5.2	5.5	6
ESLNS20 04-4	0.4	0.6	4	0.37	50	4	8.2	5	5.4	5.8	6.1	6.6
ESLNS20 04-5	0.4	0.6	5	0.37	50	4	7.6	6.1	6.6	6.9	7.3	7.8
ESLNS20 04-6	0.4	0.6	6	0.37	50	4	7.1	7.2	7.7	8.1	8.4	9

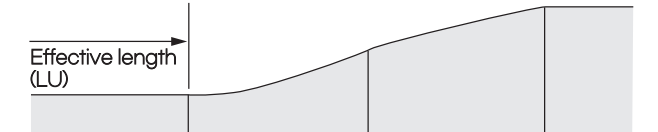
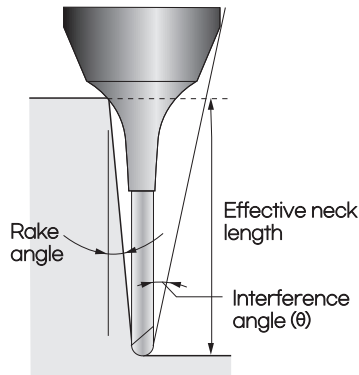
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	○		○	◎						

ESLNS20

2 Flutes Long Neck Square End Mill



※ The marked effective neck length is the default value to prevent interference with the workpiece.

EDP No	DC	APMX	LU	DN	OAL	DCON MS	BHTA	Effective length by inclination angle				
								0.5°	1°	1.5°	2°	3°
ESLNS20 05-1	0.5	0.75	1	0.47	50	4	10.7	1.7	1.9	2.2	2.4	2.7
ESLNS20 05-1.5	0.5	0.75	1.5	0.47	50	4	10.2	2.3	2.5	2.8	3	3.4
ESLNS20 05-2	0.5	0.75	2	0.47	50	4	9.7	2.8	3.1	3.4	3.6	4.1
ESLNS20 05-2.5	0.5	0.75	2.5	0.47	50	4	9.3	3.4	3.7	4	4.3	4.7
ESLNS20 05-3	0.5	0.75	3	0.47	50	4	8.9	3.9	4.3	4.6	4.9	5.4
ESLNS20 05-4	0.5	0.75	4	0.47	50	4	8.1	5	5.4	5.8	6.1	6.6
ESLNS20 05-5	0.5	0.75	5	0.47	50	4	7.5	6.1	6.6	6.9	7.3	7.8
ESLNS20 05-6	0.5	0.75	6	0.47	50	4	7	7.2	7.7	8.1	8.4	9
ESLNS20 05-8	0.5	0.75	8	0.47	50	4	6.2	9.3	9.9	10.3	10.7	11.4
ESLNS20 06-2	0.6	0.9	2	0.57	50	4	9.6	2.8	3.1	3.4	3.6	4.1
ESLNS20 06-4	0.6	0.9	4	0.57	50	4	8.1	5	5.4	5.8	6.1	6.6
ESLNS20 06-6	0.6	0.9	6	0.57	50	4	6.9	7.2	7.7	8.1	8.4	9
ESLNS20 06-8	0.6	0.9	8	0.57	50	4	6.1	9.3	9.9	10.3	10.7	11.4
ESLNS20 06-10	0.6	0.9	10	0.57	50	4	5.4	11.5	12.1	12.6	13	13.7
ESLNS20 07-2	0.7	1.05	2	0.67	50	4	9.6	2.8	3.1	3.4	3.6	4.1
ESLNS20 07-4	0.7	1.05	4	0.67	50	4	8	5	5.4	5.8	6.1	6.6
ESLNS20 07-6	0.7	1.05	6	0.67	50	4	6.9	7.2	7.7	8.1	8.4	9
ESLNS20 07-8	0.7	1.05	8	0.67	50	4	6	9.3	9.9	10.3	10.7	11.4
ESLNS20 07-10	0.7	1.2	10	0.77	50	4	5.3	11.5	12.1	12.6	13	13.7
ESLNS20 08-4	0.8	1.2	4	0.77	50	4	7.9	5	5.4	5.8	6.1	6.6

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	~325	HRC30~50	~FCD500					
◎	○		○	◎						

ESLNS20

2 Flutes Long Neck Square End Mill

Endmill

EDP No	DC	APMX	LU	DN	OAL	DCON MS	BHTA	Effective length by inclination angle				
								0.5°	1°	1.5°	2°	3°
ESLNS20 08-6	0.8	1.2	6	0.77	50	4	6.8	7.2	7.7	8.1	8.4	9
ESLNS20 08-8	0.8	1.2	8	0.77	50	4	5.9	9.3	9.9	10.3	10.7	11.4
ESLNS20 08-10	0.8	1.2	10	0.77	55	4	5.2	11.5	12.1	12.6	13	13.7
ESLNS20 08-12	0.8	1.2	12	0.77	55	4	4.7	13.6	14.2	14.8	15.2	16
ESLNS20 09-6	0.9	1.35	6	0.86	50	4	6.7	7.2	7.7	8.1	8.4	9.1
ESLNS20 09-8	0.9	1.35	8	0.86	50	4	5.8	9.4	9.9	10.4	10.7	11.4
ESLNS20 09-10	0.9	1.35	10	0.86	55	4	5.1	11.5	12.1	12.6	13	13.7
ESLNS20 09-12	0.9	1.35	12	0.86	55	4	4.6	13.6	14.3	14.8	15.2	16
ESLNS20 10-2	1	1.5	2	0.96	50	4	9.4	2.9	3.2	3.4	3.7	4.1
ESLNS20 10-4	1	1.5	4	0.96	50	4	7.7	5.1	5.5	5.8	6.1	6.6
ESLNS20 10-6	1	1.5	6	0.96	50	4	6.6	7.2	7.7	8.1	8.4	9.1
ESLNS20 10-8	1	1.5	8	0.96	50	4	5.7	9.4	9.9	10.4	10.7	11.4
ESLNS20 10-10	1	1.5	10	0.96	55	4	5	11.5	12.1	12.6	13	13.7
ESLNS20 10-12	1	1.5	12	0.96	55	4	4.5	13.6	14.3	14.8	15.2	16
ESLNS20 10-14	1	1.5	14	0.96	60	4	4.1	15.7	16.4	17	17.4	18.7
ESLNS20 10-16	1	1.5	16	0.96	60	4	3.8	17.8	18.6	19.1	19.6	21.3
ESLNS20 10-20	1	1.5	20	0.96	60	4	3.2	22	22.8	23.5	24	26.6
ESLNS20 12-6	1.2	1.8	6	1.15	50	4	6.3	7.3	7.7	8.1	8.5	9.1
ESLNS20 12-8	1.2	1.8	8	1.15	50	4	5.5	9.4	9.9	10.4	10.8	11.4
ESLNS20 12-10	1.2	1.8	10	1.15	50	4	4.8	11.5	12.1	12.6	13	13.7
ESLNS20 12-12	1.2	1.8	12	1.15	55	4	4.3	13.6	14.3	14.8	15.2	16
ESLNS20 12-16	1.2	1.8	16	1.15	55	4	3.6	17.8	18.6	19.2	19.7	21.3
ESLNS20 14-6	1.4	2.1	6	1.34	50	4	6.1	7.3	7.8	8.1	8.5	9.1
ESLNS20 14-8	1.4	2.1	8	1.34	50	4	5.3	9.4	10	10.4	10.8	11.5
ESLNS20 14-10	1.4	2.1	10	1.34	50	4	4.6	11.6	12.1	12.6	13	13.8
ESLNS20 14-12	1.4	2.1	12	1.34	55	4	4.1	13.7	14.3	14.8	15.3	16.1
ESLNS20 14-14	1.4	2.1	14	1.34	55	4	3.7	15.8	16.5	17	17.5	18.7
ESLNS20 14-16	1.4	2.1	16	1.34	55	4	3.4	17.9	18.6	19.2	19.7	21.4
ESLNS20 15-4	1.5	2.25	4	1.44	50	4	7.2	5.2	5.5	5.9	6.2	6.7
ESLNS20 15-6	1.5	2.25	6	1.44	50	4	6	7.3	7.8	8.1	8.5	9.1
ESLNS20 15-8	1.5	2.25	8	1.44	50	4	5.1	9.4	10	10.4	10.8	11.5
ESLNS20 15-10	1.5	2.25	10	1.44	50	4	4.5	11.6	12.1	12.6	13	13.8
ESLNS20 15-12	1.5	2.25	12	1.44	55	4	4	13.7	14.3	14.8	15.3	16.1
ESLNS20 15-14	1.5	2.25	14	1.44	55	4	3.6	15.8	16.5	17	17.5	18.7

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	○		○	◎						

ESLNS20

2 Flutes Long Neck Square End Mill

Endmill

EDP No	DC	APMX	LU	DN	OAL	DCON MS	BHTA	Effective length by inclination angle				
								0.5°	1°	1.5°	2°	3°
ESLNS20 15-16	1.5	2.25	16	1.44	55	4	3.3	17.9	18.6	19.2	19.7	-
ESLNS20 15-18	1.5	2.25	18	1.44	60	4	3	20	20.7	21.3	21.9	-
ESLNS20 15-20	1.5	2.25	20	1.44	60	4	2.8	22	22.9	23.5	24.1	-
ESLNS20 15-25	1.5	2.25	25	1.44	65	4	2.4	27.3	28.1	28.8	30	-
ESLNS20 16-6	1.6	2.4	6	1.54	50	4	5.9	7.3	7.8	8.1	8.5	9.1
ESLNS20 16-8	1.6	2.4	8	1.54	50	4	5	9.4	10	10.4	10.8	11.5
ESLNS20 16-10	1.6	2.4	10	1.54	50	4	4.4	11.6	12.1	12.6	13	13.8
ESLNS20 16-12	1.6	2.4	12	1.54	55	4	3.9	13.7	14.3	14.8	15.3	16.1
ESLNS20 16-14	1.6	2.4	14	1.54	55	4	3.5	15.8	16.5	17	17.5	18.7
ESLNS20 16-16	1.6	2.4	16	1.54	55	4	3.2	17.9	18.6	19.2	19.7	21.4
ESLNS20 16-18	1.6	2.4	18	1.54	60	4	2.9	20	20.7	21.3	21.9	-
ESLNS20 16-20	1.6	2.4	20	1.54	60	4	2.7	22	22.9	23.5	24.1	-
ESLNS20 18-6	1.8	2.7	6	1.73	50	4	5.6	7.4	7.8	8.2	8.5	9.1
ESLNS20 18-8	1.8	2.7	8	1.73	50	4	4.8	9.5	10	10.4	10.8	11.5
ESLNS20 18-10	1.8	2.7	10	1.73	50	4	4.2	11.6	12.2	12.6	13	13.8
ESLNS20 18-12	1.8	2.7	12	1.73	55	4	3.7	13.7	14.3	14.8	15.3	16.1
ESLNS20 18-14	1.8	2.7	14	1.73	55	4	3.3	15.8	16.5	17	17.5	18.8
ESLNS20 18-16	1.8	2.7	16	1.73	55	4	3	17.9	18.6	19.2	19.7	-
ESLNS20 18-18	1.8	2.7	18	1.73	60	4	2.7	20	20.7	21.3	21.9	-
ESLNS20 18-20	1.8	2.7	20	1.73	60	4	2.5	22.1	22.9	23.5	24.1	-
ESLNS20 20-4	2	3	4	1.92	50	4	6.5	5.3	5.6	5.9	6.2	6.7
ESLNS20 20-6	2	3	6	1.92	50	4	5.3	7.4	7.8	8.2	8.5	9.1
ESLNS20 20-8	2	3	8	1.92	50	4	4.5	9.5	10	10.4	10.8	11.5
ESLNS20 20-10	2	3	10	1.92	50	4	3.9	11.6	12.2	12.7	13.1	13.8
ESLNS20 20-12	2	3	12	1.92	55	4	3.4	13.7	14.3	14.9	15.3	16.1
ESLNS20 20-14	2	3	14	1.92	55	4	3.1	15.8	16.5	17	17.5	18.8
ESLNS20 20-16	2	3	16	1.92	55	4	2.8	17.9	18.6	19.2	19.7	-
ESLNS20 20-18	2	3	18	1.92	60	4	2.6	20	20.8	21.4	21.9	-
ESLNS20 20-20	2	3	20	1.92	60	4	2.4	22.1	22.9	23.5	24.1	-
ESLNS20 20-25	2	3	25	1.92	65	4	2	27.3	28.2	28.9	-	-
ESLNS20 20-30	2	3	30	1.92	70	4	1.7	32.5	33.4	34.4	-	-
ESLNS20 25-8	2.5	3.75	8	2.4	50	4	3.7	9.6	10.1	10.5	10.9	11.5
ESLNS20 25-10	2.5	3.75	10	2.4	50	4	3.1	11.7	12.2	12.7	13.1	13.8
ESLNS20 25-12	2.5	3.75	12	2.4	55	4	2.7	13.8	14.4	14.9	15.3	-

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	○		○	◎						

ESLNS20

2 Flutes Long Neck Square End Mill

Endmill

EDP No	DC	APMX	LU	DN	OAL	DCON MS	BHTA	Effective length by inclination angle				
								0.5°	1°	1.5°	2°	3°
ESLNS20 25-14	2.5	3.75	14	2.4	55	4	2.4	15.9	16.5	17.1	17.5	-
ESLNS20 25-16	2.5	3.75	16	2.4	55	4	2.2	18	18.7	19.2	19.7	-
ESLNS20 25-18	2.5	3.75	18	2.4	55	4	2	20.1	20.8	21.4	-	-
ESLNS20 25-20	2.5	3.75	20	2.4	60	4	1.8	22.1	22.9	23.5	-	-
ESLNS20 25-25	2.5	3.75	25	2.4	60	4	1.5	27.3	28.2	-	-	-
ESLNS20 25-30	2.5	3.75	30	2.4	70	4	1.3	32.6	33.5	-	-	-
ESLNS20 30-8	3	4.5	8	2.88	55	6	5.6	9.6	10.1	10.5	10.9	11.5
ESLNS20 30-10	3	4.5	10	2.88	55	6	5	11.7	12.3	12.7	13.1	13.8
ESLNS20 30-12	3	4.5	12	2.88	60	6	4.5	13.8	14.4	14.9	15.4	16.3
ESLNS20 30-14	3	4.5	14	2.88	60	6	4.1	15.9	16.6	17.1	17.6	18.9
ESLNS20 30-16	3	4.5	16	2.88	60	6	3.7	18	18.7	19.3	19.8	21.6
ESLNS20 30-18	3	4.5	18	2.88	60	6	3.4	20.1	20.8	21.4	21.9	24.2
ESLNS20 30-20	3	4.5	20	2.88	65	6	3.2	22.2	23	23.6	24.2	26.9
ESLNS20 30-25	3	4.5	25	2.88	70	6	2.7	27.4	28.2	28.9	30.2	-
ESLNS20 30-30	3	4.5	30	2.88	75	6	2.4	32.6	33.5	34.5	36.2	-
ESLNS20 30-35	3	4.5	35	2.88	80	6	2.1	37.7	38.7	40.2	42.2	-
ESLNS20 30-40	3	4.5	40	2.88	90	6	1.9	42.9	43.9	45.9	-	-
ESLNS20 40-12	4	6	12	3.85	60	6	3.4	13.9	14.5	15	15.4	16.3
ESLNS20 40-16	4	6	16	3.85	60	6	2.8	18.1	18.8	19.3	19.8	-
ESLNS20 40-20	4	6	20	3.85	70	6	2.3	22.3	23	23.6	24.3	-
ESLNS20 40-25	4	6	25	3.85	70	6	2	27.4	28.3	28.9	-	-
ESLNS20 40-30	4	6	30	3.85	80	6	1.7	32.6	33.5	34.6	-	-
ESLNS20 40-35	4	6	35	3.85	80	6	1.5	37.8	38.8	-	-	-
ESLNS20 40-40	4	6	40	3.85	90	6	1.3	42.9	44	-	-	-
ESLNS20 40-45	4	6	45	3.85	90	6	1.2	48.1	49.4	-	-	-
ESLNS20 40-50	4	6	50	3.85	100	6	1.1	53.2	54.8	-	-	-
ESLNS20 50-16	5	7.5	16	4.85	60	6	1.5	18.1	18.8	-	-	-
ESLNS20 50-20	5	7.5	20	4.85	60	6	1.3	22.3	23	-	-	-
ESLNS20 50-25	5	7.5	25	4.85	70	6	1.1	27.4	28.3	-	-	-
ESLNS20 50-30	5	7.5	30	4.85	70	6	0.9	32.6	-	-	-	-
ESLNS20 50-35	5	7.5	35	4.85	80	6	0.8	37.8	-	-	-	-
ESLNS20 50-40	5	7.5	40	4.85	90	6	0.7	42.9	-	-	-	-
ESLNS20 50-50	5	7.5	50	4.85	100	6	0.6	53.2	-	-	-	-

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

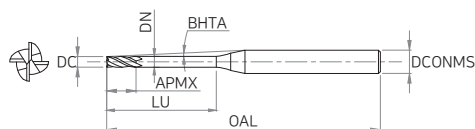
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	Steel HRc30~50	~FCD500					
◎	○		○	◎						

ESLNS40

4 Flutes Long Neck Square End Mill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.012	h5



EDP No	DC	APMX	LU	DN	OAL	DCONMS	BHTA	Effective length by inclination angle				
								0.5°	1°	1.5°	2°	3°
ESLNS40 10-4	1	1.5	4	0.96	50	4	7.7	5.1	5.5	5.8	6.1	6.6
ESLNS40 10-6	1	1.5	6	0.96	50	4	6.6	7.2	7.7	8.1	8.4	9.1
ESLNS40 10-8	1	1.5	8	0.96	50	4	5.7	9.4	9.9	10.4	10.7	11.4
ESLNS40 10-10	1	1.5	10	0.96	50	4	5	11.5	12.1	12.6	13	13.7
ESLNS40 15-4	1.5	2.25	4	1.44	50	4	7.2	5.2	5.5	5.9	6.2	6.7
ESLNS40 15-6	1.5	2.25	6	1.44	50	4	6	7.3	7.8	8.1	8.5	9.1
ESLNS40 15-8	1.5	2.25	8	1.44	50	4	5.1	9.4	10	10.4	10.8	11.5
ESLNS40 15-10	1.5	2.25	10	1.44	50	4	4.5	11.6	12.1	12.6	13	13.8
ESLNS40 15-12	1.5	2.25	12	1.44	55	4	4	13.7	14.3	14.8	15.3	16.1
ESLNS40 15-14	1.5	2.25	14	1.44	55	4	3.6	15.8	16.5	17	17.5	18.7
ESLNS40 15-16	1.5	2.25	16	1.44	55	4	3.3	17.9	18.6	19.2	19.7	-
ESLNS40 15-18	1.5	2.25	18	1.44	60	4	3	20	20.7	21.3	21.9	-
ESLNS40 15-20	1.5	2.25	20	1.44	60	4	2.8	22	22.9	23.5	24.1	-
ESLNS40 15-25	1.5	2.25	25	1.44	65	4	2.4	27.3	28.1	28.8	30	-
ESLNS40 20-4	2	3	4	1.92	50	4	6.5	5.3	5.6	5.9	6.2	6.7
ESLNS40 20-6	2	3	6	1.92	50	4	5.3	7.4	7.8	8.2	8.5	9.1
ESLNS40 20-8	2	3	8	1.92	50	4	4.5	9.5	10	10.4	10.8	11.5
ESLNS40 20-10	2	3	10	1.92	50	4	3.9	11.6	12.2	12.7	13.1	13.8
ESLNS40 20-12	2	3	12	1.92	55	4	3.4	13.7	14.3	14.9	15.3	16.1
ESLNS40 20-14	2	3	14	1.92	55	4	3.1	15.8	16.5	17	17.5	18.8

► Applicable Working Material

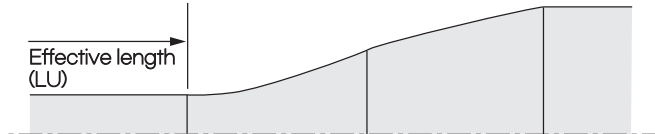
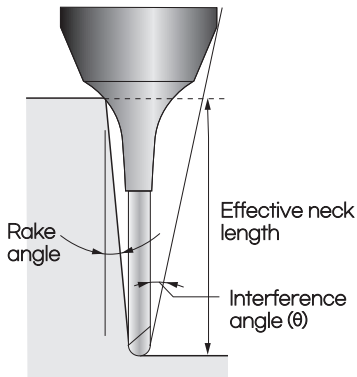
○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	~325	HRC30~50	~FCD500					
◎	○		○	◎						

ESLNS40

4 Flutes Long Neck Square End Mill

Endmill



※ The marked effective neck length is the default value to prevent interference with the workpiece.

EDP No	DC	APMX	LU	DN	OAL	DCON MS	BHTA	Effective length by inclination angle				
								0.5°	1°	1.5°	2°	3°
ESLNS40 20-16	2	3	16	1.92	55	4	2.8	17.9	18.6	19.2	19.7	-
ESLNS40 20-18	2	3	18	1.92	60	4	2.6	20	20.8	21.4	21.9	-
ESLNS40 20-20	2	3	20	1.92	60	4	2.4	22.1	22.9	23.5	24.1	-
ESLNS40 20-25	2	3	25	1.92	65	4	2	27.3	28.2	28.9	-	-
ESLNS40 20-30	2	3	30	1.92	70	4	1.7	32.5	33.4	34.4	-	-
ESLNS40 25-8	2.5	3.75	8	2.4	50	4	3.7	9.6	10.1	10.5	10.9	11.5
ESLNS40 25-10	2.5	3.75	10	2.4	50	4	3.1	11.7	12.2	12.7	13.1	13.8
ESLNS40 25-12	2.5	3.75	12	2.4	55	4	2.7	13.8	14.4	14.9	15.3	-
ESLNS40 25-14	2.5	3.75	14	2.4	55	4	2.4	15.9	16.5	17.1	17.5	-
ESLNS40 25-16	2.5	3.75	16	2.4	55	4	2.2	18	18.7	19.2	19.7	-
ESLNS40 25-18	2.5	3.75	18	2.4	60	4	2	20.1	20.8	21.4	-	-
ESLNS40 25-20	2.5	3.75	20	2.4	60	4	1.8	22.1	22.9	23.5	-	-
ESLNS40 25-25	2.5	3.75	25	2.4	65	4	1.5	27.3	28.2	-	-	-
ESLNS40 25-30	2.5	3.75	30	2.4	70	4	1.3	32.6	33.5	-	-	-
ESLNS40 30-8	3	4.5	8	2.88	55	6	5.6	9.6	10.1	10.5	10.9	11.5
ESLNS40 30-10	3	4.5	10	2.88	55	6	5	11.7	12.3	12.7	13.1	13.8
ESLNS40 30-12	3	4.5	12	2.88	60	6	4.5	13.8	14.4	14.9	15.4	16.3
ESLNS40 30-14	3	4.5	14	2.88	60	6	4.1	15.9	16.6	17.1	17.6	18.9
ESLNS40 30-16	3	4.5	16	2.88	60	6	3.7	18	18.7	19.3	19.8	21.6
ESLNS40 30-18	3	4.5	18	2.88	60	6	3.4	20.1	20.8	21.4	21.9	24.2

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	~325	HRc30~50	~FCD500					
◎	○		○	◎						

ESLNS40

4 Flutes Long Neck Square End Mill

Endmill

EDP No	DC	APMX	LU	DN	OAL	DCON MS	BHTA	Effective length by inclination angle				
								0.5°	1°	1.5°	2°	3°
ESLNS40 30-20	3	4.5	20	2.88	65	6	3.2	22.2	23	23.6	24.2	26.9
ESLNS40 30-25	3	4.5	25	2.88	70	6	2.7	27.4	28.2	28.9	30.2	-
ESLNS40 30-30	3	4.5	30	2.88	75	6	2.4	32.6	33.5	34.5	36.2	-
ESLNS40 30-35	3	4.5	35	2.88	80	6	2.1	37.7	38.7	40.2	42.2	-
ESLNS40 30-40	3	4.5	40	2.88	90	6	1.9	42.9	43.9	45.9	-	-
ESLNS40 40-12	4	6	12	3.85	60	6	3.4	13.9	14.5	15	15.4	16.3
ESLNS40 40-16	4	6	16	3.85	60	6	2.8	18.1	18.8	19.3	19.8	-
ESLNS40 40-20	4	6	20	3.85	70	6	2.3	22.3	23	23.6	24.3	-
ESLNS40 40-25	4	6	25	3.85	70	6	2	27.4	28.3	28.9	-	-
ESLNS40 40-30	4	6	30	3.85	80	6	1.7	32.6	33.5	34.6	-	-
ESLNS40 40-35	4	6	35	3.85	80	6	1.5	37.8	38.8	-	-	-
ESLNS40 40-40	4	6	40	3.85	90	6	1.3	42.9	44	-	-	-
ESLNS40 40-45	4	6	45	3.85	90	6	1.2	48.1	49.4	-	-	-
ESLNS40 40-50	4	6	50	3.85	100	6	1.1	53.2	54.8	-	-	-
ESLNS40 50-16	5	7.5	16	4.85	60	6	1.5	18.1	18.8	-	-	-
ESLNS40 50-20	5	7.5	20	4.85	60	6	1.3	22.3	23	-	-	-
ESLNS40 50-25	5	7.5	25	4.85	70	6	1.1	27.4	28.3	-	-	-
ESLNS40 50-30	5	7.5	30	4.85	70	6	0.9	32.6	-	-	-	-
ESLNS40 50-35	5	7.5	35	4.85	80	6	0.8	37.8	-	-	-	-
ESLNS40 50-40	5	7.5	40	4.85	90	6	0.7	42.9	-	-	-	-
ESLNS40 50-50	5	7.5	50	4.85	100	6	0.6	53.2	-	-	-	-

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

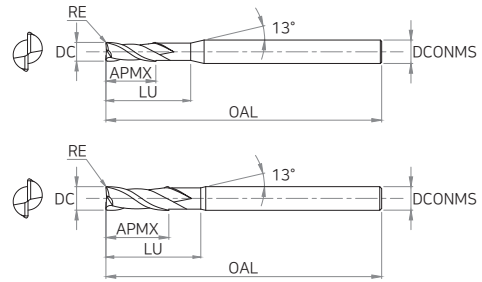
Gra
-Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

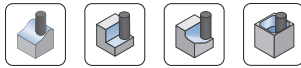
H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
◎	○		○	◎						

ESR702 2 Flutes Neck Radius End Mill



► Tolerance

DC		Shank Dia
~ Ø6	0 ~ -0.012	h5
Ø8 ~ Ø12	0 ~ -0.015	



EDP No	DC	RE	APMX	LU	OAL	DCONMS	EDP No	DC	RE	APMX	LU	OAL	DCONMS
ESR702 01000503S4	1	0.05	1.5	3	50	4	ESR702 0100212	1	0.2	1.5	12	50	6
ESR702 01000504S4	1	0.05	1.5	4	50	4	ESR702 0100303S4	1	0.3	1.5	3	50	4
ESR702 01000506S4	1	0.05	1.5	6	50	4	ESR702 0100304S4	1	0.3	1.5	4	50	4
ESR702 01000508S4	1	0.05	1.5	8	50	4	ESR702 0100306S4	1	0.3	1.5	6	50	4
ESR702 01000510S4	1	0.05	1.5	10	50	4	ESR702 0100308S4	1	0.3	1.5	8	50	4
ESR702 0100103S4	1	0.1	1.5	3	50	4	ESR702 0100310S4	1	0.3	1.5	10	50	4
ESR702 0100104	1	0.1	1.5	4	50	6	ESR702 0120208	1.2	0.2	2	8	50	6
ESR702 0100104S4	1	0.1	1.5	4	50	4	ESR702 0120212	1.2	0.2	2	12	50	6
ESR702 0100106	1	0.1	1.5	6	50	6	ESR702 01500504S4	1.5	0.05	2.5	4	50	4
ESR702 0100106S4	1	0.1	1.5	6	50	4	ESR702 01500506S4	1.5	0.05	2.5	6	50	4
ESR702 0100108S4	1	0.1	1.5	8	50	4	ESR702 01500508S4	1.5	0.05	2.5	8	50	4
ESR702 0100110S4	1	0.1	1.5	10	50	4	ESR702 01500510S4	1.5	0.05	2.5	10	50	4
ESR702 0100203S4	1	0.2	1.5	3	50	4	ESR702 01500512S4	1.5	0.05	2.5	12	50	4
ESR702 0100204	1	0.2	1.5	4	50	6	ESR702 0150104S4	1.5	0.1	2.5	4	50	4
ESR702 0100204S4	1	0.2	1.5	4	50	4	ESR702 0150106S4	1.5	0.1	2.5	6	50	4
ESR702 0100206	1	0.2	1.5	6	50	6	ESR702 0150108S4	1.5	0.1	2.5	8	50	4
ESR702 0100206S4	1	0.2	1.5	6	50	4	ESR702 0150110S4	1.5	0.1	2.5	10	50	4
ESR702 0100208S4	1	0.2	1.5	8	50	4	ESR702 0150112S4	1.5	0.1	2.5	12	50	4
ESR702 0100210	1	0.2	1.5	10	50	6	ESR702 0150204	1.5	0.2	2.5	4	50	6
ESR702 0100210S4	1	0.2	1.5	10	50	4	ESR702 0150204S4	1.5	0.2	2.5	4	50	4

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	○		○	◎						

Endmill

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

ESR702 2 Flutes Neck Radius End Mill

Endmill

	EDP No	DC	RE	APMX	LU	OAL	DCON MS		EDP No	DC	RE	APMX	LU	OAL	DCON MS
	ESR702 0150206	1.5	0.2	2.5	6	50	6		ESR702 0200306S4	2	0.3	3	6	50	4
	ESR702 0150206S4	1.5	0.2	2.5	6	50	4		ESR702 0200308S4	2	0.3	3	8	50	4
	ESR702 0150208	1.5	0.2	2.5	8	50	6		ESR702 0200310S4	2	0.3	3	10	50	4
Zamus Star	ESR702 0150208S4	1.5	0.2	2.5	8	50	4		ESR702 0200312S4	2	0.3	3	12	50	4
	ESR702 0150210	1.5	0.2	2.5	10	50	6		ESR702 0200316S4	2	0.3	3	16	50	4
	ESR702 0150210S4	1.5	0.2	2.5	10	50	4		ESR702 0200320S4	2	0.3	3	20	50	4
E-Star	ESR702 0150212S4	1.5	0.2	2.5	12	50	4		ESR702 0200506	2	0.5	3	6	50	6
	ESR702 0150215	1.5	0.2	2.5	15	50	6		ESR702 0200506S4	2	0.5	3	6	50	4
	ESR702 0150304S4	1.5	0.3	2.5	4	50	4		ESR702 0200508S4	2	0.5	3	8	50	4
	ESR702 0150306S4	1.5	0.3	2.5	6	50	4		ESR702 0200509	2	0.5	3	9	50	6
U-Wing	ESR702 0150308S4	1.5	0.3	2.5	8	50	4		ESR702 0200510S4	2	0.5	3	10	50	4
	ESR702 0150310S4	1.5	0.3	2.5	10	50	4		ESR702 0200512	2	0.5	3	12	50	6
	ESR702 0150312S4	1.5	0.3	2.5	12	50	4		ESR702 0200512S4	2	0.5	3	12	50	4
Zamus Thunder	ESR702 0150504S4	1.5	0.5	2.5	4	50	4		ESR702 0200516	2	0.5	3	16	50	6
	ESR702 0150506S4	1.5	0.5	2.5	6	50	4		ESR702 0200516S4	2	0.5	3	16	50	4
	ESR702 0150508S4	1.5	0.5	2.5	8	50	4		ESR702 0200520S4	2	0.5	3	20	50	4
	ESR702 0150510S4	1.5	0.5	2.5	10	50	4		ESR702 0250208S4	2.5	0.2	3.5	8	50	4
X-Star	ESR702 0150512S4	1.5	0.5	2.5	12	50	4		ESR702 0250210S4	2.5	0.2	3.5	10	50	4
	ESR702 0200106S4	2	0.1	3	6	50	4		ESR702 0250212S4	2.5	0.2	3.5	12	50	4
	ESR702 0200108	2	0.1	3	8	50	6		ESR702 0250216S4	2.5	0.2	3.5	16	50	4
	ESR702 0200108S4	2	0.1	3	8	50	4		ESR702 0250308S4	2.5	0.3	3.5	8	50	4
S-Wing	ESR702 0200110S4	2	0.1	3	10	50	4		ESR702 0250310S4	2.5	0.3	3.5	10	50	4
	ESR702 0200112	2	0.1	3	12	50	6		ESR702 0250312S4	2.5	0.3	3.5	12	50	4
	ESR702 0200112S4	2	0.1	3	12	50	4		ESR702 0250316S4	2.5	0.3	3.5	16	50	4
A-Wing	ESR702 0200116S4	2	0.1	3	16	50	4		ESR702 0250508S4	2.5	0.5	3.5	8	50	4
	ESR702 0200120S4	2	0.1	3	20	50	4		ESR702 0250510S4	2.5	0.5	3.5	10	50	4
	ESR702 0200206	2	0.2	3	6	50	6		ESR702 0250512S4	2.5	0.5	3.5	12	50	4
	ESR702 0200206S4	2	0.2	3	6	50	4		ESR702 0250516S4	2.5	0.5	3.5	16	50	4
Standard	ESR702 0200208S4	2	0.2	3	8	50	4		ESR702 0300108	3	0.1	4.5	8	55	6
	ESR702 0200209	2	0.2	3	9	50	6		ESR702 0300110	3	0.1	4.5	10	55	6
	ESR702 0200210S4	2	0.2	3	10	50	4		ESR702 0300112	3	0.1	4.5	12	55	6
Copper -Mate	ESR702 0200212S4	2	0.2	3	12	50	4		ESR702 0300116	3	0.1	4.5	16	55	6
	ESR702 0200216	2	0.2	3	16	50	6		ESR702 0300120	3	0.1	4.5	20	60	6
	ESR702 0200216S4	2	0.2	3	16	50	4		ESR702 0300208	3	0.2	4.5	8	55	6
	ESR702 0200220S4	2	0.2	3	20	50	4		ESR702 0300209	3	0.2	4.5	9	55	6
Gra -Mate	ESR702 0200306	2	0.3	3	6	50	6		ESR702 0300210	3	0.2	4.5	10	55	6

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
◎	○		○	◎						

ESR702

2 Flutes Neck Radius End Mill

Endmill

EDP No	DC	RE	APMX	LU	OAL	DCON MS	EDP No	DC	RE	APMX	LU	OAL	DCON MS
ESR702 0300212	3	0.2	4.5	12	55	6	ESR702 0400325	4	0.3	6	25	60	6
ESR702 0300216	3	0.2	4.5	16	55	6	ESR702 0400510	4	0.5	6	10	55	6
ESR702 0300220	3	0.2	4.5	20	60	6	ESR702 0400512	4	0.5	6	12	55	6
ESR702 0300308	3	0.3	4.5	8	55	6	ESR702 0400516	4	0.5	6	16	55	6
ESR702 0300309	3	0.3	4.5	9	55	6	ESR702 0400520	4	0.5	6	20	60	6
ESR702 0300310	3	0.3	4.5	10	55	6	ESR702 0400525	4	0.5	6	25	60	6
ESR702 0300312	3	0.3	4.5	12	55	6	ESR702 0400530	4	0.5	6	30	70	6
ESR702 0300314	3	0.3	4.5	14	55	6	ESR702 0401010	4	1	6	10	55	6
ESR702 0300316	3	0.3	4.5	16	55	6	ESR702 0401012	4	1	6	12	55	6
ESR702 0300320	3	0.3	4.5	20	60	6	ESR702 0401016	4	1	6	16	55	6
ESR702 0300508	3	0.5	4.5	8	55	6	ESR702 0401020	4	1	6	20	60	6
ESR702 0300509	3	0.5	4.5	9	55	6	ESR702 0401025	4	1	6	25	60	6
ESR702 0300510	3	0.5	4.5	10	55	6	ESR702 0401030	4	1	6	30	70	6
ESR702 0300512	3	0.5	4.5	12	55	6	ESR702 0500318	5	0.3	8	18	60	6
ESR702 0300516	3	0.5	4.5	16	55	6	ESR702 0600220	6	0.2	9	20	60	6
ESR702 0300520	3	0.5	4.5	20	60	6	ESR702 0600320	6	0.3	9	20	60	6
ESR702 0301008	3	1	4.5	8	55	6	ESR702 0600520	6	0.5	9	20	60	6
ESR702 0301010	3	1	4.5	10	55	6	ESR702 0601020	6	1	9	20	60	6
ESR702 0301012	3	1	4.5	12	55	6	ESR702 0601520	6	1.5	9	20	60	6
ESR702 0301016	3	1	4.5	16	55	6	ESR702 0602020	6	2	9	20	60	6
ESR702 0301020	3	1	4.5	20	60	6	ESR702 0800225	8	0.2	12	25	60	8
ESR702 0301025	3	1	4.5	25	60	6	ESR702 0800325	8	0.3	12	25	60	8
ESR702 0400110	4	0.1	6	10	55	6	ESR702 0800525	8	0.5	12	25	60	8
ESR702 0400112	4	0.1	6	12	55	6	ESR702 0801025	8	1	12	25	60	8
ESR702 0400116	4	0.1	6	16	55	6	ESR702 0801525	8	1.5	12	25	60	8
ESR702 0400120	4	0.1	6	20	60	6	ESR702 1000232	10	0.2	15	32	70	10
ESR702 0400125	4	0.1	6	25	60	6	ESR702 1000332	10	0.3	15	32	70	10
ESR702 0400210	4	0.2	6	10	55	6	ESR702 1000532	10	0.5	15	32	70	10
ESR702 0400212	4	0.2	6	12	55	6	ESR702 1001032	10	1	15	32	70	10
ESR702 0400216	4	0.2	6	16	55	6	ESR702 1001532	10	1.5	15	32	70	10
ESR702 0400220	4	0.2	6	20	60	6	ESR702 1002032	10	2	15	32	70	10
ESR702 0400225	4	0.2	6	25	60	6	ESR702 1200338	12	0.3	18	38	80	12
ESR702 0400310	4	0.3	6	10	55	6	ESR702 1200538	12	0.5	18	38	80	12
ESR702 0400312	4	0.3	6	12	55	6	ESR702 1201038	12	1	18	38	80	12
ESR702 0400316	4	0.3	6	16	55	6	ESR702 1201538	12	1.5	18	38	80	12
ESR702 0400320	4	0.3	6	20	60	6	ESR702 1202038	12	2	18	38	80	12

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

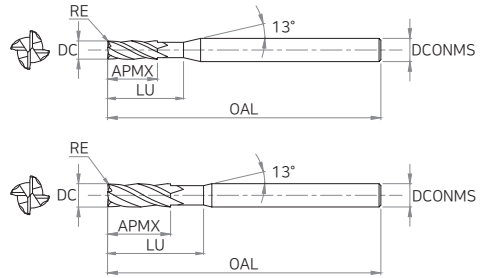
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	○		○	◎						

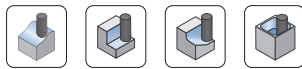
ESR704 4 Flutes Neck Radius End Mill

Endmill



► Tolerance

DC		Shank Dia
~ Ø6	0 ~ -0.012	h5
Ø8 ~ Ø12	0 ~ -0.015	



Ø6 OR UNDER ABOVE Ø6

EDP No	DC	RE	APMX	LU	OAL	DCONMS	EDP No	DC	RE	APMX	LU	OAL	DCONMS
ESR704 0100103S4	1	0.1	2	3	50	4	ESR704 0200210	2	0.2	3	10	50	6
ESR704 0100104S4	1	0.1	2	4	50	4	ESR704 0200212	2	0.2	3	12	50	6
ESR704 0100106S4	1	0.1	2	6	50	4	ESR704 0200306S4	2	0.3	3	6	50	4
ESR704 0100203S4	1	0.2	2	3	50	4	ESR704 0200308S4	2	0.3	3	8	50	4
ESR704 0100204S4	1	0.2	2	4	50	4	ESR704 0200506S4	2	0.5	3	6	50	4
ESR704 0100206S4	1	0.2	2	6	50	4	ESR704 0200508S4	2	0.5	3	8	50	4
ESR704 0100303S4	1	0.3	2	3	50	4	ESR704 0250106S4	2.5	0.1	3.5	6	50	4
ESR704 0100304S4	1	0.3	2	4	50	4	ESR704 0300108	3	0.1	4	8	55	6
ESR704 0100306S4	1	0.3	2	6	50	4	ESR704 0300110	3	0.1	4	10	55	6
ESR704 0150104S4	1.5	0.1	2.5	4	50	4	ESR704 0300112	3	0.1	4	12	55	6
ESR704 0150106S4	1.5	0.1	2.5	6	50	4	ESR704 0300116	3	0.1	4	16	55	6
ESR704 0150204S4	1.5	0.2	2.5	4	50	4	ESR704 0300120	3	0.1	4	20	60	6
ESR704 0150206S4	1.5	0.2	2.5	6	50	4	ESR704 0300208	3	0.2	4	8	55	6
ESR704 0150304S4	1.5	0.3	2.5	4	50	4	ESR704 0300210	3	0.2	4	10	55	6
ESR704 0150306S4	1.5	0.3	2.5	6	50	4	ESR704 0300212	3	0.2	4	12	55	6
ESR704 0200106S4	2	0.1	3	6	50	4	ESR704 0300216	3	0.2	4	16	55	6
ESR704 0200108S4	2	0.1	3	8	50	4	ESR704 0300220	3	0.2	4	20	60	6
ESR704 0200206S4	2	0.2	3	6	50	4	ESR704 0300308	3	0.3	4	8	55	6
ESR704 0200208	2	0.2	3	8	50	6	ESR704 0300309	3	0.3	4	9	55	6
ESR704 0200208S4	2	0.2	3	8	50	4	ESR704 0300310	3	0.3	4	10	55	6

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
◎	○		○	◎						

ESR704 4 Flutes Neck Radius End Mill

Endmill

EDP No	DC	RE	APMX	LU	OAL	DCON MS	EDP No	DC	RE	APMX	LU	OAL	DCON MS
ESR704 0300312	3	0.3	4	12	55	6	ESR704 0400516	4	0.5	6	16	55	6
ESR704 0300316	3	0.3	4	16	55	6	ESR704 0400520	4	0.5	6	20	60	6
ESR704 0300320	3	0.3	4	20	60	6	ESR704 0400525	4	0.5	6	25	60	6
ESR704 0300508	3	0.5	4	8	55	6	ESR704 0401010	4	1	6	10	55	6
ESR704 0300509	3	0.5	4	9	55	6	ESR704 0401012	4	1	6	12	55	6
ESR704 0300510	3	0.5	4	10	55	6	ESR704 0401016	4	1	6	16	55	6
ESR704 0300512	3	0.5	4	12	55	6	ESR704 0401020	4	1	6	20	60	6
ESR704 0300516	3	0.5	4	16	55	6	ESR704 0401025	4	1	6	25	60	6
ESR704 0300520	3	0.5	4	20	60	6	ESR704 0600220	6	0.2	9	20	60	6
ESR704 0301008	3	1	4	8	55	6	ESR704 0600320	6	0.3	9	20	60	6
ESR704 0301010	3	1	4	10	55	6	ESR704 0600520	6	0.5	9	20	60	6
ESR704 0301012	3	1	4	12	55	6	ESR704 0601020	6	1	9	20	60	6
ESR704 0301016	3	1	4	16	55	6	ESR704 0601520	6	1.5	9	20	60	6
ESR704 0301020	3	1	4	20	60	6	ESR704 0602020	6	2	9	20	60	6
ESR704 0400110	4	0.1	6	10	55	6	ESR704 0800225	8	0.2	12	25	60	8
ESR704 0400112	4	0.1	6	12	55	6	ESR704 0800325	8	0.3	12	25	60	8
ESR704 0400116	4	0.1	6	16	55	6	ESR704 0800525	8	0.5	12	25	60	8
ESR704 0400120	4	0.1	6	20	60	6	ESR704 0801025	8	1	12	25	60	8
ESR704 0400125	4	0.1	6	25	60	6	ESR704 0801525	8	1.5	12	25	60	8
ESR704 0400210	4	0.2	6	10	55	6	ESR704 0802025	8	2	12	25	60	8
ESR704 0400212	4	0.2	6	12	55	6	ESR704 1000232	10	0.2	15	32	70	10
ESR704 0400216	4	0.2	6	16	55	6	ESR704 1000332	10	0.3	15	32	70	10
ESR704 0400220	4	0.2	6	20	60	6	ESR704 1000532	10	0.5	15	32	70	10
ESR704 0400225	4	0.2	6	25	60	6	ESR704 1001032	10	1	15	32	70	10
ESR704 0400310	4	0.3	6	10	55	6	ESR704 1001532	10	1.5	15	32	70	10
ESR704 0400312	4	0.3	6	12	55	6	ESR704 1002032	10	2	15	32	70	10
ESR704 0400316	4	0.3	6	16	55	6	ESR704 1200338	12	0.3	18	38	80	12
ESR704 0400320	4	0.3	6	20	60	6	ESR704 1200538	12	0.5	18	38	80	12
ESR704 0400325	4	0.3	6	25	60	6	ESR704 1201038	12	1	18	38	80	12
ESR704 0400510	4	0.5	6	10	55	6	ESR704 1201538	12	1.5	18	38	80	12
ESR704 0400512	4	0.5	6	12	55	6	ESR704 1202038	12	2	18	38	80	12

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

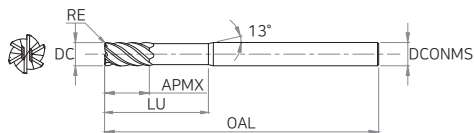
Gra
-Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

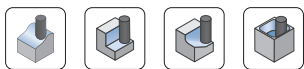
H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	~325	HRc30~50	~FCD500					
◎	○		○	◎						

ESR706 6 Flutes Neck Radius End Mill



► Tolerance

DC		Shank Dia
~ Ø6	0 ~ -0.012	h5
Ø8 ~ Ø12	0 ~ -0.015	



Ø6 OR UNDER

ABOVE Ø6

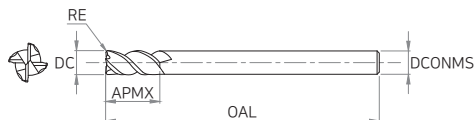
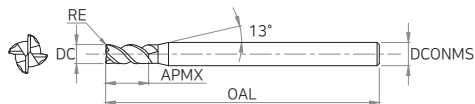
EDP No	DC	RE	APMX	LU	OAL	DCONMS
ESR706 0600314	6	0.3	6	14	50	6
ESR706 0600514	6	0.5	6	14	50	6
ESR706 0800524	8	0.5	8	24	60	8
ESR706 0801024	8	1	8	24	60	8
ESR706 1000530	10	0.5	10	30	70	10
ESR706 1001030	10	1	10	30	70	10
ESR706 1200530	12	0.5	12	30	75	12
ESR706 1201030	12	1	12	30	75	12

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	○		○	◎						

ESR714 4 Flutes Radius End Mill



► Tolerance

DC		Shank Dia
~ Ø6	0 ~ -0.012	h5
Ø8 ~ Ø12	0 ~ -0.015	



CARBIDE

AITIN



Ø6 OR UNDER ABOVE Ø6

EDP No	DC	RE	APMX	OAL	DCON MS	EDP No	DC	RE	APMX	OAL	DCON MS
ESR714 0303	3	0.3	8	50	6	ESR714 1003	10	0.3	25	70	10
ESR714 0305S4	3	0.5	8	50	4	ESR714 1005	10	0.5	25	70	10
ESR714 0305	3	0.5	8	50	6	ESR714 1010	10	1	25	70	10
ESR714 0403	4	0.3	11	50	6	ESR714 1015	10	1.5	25	70	10
ESR714 0405	4	0.5	11	50	6	ESR714 1020	10	2	25	70	10
ESR714 0405S4	4	0.5	11	50	4	ESR714 1025	10	2.5	25	70	10
ESR714 0410	4	1	11	50	6	ESR714 1030	10	3	25	70	10
ESR714 0603	6	0.3	15	60	6	ESR714 1203	12	0.3	30	80	12
ESR714 0605	6	0.5	15	60	6	ESR714 1205	12	0.5	30	80	12
ESR714 0610	6	1	15	60	6	ESR714 1210	12	1	30	80	12
ESR714 0803	8	0.3	20	60	8	ESR714 1215	12	1.5	30	80	12
ESR714 0805	8	0.5	20	60	8	ESR714 1220	12	2	30	80	12
ESR714 0810	8	1	20	60	8	ESR714 1225	12	2.5	30	80	12
ESR714 0815	8	1.5	20	60	8	ESR714 1230	12	3	30	80	12
ESR714 0820	8	2	20	60	8						

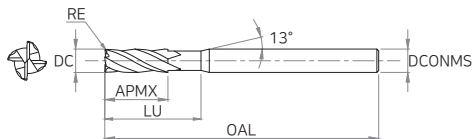
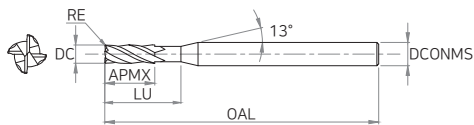
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	○		○	◎						

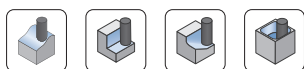
ESR724 4 Flutes Neck Radius End Mill

Endmill



► Tolerance

DC		Shank Dia
~ Ø6	0 ~ -0.012	h5
Ø8 ~ Ø12	0 ~ -0.015	



Ø6 OR UNDER

ABOVE Ø6

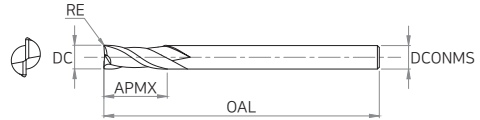
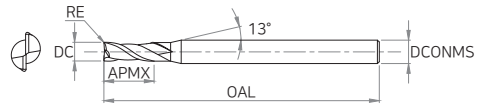
EDP No	DC	RE	APMX	LU	OAL	DCONMS
ESR724 0600520	6	0.5	9	20	90	6
ESR724 0601020	6	1	9	20	90	6
ESR724 0800525	8	0.5	12	25	100	8
ESR724 0801025	8	1	12	25	100	8
ESR724 1000532	10	0.5	15	32	100	10
ESR724 1001032	10	1	15	32	100	10
ESR724 1002032	10	2	15	32	100	10
ESR724 1200538	12	0.5	18	38	110	12
ESR724 1201038	12	1	18	38	110	12
ESR724 1202038	12	2	18	38	110	12

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	○		○	◎						

ESR732 2 Flutes Long Shank Radius End Mill



► Tolerance

DC		Shank Dia
~ Ø6	0 ~ -0.012	h5
Ø8 ~ Ø12	0 ~ -0.015	



Ø6 OR UNDER ABOVE Ø6

EDP No	DC	RE	APMX	OAL	DCON MS	EDP No	DC	RE	APMX	OAL	DCON MS
ERS732 01001	1	0.1	2	50	6	ERS732 04002	4	0.2	10	70	6
ERS732 01002	1	0.2	2	50	6	ERS732 04003	4	0.3	10	70	6
ERS732 01003	1	0.3	2	50	6	ERS732 04005	4	0.5	10	70	6
ERS732 01501	1.5	0.1	3	50	6	ERS732 04010	4	1	10	70	6
ERS732 01502	1.5	0.2	3	50	6	ERS732 05001	5	0.1	13	80	6
ERS732 01503	1.5	0.3	3	50	6	ERS732 05002	5	0.2	13	80	6
ERS732 01505	1.5	0.5	3	50	6	ERS732 05003	5	0.3	13	80	6
ERS732 02001	2	0.1	5	50	6	ERS732 05005	5	0.5	13	80	6
ERS732 02002	2	0.2	5	50	6	ERS732 05010	5	1	13	80	6
ERS732 02003	2	0.3	5	50	6	ERS732 06001	6	0.1	15	90	6
ERS732 02005	2	0.5	5	50	6	ERS732 06002	6	0.2	15	90	6
ERS732 02501	2.5	0.1	7	60	6	ERS732 06003	6	0.3	15	90	6
ERS732 02502	2.5	0.2	7	60	6	ERS732 06005	6	0.5	15	90	6
ERS732 02503	2.5	0.3	7	60	6	ERS732 06010	6	1	15	90	6
ERS732 02505	2.5	0.5	7	60	6	ERS732 08001	8	0.1	20	100	8
ERS732 03001	3	0.1	8	60	6	ERS732 08002	8	0.2	20	100	8
ERS732 03002	3	0.2	8	60	6	ERS732 08003	8	0.3	20	100	8
ERS732 03003	3	0.3	8	60	6	ERS732 08005	8	0.5	20	100	8
ERS732 03005	3	0.5	8	60	6	ERS732 08010	8	1	20	100	8
ERS732 04001	4	0.1	10	70	6	ERS732 08020	8	2	20	100	8

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	○		○	◎						

ESR732

2 Flutes Long Shank Radius End Mill

Endmill

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

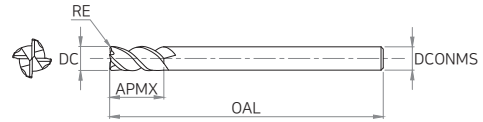
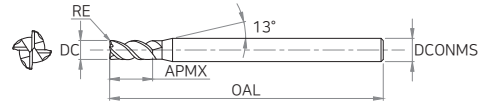
EDP No	DC	RE	APMX	OAL	DCON MS	EDP No	DC	RE	APMX	OAL	DCON MS
ERS732 10002	10	0.2	25	100	10	ERS732 12002	12	0.2	30	110	12
ERS732 10003	10	0.3	25	100	10	ERS732 12003	12	0.3	30	110	12
ERS732 10005	10	0.5	25	100	10	ERS732 12005	12	0.5	30	110	12
ERS732 10010	10	1	25	100	10	ERS732 12010	12	1	30	110	12
ERS732 10020	10	2	25	100	10	ERS732 12020	12	2	30	110	12

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

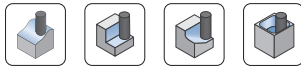
H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	○		○	◎						

ESR734 4 Flutes Long Shank Radius End Mill



► Tolerance

DC		Shank Dia
~ Ø6	0 ~ -0.012	h5
Ø8 ~ Ø12	0 ~ -0.015	



EDP No	DC	RE	APMX	OAL	DCON MS	EDP No	DC	RE	APMX	OAL	DCON MS
ESR734 01001	1	0.1	2	50	6	ESR734 04002	4	0.2	10	70	6
ESR734 01002	1	0.2	2	50	6	ESR734 04002S4	4	0.2	10	70	4
ESR734 01003	1	0.3	2	50	6	ESR734 04003	4	0.3	10	70	6
ESR734 01501	1.5	0.1	3	50	6	ESR734 04005	4	0.5	10	70	6
ESR734 01502	1.5	0.2	3	50	6	ESR734 04005S4	4	0.5	10	70	4
ESR734 01503	1.5	0.3	3	50	6	ESR734 04010	4	1	10	70	6
ESR734 01505	1.5	0.5	3	50	6	ESR734 05001	5	0.1	13	80	6
ESR734 02001	2	0.1	5	50	6	ESR734 05002	5	0.2	13	80	6
ESR734 02002	2	0.2	5	50	6	ESR734 05003	5	0.3	13	80	6
ESR734 02003	2	0.3	5	50	6	ESR734 05005	5	0.5	13	80	6
ESR734 02005	2	0.5	5	50	6	ESR734 05010	5	1	13	80	6
ESR734 02501	2.5	0.1	7	60	6	ESR734 06001	6	0.1	15	90	6
ESR734 02502	2.5	0.2	7	60	6	ESR734 06002	6	0.2	15	90	6
ESR734 02503	2.5	0.3	7	60	6	ESR734 06003	6	0.3	15	90	6
ESR734 02505	2.5	0.5	7	60	6	ESR734 06005	6	0.5	15	90	6
ESR734 03001	3	0.1	8	60	6	ESR734 06010	6	1	15	90	6
ESR734 03002	3	0.2	8	60	6	ESR734 08001	8	0.1	20	100	8
ESR734 03003	3	0.3	8	60	6	ESR734 08002	8	0.2	20	100	8
ESR734 03005	3	0.5	8	60	6	ESR734 08003	8	0.3	20	100	8
ESR734 04001	4	0.1	10	70	6	ESR734 08005	8	0.5	20	100	8

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	○		○	◎						

Endmill

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

ESR734

4 Flutes Long Shank Radius End Mill

Endmill

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

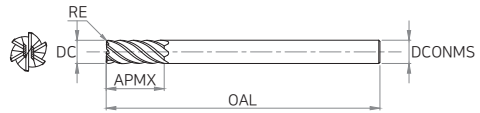
EDP No	DC	RE	APMX	OAL	DCON MS	EDP No	DC	RE	APMX	OAL	DCON MS
ESR734 08010	8	1	20	100	8	ESR734 12002	12	0.2	30	110	12
ESR734 08020	8	2	20	100	8	ESR734 12003	12	0.3	30	110	12
ESR734 10002	10	0.2	25	100	10	ESR734 12005	12	0.5	30	110	12
ESR734 10003	10	0.3	25	100	10	ESR734 12010	12	1	30	110	12
ESR734 10005	10	0.5	25	100	10	ESR734 12010L	12	1	30	150	12
ESR734 10010	10	1	25	100	10	ESR734 12020	12	2	30	110	12
ESR734 10020	10	2	25	100	10						

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

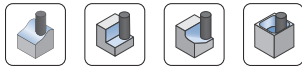
H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	○		○	◎						

ESR736 6 Flutes Radius End Mill



► Tolerance

DC		Shank Dia
~ Ø6	0 ~ -0.012	h5
Ø8 ~ Ø12	0 ~ -0.015	



EDP No	DC	RE	APMX	OAL	DCONMS
ESR736 06005	6	0.5	15	90	6
ESR736 06010	6	1	15	90	6
ESR736 08005	8	0.5	20	100	8
ESR736 08010	8	1	20	100	8
ESR736 10005	10	0.5	25	100	10
ESR736 10010	10	1	25	100	10
ESR736 12005	12	0.5	30	110	12
ESR736 12010	12	1	30	110	12

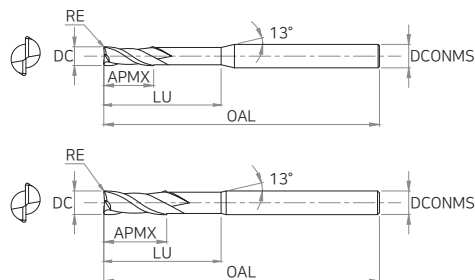
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	○		○	◎						

ESRR712 2 Flutes Rib Radius End Mill

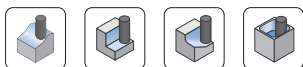
Endmill



► Tolerance

DC		Shank Dia
~ Ø6	0 ~ -0.012	h5
Ø8 ~ Ø16	0 ~ -0.015	

U-Wing



CARBIDE

AITIN



Ø6 OR UNDER

ABOVE Ø6

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

EDP No	DC	RE	APMX	LU	OAL	DCON MS	EDP No	DC	RE	APMX	LU	OAL	DCON MS
ESRR712 002002005	0.2	0.02	0.2	0.5	40	4	ESRR712 00401001	0.4	0.1	0.4	1	40	4
ESRR712 00200201	0.2	0.02	0.2	1	40	4	ESRR712 004010015	0.4	0.1	0.4	1.5	40	4
ESRR712 002002015	0.2	0.02	0.2	1.5	40	4	ESRR712 00401002	0.4	0.1	0.4	2	40	4
ESRR712 002005005	0.2	0.05	0.2	0.5	40	4	ESRR712 00401003	0.4	0.1	0.4	3	40	4
ESRR712 00200501	0.2	0.05	0.2	1	40	4	ESRR712 00401004	0.4	0.1	0.4	4	40	4
ESRR712 002005015	0.2	0.05	0.2	1.5	40	4	ESRR712 00500201	0.5	0.02	0.5	1	45	4
ESRR712 00300201	0.3	0.02	0.3	1	40	4	ESRR712 005002015	0.5	0.02	0.5	1.5	45	4
ESRR712 00300202	0.3	0.02	0.3	2	40	4	ESRR712 00500202	0.5	0.02	0.5	2	45	4
ESRR712 00300203	0.3	0.02	0.3	3	40	4	ESRR712 005002025	0.5	0.02	0.5	2.5	45	4
ESRR712 00300501	0.3	0.05	0.3	1	40	4	ESRR712 00500203	0.5	0.02	0.5	3	45	4
ESRR712 00300502	0.3	0.05	0.3	2	40	4	ESRR712 00500204	0.5	0.02	0.5	4	45	4
ESRR712 00300503	0.3	0.05	0.3	3	40	4	ESRR712 00500205	0.5	0.02	0.5	5	45	4
ESRR712 00400201	0.4	0.02	0.4	1	40	4	ESRR712 00500206	0.5	0.02	0.5	6	45	4
ESRR712 00400202	0.4	0.02	0.4	2	40	4	ESRR712 00500208	0.5	0.02	0.5	8	45	4
ESRR712 00400203	0.4	0.02	0.4	3	40	4	ESRR712 00500210	0.5	0.02	0.5	10	45	4
ESRR712 00400204	0.4	0.02	0.4	4	40	4	ESRR712 00500501	0.5	0.05	0.5	1	45	4
ESRR712 00400501	0.4	0.05	0.4	1	40	4	ESRR712 005005015	0.5	0.05	0.5	1.5	45	4
ESRR712 00400502	0.4	0.05	0.4	2	40	4	ESRR712 00500502	0.5	0.05	0.5	2	45	4
ESRR712 00400503	0.4	0.05	0.4	3	40	4	ESRR712 005005025	0.5	0.05	0.5	2.5	45	4
ESRR712 00400504	0.4	0.05	0.4	4	40	4	ESRR712 00500503	0.5	0.05	0.5	3	45	4

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
◎	○		○	◎						

ESRR712 2 Flutes Rib Radius End Mill

Endmill

EDP No	DC	RE	APMX	LU	OAL	DCON MS	EDP No	DC	RE	APMX	LU	OAL	DCON MS
ESRR712 00500504	0.5	0.05	0.5	4	45	4	ESRR712 00601010	0.6	0.1	0.6	10	45	4
ESRR712 00500505	0.5	0.05	0.5	5	45	4	ESRR712 00601012	0.6	0.1	0.6	12	50	4
ESRR712 00500506	0.5	0.05	0.5	6	45	4	ESRR712 00701002	0.7	0.1	0.7	2	45	4
ESRR712 00500508	0.5	0.05	0.5	8	45	4	ESRR712 00701004	0.7	0.1	0.7	4	45	4
ESRR712 00500510	0.5	0.05	0.5	10	45	4	ESRR712 00701008	0.7	0.1	0.7	8	45	4
ESRR712 00501001	0.5	0.1	0.5	1	45	4	ESRR712 00701010	0.7	0.1	0.7	10	45	4
ESRR712 005010015	0.5	0.1	0.5	1.5	45	4	ESRR712 00800202	0.8	0.02	0.8	2	45	4
ESRR712 00501002	0.5	0.1	0.5	2	45	4	ESRR712 00800204	0.8	0.02	0.8	4	45	4
ESRR712 005010025	0.5	0.1	0.5	2.5	45	4	ESRR712 00800206	0.8	0.02	0.8	6	45	4
ESRR712 00501003	0.5	0.1	0.5	3	45	4	ESRR712 00800208	0.8	0.02	0.8	8	45	4
ESRR712 00501004	0.5	0.1	0.5	4	45	4	ESRR712 00800210	0.8	0.02	0.8	10	45	4
ESRR712 00501005	0.5	0.1	0.5	5	45	4	ESRR712 00800212	0.8	0.02	0.8	12	50	4
ESRR712 00501006	0.5	0.1	0.5	6	45	4	ESRR712 00800502	0.8	0.05	0.8	2	45	4
ESRR712 00501008	0.5	0.1	0.5	8	45	4	ESRR712 00800504	0.8	0.05	0.8	4	45	4
ESRR712 00501010	0.5	0.1	0.5	10	45	4	ESRR712 00800506	0.8	0.05	0.8	6	45	4
ESRR712 00600202	0.6	0.02	0.6	2	45	4	ESRR712 00800508	0.8	0.05	0.8	8	45	4
ESRR712 00600203	0.6	0.02	0.6	3	45	4	ESRR712 00800510	0.8	0.05	0.8	10	45	4
ESRR712 00600204	0.6	0.02	0.6	4	45	4	ESRR712 00800512	0.8	0.05	0.8	12	50	4
ESRR712 00600206	0.6	0.02	0.6	6	45	4	ESRR712 00801002	0.8	0.1	0.8	2	45	4
ESRR712 00600208	0.6	0.02	0.6	8	45	4	ESRR712 00801004	0.8	0.1	0.8	4	45	4
ESRR712 00600210	0.6	0.02	0.6	10	45	4	ESRR712 00801006	0.8	0.1	0.8	6	45	4
ESRR712 00600212	0.6	0.02	0.6	12	50	4	ESRR712 00801008	0.8	0.1	0.8	8	45	4
ESRR712 00600502	0.6	0.05	0.6	2	45	4	ESRR712 00801010	0.8	0.1	0.8	10	45	4
ESRR712 00600503	0.6	0.05	0.6	3	45	4	ESRR712 00801012	0.8	0.1	0.8	12	50	4
ESRR712 00600504	0.6	0.05	0.6	4	45	4	ESRR712 00802002	0.8	0.2	0.8	2	45	4
ESRR712 00600506	0.6	0.05	0.6	6	45	4	ESRR712 00802004	0.8	0.2	0.8	4	45	4
ESRR712 00600508	0.6	0.05	0.6	8	45	4	ESRR712 00802006	0.8	0.2	0.8	6	45	4
ESRR712 00600510	0.6	0.05	0.6	10	45	4	ESRR712 00802008	0.8	0.2	0.8	8	45	4
ESRR712 00600512	0.6	0.05	0.6	12	50	4	ESRR712 00802010	0.8	0.2	0.8	10	45	4
ESRR712 00601002	0.6	0.1	0.6	2	45	4	ESRR712 00802012	0.8	0.2	0.8	12	50	4
ESRR712 00601003	0.6	0.1	0.6	3	45	4	ESRR712 01000204	1	0.02	1	4	45	4
ESRR712 00601004	0.6	0.1	0.6	4	45	4	ESRR712 01000206	1	0.02	1	6	45	4
ESRR712 00601006	0.6	0.1	0.6	6	45	4	ESRR712 01000208	1	0.02	1	8	45	4
ESRR712 00601008	0.6	0.1	0.6	8	45	4	ESRR712 01000210	1	0.02	1	10	50	4

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	○		○	◎						

ESRR712 2 Flutes Rib Radius End Mill

Endmill

EDP No	DC	RE	APMX	LU	OAL	DCON MS	EDP No	DC	RE	APMX	LU	OAL	DCON MS
ESRR712 01000212	1	0.02	1	12	50	4	ESRR712 01003016	1	0.3	1	16	50	4
ESRR712 01000214	1	0.02	1	14	50	4	ESRR712 01003020	1	0.3	1	20	50	4
ESRR712 01000216	1	0.02	1	16	50	4	ESRR712 01200204	1.2	0.02	1.2	4	45	4
ESRR712 01000220	1	0.02	1	20	50	4	ESRR712 01200206	1.2	0.02	1.2	6	45	4
ESRR712 01000504	1	0.05	1	4	45	4	ESRR712 01200208	1.2	0.02	1.2	8	45	4
ESRR712 01000506	1	0.05	1	6	45	4	ESRR712 01200210	1.2	0.02	1.2	10	50	4
ESRR712 01000508	1	0.05	1	8	45	4	ESRR712 01200212	1.2	0.02	1.2	12	50	4
ESRR712 01000510	1	0.05	1	10	50	4	ESRR712 01200214	1.2	0.02	1.2	14	50	4
ESRR712 01000512	1	0.05	1	12	50	4	ESRR712 01200216	1.2	0.02	1.2	16	50	4
ESRR712 01000514	1	0.05	1	14	50	4	ESRR712 01200220	1.2	0.02	1.2	20	50	4
ESRR712 01000516	1	0.05	1	16	50	4	ESRR712 01200504	1.2	0.05	1.2	4	45	4
ESRR712 01000520	1	0.05	1	20	50	4	ESRR712 01200506	1.2	0.05	1.2	6	45	4
ESRR712 01001004	1	0.1	1	4	45	4	ESRR712 01200508	1.2	0.05	1.2	8	45	4
ESRR712 01001006	1	0.1	1	6	45	4	ESRR712 01200510	1.2	0.05	1.2	10	50	4
ESRR712 01001008	1	0.1	1	8	45	4	ESRR712 01200512	1.2	0.05	1.2	12	50	4
ESRR712 01001010	1	0.1	1	10	50	4	ESRR712 01200514	1.2	0.05	1.2	14	50	4
ESRR712 01001012	1	0.1	1	12	50	4	ESRR712 01200516	1.2	0.05	1.2	16	50	4
ESRR712 01001014	1	0.1	1	14	50	4	ESRR712 01200520	1.2	0.05	1.2	20	50	4
ESRR712 01001016	1	0.1	1	16	50	4	ESRR712 01201004	1.2	0.1	1.2	4	45	4
ESRR712 01001020	1	0.1	1	20	50	4	ESRR712 01201006	1.2	0.1	1.2	6	45	4
ESRR712 01002004	1	0.2	1	4	45	4	ESRR712 01201008	1.2	0.1	1.2	8	45	4
ESRR712 01002006	1	0.2	1	6	45	4	ESRR712 01201010	1.2	0.1	1.2	10	50	4
ESRR712 01002008	1	0.2	1	8	45	4	ESRR712 01201012	1.2	0.1	1.2	12	50	4
ESRR712 01002010	1	0.2	1	10	50	4	ESRR712 01201014	1.2	0.1	1.2	14	50	4
ESRR712 01002012	1	0.2	1	12	50	4	ESRR712 01201016	1.2	0.1	1.2	16	50	4
ESRR712 01002014	1	0.2	1	14	50	4	ESRR712 01201020	1.2	0.1	1.2	20	50	4
ESRR712 01002016	1	0.2	1	16	50	4	ESRR712 01202004	1.2	0.2	1.2	4	45	4
ESRR712 01002020	1	0.2	1	20	50	4	ESRR712 01202006	1.2	0.2	1.2	6	45	4
ESRR712 01003004	1	0.3	1	4	45	4	ESRR712 01202008	1.2	0.2	1.2	8	45	4
ESRR712 01003006	1	0.3	1	6	45	4	ESRR712 01202010	1.2	0.2	1.2	10	50	4
ESRR712 01003008	1	0.3	1	8	45	4	ESRR712 01202012	1.2	0.2	1.2	12	50	4
ESRR712 01003010	1	0.3	1	10	50	4	ESRR712 01202014	1.2	0.2	1.2	14	50	4
ESRR712 01003012	1	0.3	1	12	50	4	ESRR712 01202016	1.2	0.2	1.2	16	50	4
ESRR712 01003014	1	0.3	1	14	50	4	ESRR712 01202020	1.2	0.2	1.2	20	50	4

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	Steel ~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	○		○	◎						

ESRR712 2 Flutes Rib Radius End Mill

Endmill

EDP No	DC	RE	APMX	LU	OAL	DCON MS	EDP No	DC	RE	APMX	LU	OAL	DCON MS
ESRR712 01203004	1.2	0.3	1.2	4	45	4	ESRR712 01502008	1.5	0.2	1.5	8	45	4
ESRR712 01203006	1.2	0.3	1.2	6	45	4	ESRR712 01502010	1.5	0.2	1.5	10	50	4
ESRR712 01203008	1.2	0.3	1.2	8	45	4	ESRR712 01502012	1.5	0.2	1.5	12	50	4
ESRR712 01203010	1.2	0.3	1.2	10	50	4	ESRR712 01502014	1.5	0.2	1.5	14	50	4
ESRR712 01203012	1.2	0.3	1.2	12	50	4	ESRR712 01502016	1.5	0.2	1.5	16	50	4
ESRR712 01203014	1.2	0.3	1.2	14	50	4	ESRR712 01502020	1.5	0.2	1.5	20	50	4
ESRR712 01203016	1.2	0.3	1.2	16	50	4	ESRR712 01503004	1.5	0.3	1.5	4	45	4
ESRR712 01203020	1.2	0.3	1.2	20	50	4	ESRR712 01503006	1.5	0.3	1.5	6	45	4
ESRR712 01500204	1.5	0.02	1.5	4	45	4	ESRR712 01503008	1.5	0.3	1.5	8	45	4
ESRR712 01500206	1.5	0.02	1.5	6	45	4	ESRR712 01503010	1.5	0.3	1.5	10	50	4
ESRR712 01500208	1.5	0.02	1.5	8	45	4	ESRR712 01503012	1.5	0.3	1.5	12	50	4
ESRR712 01500210	1.5	0.02	1.5	10	50	4	ESRR712 01503014	1.5	0.3	1.5	14	50	4
ESRR712 01500212	1.5	0.02	1.5	12	50	4	ESRR712 01503016	1.5	0.3	1.5	16	50	4
ESRR712 01500214	1.5	0.02	1.5	14	50	4	ESRR712 01503020	1.5	0.3	1.5	20	50	4
ESRR712 01500216	1.5	0.02	1.5	16	50	4	ESRR712 01505004	1.5	0.5	1.5	4	45	4
ESRR712 01500220	1.5	0.02	1.5	20	50	4	ESRR712 01505006	1.5	0.5	1.5	6	45	4
ESRR712 01500504	1.5	0.05	1.5	4	45	4	ESRR712 01505008	1.5	0.5	1.5	8	45	4
ESRR712 01500506	1.5	0.05	1.5	6	45	4	ESRR712 01505010	1.5	0.5	1.5	10	50	4
ESRR712 01500508	1.5	0.05	1.5	8	45	4	ESRR712 01505012	1.5	0.5	1.5	12	50	4
ESRR712 01500510	1.5	0.05	1.5	10	50	4	ESRR712 01505014	1.5	0.5	1.5	14	50	4
ESRR712 01500512	1.5	0.05	1.5	12	50	4	ESRR712 01505016	1.5	0.5	1.5	16	50	4
ESRR712 01500514	1.5	0.05	1.5	14	50	4	ESRR712 01505020	1.5	0.5	1.5	20	50	4
ESRR712 01500516	1.5	0.05	1.5	16	50	4	ESRR712 02000206	2	0.02	2	6	45	4
ESRR712 01500520	1.5	0.05	1.5	20	50	4	ESRR712 02000208	2	0.02	2	8	45	4
ESRR712 01501004	1.5	0.1	1.5	4	45	4	ESRR712 02000210	2	0.02	2	10	50	4
ESRR712 01501006	1.5	0.1	1.5	6	45	4	ESRR712 02000212	2	0.02	2	12	50	4
ESRR712 01501008	1.5	0.1	1.5	8	45	4	ESRR712 02000214	2	0.02	2	14	50	4
ESRR712 01501010	1.5	0.1	1.5	10	50	4	ESRR712 02000216	2	0.02	2	16	50	4
ESRR712 01501012	1.5	0.1	1.5	12	50	4	ESRR712 02000220	2	0.02	2	20	50	4
ESRR712 01501014	1.5	0.1	1.5	14	50	4	ESRR712 02000225	2	0.02	2	25	60	4
ESRR712 01501016	1.5	0.1	1.5	16	50	4	ESRR712 02000506	2	0.05	2	6	45	4
ESRR712 01501020	1.5	0.1	1.5	20	50	4	ESRR712 02000508	2	0.05	2	8	45	4
ESRR712 01502004	1.5	0.2	1.5	4	45	4	ESRR712 02000510	2	0.05	2	10	50	4
ESRR712 01502006	1.5	0.2	1.5	6	45	4	ESRR712 02000512	2	0.05	2	12	50	4

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	○		○	◎						

ESRR712 2 Flutes Rib Radius End Mill

Endmill

EDP No	DC	RE	APMX	LU	OAL	DCON MS	EDP No	DC	RE	APMX	LU	OAL	DCON MS
ESRR712 02000514	2	0.05	2	14	50	4	ESRR712 02005012	2	0.5	2	12	50	4
ESRR712 02000516	2	0.05	2	16	50	4	ESRR712 02005014	2	0.5	2	14	50	4
ESRR712 02000520	2	0.05	2	20	50	4	ESRR712 02005016	2	0.5	2	16	50	4
ESRR712 02000525	2	0.05	2	25	60	4	ESRR712 02005020	2	0.5	2	20	50	4
ESRR712 02001006	2	0.1	2	6	45	4	ESRR712 02005025	2	0.5	2	25	60	4
ESRR712 02001008	2	0.1	2	8	45	4	ESRR712 02005030	2	0.5	2	30	70	4
ESRR712 02001010	2	0.1	2	10	50	4	ESRR712 02501010	2.5	0.1	2.5	10	50	4
ESRR712 02001012	2	0.1	2	12	50	4	ESRR712 02501016	2.5	0.1	2.5	16	50	4
ESRR712 02001014	2	0.1	2	14	50	4	ESRR712 02501020	2.5	0.1	2.5	20	50	4
ESRR712 02001016	2	0.1	2	16	50	4	ESRR712 02501025	2.5	0.1	2.5	25	60	4
ESRR712 02001020	2	0.1	2	20	50	4	ESRR712 02501030	2.5	0.1	2.5	30	70	4
ESRR712 02001025	2	0.1	2	25	60	4	ESRR712 02502010	2.5	0.2	2.5	10	50	4
ESRR712 02001030	2	0.1	2	30	70	4	ESRR712 02502016	2.5	0.2	2.5	16	50	4
ESRR712 02002006	2	0.2	2	6	45	4	ESRR712 02502020	2.5	0.2	2.5	20	50	4
ESRR712 02002008	2	0.2	2	8	45	4	ESRR712 02503010	2.5	0.3	2.5	10	50	4
ESRR712 02002010	2	0.2	2	10	50	4	ESRR712 02503016	2.5	0.3	2.5	16	50	4
ESRR712 02002012	2	0.2	2	12	50	4	ESRR712 02503020	2.5	0.3	2.5	20	50	4
ESRR712 02002014	2	0.2	2	14	50	4	ESRR712 02505010	2.5	0.5	2.5	10	50	4
ESRR712 02002016	2	0.2	2	16	50	4	ESRR712 02505016	2.5	0.5	2.5	16	50	4
ESRR712 02002020	2	0.2	2	20	50	4	ESRR712 02505020	2.5	0.5	2.5	20	50	4
ESRR712 02002025	2	0.2	2	25	60	4	ESRR712 03001010	3	0.1	3	10	50	6
ESRR712 02002030	2	0.2	2	30	70	4	ESRR712 03001012	3	0.1	3	12	50	6
ESRR712 02003006	2	0.3	2	6	45	4	ESRR712 03001016	3	0.1	3	16	55	6
ESRR712 02003008	2	0.3	2	8	45	4	ESRR712 03001020	3	0.1	3	20	60	6
ESRR712 02003010	2	0.3	2	10	50	4	ESRR712 03001025	3	0.1	3	25	65	6
ESRR712 02003012	2	0.3	2	12	50	4	ESRR712 03001030	3	0.1	3	30	70	6
ESRR712 02003014	2	0.3	2	14	50	4	ESRR712 03001035	3	0.1	3	35	75	6
ESRR712 02003016	2	0.3	2	16	50	4	ESRR712 03001040	3	0.1	3	40	80	6
ESRR712 02003020	2	0.3	2	20	50	4	ESRR712 03002010	3	0.2	3	10	50	6
ESRR712 02003025	2	0.3	2	25	60	4	ESRR712 03002012	3	0.2	3	12	50	6
ESRR712 02003030	2	0.3	2	30	70	4	ESRR712 03002016	3	0.2	3	16	55	6
ESRR712 02005006	2	0.5	2	6	45	4	ESRR712 03002020	3	0.2	3	20	60	6
ESRR712 02005008	2	0.5	2	8	45	4	ESRR712 03002025	3	0.2	3	25	65	6
ESRR712 02005010	2	0.5	2	10	50	4	ESRR712 03002030	3	0.2	3	30	70	6

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	~325	HRC30~50	~FCD500					
◎	○		○	◎						

ESRR712 2 Flutes Rib Radius End Mill

Endmill

EDP No	DC	RE	APMX	LU	OAL	DCON MS	EDP No	DC	RE	APMX	LU	OAL	DCON MS
ESRR712 03002035	3	0.2	3	35	75	6	ESRR712 04002016	4	0.2	4	16	55	6
ESRR712 03002040	3	0.2	3	40	80	6	ESRR712 04002020	4	0.2	4	20	60	6
ESRR712 03003010	3	0.3	3	10	50	6	ESRR712 04002025	4	0.2	4	25	65	6
ESRR712 03003012	3	0.3	3	12	50	6	ESRR712 04002030	4	0.2	4	30	70	6
ESRR712 03003016	3	0.3	3	16	55	6	ESRR712 04002035	4	0.2	4	35	75	6
ESRR712 03003020	3	0.3	3	20	60	6	ESRR712 04002040	4	0.2	4	40	80	6
ESRR712 03003025	3	0.3	3	25	65	6	ESRR712 04003012	4	0.3	4	12	50	6
ESRR712 03003030	3	0.3	3	30	70	6	ESRR712 04003016	4	0.3	4	16	55	6
ESRR712 03003035	3	0.3	3	35	75	6	ESRR712 04003020	4	0.3	4	20	60	6
ESRR712 03003040	3	0.3	3	40	80	6	ESRR712 04003025	4	0.3	4	25	65	6
ESRR712 03005010	3	0.5	3	10	50	6	ESRR712 04003030	4	0.3	4	30	70	6
ESRR712 03005012	3	0.5	3	12	50	6	ESRR712 04003035	4	0.3	4	35	75	6
ESRR712 03005016	3	0.5	3	16	55	6	ESRR712 04003040	4	0.3	4	40	80	6
ESRR712 03005020	3	0.5	3	20	60	6	ESRR712 04005012	4	0.5	4	12	50	6
ESRR712 03005025	3	0.5	3	25	65	6	ESRR712 04005016	4	0.5	4	16	55	6
ESRR712 03005030	3	0.5	3	30	70	6	ESRR712 04005020	4	0.5	4	20	60	6
ESRR712 03005035	3	0.5	3	35	75	6	ESRR712 04005025	4	0.5	4	25	65	6
ESRR712 03005040	3	0.5	3	40	80	6	ESRR712 04005030	4	0.5	4	30	70	6
ESRR712 03010010	3	1	3	10	50	6	ESRR712 04005035	4	0.5	4	35	75	6
ESRR712 03010012	3	1	3	12	50	6	ESRR712 04005040	4	0.5	4	40	80	6
ESRR712 03010016	3	1	3	16	55	6	ESRR712 04010012	4	1	4	12	50	6
ESRR712 03010020	3	1	3	20	60	6	ESRR712 04010016	4	1	4	16	55	6
ESRR712 03010025	3	1	3	25	65	6	ESRR712 04010020	4	1	4	20	60	6
ESRR712 03010030	3	1	3	30	70	6	ESRR712 04010025	4	1	4	25	65	6
ESRR712 03010035	3	1	3	35	75	6	ESRR712 04010030	4	1	4	30	70	6
ESRR712 03010040	3	1	3	40	80	6	ESRR712 04010035	4	1	4	35	75	6
ESRR712 04001012	4	0.1	4	12	50	6	ESRR712 04010040	4	1	4	40	80	6
ESRR712 04001016	4	0.1	4	16	55	6	ESRR712 05002015	5	0.2	6	15	60	6
ESRR712 04001020	4	0.1	4	20	60	6	ESRR712 05002025	5	0.2	6	25	70	6
ESRR712 04001025	4	0.1	4	25	65	6	ESRR712 05002030	5	0.2	6	30	70	6
ESRR712 04001030	4	0.1	4	30	70	6	ESRR712 05002040	5	0.2	6	40	80	6
ESRR712 04001035	4	0.1	4	35	75	6	ESRR712 05005015	5	0.5	6	15	60	6
ESRR712 04001040	4	0.1	4	40	80	6	ESRR712 05005025	5	0.5	6	25	70	6
ESRR712 04002012	4	0.2	4	12	50	6	ESRR712 05005030	5	0.5	6	30	70	6

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	○		○	◎						

ESRR712 2 Flutes Rib Radius End Mill

Endmill

EDP No	DC	RE	APMX	LU	OAL	DCON MS	EDP No	DC	RE	APMX	LU	OAL	DCON MS
ESRR712 05005040	5	0.5	6	40	80	6	ESRR712 08005022	8	0.5	9	22	65	8
ESRR712 05010015	5	1	6	15	60	6	ESRR712 08010022	8	1	9	22	65	8
ESRR712 05010025	5	1	6	25	70	6	ESRR712 08015022	8	1.5	9	22	65	8
ESRR712 05010030	5	1	6	30	70	6	ESRR712 10002024	10	0.2	11	24	70	10
ESRR712 05010040	5	1	6	40	80	6	ESRR712 10003024	10	0.3	11	24	70	10
ESRR712 06001020	6	0.1	7	20	60	6	ESRR712 10005024	10	0.5	11	24	70	10
ESRR712 06001040	6	0.1	7	40	80	6	ESRR712 10010024	10	1	11	24	70	10
ESRR712 06002020	6	0.2	7	20	60	6	ESRR712 10015024	10	1.5	11	24	70	10
ESRR712 06002040	6	0.2	7	40	80	6	ESRR712 10020024	10	2	11	24	70	10
ESRR712 06003020	6	0.3	7	20	60	6	ESRR712 12002026	12	0.2	13	26	80	12
ESRR712 06003040	6	0.3	7	40	80	6	ESRR712 12003026	12	0.3	13	26	80	12
ESRR712 06005020	6	0.5	7	20	60	6	ESRR712 12005026	12	0.5	13	26	80	12
ESRR712 06005040	6	0.5	7	40	80	6	ESRR712 12010026	12	1	13	26	80	12
ESRR712 06010020	6	1	7	20	60	6	ESRR712 12015026	12	1.5	13	26	80	12
ESRR712 06010040	6	1	7	40	80	6	ESRR712 12020026	12	2	13	26	80	12
ESRR712 06015020	6	1.5	7	20	60	6	ESRR712 12030026	12	3	13	26	80	12
ESRR712 06015040	6	1.5	7	40	80	6	ESRR712 16005035	16	0.5	20	35	110	16
ESRR712 08002022	8	0.2	9	22	65	8	ESRR712 16010035	16	1	20	35	110	16
ESRR712 08003022	8	0.3	9	22	65	8							

S-Wing

A-Wing

Standard

Copper
-Mate

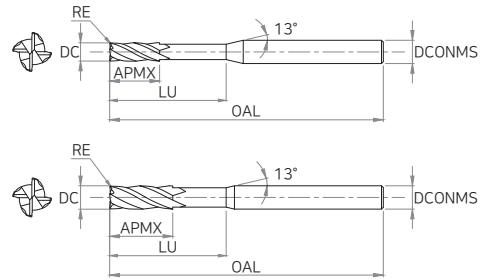
Gra
-Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

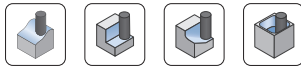
H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	○		○	◎						

ESRR714 4 Flutes Rib Radius End Mill



► Tolerance

DC		Shank Dia
~ Ø6	0 ~ -0.012	h5
Ø8 ~ Ø20	0 ~ -0.015	



EDP No	DC	RE	APMX	LU	OAL	DCON MS	EDP No	DC	RE	APMX	LU	OAL	DCON MS
ESRR714 00500502	0.5	0.05	0.5	2	45	4	ESRR714 00701002	0.7	0.1	0.7	2	45	4
ESRR714 00500504	0.5	0.05	0.5	4	45	4	ESRR714 00701004	0.7	0.1	0.7	4	45	4
ESRR714 00500506	0.5	0.05	0.5	6	45	4	ESRR714 00701006	0.7	0.1	0.7	6	45	4
ESRR714 00500508	0.5	0.05	0.5	8	45	4	ESRR714 00701008	0.7	0.1	0.7	8	45	4
ESRR714 00501002	0.5	0.1	0.5	2	45	4	ESRR714 00800202	0.8	0.02	0.8	2	45	4
ESRR714 00501004	0.5	0.1	0.5	4	45	4	ESRR714 00800204	0.8	0.02	0.8	4	45	4
ESRR714 00501006	0.5	0.1	0.5	6	45	4	ESRR714 00800206	0.8	0.02	0.8	6	45	4
ESRR714 00501008	0.5	0.1	0.5	8	45	4	ESRR714 00800208	0.8	0.02	0.8	8	45	4
ESRR714 00600502	0.6	0.05	0.6	2	45	4	ESRR714 00800210	0.8	0.02	0.8	10	45	4
ESRR714 00600504	0.6	0.05	0.6	4	45	4	ESRR714 00800212	0.8	0.02	0.8	12	50	4
ESRR714 00600506	0.6	0.05	0.6	6	45	4	ESRR714 00800502	0.8	0.05	0.8	2	45	4
ESRR714 00600508	0.6	0.05	0.6	8	45	4	ESRR714 00800504	0.8	0.05	0.8	4	45	4
ESRR714 00601002	0.6	0.1	0.6	2	45	4	ESRR714 00800506	0.8	0.05	0.8	6	45	4
ESRR714 00601004	0.6	0.1	0.6	4	45	4	ESRR714 00800508	0.8	0.05	0.8	8	45	4
ESRR714 00601006	0.6	0.1	0.6	6	45	4	ESRR714 00800510	0.8	0.05	0.8	10	45	4
ESRR714 00601008	0.6	0.1	0.6	8	45	4	ESRR714 00800512	0.8	0.05	0.8	12	50	4
ESRR714 00700502	0.7	0.05	0.7	2	45	4	ESRR714 00801002	0.8	0.1	0.8	2	45	4
ESRR714 00700504	0.7	0.05	0.7	4	45	4	ESRR714 00801004	0.8	0.1	0.8	4	45	4
ESRR714 00700506	0.7	0.05	0.7	6	45	4	ESRR714 00801006	0.8	0.1	0.8	6	45	4
ESRR714 00700508	0.7	0.05	0.7	8	45	4	ESRR714 00801008	0.8	0.1	0.8	8	45	4

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	○		○	◎						

ESRR714 4 Flutes Rib Radius End Mill

Endmill

EDP No	DC	RE	APMX	LU	OAL	DCON MS	EDP No	DC	RE	APMX	LU	OAL	DCON MS
ESRR714 00801010	0.8	0.1	0.8	10	45	4	ESRR714 01002014	1	0.2	1	14	50	4
ESRR714 00801012	0.8	0.1	0.8	12	50	4	ESRR714 01002016	1	0.2	1	16	50	4
ESRR714 01000204	1	0.02	1	4	45	4	ESRR714 01002020	1	0.2	1	20	50	4
ESRR714 01000206	1	0.02	1	6	45	4	ESRR714 01003003	1	0.3	1	3	45	4
ESRR714 01000208	1	0.02	1	8	45	4	ESRR714 01003004	1	0.3	1	4	45	4
ESRR714 01000210	1	0.02	1	10	50	4	ESRR714 01003006	1	0.3	1	6	45	4
ESRR714 01000212	1	0.02	1	12	50	4	ESRR714 01003008	1	0.3	1	8	45	4
ESRR714 01000214	1	0.02	1	14	50	4	ESRR714 01003010	1	0.3	1	10	50	4
ESRR714 01000216	1	0.02	1	16	50	4	ESRR714 01003012	1	0.3	1	12	50	4
ESRR714 01000220	1	0.02	1	20	50	4	ESRR714 01003014	1	0.3	1	14	50	4
ESRR714 01000503	1	0.05	1	3	45	4	ESRR714 01003016	1	0.3	1	16	50	4
ESRR714 01000504	1	0.05	1	4	45	4	ESRR714 01003020	1	0.3	1	20	50	4
ESRR714 01000506	1	0.05	1	6	45	4	ESRR714 01200204	1.2	0.02	1.2	4	45	4
ESRR714 01000508	1	0.05	1	8	45	4	ESRR714 01200206	1.2	0.02	1.2	6	45	4
ESRR714 01000510	1	0.05	1	10	50	4	ESRR714 01200208	1.2	0.02	1.2	8	45	4
ESRR714 01000512	1	0.05	1	12	50	4	ESRR714 01200210	1.2	0.02	1.2	10	50	4
ESRR714 01000514	1	0.05	1	14	50	4	ESRR714 01200212	1.2	0.02	1.2	12	50	4
ESRR714 01000516	1	0.05	1	16	50	4	ESRR714 01200214	1.2	0.02	1.2	14	50	4
ESRR714 01000520	1	0.05	1	20	50	4	ESRR714 01200216	1.2	0.02	1.2	16	50	4
ESRR714 01001003	1	0.1	1	3	45	4	ESRR714 01200220	1.2	0.02	1.2	20	50	4
ESRR714 01001004	1	0.1	1	4	45	4	ESRR714 01200503	1.2	0.05	1.2	3	45	4
ESRR714 01001006	1	0.1	1	6	45	4	ESRR714 01200504	1.2	0.05	1.2	4	45	4
ESRR714 01001008	1	0.1	1	8	45	4	ESRR714 01200506	1.2	0.05	1.2	6	45	4
ESRR714 01001010	1	0.1	1	10	50	4	ESRR714 01200508	1.2	0.05	1.2	8	45	4
ESRR714 01001012	1	0.1	1	12	50	4	ESRR714 01200510	1.2	0.05	1.2	10	50	4
ESRR714 01001014	1	0.1	1	14	50	4	ESRR714 01200512	1.2	0.05	1.2	12	50	4
ESRR714 01001016	1	0.1	1	16	50	4	ESRR714 01200514	1.2	0.05	1.2	14	50	4
ESRR714 01001020	1	0.1	1	20	50	4	ESRR714 01200516	1.2	0.05	1.2	16	50	4
ESRR714 01002003	1	0.2	1	3	45	4	ESRR714 01200520	1.2	0.05	1.2	20	50	4
ESRR714 01002004	1	0.2	1	4	45	4	ESRR714 01201003	1.2	0.1	1.2	3	45	4
ESRR714 01002006	1	0.2	1	6	45	4	ESRR714 01201004	1.2	0.1	1.2	4	45	4
ESRR714 01002008	1	0.2	1	8	45	4	ESRR714 01201006	1.2	0.1	1.2	6	45	4
ESRR714 01002010	1	0.2	1	10	50	4	ESRR714 01201008	1.2	0.1	1.2	8	45	4
ESRR714 01002012	1	0.2	1	12	50	4	ESRR714 01201010	1.2	0.1	1.2	10	50	4

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	Steel ~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	○		○	◎						

ESRR714 4 Flutes Rib Radius End Mill

Endmill

EDP No	DC	RE	APMX	LU	OAL	DCON MS	EDP No	DC	RE	APMX	LU	OAL	DCON MS
ESRR714 01201012	1.2	0.1	1.2	12	50	4	ESRR714 01500514	1.5	0.05	1.5	14	50	4
ESRR714 01201014	1.2	0.1	1.2	14	50	4	ESRR714 01500516	1.5	0.05	1.5	16	50	4
ESRR714 01201016	1.2	0.1	1.2	16	50	4	ESRR714 01500520	1.5	0.05	1.5	20	50	4
ESRR714 01201020	1.2	0.1	1.2	20	50	4	ESRR714 01500522	1.5	0.05	1.5	22	60	4
ESRR714 01202003	1.2	0.2	1.2	3	45	4	ESRR714 01500526	1.5	0.05	1.5	26	60	4
ESRR714 01202004	1.2	0.2	1.2	4	45	4	ESRR714 01501004	1.5	0.1	1.5	4	45	4
ESRR714 01202006	1.2	0.2	1.2	6	45	4	ESRR714 01501006	1.5	0.1	1.5	6	45	4
ESRR714 01202008	1.2	0.2	1.2	8	45	4	ESRR714 01501008	1.5	0.1	1.5	8	45	4
ESRR714 01202010	1.2	0.2	1.2	10	50	4	ESRR714 01501010	1.5	0.1	1.5	10	50	4
ESRR714 01202012	1.2	0.2	1.2	12	50	4	ESRR714 01501012	1.5	0.1	1.5	12	50	4
ESRR714 01202014	1.2	0.2	1.2	14	50	4	ESRR714 01501014	1.5	0.1	1.5	14	50	4
ESRR714 01202016	1.2	0.2	1.2	16	50	4	ESRR714 01501016	1.5	0.1	1.5	16	50	4
ESRR714 01202020	1.2	0.2	1.2	20	50	4	ESRR714 01501020	1.5	0.1	1.5	20	50	4
ESRR714 01203003	1.2	0.3	1.2	3	45	4	ESRR714 01501022	1.5	0.1	1.5	22	60	4
ESRR714 01203004	1.2	0.3	1.2	4	45	4	ESRR714 01501026	1.5	0.1	1.5	26	60	4
ESRR714 01203006	1.2	0.3	1.2	6	45	4	ESRR714 01502004	1.5	0.2	1.5	4	45	4
ESRR714 01203008	1.2	0.3	1.2	8	45	4	ESRR714 01502006	1.5	0.2	1.5	6	45	4
ESRR714 01203010	1.2	0.3	1.2	10	50	4	ESRR714 01502008	1.5	0.2	1.5	8	45	4
ESRR714 01203012	1.2	0.3	1.2	12	50	4	ESRR714 01502010	1.5	0.2	1.5	10	50	4
ESRR714 01203016	1.2	0.3	1.2	16	50	4	ESRR714 01502012	1.5	0.2	1.5	12	50	4
ESRR714 01203020	1.2	0.3	1.2	20	50	4	ESRR714 01502014	1.5	0.2	1.5	14	50	4
ESRR714 01500206	1.5	0.02	1.5	6	45	4	ESRR714 01502016	1.5	0.2	1.5	16	50	4
ESRR714 01500208	1.5	0.02	1.5	8	45	4	ESRR714 01502020	1.5	0.2	1.5	20	50	4
ESRR714 01500210	1.5	0.02	1.5	10	50	4	ESRR714 01502022	1.5	0.2	1.5	22	60	4
ESRR714 01500212	1.5	0.02	1.5	12	50	4	ESRR714 01502025	1.5	0.2	1.5	25	60	4
ESRR714 01500214	1.5	0.02	1.5	14	50	4	ESRR714 01503004	1.5	0.3	1.5	4	45	4
ESRR714 01500216	1.5	0.02	1.5	16	50	4	ESRR714 01503006	1.5	0.3	1.5	6	45	4
ESRR714 01500220	1.5	0.02	1.5	20	50	4	ESRR714 01503008	1.5	0.3	1.5	8	45	4
ESRR714 01500222	1.5	0.02	1.5	22	60	4	ESRR714 01503010	1.5	0.3	1.5	10	50	4
ESRR714 01500504	1.5	0.05	1.5	4	45	4	ESRR714 01503012	1.5	0.3	1.5	12	50	4
ESRR714 01500506	1.5	0.05	1.5	6	45	4	ESRR714 01503014	1.5	0.3	1.5	14	50	4
ESRR714 01500508	1.5	0.05	1.5	8	45	4	ESRR714 01503016	1.5	0.3	1.5	16	50	4
ESRR714 01500510	1.5	0.05	1.5	10	50	4	ESRR714 01503020	1.5	0.3	1.5	20	50	4
ESRR714 01500512	1.5	0.05	1.5	12	50	4	ESRR714 01503022	1.5	0.3	1.5	22	60	4

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	○		○	◎						

ESRR714 4 Flutes Rib Radius End Mill

Endmill

EDP No	DC	RE	APMX	LU	OAL	DCON MS	EDP No	DC	RE	APMX	LU	OAL	DCON MS
ESRR714 01503025	1.5	0.3	1.5	25	60	4	ESRR714 02001016	2	0.1	2	16	50	4
ESRR714 01505004	1.5	0.5	1.5	4	45	4	ESRR714 02001020	2	0.1	2	20	50	4
ESRR714 01505006	1.5	0.5	1.5	6	45	4	ESRR714 02001022	2	0.1	2	22	60	4
ESRR714 01505008	1.5	0.5	1.5	8	45	4	ESRR714 02001025	2	0.1	2	25	60	4
ESRR714 01505010	1.5	0.5	1.5	10	50	4	ESRR714 02001030	2	0.1	2	30	70	4
ESRR714 01505012	1.5	0.5	1.5	12	50	4	ESRR714 02002006	2	0.2	2	6	45	4
ESRR714 01505014	1.5	0.5	1.5	14	50	4	ESRR714 02002008	2	0.2	2	8	45	4
ESRR714 01505016	1.5	0.5	1.5	16	50	4	ESRR714 02002010	2	0.2	2	10	50	4
ESRR714 01505020	1.5	0.5	1.5	20	50	4	ESRR714 02002012	2	0.2	2	12	50	4
ESRR714 01505022	1.5	0.5	1.5	22	60	4	ESRR714 02002014	2	0.2	2	14	50	4
ESRR714 01505025	1.5	0.5	1.5	25	60	4	ESRR714 02002016	2	0.2	2	16	50	4
ESRR714 02000206	2	0.02	2	6	45	4	ESRR714 02002020	2	0.2	2	20	50	4
ESRR714 02000208	2	0.02	2	8	45	4	ESRR714 02002022	2	0.2	2	22	60	4
ESRR714 02000210	2	0.02	2	10	50	4	ESRR714 02002025	2	0.2	2	25	60	4
ESRR714 02000212	2	0.02	2	12	50	4	ESRR714 02002030	2	0.2	2	30	70	4
ESRR714 02000214	2	0.02	2	14	50	4	ESRR714 02003006	2	0.3	2	6	45	4
ESRR714 02000216	2	0.02	2	16	50	4	ESRR714 02003008	2	0.3	2	8	45	4
ESRR714 02000220	2	0.02	2	20	50	4	ESRR714 02003010	2	0.3	2	10	50	4
ESRR714 02000225	2	0.02	2	25	60	4	ESRR714 02003012	2	0.3	2	12	50	4
ESRR714 02000230	2	0.02	2	30	70	4	ESRR714 02003014	2	0.3	2	14	50	4
ESRR714 02000506	2	0.05	2	6	45	4	ESRR714 02003016	2	0.3	2	16	50	4
ESRR714 02000508	2	0.05	2	8	45	4	ESRR714 02003020	2	0.3	2	20	50	4
ESRR714 02000510	2	0.05	2	10	50	4	ESRR714 02003022	2	0.3	2	22	60	4
ESRR714 02000512	2	0.05	2	12	50	4	ESRR714 02003025	2	0.3	2	25	60	4
ESRR714 02000514	2	0.05	2	14	50	4	ESRR714 02003030	2	0.3	2	30	70	4
ESRR714 02000516	2	0.05	2	16	50	4	ESRR714 02005006	2	0.5	3	6	45	4
ESRR714 02000520	2	0.05	2	20	50	4	ESRR714 02005008	2	0.5	2	8	45	4
ESRR714 02000525	2	0.05	2	25	60	4	ESRR714 02005010	2	0.5	2	10	50	4
ESRR714 02000530	2	0.05	2	30	70	4	ESRR714 02005012	2	0.5	2	12	50	4
ESRR714 02001006	2	0.1	2	6	45	4	ESRR714 02005014	2	0.5	2	14	50	4
ESRR714 02001008	2	0.1	2	8	45	4	ESRR714 02005016	2	0.5	2	16	50	4
ESRR714 02001010	2	0.1	2	10	50	4	ESRR714 02005020	2	0.5	2	20	50	4
ESRR714 02001012	2	0.1	2	12	50	4	ESRR714 02005022	2	0.5	2	22	60	4
ESRR714 02001014	2	0.1	2	14	50	4	ESRR714 02005025	2	0.5	2	25	60	4

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
◎	○		○	◎						

ESRR714 4 Flutes Rib Radius End Mill

Endmill

EDP No	DC	RE	APMX	LU	OAL	DCON MS	EDP No	DC	RE	APMX	LU	OAL	DCON MS
ESRR714 02005030	2	0.5	2	30	70	4	ESRR714 03001010	3	0.1	3	10	50	6
ESRR714 02501008	2.5	0.1	2.5	8	45	4	ESRR714 03001012	3	0.1	3	12	50	6
ESRR714 02501010	2.5	0.1	2.5	10	50	4	ESRR714 03001014	3	0.1	3	14	50	6
ESRR714 02501012	2.5	0.1	2.5	12	50	4	ESRR714 03001016	3	0.1	3	16	55	6
ESRR714 02501014	2.5	0.1	2.5	14	50	4	ESRR714 03001020	3	0.1	3	20	60	6
ESRR714 02501016	2.5	0.1	2.5	16	50	4	ESRR714 03001025	3	0.1	3	25	65	6
ESRR714 02501020	2.5	0.1	2.5	20	50	4	ESRR714 03001030	3	0.1	3	30	70	6
ESRR714 02501025	2.5	0.1	2.5	25	60	4	ESRR714 03001035	3	0.1	3	35	75	6
ESRR714 02501030	2.5	0.1	2.5	30	70	4	ESRR714 03001040	3	0.1	3	40	80	6
ESRR714 02502008	2.5	0.2	2.5	8	45	4	ESRR714 03001045	3	0.1	3	45	90	6
ESRR714 02502010	2.5	0.2	2.5	10	50	4	ESRR714 03002008	3	0.2	3	8	45	6
ESRR714 02502012	2.5	0.2	2.5	12	50	4	ESRR714 03002010	3	0.2	3	10	50	6
ESRR714 02502014	2.5	0.2	2.5	14	50	4	ESRR714 03002012	3	0.2	3	12	50	6
ESRR714 02502016	2.5	0.2	2.5	16	50	4	ESRR714 03002014	3	0.2	3	14	50	6
ESRR714 02502020	2.5	0.2	2.5	20	50	4	ESRR714 03002016	3	0.2	3	16	55	6
ESRR714 02502025	2.5	0.2	2.5	25	60	4	ESRR714 03002020	3	0.2	3	20	60	6
ESRR714 02502030	2.5	0.2	2.5	30	70	4	ESRR714 03002025	3	0.2	3	25	65	6
ESRR714 02503008	2.5	0.3	2.5	8	45	4	ESRR714 03002030	3	0.2	3	30	70	6
ESRR714 02503010	2.5	0.3	2.5	10	50	4	ESRR714 03002035	3	0.2	3	35	75	6
ESRR714 02503012	2.5	0.3	2.5	12	50	4	ESRR714 03002040	3	0.2	3	40	80	6
ESRR714 02503014	2.5	0.3	2.5	14	50	4	ESRR714 03002045	3	0.2	3	45	90	6
ESRR714 02503016	2.5	0.3	2.5	16	50	4	ESRR714 03003008	3	0.3	3	8	45	6
ESRR714 02503020	2.5	0.3	2.5	20	50	4	ESRR714 03003010	3	0.3	3	10	50	6
ESRR714 02503025	2.5	0.3	2.5	25	60	4	ESRR714 03003012	3	0.3	3	12	50	6
ESRR714 02503030	2.5	0.3	2.5	30	70	4	ESRR714 03003014	3	0.3	3	14	50	6
ESRR714 02505008	2.5	0.5	2.5	8	45	4	ESRR714 03003016	3	0.3	3	16	55	6
ESRR714 02505010	2.5	0.5	2.5	10	50	4	ESRR714 03003020	3	0.3	3	20	60	6
ESRR714 02505012	2.5	0.5	2.5	12	50	4	ESRR714 03003025	3	0.3	3	25	65	6
ESRR714 02505014	2.5	0.5	2.5	14	50	4	ESRR714 03003030	3	0.3	3	30	70	6
ESRR714 02505016	2.5	0.5	2.5	16	50	4	ESRR714 03003035	3	0.3	3	35	75	6
ESRR714 02505020	2.5	0.5	2.5	20	50	4	ESRR714 03003040	3	0.3	3	40	80	6
ESRR714 02505025	2.5	0.5	2.5	25	60	4	ESRR714 03003045	3	0.3	3	45	90	6
ESRR714 02505030	2.5	0.5	2.5	30	70	4	ESRR714 03005008	3	0.5	3	8	45	6
ESRR714 03001008	3	0.1	3	8	45	6	ESRR714 03005010	3	0.5	3	10	50	6

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	○		○	◎						

ESRR714 4 Flutes Rib Radius End Mill

Endmill

EDP No	DC	RE	APMX	LU	OAL	DCON MS	EDP No	DC	RE	APMX	LU	OAL	DCON MS
ESRR714 03005012	3	0.5	3	12	50	6	ESRR714 04002012	4	0.2	4	12	50	6
ESRR714 03005014	3	0.5	3	14	50	6	ESRR714 04002013	4	0.2	4	13	55	6
ESRR714 03005016	3	0.5	3	16	55	6	ESRR714 04002016	4	0.2	4	16	55	6
ESRR714 03005020	3	0.5	3	20	60	6	ESRR714 04002020	4	0.2	4	20	60	6
ESRR714 03005025	3	0.5	3	25	65	6	ESRR714 04002025	4	0.2	4	25	65	6
ESRR714 03005030	3	0.5	3	30	70	6	ESRR714 04002030	4	0.2	4	30	70	6
ESRR714 03005035	3	0.5	3	35	75	6	ESRR714 04002035	4	0.2	4	35	75	6
ESRR714 03005040	3	0.5	3	40	80	6	ESRR714 04002040	4	0.2	4	40	80	6
ESRR714 03005045	3	0.5	3	45	90	6	ESRR714 04002045	4	0.2	4	45	90	6
ESRR714 03005050	3	0.5	3	50	100	6	ESRR714 04002050	4	0.2	4	50	100	6
ESRR714 03010008	3	1	3	8	45	6	ESRR714 04003010	4	0.3	4	10	50	6
ESRR714 03010010	3	1	3	10	50	6	ESRR714 04003012	4	0.3	4	12	50	6
ESRR714 03010012	3	1	3	12	50	6	ESRR714 04003013	4	0.3	4	13	55	6
ESRR714 03010014	3	1	3	14	50	6	ESRR714 04003016	4	0.3	4	16	55	6
ESRR714 03010016	3	1	3	16	55	6	ESRR714 04003020	4	0.3	4	20	60	6
ESRR714 03010020	3	1	3	20	60	6	ESRR714 04003025	4	0.3	4	25	65	6
ESRR714 03010025	3	1	3	25	65	6	ESRR714 04003030	4	0.3	4	30	70	6
ESRR714 03010030	3	1	3	30	70	6	ESRR714 04003035	4	0.3	4	35	75	6
ESRR714 03010035	3	1	3	35	75	6	ESRR714 04003040	4	0.3	4	40	80	6
ESRR714 03010040	3	1	3	40	80	6	ESRR714 04003045	4	0.3	4	45	90	6
ESRR714 03010045	3	1	3	45	90	6	ESRR714 04003050	4	0.3	4	50	100	6
ESRR714 03010050	3	1	3	50	100	6	ESRR714 04005010	4	0.5	4	10	50	6
ESRR714 04001010	4	0.1	4	10	50	6	ESRR714 04005012	4	0.5	4	12	50	6
ESRR714 04001012	4	0.1	4	12	50	6	ESRR714 04005013	4	0.5	4	13	55	6
ESRR714 04001013	4	0.1	4	13	55	6	ESRR714 04005016	4	0.5	4	16	55	6
ESRR714 04001016	4	0.1	4	16	55	6	ESRR714 04005020	4	0.5	4	20	60	6
ESRR714 04001020	4	0.1	4	20	60	6	ESRR714 04005025	4	0.5	4	25	65	6
ESRR714 04001025	4	0.1	4	25	65	6	ESRR714 04005030	4	0.5	4	30	70	6
ESRR714 04001030	4	0.1	4	30	70	6	ESRR714 04005035	4	0.5	4	35	75	6
ESRR714 04001035	4	0.1	4	35	75	6	ESRR714 04005040	4	0.5	4	40	80	6
ESRR714 04001040	4	0.1	4	40	80	6	ESRR714 04005045	4	0.5	4	45	90	6
ESRR714 04001045	4	0.1	4	45	90	6	ESRR714 04005050	4	0.5	4	50	100	6
ESRR714 04001050	4	0.1	4	50	100	6	ESRR714 04005055	4	0.5	4	55	100	6
ESRR714 04002010	4	0.2	4	10	50	6	ESRR714 04010010	4	1	4	10	50	6

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	~325	HRC30~50	~FCD500					
◎	○		○	◎						

ESRR714 4 Flutes Rib Radius End Mill

Endmill

EDP No	DC	RE	APMX	LU	OAL	DCON MS	EDP No	DC	RE	APMX	LU	OAL	DCON MS
ESRR714 04010012	4	1	4	12	50	6	ESRR714 06001050	6	0.1	7	50	100	6
ESRR714 04010013	4	1	4	13	55	6	ESRR714 06002020	6	0.2	7	20	60	6
ESRR714 04010016	4	1	4	16	55	6	ESRR714 06002040	6	0.2	7	40	80	6
ESRR714 04010020	4	1	4	20	60	6	ESRR714 06002050	6	0.2	7	50	100	6
ESRR714 04010025	4	1	4	25	65	6	ESRR714 06003020	6	0.3	7	20	60	6
ESRR714 04010030	4	1	4	30	70	6	ESRR714 06003030	6	0.3	7	30	70	6
ESRR714 04010035	4	1	4	35	75	6	ESRR714 06003040	6	0.3	7	40	80	6
ESRR714 04010040	4	1	4	40	80	6	ESRR714 06003050	6	0.3	7	50	100	6
ESRR714 04010045	4	1	4	45	90	6	ESRR714 06005020	6	0.5	7	20	60	6
ESRR714 04010050	4	1	4	50	100	6	ESRR714 06005030	6	0.5	7	30	70	6
ESRR714 04010055	4	1	4	55	100	6	ESRR714 06005040	6	0.5	7	40	80	6
ESRR714 05001016	5	0.1	5	16	60	6	ESRR714 06005050	6	0.5	7	50	100	6
ESRR714 05001030	5	0.1	5	30	70	6	ESRR714 06005060	6	0.5	7	60	110	6
ESRR714 05001040	5	0.1	5	40	80	6	ESRR714 06010020	6	1	7	20	60	6
ESRR714 05002016	5	0.2	5	16	60	6	ESRR714 06010030	6	1	7	30	70	6
ESRR714 05002030	5	0.2	5	30	70	6	ESRR714 06010040	6	1	7	40	80	6
ESRR714 05002040	5	0.2	5	40	80	6	ESRR714 06010050	6	1	7	50	100	6
ESRR714 05003016	5	0.3	5	16	60	6	ESRR714 06010060	6	1	7	60	110	6
ESRR714 05003030	5	0.3	5	30	70	6	ESRR714 06015020	6	1.5	7	20	60	6
ESRR714 05003040	5	0.3	5	40	80	6	ESRR714 06015040	6	1.5	7	40	80	6
ESRR714 05005016	5	0.5	5	16	60	6	ESRR714 06015050	6	1.5	7	50	100	6
ESRR714 05005030	5	0.5	5	30	70	6	ESRR714 06020020	6	2	7	20	60	6
ESRR714 05005040	5	0.5	5	40	80	6	ESRR714 06020030	6	2	7	30	70	6
ESRR714 05005050	5	0.5	5	50	100	6	ESRR714 06020040	6	2	7	40	80	6
ESRR714 05005060	5	0.5	5	60	110	6	ESRR714 06020050	6	2	7	50	100	6
ESRR714 05010016	5	1	5	16	60	6	ESRR714 08001025	8	0.1	9	25	70	8
ESRR714 05010030	5	1	5	30	70	6	ESRR714 08002022	8	0.2	9	22	65	8
ESRR714 05010040	5	1	5	40	80	6	ESRR714 08002040	8	0.2	9	40	100	8
ESRR714 05010050	5	1	5	50	100	6	ESRR714 08003022	8	0.3	9	22	65	8
ESRR714 05010060	5	1	5	60	110	6	ESRR714 08003040	8	0.3	9	40	100	8
ESRR714 05015015	5	1.5	5	15	60	6	ESRR714 08005022	8	0.5	9	22	65	8
ESRR714 05020015	5	2	5	15	60	6	ESRR714 08005035	8	0.5	9	35	100	8
ESRR714 06001020	6	0.1	7	20	60	6	ESRR714 08005040	8	0.5	9	40	100	8
ESRR714 06001040	6	0.1	7	40	80	6	ESRR714 08005050	8	0.5	9	50	120	8

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	○		○	◎						

ESRR714 4 Flutes Rib Radius End Mill

Endmill

EDP No	DC	RE	APMX	LU	OAL	DCON MS	EDP No	DC	RE	APMX	LU	OAL	DCON MS
ESRR714 08005060	8	0.5	9	60	120	8	ESRR714 10020024	10	2	11	24	70	10
ESRR714 08010022	8	1	9	22	65	8	ESRR714 10020040	10	2	11	40	100	10
ESRR714 08010035	8	1	9	35	100	8	ESRR714 10020050	10	2	11	50	120	10
ESRR714 08010040	8	1	9	40	100	8	ESRR714 10025024	10	2.5	11	24	70	10
ESRR714 08010050	8	1	9	50	120	8	ESRR714 12002032	12	0.2	13	32	80	12
ESRR714 08010060	8	1	9	60	120	8	ESRR714 12003026	12	0.3	13	26	80	12
ESRR714 08015022	8	1.5	9	22	65	8	ESRR714 12003045	12	0.3	13	45	110	12
ESRR714 08015040	8	1.5	9	40	100	8	ESRR714 12005026	12	0.5	13	26	80	12
ESRR714 08020022	8	2	9	22	65	8	ESRR714 12005040	12	0.5	13	40	110	12
ESRR714 08020040	8	2	9	40	100	8	ESRR714 12005060	12	0.5	13	60	130	12
ESRR714 08020050	8	2	9	50	120	8	ESRR714 12010026	12	1	13	26	80	12
ESRR714 10001030	10	0.1	11	30	75	10	ESRR714 12010040	12	1	13	40	110	12
ESRR714 10002024	10	0.2	11	24	70	10	ESRR714 12010060	12	1	13	60	130	12
ESRR714 10002040	10	0.2	11	40	100	10	ESRR714 12015026	12	1.5	13	26	80	12
ESRR714 10003024	10	0.3	11	24	70	10	ESRR714 12020026	12	2	13	26	80	12
ESRR714 10003040	10	0.3	11	40	100	10	ESRR714 12020040	12	2	13	40	110	12
ESRR714 10005024	10	0.5	11	24	70	10	ESRR714 12030026	12	3	13	26	80	12
ESRR714 10005040	10	0.5	11	40	100	10	ESRR714 16005035	16	0.5	20	35	100	16
ESRR714 10005050	10	0.5	11	50	120	10	ESRR714 16005050	16	0.5	35	50	150	16
ESRR714 10005060	10	0.5	11	60	120	10	ESRR714 16010035	16	1	20	35	100	16
ESRR714 10010024	10	1	11	24	70	10	ESRR714 16010050	16	1	35	50	150	16
ESRR714 10010040	10	1	11	40	100	10	ESRR714 20005040	20	0.5	25	40	100	20
ESRR714 10010050	10	1	11	50	120	10	ESRR714 20005055	20	0.5	40	55	150	20
ESRR714 10010060	10	1	11	60	120	10	ESRR714 20010040	20	1	25	40	100	20
ESRR714 10015024	10	1.5	11	24	70	10	ESRR714 20010055	20	1	40	55	150	20
ESRR714 10015040	10	1.5	11	40	100	10							

Standard

Copper
-Mate

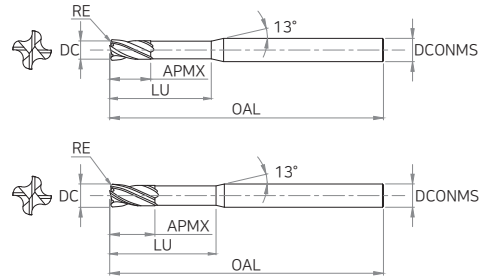
Gra
-Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

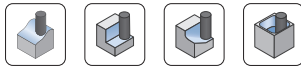
H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	○		○	◎						

ESXR704 4 Flutes Neck Radius End Mill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.02	h5



EDP No	DC	RE	APMX	LU	OAL	DCON MS	EDP No	DC	RE	APMX	LU	OAL	DCON MS
ESXR704 01000504	1	0.05	1.5	4	45	4	ESXR704 0401012	4	1	5	12	55	6
ESXR704 02000506	2	0.05	3	6	45	4	ESXR704 0500116	5	0.1	6	16	60	6
ESXR704 02000507	2	0.05	2.5	7	50	4	ESXR704 0500216	5	0.2	6	16	60	6
ESXR704 0200107	2	0.1	2.5	7	50	4	ESXR704 0500316	5	0.3	6	16	60	6
ESXR704 0300107	3	0.1	4	7	45	6	ESXR704 0500516	5	0.5	6	16	60	6
ESXR704 0300109	3	0.1	4	9	55	6	ESXR704 0501016	5	1	6	16	60	6
ESXR704 0300209	3	0.2	4	9	55	6	ESXR704 0600120	6	0.1	7	20	60	6
ESXR704 0300309	3	0.3	4	9	55	6	ESXR704 0600214	6	0.2	7	14	50	6
ESXR704 0300312	3	0.3	4	12	55	6	ESXR704 0600220	6	0.2	7	20	60	6
ESXR704 0300316	3	0.3	4	16	55	6	ESXR704 0600320	6	0.3	7	20	60	6
ESXR704 0400109	4	0.1	5	9	45	6	ESXR704 0600520	6	0.5	7	20	60	6
ESXR704 0400212	4	0.2	5	12	55	6	ESXR704 0601020	6	1	7	20	60	6
ESXR704 0400212S4	4	0.2	5	12	55	4	ESXR704 0601520	6	1.5	7	20	60	6
ESXR704 0400312	4	0.3	5	12	55	6	ESXR704 0800125	8	0.1	9	25	60	8
ESXR704 0400316	4	0.3	5	16	55	6	ESXR704 0800218	8	0.2	9	18	60	8
ESXR704 0400320	4	0.3	5	20	55	6	ESXR704 0800225	8	0.2	9	25	60	8
ESXR704 0400512	4	0.5	5	12	55	6	ESXR704 0800325	8	0.3	9	25	60	8
ESXR704 0400516	4	0.5	5	16	55	6	ESXR704 0800525	8	0.5	9	25	60	8
ESXR704 0400516S4	4	0.5	5	16	55	4	ESXR704 0801025	8	1	9	25	60	8
ESXR704 0400520	4	0.5	5	20	55	6	ESXR704 0801525	8	1.5	9	25	60	8

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	○		○	◎						

ESXR704 4 Flutes Neck Radius End Mill

Endmill

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

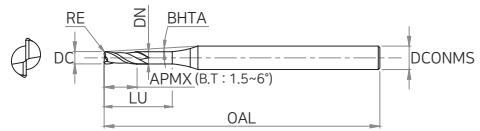
EDP No	DC	RE	APMX	LU	OAL	DCON MS	EDP No	DC	RE	APMX	LU	OAL	DCON MS
ESXR704 0802025	8	2	9	25	60	8	ESXR704 1200238	12	0.2	12	38	75	12
ESXR704 1000225	10	0.2	12	25	75	10	ESXR704 1200330	12	0.3	15	30	75	12
ESXR704 1000232	10	0.2	11	32	75	10	ESXR704 1200338	12	0.3	12	38	75	12
ESXR704 1000332	10	0.3	11	32	75	10	ESXR704 1200538	12	0.5	12	38	75	12
ESXR704 1000532	10	0.5	11	32	75	10	ESXR704 1201038	12	1	12	38	75	12
ESXR704 1001032	10	1	11	32	75	10	ESXR704 1201538	12	1.5	12	38	75	12
ESXR704 1001532	10	1.5	11	32	75	10	ESXR704 1202038	12	2	12	38	75	12
ESXR704 1002032	10	2	11	32	75	10							

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

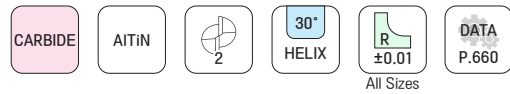
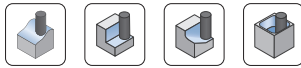
H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	○		○	◎						

ESLNR20 2 Flutes Long Neck Radius End Mill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.012	h5



EDP No	DC	RE	APMX	LU	DN	OAL	DCONMS	BHTA	Effective length by inclination angle				
									0.5°	1°	1.5°	2°	3°
ESLNR20 02-0.5-005	0.2	0.05	0.15	0.5	0.17	50	4	11.4	0.9	1	1	1.1	12
ESLNR20 02-1-005	0.2	0.05	0.15	1	0.17	50	4	10.9	1.6	1.7	1.9	2	2.3
ESLNR20 02-1.5-005	0.2	0.05	0.15	1.5	0.17	50	4	10.3	2.1	2.3	2.5	2.7	3
ESLNR20 02-2-005	0.2	0.05	0.15	2	0.17	50	4	9.9	2.8	3.1	3.4	3.6	4.1
ESLNR20 03-1-005	0.3	0.05	0.25	1	0.27	50	4	10.8	1.4	1.5	1.6	1.7	1.9
ESLNR20 03-1.5-005	0.3	0.05	0.25	1.5	0.27	50	4	10.3	2.1	2.3	2.5	2.7	3
ESLNR20 03-2.5-005	0.3	0.05	0.25	2.5	0.27	50	4	9.8	2.7	2.9	3.1	3.3	3.6
ESLNR20 03-2-005	0.3	0.05	0.25	2	0.27	50	4	9.4	3.2	3.5	3.7	3.9	4.3
ESLNR20 03-3-005	0.3	0.05	0.25	3	0.27	50	4	9	3.9	4.3	4.6	4.9	5.4
ESLNR20 04-1-005	0.4	0.05	0.3	1	0.37	50	4	10.8	1.4	1.5	1.6	1.7	1.9
ESLNR20 04-1.5-005	0.4	0.05	0.3	1.5	0.37	50	4	10.3	2	2.1	2.2	2.3	2.5
ESLNR20 04-2-005	0.4	0.05	0.3	2	0.37	50	4	9.8	2.7	2.9	3.1	3.3	3.6
ESLNR20 04-2.5-005	0.4	0.05	0.3	2.5	0.37	50	4	9.4	3.2	3.5	3.7	3.9	4.3
ESLNR20 04-3-005	0.4	0.05	0.3	3	0.37	50	4	9	3.8	4	4.3	4.5	4.9
ESLNR20 04-3.5-005	0.4	0.05	0.3	3.5	0.37	50	4	8.6	4.3	4.6	4.9	5.1	5.5
ESLNR20 04-4-005	0.4	0.05	0.3	4	0.37	50	4	8.3	5	5.4	5.8	6.1	6.6
ESLNR20 04-2-01	0.4	0.1	0.3	2	0.37	50	4	9.8	2.7	2.9	3.1	3.3	3.6
ESLNR20 04-3-01	0.4	0.1	0.3	3	0.37	50	4	9	3.8	4	4.3	4.5	4.9
ESLNR20 04-4-01	0.4	0.1	0.3	4	0.37	50	4	8.3	5	5.4	5.8	6.1	6.6
ESLNR20 05-1-005	0.5	0.05	0.35	1	0.47	50	4	10.8	1.4	1.5	1.6	1.7	1.9

► Applicable Working Material

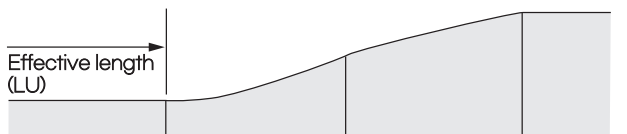
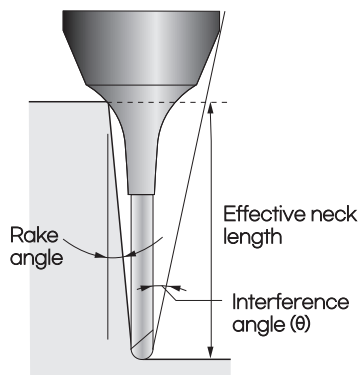
○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	○		○	◎						

ESLNR20

2 Flutes Long Neck Radius End Mill

Endmill



※ The marked effective neck length is the default value to prevent interference with the workpiece.

EDP No	DC	RE	APMX	LU	DN	OAL	DCON MS	BHTA	Effective length by inclination angle				
									0.5°	1°	1.5°	2°	3°
ESLNR20 05-2-005	0.5	0.05	0.35	2	0.47	50	4	9.7	2.5	2.6	2.8	2.9	3.1
ESLNR20 05-3-005	0.5	0.05	0.35	3	0.47	50	4	8.9	3.8	4	4.3	4.5	4.9
ESLNR20 05-4-005	0.5	0.05	0.35	4	0.47	50	4	8.2	4.8	5.2	5.4	5.7	6.1
ESLNR20 05-5-005	0.5	0.05	0.35	5	0.47	50	4	7.6	6.1	6.6	6.9	7.3	7.8
ESLNR20 05-6-005	0.5	0.05	0.35	6	0.47	50	4	7	7.2	7.7	8.1	8.4	9
ESLNR20 05-1-01	0.5	0.1	0.35	1	0.47	50	4	10.8	1.4	1.5	1.6	1.7	1.9
ESLNR20 05-2-01	0.5	0.1	0.35	2	0.47	50	4	9.8	2.5	2.6	2.8	2.9	3.1
ESLNR20 05-3-01	0.5	0.1	0.35	3	0.47	50	4	8.9	3.8	4	4.3	4.5	4.9
ESLNR20 05-4-01	0.5	0.1	0.35	4	0.47	50	4	8.2	4.8	5.2	5.4	5.7	6.1
ESLNR20 05-5-01	0.5	0.1	0.35	5	0.47	50	4	7.6	6.1	6.5	6.9	7.2	7.8
ESLNR20 05-6-01	0.5	0.1	0.35	6	0.47	50	4	7.1	7.2	7.7	8.1	8.4	9
ESLNR20 06-2-01	0.6	0.1	0.4	2	0.57	50	4	9.7	2.5	2.6	2.8	2.9	3.1
ESLNR20 06-4-01	0.6	0.1	0.4	4	0.57	50	4	8.1	4.8	5.2	5.4	5.7	6.1
ESLNR20 06-6-01	0.6	0.1	0.4	6	0.57	50	4	7	7.2	7.7	8.1	8.4	9
ESLNR20 06-8-01	0.6	0.1	0.4	8	0.57	50	4	6.1	9.3	9.9	10.3	10.7	11
ESLNR20 06-10-01	0.6	0.1	0.4	10	0.57	50	4	5.5	11.5	12.1	12.5	13	13.7
ESLNR20 08-4-01	0.8	0.1	0.5	4	0.77	50	4	8	4.8	5.2	5.4	5.7	6.1
ESLNR20 08-6-01	0.8	0.1	0.5	6	0.77	50	4	6.8	7	7.4	7.7	7.9	8.4
ESLNR20 08-8-01	0.8	0.1	0.5	8	0.77	50	4	5.9	9.3	9.9	10.3	10.7	11.4
ESLNR20 08-12-01	0.8	0.1	0.5	12	0.77	50	4	4.7	13.6	14.2	14.7	15.2	16

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	~325	HRC30~50	~FCD500					
◎	○		○	◎						

ESLNR20

2 Flutes Long Neck Radius End Mill

Endmill

EDP No	DC	RE	APMX	LU	DN	OAL	DCON MS	BHTA	Effective length by inclination angle				
									0.5°	1°	1.5°	2°	3°
ESLNR20 08-4-02	0.8	0.2	0.5	4	0.77	50	4	8	4.8	5.1	5.4	5.6	6.1
ESLNR20 08-6-02	0.8	0.2	0.5	6	0.77	50	4	6.9	7	7.3	7.7	7.9	8.4
ESLNR20 10-4-01	1	0.1	0.8	4	0.94	50	4	7.7	4.7	4.9	5.1	5.2	5.5
ESLNR20 10-6-01	1	0.1	0.8	6	0.94	50	4	6.6	7.1	7.4	7.7	8	8.5
ESLNR20 10-8-01	1	0.1	0.8	8	0.94	50	4	5.7	9.2	9.6	9.9	10.2	10.8
ESLNR20 10-10-01	1	0.1	0.8	10	0.94	50	4	5.1	11.6	12.1	12.6	13	13.7
ESLNR20 10-12-01	1	0.1	0.8	12	0.94	55	4	4.5	13.7	14.3	14.8	15.3	16
ESLNR20 10-16-01	1	0.1	0.8	16	0.94	60	4	3.8	17.9	18.6	19.2	19.7	21.3
ESLNR20 10-20-01	1	0.1	0.8	20	0.94	60	4	3.2	22	22.8	23.5	24	26.7
ESLNR20 10-4-02	1	0.2	0.8	4	0.94	50	4	7.8	4.7	4.9	5.1	5.2	5.5
ESLNR20 10-6-02	1	0.2	0.8	6	0.94	50	4	6.6	7.1	7.4	7.7	8	8.5
ESLNR20 10-8-02	1	0.2	0.8	8	0.94	50	4	5.8	9.2	9.6	9.9	10.2	10.8
ESLNR20 10-10-02	1	0.2	0.8	10	0.94	50	4	5.1	11.6	12.1	12.6	13	13.7
ESLNR20 10-12-02	1	0.2	0.8	12	0.94	55	4	4.6	13.7	14.3	14.8	15.2	16
ESLNR20 10-16-02	1	0.2	0.8	16	0.94	60	4	3.8	17.9	18.6	19.2	19.7	21.3
ESLNR20 10-20-02	1	0.2	0.8	20	0.94	60	4	3.2	22	22.8	23.5	24	26.6
ESLNR20 10-6-03	1	0.3	0.8	6	0.94	50	4	6.7	7.1	7.4	7.7	8	8.4
ESLNR20 10-10-03	1	0.3	0.8	10	0.94	50	4	5.1	11.5	12.1	12.6	13	13.7
ESLNR20 10-16-03	1	0.3	0.8	16	0.94	60	4	3.8	17.9	18.6	19.1	19.6	21.3
ESLNR20 10-20-03	1	0.3	0.8	20	0.94	60	4	3.2	22	22.8	23.5	24	26.6
ESLNR20 15-4-01	1.5	0.1	1.35	4	1.42	50	4	7.2	4.8	4.9	5.1	5.3	5.5
ESLNR20 15-8-01	1.5	0.1	1.35	8	1.42	50	4	5.2	9.2	9.6	10	10.3	10.8
ESLNR20 15-12-01	1.5	0.1	1.35	12	1.42	55	4	4	13.4	13.9	14.3	14.7	16.1
ESLNR20 15-15-01	1.5	0.1	1.35	15	1.42	55	4	3.5	16.9	17.6	18.1	18.6	20.1
ESLNR20 15-20-01	1.5	0.1	1.35	20	1.42	60	4	2.8	22.1	22.9	23.5	24.1	-
ESLNR20 15-4-02	1.5	0.2	1.35	4	1.42	50	4	7.3	4.7	4.9	5.1	5.3	5.5
ESLNR20 15-8-02	1.5	0.2	1.35	8	1.42	50	4	5.2	9.2	9.6	10	10.3	10.8
ESLNR20 15-12-02	1.5	0.2	1.35	12	1.42	55	4	4.1	13.4	13.9	14.3	14.7	16.1
ESLNR20 15-15-02	1.5	0.2	1.35	15	1.42	55	4	3.5	16.9	17.5	18.1	18.6	20
ESLNR20 15-20-02	1.5	0.2	1.35	20	1.42	60	4	2.8	22.1	22.9	23.5	24.1	-
ESLNR20 15-8-03	1.5	0.3	1.35	8	1.42	50	4	5.2	9.2	9.6	10	10.3	10.8
ESLNR20 15-15-03	1.5	0.3	1.35	15	1.42	55	4	3.5	16.9	17.5	18.1	18.6	20
ESLNR20 15-20-03	1.5	0.3	1.35	20	1.42	60	4	2.8	22.1	22.9	23.5	24	-
ESLNR20 20-6-02	2	0.2	1.7	6	1.92	50	4	5.4	6.8	7.1	7.3	7.5	8.1

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	Steel HRc30~50	~FCD500					
◎	○		○	◎						

ESLNR20

2 Flutes Long Neck Radius End Mill

Endmill

	EDP No	DC	RE	APMX	LU	DN	OAL	DCON MS	BHTA	Effective length by inclination angle				
										0.5°	1°	1.5°	2°	3°
Zamus Star	ESLNR20 20-8-02	2	0.2	1.7	8	1.92	50	4	4.6	8.9	9.2	9.4	9.7	10.8
	ESLNR20 20-12-02	2	0.2	1.7	12	1.92	55	4	3.5	13.4	13.9	14.3	14.7	16.1
	ESLNR20 20-16-02	2	0.2	1.7	16	1.92	55	4	2.8	17.6	18.1	18.6	19.3	-
	ESLNR20 20-20-02	2	0.2	1.7	20	1.92	60	4	2.4	22.1	22.9	23.5	24.1	-
E-Star	ESLNR20 20-25-02	2	0.2	1.7	25	1.92	65	4	2	27.3	28.2	28.8	-	-
	ESLNR20 20-30-02	2	0.2	1.7	30	1.92	70	4	1.7	32.5	33.4	34.4	-	-
	ESLNR20 20-8-03	2	0.3	1.7	8	1.92	50	4	4.6	8.9	9.2	9.4	9.7	10.7
	ESLNR20 20-16-03	2	0.3	1.7	16	1.92	55	4	2.8	17.6	18.1	18.6	19.3	-
U-Wing	ESLNR20 20-20-03	2	0.3	1.7	20	1.92	60	4	2.4	22.1	22.9	23.5	24	-
	ESLNR20 20-6-05	2	0.5	1.7	6	1.92	50	4	5.5	6.8	7.1	7.3	7.4	8
	ESLNR20 20-8-05	2	0.5	1.7	8	1.92	50	4	4.7	8.9	9.2	9.4	9.6	10.7
	ESLNR20 20-12-05	2	0.5	1.7	12	1.92	55	4	3.5	13.4	13.9	14.3	14.6	16
Zamus Thunder	ESLNR20 20-16-05	2	0.5	1.7	16	1.92	55	4	2.9	17.6	18.1	18.6	19.2	-
	ESLNR20 20-20-05	2	0.5	1.7	20	1.92	60	4	2.4	22.1	22.9	23.5	24	-
	ESLNR20 20-25-05	2	0.5	1.7	25	1.92	65	4	2	27.3	28.1	28.8	-	-
	ESLNR20 20-30-05	2	0.5	1.7	30	1.92	70	4	1.7	32.5	33.4	34.3	-	-
X-Star	ESLNR20 20-8-08	2	0.8	1.7	8	1.92	50	4	4.8	8.9	9.2	9.4	9.6	10.6
	ESLNR20 20-16-08	2	0.8	1.7	16	1.92	55	4	2.9	17.6	18.1	18.6	19.2	-
	ESLNR20 20-20-08	2	0.8	1.7	20	1.92	60	4	2.4	22.1	22.8	23.5	24	-
	ESLNR20 30-8-02	3	0.2	2.5	8	2.86	55	6	5.7	9	9.3	9.5	9.9	10.9
S-Wing	ESLNR20 30-12-02	3	0.2	2.5	12	2.86	60	6	4.5	13.1	13.5	14	14.7	16.2
	ESLNR20 30-16-02	3	0.2	2.5	16	2.86	60	6	3.8	17.7	18.2	18.7	19.5	21.6
	ESLNR20 30-20-02	3	0.2	2.5	20	2.86	65	6	3.2	21.8	22.4	23.1	24.2	26.9
	ESLNR20 30-30-02	3	0.2	2.5	30	2.86	75	6	2.4	32.6	33.5	34.5	36.2	-
A-Wing	ESLNR20 30-35-02	3	0.2	2.5	35	2.86	80	6	2.1	37.7	38.7	40.2	42.2	-
	ESLNR20 30-8-03	3	0.3	2.5	8	2.86	55	6	5.7	9	9.3	9.5	9.9	10.9
	ESLNR20 30-16-03	3	0.3	2.5	16	2.86	60	6	3.8	17.7	18.2	18.7	19.4	21.5
	ESLNR20 30-20-03	3	0.3	2.5	20	2.86	65	6	3.2	21.8	22.4	23.1	24.2	26.8
Standard	ESLNR20 30-30-03	3	0.3	2.5	30	2.86	75	6	2.4	32.6	33.5	34.5	36.2	-
	ESLNR20 30-8-05	3	0.5	2.5	8	2.86	55	6	5.8	9	9.3	9.5	9.8	10.8
	ESLNR20 30-12-05	3	0.5	2.5	12	2.86	60	6	4.6	13.1	13.5	13.9	14.6	16.2
	ESLNR20 30-16-05	3	0.5	2.5	16	2.86	60	6	3.8	17.7	18.2	18.7	19.4	21.5
Copper -Mate	ESLNR20 30-20-05	3	0.5	2.5	20	2.86	65	6	3.2	21.8	22.4	23.1	24.2	26.8
	ESLNR20 30-30-05	3	0.5	2.5	30	2.86	75	6	2.4	32.6	33.5	34.5	36.1	-
	ESLNR20 30-35-05	3	0.5	2.5	35	2.86	80	6	2.1	37.7	38.7	40.2	42.1	-

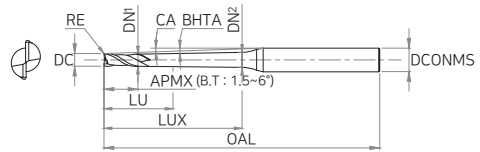
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
◎	○		○	◎						

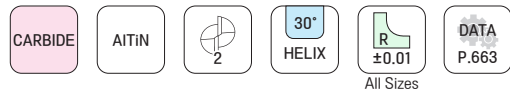
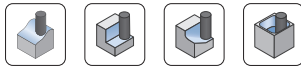
ESTNR20

2 Flutes Tapered Neck Radius End Mill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.012	h5



EDP No	DC	RE	APMX	LUX	CA	DN ¹	DN ²	OAL	DCONMS	LU	BHTA	Effective length by inclination angle				
												0.5°	1°	1.5°	2°	3°
ESTNR20 02-2-09005	0.2	0.05	0.15	2	0.9	0.17	0.23	50	4	1.1	10	-	2.8	3.1	3.4	3.9
ESTNR20 04-4-09005	0.4	0.05	0.3	4	0.9	0.37	0.49	50	4	1.25	8.4	-	4.9	5.3	5.7	6.3
ESTNR20 04-5-09005	0.4	0.05	0.3	5	0.9	0.37	0.52	50	4	1.25	7.8	-	5.9	6.4	6.8	7.5
ESTNR20 04-4-0901	0.4	0.1	0.3	4	0.9	0.37	0.49	50	4	1.25	8.5	-	4.9	5.3	5.7	6.3
ESTNR20 04-5-0901	0.4	0.1	0.3	5	0.9	0.37	0.52	50	4	1.25	7.9	-	5.9	6.4	6.8	7.5
ESTNR20 05-5-0901	0.5	0.1	0.35	5	0.9	0.47	0.62	50	4	1.3	7.8	-	5.9	6.4	6.8	7.5
ESTNR20 05-8-0901	0.5	0.1	0.35	8	0.9	0.47	0.71	50	4	1.3	6.4	-	9	9.7	10.2	11
ESTNR20 05-10-0901	0.5	0.1	0.35	10	0.9	0.47	0.77	55	4	1.3	5.8	-	11	11.8	12.4	13.2
ESTNR20 06-12-0901	0.6	0.1	0.4	12	0.9	0.57	0.93	55	4	1.35	5.1	-	13	13.9	14.5	15.5
ESTNR20 06-15-0901	0.6	0.1	0.4	15	0.9	0.57	1.3	55	4	1.35	4.5	-	16.1	17.1	17.8	18.8
ESTNR20 08-6-0402	0.8	0.2	0.5	6	0.4	0.77	0.85	50	4	2.64	7	6.6	7.1	7.5	7.8	8.3
ESTNR20 08-12-0902	0.8	0.2	0.5	12	0.9	0.77	1.13	55	4	1.45	5	-	13	13.9	14.5	15.5
ESTNR20 10-8-0402	1	0.2	0.8	8	0.4	0.94	1.4	55	6	5.09	7.4	8.8	9.3	9.7	10.1	10.6
ESTNR20 10-10-0902	1	0.2	0.8	10	0.9	0.94	1.23	55	6	5.09	6.8	-	11.2	11.9	12.4	13.3
ESTNR20 10-15-0902	1	0.2	0.8	15	0.9	0.94	1.39	60	6	2.7	5.6	-	16.3	17.2	17.8	18.8
ESTNR20 10-20-0902	1	0.2	0.8	20	0.9	0.94	1.54	65	6	2.7	4.8	-	21.3	22.4	23.2	24.7
ESTNR20 10-25-0902	1	0.2	0.8	25	0.9	0.94	1.7	70	6	2.7	4.1	-	26.4	27.6	28.5	30.9
ESTNR20 10-30-0902	1	0.2	0.8	30	0.9	0.94	1.86	75	6	2.7	3.7	-	31.5	32.8	33.7	37
ESTNR20 10-35-0902	1	0.2	0.8	35	0.9	0.94	2.2	80	6	2.7	3.3	-	36.5	38	39	43.2
ESTNR20 10-8-0403	1	0.3	0.8	8	0.4	0.94	1.4	55	6	2.7	7.4	8.8	9.3	9.7	10	10.6

► Applicable Working Material

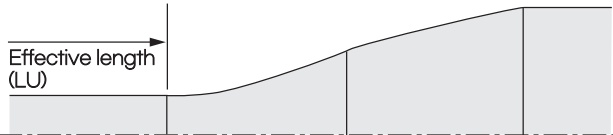
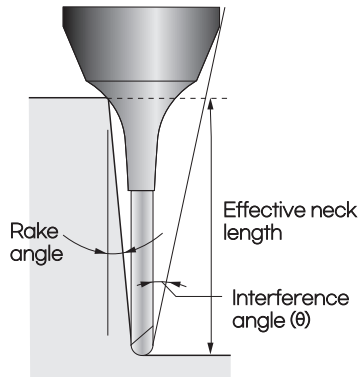
○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	○		○	◎						

ESTNR20

2 Flutes Tapered Neck Radius End Mill

Endmill



※ The marked effective neck length is the default value to prevent interference with the workpiece.

EDP No	DC	RE	APMX	LUX	CA	DN ¹	DN ²	OAL	DCON MS	LU	BHTA	Effective length by inclination angle				
												0.5°	1°	1.5°	2°	3°
ESTNR20 10-15-0903	1	0.3	0.8	15	0.9	0.94	1.39	60	6	2.7	5.6	-	16.3	17.2	17.8	18.8
ESTNR20 10-25-0903	1	0.3	0.8	25	0.9	0.94	1.7	70	6	2.7	4.2	-	26.4	27.6	28.5	30.8
ESTNR20 10-30-0903	1	0.3	0.8	30	0.9	0.94	1.86	75	6	2.7	3.7	-	31.5	32.8	33.7	37
ESTNR20 15-10-0402	1.5	0.2	1.35	10	0.4	1.42	1.54	55	6	7.07	6.4	11	11.5	11.9	12.3	13
ESTNR20 15-15-0902	1.5	0.2	1.35	15	0.9	1.42	1.85	60	6	7.07	5.3	-	16.4	17.3	17.9	18.9
ESTNR20 15-20-0902	1.5	0.2	1.35	20	0.9	1.42	2.1	65	6	3.89	4.5	-	21.5	22.5	23.2	24.9
ESTNR20 15-25-0902	1.5	0.2	1.35	25	0.9	1.42	2.16	70	6	3.89	3.9	-	26.6	27.7	28.5	31
ESTNR20 15-30-0902	1.5	0.2	1.35	30	0.9	1.42	2.32	75	6	3.89	3.4	-	31.6	32.9	33.8	37.1
ESTNR20 15-10-0403	1.5	0.3	1.35	10	0.4	1.42	1.54	55	6	3.89	6.4	11	11.5	11.9	12.3	13
ESTNR20 15-20-0903	1.5	0.3	1.35	20	0.9	1.42	2.1	65	6	3.89	4.5	-	21.5	22.5	23.2	24.8
ESTNR20 15-25-0903	1.5	0.3	1.35	25	0.9	1.42	2.16	70	6	3.89	3.9	-	26.5	27.7	28.5	31
ESTNR20 15-30-0903	1.5	0.3	1.35	30	0.9	1.42	2.32	75	6	3.89	3.4	-	31.6	32.9	33.8	37.1
ESTNR20 20-30-0902	2	0.2	1.7	30	0.9	1.92	2.81	70	6	7.42	3.1	-	31.6	32.9	33.8	37.2
ESTNR20 20-40-0902	2	0.2	1.7	40	0.9	1.92	3.12	80	6	7.42	2.5	-	41.8	43.3	44.6	-
ESTNR20 20-50-0902	2	0.2	1.7	50	0.9	1.92	3.44	90	6	7.42	2.1	-	51.9	53.6	55.7	-
ESTNR20 20-12-0403	2	0.3	1.7	12	0.4	1.92	2.06	55	6	7.42	5.5	13	13.6	14.1	14.5	15.6
ESTNR20 20-20-0903	2	0.3	1.7	20	0.9	1.92	2.5	65	6	4.24	4.1	-	21.5	22.5	23.2	24.9
ESTNR20 20-30-0903	2	0.3	1.7	30	0.9	1.92	2.81	70	6	4.24	3.1	-	31.6	32.9	33.8	37.1
ESTNR20 20-40-0903	2	0.3	1.7	40	0.9	1.92	3.12	80	6	4.24	2.5	-	41.7	43.3	44.6	-
ESTNR20 20-50-0903	2	0.3	1.7	50	0.9	1.92	3.44	90	6	4.24	2.1	-	51.8	53.6	55.7	-

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	~HRC325	HRC30~50	~FC500					
◎	○		○	◎						

ESTNR20

2 Flutes Tapered Neck Radius End Mill

Endmill

EDP No	DC	RE	APMX	LUX	CA	DN ¹	DN ²	OAL	DCON MS	LU	BHTA	Effective length by inclination angle				
												0.5°	1°	1.5°	2°	3°
ESTNR20 20-8-0405	2	0.5	1.7	8	0.4	1.92	2.01	50	6	4.24	6.8	8.7	9	9.3	9.5	10.4
ESTNR20 20-12-0405	2	0.5	1.7	12	0.4	1.92	2.06	55	6	4.24	5.6	13	13.6	14.1	14.4	15.5
ESTNR20 20-16-0405	2	0.5	1.7	16	0.4	1.92	2.12	60	6	4.24	4.7	17	17.8	18.3	18.7	20.7
ESTNR20 20-20-0905	2	0.5	1.7	20	0.9	1.92	2.5	65	6	4.24	4.2	-	21.5	22.5	23.2	24.8
ESTNR20 20-25-0905	2	0.5	1.7	25	0.9	1.92	2.65	65	6	4.24	3.6	-	26.6	27.7	28.5	30.9
ESTNR20 20-30-0905	2	0.5	1.7	30	0.9	1.92	2.81	70	6	4.24	3.1	-	31.6	32.9	33.8	37.1
ESTNR20 20-40-0905	2	0.5	1.7	40	0.9	1.92	3.12	80	6	4.24	2.5	-	41.7	43.2	44.6	-
ESTNR20 20-50-0905	2	0.5	1.7	50	0.9	1.92	3.44	90	6	4.24	2.1	-	51.8	53.6	55.6	-
ESTNR20 30-40-0902	3	0.2	2.5	40	0.9	2.86	4.04	80	6	6.95	2	-	42	43.4	-	-
ESTNR20 30-50-0902	3	0.2	2.5	50	0.9	2.86	4.35	90	6	6.95	1.6	-	52.1	53.7	-	-
ESTNR20 30-60-0902	3	0.2	2.5	60	0.9	2.86	4.67	100	6	6.95	1.4	-	62.2	-	-	-
ESTNR20 30-40-0903	3	0.3	2.5	40	0.9	2.86	4.04	80	6	6.95	2	-	42	43.4	-	-
ESTNR20 30-50-0903	3	0.3	2.5	50	0.9	2.86	4.35	90	6	6.95	1.7	-	52.1	53.7	-	-
ESTNR20 30-60-0903	3	0.3	2.5	60	0.9	2.86	4.67	100	6	6.95	1.4	-	62.2	-	-	-
ESTNR20 30-40-0905	3	0.5	2.5	40	0.9	2.86	4.04	80	6	6.95	2	-	42	43.4	-	-
ESTNR20 30-50-0905	3	0.5	2.5	50	0.9	2.86	4.35	90	6	6.95	1.7	-	52.1	53.7	-	-
ESTNR20 30-60-0905	3	0.5	2.5	60	0.9	2.86	4.67	100	6	6.95	1.4	-	62.1	-	-	-

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

► Applicable Working Material

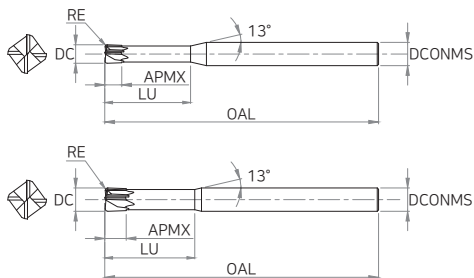
○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	○		○	◎						

ESPM4 4 Flutes Neck Radius End Mill

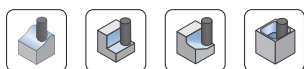
For High Speed Machining

Endmill



► Tolerance

DC		Shank Dia
~ Ø6	0 ~ -0.012	h5
Ø8 ~ Ø12	0 ~ -0.015	



Ø6 OR UNDER

ABOVE Ø6

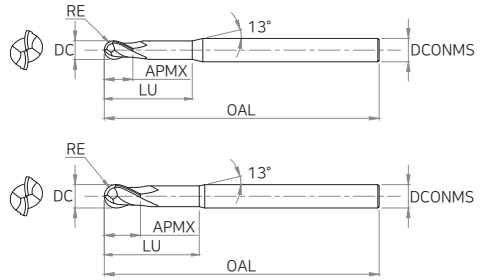
EDP No	DC	RE	APMX	LU	OAL	DCONMS
ESPM4 030-05	3	0.5	1.2	8	50	6
ESPM4 040-05	4	0.5	1.5	10	50	6
ESPM4 060-05	6	0.5	2.5	12	60	6
ESPM4 060-10	6	1	2.5	12	60	6
ESPM4 060-15	6	1.5	2.5	12	60	6
ESPM4 060-15L	6	1.5	2.5	12	90	6
ESPM4 080-10	8	1	3.5	16	60	8
ESPM4 080-20	8	2	3.5	16	60	8
ESPM4 080-20L	8	2	3.5	16	100	8
ESPM4 100-10	10	1	4	20	70	10
ESPM4 100-20	10	2	4	20	70	10
ESPM4 100-20L	10	2	4	20	100	10
ESPM4 120-20	12	2	5	25	80	12
ESPM4 120-30	12	3	5	25	80	12
ESPM4 120-30L	12	3	5	25	110	12

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

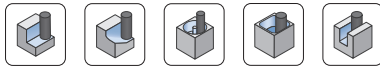
H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
◎	○		○	◎						

ESB702 2 Flutes Neck Ball End Mill



► Tolerance

DC		Shank Dia
~ Ø6	0 ~ -0.012	h5
Ø8 ~ Ø12	0 ~ -0.015	



EDP No	DC	RE	APMX	LU	OAL	DCON MS	EDP No	DC	RE	APMX	LU	OAL	DCON MS
ESB702 001	0.1	0.05	0.15	-	40	4	ESB702 030S	3	1.5	4	10	50	6
ESB702 002	0.2	0.1	0.3	-	40	4	ESB702 030S4	3	1.5	4	-	45	4
ESB702 003	0.3	0.15	0.5	-	40	4	ESB702 031	3	1.5	4	10	70	6
ESB702 004	0.4	0.2	0.6	-	40	4	ESB702 040	4	2	5	10	60	6
ESB702 005	0.5	0.25	0.7	-	40	4	ESB702 040S	4	2	5	10	50	6
ESB702 006	0.6	0.3	0.9	-	40	4	ESB702 040S4	4	2	5	-	45	4
ESB702 007	0.7	0.35	1.1	-	40	4	ESB702 041	4	2	5	10	70	6
ESB702 008	0.8	0.4	1.2	-	40	4	ESB702 050	5	2.5	6	12	60	6
ESB702 009	0.9	0.45	1.4	-	40	4	ESB702 060	6	3	7	12	60	6
ESB702 010	1	0.5	1.5	3	50	6	ESB702 061	6	3	7	12	90	6
ESB702 010S4	1	0.5	1.5	-	45	4	ESB702 080	8	4	9	15	70	8
ESB702 015	1.5	0.75	2	4	50	6	ESB702 081	8	4	9	15	100	8
ESB702 015S4	1.5	0.75	2	-	45	4	ESB702 100	10	5	11	25	75	10
ESB702 020	2	1	2.5	5	50	6	ESB702 101	10	5	11	25	100	10
ESB702 020S4	2	1	2.5	-	45	4	ESB702 120	12	6	12	25	80	12
ESB702 025	2.5	1.25	3	7	50	6	ESB702 121	12	6	12	25	110	12
ESB702 030	3	1.5	4	10	60	6							

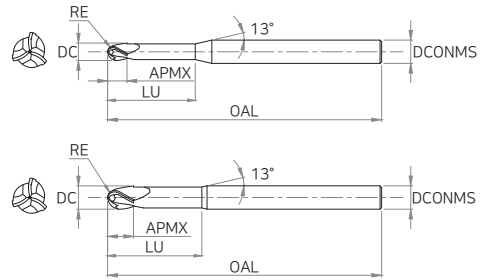
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	HB225 ~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	○		○	◎						

ESB703 3 Flutes Neck Ball End Mill

Endmill



► Tolerance

DC		Shank Dia
~ Ø6	0 ~ -0.012	h5
Ø8 ~ Ø12	0 ~ -0.015	



EDP No	DC	RE	APMX	LU	OAL	DCONMS
ESB703 020	2	1	2.5	5	50	6
ESB703 025	2.5	1.25	3	7	50	6
ESB703 030	3	1.5	4	10	60	6
ESB703 030S	3	1.5	4	10	50	6
ESB703 031	3	1.5	4	10	70	6
ESB703 040	4	2	5	10	60	6
ESB703 040S	4	2	5	10	50	6
ESB703 041	4	2	5	10	70	6
ESB703 050	5	2.5	6	12	60	6
ESB703 060	6	3	7	12	60	6
ESB703 061	6	3	7	12	90	6
ESB703 080	8	4	9	15	70	8
ESB703 081	8	4	9	15	100	8
ESB703 100	10	5	11	25	75	10
ESB703 101	10	5	11	25	100	10
ESB703 120	12	6	12	25	80	12
ESB703 121	12	6	12	25	110	12

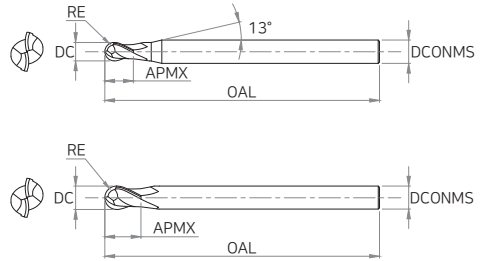
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	Steel ~HB225	HB225 ~325	Steel HRC30~50	~FC500					
◎	○		○	◎						

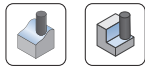
ESB712

2 Flutes Ball End Mill



► Tolerance

DC		Shank Dia
~Ø6	0 ~ -0.012	h5
Ø8 ~ Ø12	0 ~ -0.015	



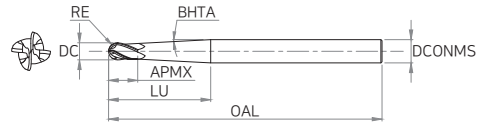
EDP No	DC	RE	APMX	OAL	DCON MS	EDP No	DC	RE	APMX	OAL	DCON MS
ESB712 010	1	0.5	2.5	50	6	ESB712 030S4	3	1.5	8	60	4
ESB712 010S	1	0.5	1.5	40	6	ESB712 040	4	2	8	70	6
ESB712 010S4	1	0.5	2.5	50	4	ESB712 040S	4	2	6	50	6
ESB712 012	1.2	0.6	3	50	6	ESB712 050	5	2.5	10	80	6
ESB712 015	1.5	0.75	4	50	6	ESB712 050S	5	2.5	7.5	50	6
ESB712 015S	1.5	0.75	2.5	40	6	ESB712 060	6	3	12	90	6
ESB712 015S4	1.5	0.75	4	50	4	ESB712 060S	6	3	9	50	6
ESB712 020	2	1	5	50	6	ESB712 080S	8	4	12	50	8
ESB712 020S	2	1	3	40	6	ESB712 081	8	4	14	100	8
ESB712 020S4	2	1	5	50	4	ESB712 100	10	5	18	100	10
ESB712 025	2.5	1.25	7	60	6	ESB712 100S	10	5	15	60	10
ESB712 030	3	1.5	8	60	6	ESB712 120	12	6	22	110	12
ESB712 030S	3	1.5	4.5	50	6	ESB712 120S	12	6	18	60	12

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

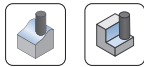
H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	○		○	◎						

ESB734 4 Flutes 15° Helix Ball End Mill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.012	h5



EDP No	DC	RE	BHTA	APMX	LU	OAL	DCONMS
ESB734 020-2.5	2	1	2.5	2	25	60	4
ESB734 020-3.5	2	1	3.5	2	18	60	4
ESB734 025-2.5	2.5	1.25	2.5	3	20	60	4
ESB734 025-3.0	2.5	1.25	3	3	17	60	4
ESB734 030-2.0	3	1.5	2	3	46	70	6
ESB734 030-2.5	3	1.5	2.5	3	37	70	6
ESB734 040-2.0	4	2	2	4	33	70	6
ESB734 040-2.5	4	2	2.5	4	27	70	6
ESB734 050-2.5	5	2.5	2.5	5	16	70	6
ESB734 060-1.5	6	3	1.5	6	44	100	8
ESB734 060-2.5	6	3	2.5	6	29	100	8
ESB734 080-1.5	8	4	1.5	8	46	100	10
ESB734 080-2.5	8	4	2.5	8	31	100	10
ESB734 100-1.5	10	5	1.5	10	48	110	12
ESB734 100-2.5	10	5	2.5	10	33	110	12

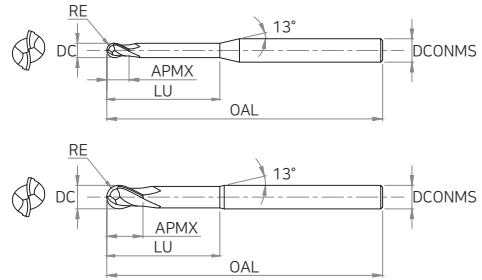
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FC500					
◎	○		○	◎						

ESRB712 2 Flutes Rib Ball End Mill

Endmill



► Tolerance

DC		Shank Dia
~ Ø6	0 ~ -0.012	h5
Ø8 ~ Ø12	0 ~ -0.015	



EDP No	DC	RE	APMX	LU	OAL	DCON MS	EDP No	DC	RE	APMX	LU	OAL	DCON MS
ESRB712 001002	0.1	0.05	0.1	0.2	40	4	ESRB712 00403	0.4	0.2	0.4	3	40	4
ESRB712 001003	0.1	0.05	0.1	0.3	40	4	ESRB712 00404	0.4	0.2	0.4	4	40	4
ESRB712 001005	0.1	0.05	0.1	0.5	40	4	ESRB712 00405	0.4	0.2	0.4	5	40	4
ESRB712 00101	0.1	0.05	0.1	1	40	4	ESRB712 00406	0.4	0.2	0.4	6	40	4
ESRB712 002005	0.2	0.1	0.2	0.5	40	4	ESRB712 00408	0.4	0.2	0.4	8	40	4
ESRB712 002015	0.2	0.1	0.2	1.5	40	4	ESRB712 00410	0.4	0.2	0.4	10	40	4
ESRB712 00201	0.2	0.1	0.2	1	40	4	ESRB712 005015	0.5	0.25	0.5	1.5	45	4
ESRB712 00202	0.2	0.1	0.2	2	40	4	ESRB712 00501	0.5	0.25	0.5	1	45	4
ESRB712 00203	0.2	0.1	0.2	3	40	4	ESRB712 00501S6	0.5	0.25	0.5	1	45	6
ESRB712 003015	0.3	0.15	0.3	1.5	40	4	ESRB712 005025	0.5	0.25	0.5	2.5	45	4
ESRB712 00301	0.3	0.15	0.3	1	40	4	ESRB712 00502	0.5	0.25	0.5	2	45	4
ESRB712 003025	0.3	0.15	0.3	2.5	40	4	ESRB712 00502S6	0.5	0.25	0.5	2	45	6
ESRB712 00302	0.3	0.15	0.3	2	40	4	ESRB712 00503	0.5	0.25	0.5	3	45	4
ESRB712 00303	0.3	0.15	0.3	3	40	4	ESRB712 00504	0.5	0.25	0.5	4	45	4
ESRB712 00304	0.3	0.15	0.3	4	40	4	ESRB712 00504S6	0.5	0.25	0.5	4	45	6
ESRB712 00305	0.3	0.15	0.3	5	40	4	ESRB712 00505	0.5	0.25	0.5	5	45	4
ESRB712 004015	0.4	0.2	0.4	1.5	40	4	ESRB712 00506	0.5	0.25	0.5	6	45	4
ESRB712 00401	0.4	0.2	0.4	1	40	4	ESRB712 00508	0.5	0.25	0.5	8	45	4
ESRB712 004025	0.4	0.2	0.4	2.5	40	4	ESRB712 00510	0.5	0.25	0.5	10	45	4
ESRB712 00402	0.4	0.2	0.4	2	40	4	ESRB712 00512	0.5	0.25	0.5	12	45	4

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N				M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy	
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500						
◎	○		○	◎							

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

ESRB712 2 Flutes Rib Ball End Mill

Endmill

	EDP No	DC	RE	APMX	LU	OAL	DCON MS		EDP No	DC	RE	APMX	LU	OAL	DCON MS
Zamus Star	ESRB712 00514	0.5	0.25	0.5	14	45	4		ESRB712 00803	0.8	0.4	0.8	3	45	4
	ESRB712 00516	0.5	0.25	0.5	16	45	4		ESRB712 00803S6	0.8	0.4	0.8	3	45	6
	ESRB712 00601	0.6	0.3	0.6	1	45	4		ESRB712 00804	0.8	0.4	0.8	4	45	4
	ESRB712 00601S6	0.6	0.3	0.6	1	45	6		ESRB712 00804S6	0.8	0.4	0.8	4	45	6
E-Star	ESRB712 00602	0.6	0.3	0.6	2	45	4		ESRB712 00805	0.8	0.4	0.8	5	45	4
	ESRB712 00602S6	0.6	0.3	0.6	2	45	6		ESRB712 00805S6	0.8	0.4	0.8	5	45	6
	ESRB712 00603	0.6	0.3	0.6	3	45	4		ESRB712 00806	0.8	0.4	0.8	6	45	4
	ESRB712 00603S6	0.6	0.3	0.6	3	45	6		ESRB712 00806S6	0.8	0.4	0.8	6	45	6
U-Wing	ESRB712 00604	0.6	0.3	0.6	4	45	4		ESRB712 00808	0.8	0.4	0.8	8	45	4
	ESRB712 00604S6	0.6	0.3	0.6	4	45	6		ESRB712 00808S6	0.8	0.4	0.8	8	45	6
	ESRB712 00605	0.6	0.3	0.6	5	45	4		ESRB712 00810	0.8	0.4	0.8	10	45	4
	ESRB712 00605S6	0.6	0.3	0.6	5	45	6		ESRB712 00810S6	0.8	0.4	0.8	10	45	6
Zamus Thunder	ESRB712 00606	0.6	0.3	0.6	6	45	4		ESRB712 00812	0.8	0.4	0.8	12	45	4
	ESRB712 00606S6	0.6	0.3	0.6	6	45	6		ESRB712 00812S6	0.8	0.4	0.8	12	45	6
	ESRB712 00608	0.6	0.3	0.6	8	45	4		ESRB712 00814	0.8	0.4	0.8	14	45	4
	ESRB712 00608S6	0.6	0.3	0.6	8	45	6		ESRB712 00814S6	0.8	0.4	0.8	14	45	6
X-Star	ESRB712 00610	0.6	0.3	0.6	10	45	4		ESRB712 00816	0.8	0.4	0.8	16	45	4
	ESRB712 00610S6	0.6	0.3	0.6	10	45	6		ESRB712 00816S6	0.8	0.4	0.8	16	50	6
	ESRB712 00612	0.6	0.3	0.6	12	45	4		ESRB712 00820	0.8	0.4	0.8	20	50	4
	ESRB712 00612S6	0.6	0.3	0.6	12	45	6		ESRB712 00820S6	0.8	0.4	0.8	20	55	6
S-Wing	ESRB712 00614	0.6	0.3	0.6	14	45	4		ESRB712 00904	0.9	0.45	0.9	4	45	4
	ESRB712 00614S6	0.6	0.3	0.6	14	45	6		ESRB712 00906	0.9	0.45	0.9	6	45	4
	ESRB712 00616	0.6	0.3	0.6	16	45	4		ESRB712 00908	0.9	0.45	0.9	8	45	4
	ESRB712 00616S6	0.6	0.3	0.6	16	50	6		ESRB712 00910	0.9	0.45	0.9	10	45	4
A-Wing	ESRB712 00702	0.7	0.35	0.7	2	45	4		ESRB712 01002	1	0.5	1	2	50	4
	ESRB712 00704	0.7	0.35	0.7	4	45	4		ESRB712 01002S6	1	0.5	1	2	50	6
	ESRB712 00706	0.7	0.35	0.7	6	45	4		ESRB712 01003	1	0.5	1	3	50	4
	ESRB712 00708	0.7	0.35	0.7	8	45	4		ESRB712 01003S6	1	0.5	1	3	50	6
Standard	ESRB712 00710	0.7	0.35	0.7	10	45	4		ESRB712 01004	1	0.5	1	4	50	4
	ESRB712 00712	0.7	0.35	0.7	12	45	4		ESRB712 01004S6	1	0.5	1	4	50	6
	ESRB712 00801	0.8	0.4	0.8	1	45	4		ESRB712 01005	1	0.5	1	5	50	4
	ESRB712 00801S6	0.8	0.4	0.8	1	45	6		ESRB712 01005S6	1	0.5	1	5	50	6
Copper -Mate	ESRB712 00802	0.8	0.4	0.8	2	45	4		ESRB712 01006	1	0.5	1	6	50	4
	ESRB712 00802S6	0.8	0.4	0.8	2	45	6		ESRB712 01006S6	1	0.5	1	6	50	6
Gra -Mate															

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
◎	○		○	◎						

ESRB712 2 Flutes Rib Ball End Mill

Endmill

EDP No	DC	RE	APMX	LU	OAL	DCON MS	EDP No	DC	RE	APMX	LU	OAL	DCON MS
ESRB712 01007	1	0.5	1	7	50	4	ESRB712 01406	1.4	0.7	1.4	6	50	4
ESRB712 01007S6	1	0.5	1	7	50	6	ESRB712 01408	1.4	0.7	1.4	8	50	4
ESRB712 01008	1	0.5	1	8	50	4	ESRB712 01410	1.4	0.7	1.4	10	50	4
ESRB712 01008S6	1	0.5	1	8	50	6	ESRB712 01412	1.4	0.7	1.4	12	50	4
ESRB712 01009	1	0.5	1	9	50	4	ESRB712 01416	1.4	0.7	1.4	16	50	4
ESRB712 01009S6	1	0.5	1	9	50	6	ESRB712 01503	1.5	0.75	1.5	3	50	4
ESRB712 01010	1	0.5	1	10	50	4	ESRB712 01503S6	1.5	0.75	1.5	3	50	6
ESRB712 01010S6	1	0.5	1	10	50	6	ESRB712 01504	1.5	0.75	1.5	4	50	4
ESRB712 01012	1	0.5	1	12	50	4	ESRB712 01504S6	1.5	0.75	1.5	4	50	6
ESRB712 01012S6	1	0.5	1	12	50	6	ESRB712 01505	1.5	0.75	1.5	5	50	4
ESRB712 01014	1	0.5	1	14	50	4	ESRB712 01506	1.5	0.75	1.5	6	50	4
ESRB712 01014S6	1	0.5	1	14	50	6	ESRB712 01506S6	1.5	0.75	1.5	6	50	6
ESRB712 01016	1	0.5	1	16	50	4	ESRB712 01507	1.5	0.75	1.5	7	50	4
ESRB712 01016S6	1	0.5	1	16	50	6	ESRB712 01508	1.5	0.75	1.5	8	50	4
ESRB712 01018	1	0.5	1	18	50	4	ESRB712 01508S6	1.5	0.75	1.5	8	50	6
ESRB712 01018S6	1	0.5	1	18	50	6	ESRB712 01510	1.5	0.75	1.5	10	50	4
ESRB712 01020	1	0.5	1	20	55	4	ESRB712 01510S6	1.5	0.75	1.5	10	50	6
ESRB712 01020S6	1	0.5	1	20	55	6	ESRB712 01512	1.5	0.75	1.5	12	50	4
ESRB712 01022	1	0.5	1	22	60	4	ESRB712 01512S6	1.5	0.75	1.5	12	50	6
ESRB712 01022S6	1	0.5	1	22	60	6	ESRB712 01514	1.5	0.75	1.5	14	50	4
ESRB712 01026	1	0.5	1	26	60	4	ESRB712 01514S6	1.5	0.75	1.5	14	50	6
ESRB712 01026S6	1	0.5	1	26	60	6	ESRB712 01516	1.5	0.75	1.5	16	50	4
ESRB712 01030	1	0.5	1	30	70	4	ESRB712 01516S6	1.5	0.75	1.5	16	50	6
ESRB712 01030S6	1	0.5	1	30	70	6	ESRB712 01518	1.5	0.75	1.5	18	50	4
ESRB712 01040	1	0.5	1	40	80	4	ESRB712 01518S6	1.5	0.75	1.5	18	50	6
ESRB712 01050	1	0.5	1	50	100	4	ESRB712 01520	1.5	0.75	1.5	20	55	4
ESRB712 01204	1.2	0.6	1.2	4	50	4	ESRB712 01520S6	1.5	0.75	1.5	20	55	6
ESRB712 01206	1.2	0.6	1.2	6	50	4	ESRB712 01522	1.5	0.75	1.5	22	60	4
ESRB712 01208	1.2	0.6	1.2	8	50	4	ESRB712 01522S6	1.5	0.75	1.5	22	60	6
ESRB712 01210	1.2	0.6	1.2	10	50	4	ESRB712 01526	1.5	0.75	1.5	26	60	4
ESRB712 01212	1.2	0.6	1.2	12	50	4	ESRB712 01526S6	1.5	0.75	1.5	26	60	6
ESRB712 01216	1.2	0.6	1.2	16	50	4	ESRB712 01530	1.5	0.75	1.5	30	70	4
ESRB712 01220	1.2	0.6	1.2	20	50	4	ESRB712 01530S6	1.5	0.75	1.5	30	70	6
ESRB712 01226	1.2	0.6	1.2	26	60	4	ESRB712 01535	1.5	0.75	1.5	35	70	4

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	○		○	◎						

ESRB712 2 Flutes Rib Ball End Mill

Endmill

	EDP No	DC	RE	APMX	LU	OAL	DCON MS		EDP No	DC	RE	APMX	LU	OAL	DCON MS
Zamus Star	ESRB712 01535S6	1.5	0.75	1.5	35	70	6		ESRB712 02020S6	2	1	2	20	55	6
	ESRB712 01540	1.5	0.75	1.5	40	80	4		ESRB712 02022	2	1	2	22	60	4
	ESRB712 01540S6	1.5	0.75	1.5	40	80	6		ESRB712 02022S6	2	1	2	22	60	6
	ESRB712 01604	1.6	0.8	1.6	4	50	4		ESRB712 02026	2	1	2	26	60	4
E-Star	ESRB712 01606	1.6	0.8	1.6	6	50	4		ESRB712 02026S6	2	1	2	26	60	6
	ESRB712 01608	1.6	0.8	1.6	8	50	4		ESRB712 02030	2	1	2	30	70	4
	ESRB712 01610	1.6	0.8	1.6	10	50	4		ESRB712 02030S6	2	1	2	30	70	6
	ESRB712 01612	1.6	0.8	1.6	12	50	4		ESRB712 02035	2	1	2	35	70	4
U-Wing	ESRB712 01616	1.6	0.8	1.6	16	50	4		ESRB712 02035S6	2	1	2	35	70	6
	ESRB712 01620	1.6	0.8	1.6	20	50	4		ESRB712 02040	2	1	2	40	80	4
	ESRB712 01804	1.8	0.9	1.8	4	50	4		ESRB712 02040S6	2	1	2	40	80	6
	ESRB712 01806	1.8	0.9	1.8	6	50	4		ESRB712 02045	2	1	2	45	90	4
Zamus Thunder	ESRB712 01808	1.8	0.9	1.8	8	50	4		ESRB712 02045S6	2	1	2	45	90	6
	ESRB712 01810	1.8	0.9	1.8	10	50	4		ESRB712 02050	2	1	2	50	100	4
	ESRB712 01812	1.8	0.9	1.8	12	50	4		ESRB712 02050S6	2	1	2	50	100	6
	ESRB712 01816	1.8	0.9	1.8	16	50	4		ESRB712 02060	2	1	2	60	110	4
X-Star	ESRB712 01820	1.8	0.9	1.8	20	50	4		ESRB712 02508	2.5	1.25	2.5	8	50	4
	ESRB712 02004	2	1	2	4	50	4		ESRB712 02510	2.5	1.25	2.5	10	50	4
	ESRB712 02004S6	2	1	2	4	50	6		ESRB712 02512	2.5	1.25	2.5	12	50	4
	ESRB712 02006	2	1	2	6	50	4		ESRB712 02516	2.5	1.25	2.5	16	50	4
S-Wing	ESRB712 02006S6	2	1	2	6	50	6		ESRB712 02520	2.5	1.25	2.5	20	50	4
	ESRB712 02008	2	1	2	8	50	4		ESRB712 02522	2.5	1.25	2.5	22	60	4
	ESRB712 02008S6	2	1	2	8	50	6		ESRB712 02526	2.5	1.25	2.5	26	60	4
	ESRB712 02010	2	1	2	10	50	4		ESRB712 02530	2.5	1.25	2.5	30	70	4
A-Wing	ESRB712 02010S6	2	1	2	10	50	6		ESRB712 02535	2.5	1.25	2.5	35	70	4
	ESRB712 02012	2	1	2	12	50	4		ESRB712 02540	2.5	1.25	2.5	40	80	4
	ESRB712 02012S6	2	1	2	12	50	6		ESRB712 02545	2.5	1.25	2.5	45	90	4
	ESRB712 02014	2	1	2	14	50	4		ESRB712 02550	2.5	1.25	2.5	50	100	4
Standard	ESRB712 02014S6	2	1	2	14	50	6		ESRB712 03006	3	1.5	3	6	50	6
	ESRB712 02016	2	1	2	16	50	4		ESRB712 03008	3	1.5	3	8	50	6
	ESRB712 02016S6	2	1	2	16	50	6		ESRB712 03010	3	1.5	3	10	50	6
	ESRB712 02018	2	1	2	18	55	4		ESRB712 03012	3	1.5	3	12	50	6
Copper -Mate	ESRB712 02018S6	2	1	2	18	55	6		ESRB712 03014	3	1.5	3	14	60	6
	ESRB712 02020	2	1	2	20	55	4		ESRB712 03016	3	1.5	3	16	60	6

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	~325	HRC30~50	~FCD500					
◎	○		○	◎						

ESRB712

2 Flutes Rib Ball End Mill

Endmill

EDP No	DC	RE	APMX	LU	OAL	DCON MS	EDP No	DC	RE	APMX	LU	OAL	DCON MS
ESRB712 03018	3	1.5	3	18	60	6	ESRB712 04055	4	2	4	55	100	6
ESRB712 03020	3	1.5	3	20	60	6	ESRB712 04060	4	2	4	60	100	6
ESRB712 03022	3	1.5	3	22	65	6	ESRB712 05015	5	2.5	6	15	60	6
ESRB712 03026	3	1.5	3	26	65	6	ESRB712 05020	5	2.5	6	20	60	6
ESRB712 03030	3	1.5	3	30	70	6	ESRB712 05026	5	2.5	6	26	65	6
ESRB712 03035	3	1.5	3	35	70	6	ESRB712 05030	5	2.5	6	30	70	6
ESRB712 03040	3	1.5	3	40	80	6	ESRB712 05035	5	2.5	6	35	70	6
ESRB712 03045	3	1.5	3	45	90	6	ESRB712 05040	5	2.5	6	40	80	6
ESRB712 03050	3	1.5	3	50	100	6	ESRB712 05045	5	2.5	6	45	90	6
ESRB712 03060	3	1.5	3	60	100	6	ESRB712 05050	5	2.5	6	50	100	6
ESRB712 03510	3.5	1.75	3	10	50	6	ESRB712 05055	5	2.5	6	55	100	6
ESRB712 03516	3.5	1.75	3	16	60	6	ESRB712 05060	5	2.5	6	60	100	6
ESRB712 03520	3.5	1.75	3	20	60	6	ESRB712 0602090	6	3	12	20	90	6
ESRB712 03526	3.5	1.75	3	26	65	6	ESRB712 06020	6	3	8	20	60	6
ESRB712 03530	3.5	1.75	3	30	70	6	ESRB712 0603090	6	3	12	30	90	6
ESRB712 04008	4	2	4	8	50	6	ESRB712 06030	6	3	8	30	60	6
ESRB712 04010	4	2	4	10	50	6	ESRB712 08025100	8	4	14	25	100	8
ESRB712 04012	4	2	4	12	50	6	ESRB712 08025	8	4	10	25	70	8
ESRB712 04014	4	2	4	14	60	6	ESRB712 08035100	8	4	14	35	100	8
ESRB712 04016	4	2	4	16	60	6	ESRB712 08035	8	4	10	35	70	8
ESRB712 04018	4	2	4	18	60	6	ESRB712 10030100	10	5	18	30	100	10
ESRB712 04020	4	2	4	20	60	6	ESRB712 10030	10	5	12	30	75	10
ESRB712 04022	4	2	4	22	65	6	ESRB712 10040100	10	5	18	40	100	10
ESRB712 04026	4	2	4	26	65	6	ESRB712 10040	10	5	12	40	75	10
ESRB712 04030	4	2	4	30	70	6	ESRB712 12032110	12	6	22	32	110	12
ESRB712 04035	4	2	4	35	70	6	ESRB712 12032	12	6	14	32	80	12
ESRB712 04040	4	2	4	40	80	6	ESRB712 12045110	12	6	22	45	110	12
ESRB712 04045	4	2	4	45	90	6	ESRB712 12045	12	6	14	45	80	12
ESRB712 04050	4	2	4	50	100	6							

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

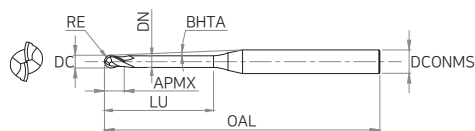
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	Steel HRc30~50	~FCD500					
◎	○		○	◎						

ESLNB20

2 Flutes Long Neck Ball End Mill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.012	h5



ABOVE Ø6

EDP No	DC	RE	APMX	LU	DN	OAL	DCON MS	BHTA	Effective length by inclination angle				
									0.5°	1°	1.5°	2°	3°
ESLNB20 01-0.2	0.1	0.05	0.08	0.2	0.08	45	4	11.8	0.3	0.3	0.3	0.4	0.4
ESLNB20 01-0.3	0.1	0.05	0.08	0.3	0.08	45	4	11.7	0.4	0.4	0.5	0.5	0.5
ESLNB20 01-0.5	0.1	0.05	0.08	0.5	0.08	45	4	11.4	0.6	0.7	0.7	0.7	0.8
ESLNB20 02-0.5	0.2	0.1	0.15	0.5	0.17	50	4	11.5	1.2	1.3	1.5	1.6	2
ESLNB20 02-1	0.2	0.1	0.15	1	0.17	50	4	10.9	1.7	1.9	2.1	2.3	2.7
ESLNB20 02-1.5	0.2	0.1	0.15	1.5	0.17	50	4	10.4	2.3	2.5	2.8	3	3.4
ESLNB20 02-2	0.2	0.1	0.15	2	0.17	50	4	9.9	2.8	3.1	3.4	3.6	4.1
ESLNB20 02-2.5	0.2	0.1	0.15	2.5	0.17	50	4	9.5	3.4	3.7	4	4.2	4.7
ESLNB20 02-3.0	0.2	0.1	0.15	3	0.17	50	4	9.1	3.9	4.3	4.6	4.9	5.4
ESLNB20 03-1	0.3	0.15	0.25	1	0.27	50	4	10.9	1.7	1.9	2.1	2.3	2.7
ESLNB20 03-1.5	0.3	0.15	0.25	1.5	0.27	50	4	10.4	2.3	2.5	2.7	3	3.4
ESLNB20 03-2	0.3	0.15	0.25	2	0.27	50	4	9.9	2.8	3.1	3.4	3.6	4
ESLNB20 03-2.5	0.3	0.15	0.25	2.5	0.27	50	4	9.5	3.4	3.7	4	4.2	4.7
ESLNB20 03-3	0.3	0.15	0.25	3	0.27	50	4	9.1	3.9	4.3	4.6	4.8	5.3
ESLNB20 04-1	0.4	0.2	0.3	1	0.37	50	4	11	1.7	1.9	2.1	2.3	2.7
ESLNB20 04-1.5	0.4	0.2	0.3	1.5	0.37	50	4	10.4	2.3	2.5	2.7	2.9	3.4
ESLNB20 04-2	0.4	0.2	0.3	2	0.37	50	4	9.9	2.8	3.1	3.4	3.6	4
ESLNB20 04-2.5	0.4	0.2	0.3	2.5	0.37	50	4	9.5	3.4	3.7	4	4.2	4.7
ESLNB20 04-3	0.4	0.2	0.3	3	0.37	50	4	9.1	3.9	4.3	4.6	4.8	5.3
ESLNB20 04-3.5	0.4	0.2	0.3	3.5	0.37	50	4	8.7	4.5	4.8	5.2	5.4	6

► Applicable Working Material

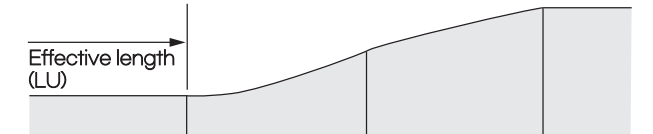
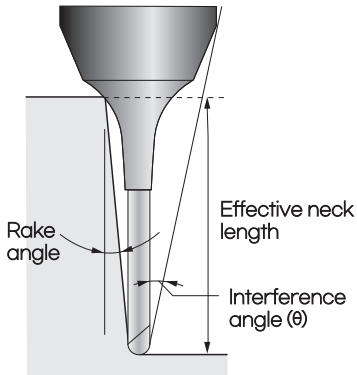
○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	~325	HRC30~50	~FC500					
◎	○		○	◎						

ESLNB20

2 Flutes Long Neck Ball End Mill

Endmill



※ The marked effective neck length is the default value to prevent interference with the workpiece.

EDP No	DC	RE	APMX	LU	DN	OAL	DCON MS	BHTA	Effective length by inclination angle				
									0.5°	1°	1.5°	2°	3°
ESLNB20 04-4	0.4	0.2	0.3	4	0.37	50	4	8.3	5	5.4	5.7	6	6.6
ESLNB20 04-4.5	0.4	0.2	0.3	4.5	0.37	50	4	8	5.6	6	6.3	6.6	7.2
ESLNB20 05-1	0.5	0.25	0.35	1	0.47	50	4	11	1.7	1.9	2.1	2.3	2.6
ESLNB20 05-2	0.5	0.25	0.35	2	0.47	50	4	9.9	2.8	3.1	3.3	3.6	4
ESLNB20 05-3	0.5	0.25	0.35	3	0.47	50	4	9	3.9	4.3	4.6	4.8	5.3
ESLNB20 05-4	0.5	0.25	0.35	4	0.47	50	4	8.3	5	5.4	5.7	6	6.6
ESLNB20 05-5	0.5	0.25	0.35	5	0.47	50	4	7.7	6.1	6.5	6.9	7.2	7.8
ESLNB20 05-6	0.5	0.25	0.35	6	0.47	50	4	7.1	7.2	7.6	8	8.4	9
ESLNB20 05-8	0.5	0.25	0.35	8	0.47	50	4	6.3	9.3	9.9	10.3	10.7	11.4
ESLNB20 06-1	0.6	0.3	0.4	1	0.57	50	4	11	1.7	1.9	2.1	2.3	2.6
ESLNB20 06-2	0.6	0.3	0.4	2	0.57	50	4	9.9	2.8	3.1	3.3	3.6	4
ESLNB20 06-3	0.6	0.3	0.4	3	0.57	50	4	9	3.9	4.3	4.5	4.8	5.3
ESLNB20 06-4	0.6	0.3	0.4	4	0.57	50	4	8.3	5	5.4	5.7	6	6.6
ESLNB20 06-5	0.6	0.3	0.4	5	0.57	50	4	7.6	6.1	6.5	6.9	7.2	7.8
ESLNB20 06-6	0.6	0.3	0.4	6	0.57	50	4	7.1	7.2	7.6	8	8.4	9
ESLNB20 06-7	0.6	0.3	0.4	7	0.57	50	4	6.6	8.3	8.8	9.2	9.5	10.2
ESLNB20 06-8	0.6	0.3	0.4	8	0.57	50	4	6.2	9.3	9.9	10.3	10.7	11.4
ESLNB20 06-9	0.6	0.3	0.4	9	0.57	50	4	5.8	10.4	10.9	11.4	11.8	12.5
ESLNB20 06-10	0.6	0.3	0.4	10	0.57	50	4	5.5	11.4	12	12.5	12.9	13.7
ESLNB20 06-12	0.6	0.3	0.4	12	0.57	50	4	5	13.6	14.2	14.7	15.2	16

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	~HB225 ~325	HRc30~50	~FCD500					
◎	○		○	◎						

ESLNB20

2 Flutes Long Neck Ball End Mill

Endmill

	EDP No	DC	RE	APMX	LU	DN	OAL	DCON MS	BHTA	Effective length by inclination angle				
										0.5°	1°	1.5°	2°	3°
Zamus Star	ESLNB20 08-2	0.8	0.4	0.5	2	0.77	50	4	9.9	2.8	3.1	3.3	3.5	4
	ESLNB20 08-4	0.8	0.4	0.5	4	0.77	50	4	8.2	5	5.4	5.7	6	6.5
	ESLNB20 08-5	0.8	0.4	0.5	5	0.77	50	4	7.5	6.1	6.5	6.9	7.2	7.8
	ESLNB20 08-6	0.8	0.4	0.5	6	0.77	50	4	7	7.2	7.6	8	8.4	9
	ESLNB20 08-8	0.8	0.4	0.5	8	0.77	50	4	6.1	9.3	9.8	10.3	10.7	11.3
E-Star	ESLNB20 08-10	0.8	0.4	0.5	10	0.77	50	4	5.4	11.4	12	12.5	12.9	13.7
	ESLNB20 10-2	1	0.5	0.8	2	0.96	50	4	9.9	2.9	3.1	3.3	3.5	4
	ESLNB20 10-3	1	0.5	0.8	3	0.96	50	4	8.9	4	4.3	4.5	4.8	5.3
U-Wing	ESLNB20 10-4	1	0.5	0.8	4	0.96	50	4	8.1	5	5.4	5.7	6	6.5
	ESLNB20 10-5	1	0.5	0.8	5	0.96	50	4	7.4	6.1	6.5	6.9	7.2	7.8
	ESLNB20 10-6	1	0.5	0.8	6	0.96	50	4	6.8	7.2	7.7	8	8.4	9
	ESLNB20 10-7	1	0.5	0.8	7	0.96	50	4	6.3	8.3	8.8	9.2	9.5	10.2
Zamus Thunder	ESLNB20 10-8	1	0.5	0.8	8	0.96	50	4	5.9	9.3	9.9	10.3	10.7	11.3
	ESLNB20 10-9	1	0.5	0.8	9	0.96	50	4	5.5	10.4	11	11.4	11.8	12.5
	ESLNB20 10-10	1	0.5	0.8	10	0.96	50	4	5.2	11.5	12	12.5	12.9	13.7
X-Star	ESLNB20 10-12	1	0.5	0.8	12	0.96	55	4	4.6	13.6	14.2	14.7	15.2	15.9
	ESLNB20 10-14	1	0.5	0.8	14	0.96	55	4	4.2	15.7	16.4	16.9	17.4	18.5
	ESLNB20 10-16	1	0.5	0.8	16	0.96	55	4	3.8	17.8	18.5	19.1	19.6	21.2
	ESLNB20 10-18	1	0.5	0.8	18	0.96	60	4	3.5	19.9	20.7	21.3	21.8	23.8
S-Wing	ESLNB20 10-20	1	0.5	0.8	20	0.96	60	4	3.3	22	22.8	23.4	24	26.5
	ESLNB20 12-4	1.2	0.6	1.1	4	1.15	50	4	7.9	5.1	5.4	5.7	6	6.5
A-Wing	ESLNB20 12-6	1.2	0.6	1.1	6	1.15	50	4	6.6	7.2	7.7	8	8.4	9
	ESLNB20 12-8	1.2	0.6	1.1	8	1.15	50	4	5.7	9.4	9.9	10.3	10.7	11.3
	ESLNB20 12-10	1.2	0.6	1.1	10	1.15	50	4	5	11.5	12.1	12.5	12.9	13.7
	ESLNB20 12-12	1.2	0.6	1.1	12	1.15	55	4	4.5	13.6	14.2	14.7	15.2	15.9
Standard	ESLNB20 14-8	1.4	0.7	1.3	8	1.34	50	4	5.5	9.4	9.9	10.3	10.7	11.3
	ESLNB20 14-12	1.4	0.7	1.3	12	1.34	55	4	4.3	13.6	14.2	14.7	15.2	15.9
	ESLNB20 14-16	1.4	0.7	1.3	16	1.34	55	4	3.5	17.8	18.5	19.1	19.6	21.2
Copper-Mate	ESLNB20 15-4	1.5	0.75	1.35	4	1.44	50	4	7.7	5.1	5.4	5.7	6	6.5
	ESLNB20 15-6	1.5	0.75	1.35	6	1.44	50	4	6.4	7.3	7.7	8	8.4	9
	ESLNB20 15-8	1.5	0.75	1.35	8	1.44	50	4	5.4	9.4	9.9	10.3	10.7	11.3
	ESLNB20 15-10	1.5	0.75	1.35	10	1.44	50	4	4.7	11.5	12.1	12.5	12.9	13.7
Gra-Mate	ESLNB20 15-12	1.5	0.75	1.35	12	1.44	55	4	4.2	13.6	14.2	14.7	15.2	15.9
	ESLNB20 15-14	1.5	0.75	1.35	14	1.44	55	4	3.8	15.7	16.4	16.9	17.4	18.5

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
◎	○		○	◎						

ESLNB20

2 Flutes Long Neck Ball End Mill

Endmill

EDP No	DC	RE	APMX	LU	DN	OAL	DCON MS	BHTA	Effective length by inclination angle				
									0.5°	1°	1.5°	2°	3°
ESLNB20 15-16	1.5	0.75	1.35	16	1.44	55	4	3.4	17.8	18.5	19.1	19.6	21.1
ESLNB20 15-20	1.5	0.75	1.35	20	1.44	60	4	2.9	22	22.8	23.4	24	-
ESLNB20 16-8	1.6	0.8	1.4	8	1.54	50	4	5.3	9.4	9.9	10.3	10.7	11.3
ESLNB20 16-10	1.6	0.8	1.4	10	1.54	55	4	4.6	11.5	12.1	12.5	12.9	13.7
ESLNB20 16-12	1.6	0.8	1.4	12	1.54	55	4	4.1	13.6	14.2	14.7	15.2	15.9
ESLNB20 16-16	1.6	0.8	1.4	16	1.54	55	4	3.3	17.8	18.5	19.1	19.6	21.1
ESLNB20 16-20	1.6	0.8	1.4	20	1.54	60	4	2.8	22	22.8	23.4	24	-
ESLNB20 18-8	1.8	0.9	1.6	8	1.73	50	4	5.1	9.4	9.9	10.3	10.7	11.3
ESLNB20 18-12	1.8	0.9	1.6	12	1.73	55	4	3.9	13.7	14.3	14.7	15.2	15.9
ESLNB20 18-16	1.8	0.9	1.6	16	1.73	55	4	3.1	17.9	18.6	19.1	19.6	21.1
ESLNB20 18-20	1.8	0.9	1.6	20	1.73	60	4	2.6	22	22.8	23.4	24	-
ESLNB20 20-3	2	1	1.7	3	1.92	50	4	8.3	4.1	4.4	4.6	4.8	5.2
ESLNB20 20-4	2	1	3	4	1.92	50	4	7.3	5.2	5.5	5.8	6	6.5
ESLNB20 20-6	2	1	3	6	1.92	50	4	5.8	7.3	7.7	8.1	8.4	9
ESLNB20 20-8	2	1	3	8	1.92	50	4	4.9	9.5	9.9	10.3	10.7	11.3
ESLNB20 20-10	2	1	3	10	1.92	50	4	4.2	11.6	12.1	12.6	12.9	13.6
ESLNB20 20-12	2	1	3	12	1.92	55	4	3.7	13.7	14.3	14.8	15.2	15.9
ESLNB20 20-14	2	1	3	14	1.92	55	4	3.2	15.8	16.4	16.9	17.4	18.5
ESLNB20 20-16	2	1	3	16	1.92	55	4	2.9	17.9	18.6	19.1	19.6	-
ESLNB20 20-18	2	1	3	18	1.92	60	4	2.7	20	20.7	21.3	21.8	-
ESLNB20 20-20	2	1	3	20	1.92	60	4	2.4	22.1	22.8	23.4	24	-
ESLNB20 20-22	2	1	3	22	1.92	60	4	2.3	24.1	24.9	25.6	26.3	-
ESLNB20 20-25	2	1	3	25	1.92	65	4	2	27.3	28.1	28.8	-	-
ESLNB20 20-30	2	1	3	30	1.92	70	4	1.7	32.4	33.4	34.2	-	-
ESLNB20 20-35	2	1	3	35	1.92	75	4	1.5	37.6	38.6	-	-	-
ESLNB20 20-40	2	1	3	40	1.92	80	4	1.4	42.8	43.8	-	-	-
ESLNB20 25-10	2.5	1.25	4	10	2.4	50	4	3.4	11.6	12.1	12.6	13	13.6
ESLNB20 25-16	2.5	1.25	4	16	2.4	55	4	2.3	17.9	18.6	19.1	19.6	-
ESLNB20 25-20	2.5	1.25	4	20	2.4	60	4	1.9	22.1	22.8	23.5	-	-
ESLNB20 30-8	3	1.5	4	8	2.88	55	6	6.2	9.6	10	10.4	10.7	11.3
ESLNB20 30-10	3	1.5	4	10	2.88	55	6	5.5	11.7	12.2	12.6	13	13.6
ESLNB20 30-13	3	1.5	4	13	2.88	60	6	4.6	14.8	15.4	15.9	16.3	17.1
ESLNB20 30-16	3	1.5	4	16	2.88	60	6	4	18	18.6	19.1	19.6	21.1
ESLNB20 30-18	3	1.5	4	18	2.88	60	6	3.6	20	20.7	21.3	21.8	23.7

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	○		○	◎						

ESLNB20

2 Flutes Long Neck Ball End Mill

Endmill

EDP No	DC	RE	APMX	LU	DN	OAL	DCON MS	BHTA	Effective length by inclination angle				
									0.5°	1°	1.5°	2°	3°
ESLNB20 30-20	3	1.5	4	20	2.88	65	6	3.4	22.1	22.9	23.5	24	26.4
ESLNB20 30-25	3	1.5	4	25	2.88	70	6	2.8	27.3	28.2	28.8	29.9	-
ESLNB20 30-30	3	1.5	4	30	2.88	75	6	2.2	37.7	38.7	40	41.9	-
ESLNB20 30-35	3	1.5	4	35	2.88	80	6	4.5	11.6	12.1	12.5	12.9	13.5
ESLNB20 40-10	4	2	5	10	3.9	55	6	3.6	14.7	15.3	15.8	16.2	17
ESLNB20 40-13	4	2	5	13	3.9	60	6	3.1	17.9	18.5	19.1	19.5	20.9
ESLNB20 40-16	4	2	5	16	3.9	60	6	2.5	22.1	22.8	23.4	23.9	-
ESLNB20 40-20	4	2	5	20	3.9	65	6	2.1	27.3	28.1	28.8	29.8	-
ESLNB20 40-25	4	2	5	25	3.9	70	6	1.8	32.4	33.4	34.2	-	-
ESLNB20 40-30	4	2	5	30	3.9	75	6	1.6	37.6	38.6	39.9	-	-
ESLNB20 40-35	4	2	5	35	3.9	80	6	1.4	42.8	43.8	-	-	-
ESLNB20 40-40	4	2	5	40	3.9	80	6	1.2	47.9	49.1	-	-	-
ESLNB20 40-45	4	2	5	45	3.9	90	6	1.1	53.1	54.5	-	-	-
ESLNB20 40-50	4	2	5	50	3.9	100	6	1.4	22	22.8	-	-	-
ESLNB20 50-20	5	2.5	6	20	4.9	65	6	1.2	27.2	28.1	-	-	-
ESLNB20 50-25	5	2.5	6	25	4.9	70	6	1	32.4	-	-	-	-
ESLNB20 50-30	5	2.5	6	30	4.9	75	6	0.8	42.8	-	-	-	-
ESLNB20 50-35	5	2.5	6	35	4.9	80	6	0.7	42.8	-	-	-	-
ESLNB20 50-40	5	2.5	6	40	4.9	90	6	-	-	-	-	-	-

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

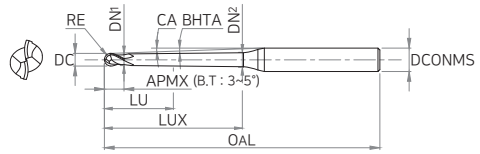
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	○		○	◎						

ESTNB20

2 Flutes Tapered Neck Ball End Mill



► Tolerance

DC		Shank Dia
~ Ø6	0 ~ -0.012	h5
Ø8 ~ Ø12	0 ~ -0.015	



EDP No	DC	RE	APMX	LUX	CA	DN ¹	DN ²	OAL	DCONMS	LU	BHTA	Effective length by inclination angle				
												0.5°	1°	1.5°	2°	3°
ESTNB20 02-1-04	0.2	0.1	0.15	1	0.4	0.17	0.18	50	4	1.35	10.9	1.5	1.7	1.8	2	2.3
ESTNB20 02-1.5-04	0.2	0.1	0.15	1.5	0.4	0.17	0.19	50	4	1.77	10.4	2	2.2	2.4	2.6	2.9
ESTNB20 02-2-09	0.2	0.1	0.15	2	0.9	0.17	0.23	50	4	1.1	10.1	-	2.8	3.1	3.4	3.9
ESTNB20 02-2.5-09	0.2	0.1	0.15	2.5	0.9	0.17	0.24	50	4	1.1	9.6	-	3.3	3.7	4	4.5
ESTNB20 03-2-04	0.3	0.15	0.25	2	0.4	0.28	0.29	50	4	2.19	10	2.5	2.8	3	3.2	3.5
ESTNB20 03-3-09	0.3	0.15	0.25	3	0.9	0.28	0.36	50	4	1.2	9.3	-	3.8	4.2	4.5	5.1
ESTNB20 03-4-09	0.3	0.15	0.25	4	0.9	0.28	0.39	50	4	1.2	8.6	-	4.8	5.3	5.7	6.3
ESTNB20 04-2-04	0.4	0.2	0.3	2	0.4	0.37	0.39	50	4	2.2	10	2.5	2.8	3	3.2	3.5
ESTNB20 04-3-04	0.4	0.2	0.3	3	0.4	0.37	0.41	50	4	2.44	9.1	3.6	3.9	4.1	4.4	4.8
ESTNB20 04-4-04	0.4	0.2	0.3	4	0.4	0.37	0.42	50	4	2.44	8.4	4.7	5.2	5.6	5.9	6.5
ESTNB20 04-4-09	0.4	0.2	0.3	4	0.9	0.37	0.49	50	4	1.25	8.5	-	4.8	5.3	5.7	6.3
ESTNB20 04-5-04	0.4	0.2	0.3	5	0.4	0.37	0.44	50	4	2.44	7.8	5.7	6.3	6.7	7.1	7.7
ESTNB20 04-5-09	0.4	0.2	0.3	5	0.9	0.37	0.52	50	4	1.25	7.9	-	5.9	6.4	6.8	7.5
ESTNB20 05-4-04	0.5	0.25	0.35	4	0.4	0.47	0.52	50	4	2.49	8.4	4.6	5	5.3	5.5	5.9
ESTNB20 05-8-09	0.5	0.25	0.35	8	0.9	0.47	0.71	50	4	1.3	6.5	-	8.9	9.6	10.1	10.9
ESTNB20 05-12-09	0.5	0.25	0.35	12	0.9	0.47	0.84	50	4	1.3	5.3	-	13	13.9	14.5	15.4
ESTNB20 054-2-04	0.54	0.27	0.37	2	0.4	0.52	0.54	50	4	1.8	10	2.3	2.5	2.7	2.8	3
ESTNB20 054-4-04	0.54	0.27	0.37	4	0.4	0.52	0.57	50	4	1.8	8.4	4.5	4.9	5.2	5.5	5.9
ESTNB20 054-5-04	0.54	0.27	0.37	5	0.4	0.52	0.59	50	4	1.8	7.8	5.5	6	6.3	6.6	7.1
ESTNB20 054-6-04	0.54	0.27	0.37	6	0.4	0.52	0.6	50	4	1.8	7.2	6.7	7.3	7.8	8.2	8.8

► Applicable Working Material

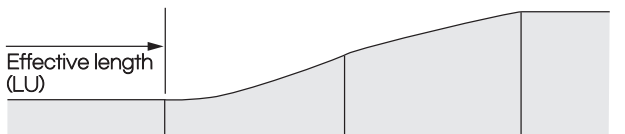
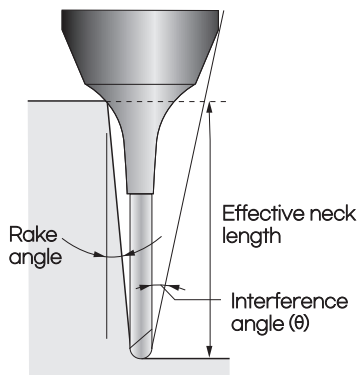
○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	○		○	◎						

ESTNB20

2 Flutes Tapered Neck Ball End Mill

Endmill



※ The marked effective neck length is the default value to prevent interference with the workpiece.

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

EDP No	DC	RE	APMX	LUX	CA	DN ¹	DN ²	OAL	DCON MS	LU	BHTA	Effective length by inclination angle				
												0.5°	1°	1.5°	2°	3°
ESTNB20 054-6.5-04	0.54	0.27	0.37	6.5	0.4	0.52	0.61	50	4	1.8	7	7.2	7.9	8.3	8.7	9.4
ESTNB20 054-7-04	0.54	0.27	0.37	7	0.4	0.52	0.61	50	4	1.8	6.8	7.7	8.4	8.9	9.3	10
ESTNB20 06-2-04	0.6	0.3	0.4	2	0.4	0.57	0.59	50	4	2.17	10	2.4	2.5	2.7	2.8	3
ESTNB20 06-4-04	0.6	0.3	0.4	4	0.4	0.57	0.62	50	4	2.54	8.4	4.6	5	5.2	5.5	5.9
ESTNB20 06-6-04	0.6	0.3	0.4	6	0.4	0.57	0.65	50	4	2.54	7.2	6.8	7.4	7.8	8.2	8.8
ESTNB20 06-6-09	0.6	0.3	0.4	6	0.9	0.57	0.75	50	4	1.35	7.3	-	6.9	7.5	7.9	8.6
ESTNB20 06-8-09	0.6	0.3	0.4	8	0.9	0.57	0.81	50	4	1.35	6.4	-	8.9	9.6	10.1	10.9
ESTNB20 06-10-04	0.6	0.3	0.4	10	0.4	0.57	0.7	50	4	2.54	5.6	10.8	11.7	12.2	12.7	13.5
ESTNB20 06-10-09	0.6	0.3	0.4	10	0.9	0.57	0.87	50	4	1.35	5.7	-	11	11.8	12.3	13.2
ESTNB20 06-12-09	0.6	0.3	0.4	12	0.9	0.57	0.93	55	4	1.35	5.2	-	13	13.9	14.5	15.4
ESTNB20 06-15-04	0.6	0.3	0.4	15	0.4	0.57	0.77	55	4	2.54	4.4	15.9	17	17.6	18.2	19.2
ESTNB20 06-15-09	0.6	0.3	0.4	15	0.9	0.57	1.03	55	4	1.35	4.5	-	16.1	17.1	17.7	18.8
ESTNB20 08-4-04	0.8	0.4	0.5	4	0.4	0.77	0.82	50	4	2.64	8.3	4.6	4.9	5.2	5.5	5.9
ESTNB20 08-6-04	0.8	0.4	0.5	6	0.4	0.77	0.85	50	4	2.64	7.1	6.6	7.1	7.5	7.7	8.3
ESTNB20 08-8-09	0.8	0.4	0.5	8	0.9	0.77	1.01	50	4	1.45	6.3	-	8.9	9.6	10.1	10.9
ESTNB20 08-12-09	0.8	0.4	0.5	12	0.9	0.77	1.13	55	4	1.45	5	-	13	13.9	14.5	15.4
ESTNB20 08-16-09	0.8	0.4	0.5	16	0.9	0.77	1.26	55	4	1.45	4.2	-	17.1	18.1	18.8	19.9
ESTNB20 09-4-04	0.9	0.45	0.6	4	0.4	0.86	0.91	50	4	3.46	8.2	4.5	4.7	4.9	5.1	5.4
ESTNB20 09-8-04	0.9	0.45	0.6	8	0.4	0.86	0.96	55	4	3.46	6.1	8.7	9.3	9.7	10	10.6
ESTNB20 09-12-04	0.9	0.45	0.6	12	0.4	0.86	1.02	55	4	3.46	4.8	12.9	13.8	14.4	14.9	15.7

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
◎	○		○	◎						

ESTNB20

2 Flutes Tapered Neck Ball End Mill

Endmill

EDP No	DC	RE	APMX	LUX	CA	DN ¹	DN ²	OAL	DCON MS	LU	BHTA	Effective length by inclination angle				
												0.5°	1°	1.5°	2°	3°
ESTNB20 09-16-04	0.9	0.45	0.6	16	0.4	0.86	1.08	60	4	3.46	4	17	18	18.7	19.3	20.5
ESTNB20 09-18-04	0.9	0.45	0.6	18	0.4	0.86	1.1	65	4	3.46	3.7	19.1	20.1	20.9	21.5	23.1
ESTNB20 09-20-04	0.9	0.45	0.6	20	0.4	0.86	1.13	65	4	3.46	3.4	21.1	22.2	23	23.6	25.6
ESTNB20 09-22-04	0.9	0.45	0.6	22	0.4	0.86	1.16	65	4	3.46	3.2	23.1	24.3	25.1	25.8	28.2
ESTNB20 09-24-04	0.9	0.45	0.6	24	0.4	0.86	1.19	70	4	3.46	3	25.2	26.4	27.2	27.9	-
ESTNB20 10-6-04	1	0.5	0.8	6	0.4	0.94	1.01	50	6	5.09	8.3	6.8	7.2	7.5	7.8	8.3
ESTNB20 10-8-04	1	0.5	0.8	8	0.4	0.94	1.04	55	6	5.09	7.5	8.8	9.3	9.7	10	10.6
ESTNB20 10-10-04	1	0.5	0.8	10	0.4	0.94	1.07	55	6	5.09	6.8	11	11.7	12.3	12.7	13.5
ESTNB20 10-10-09	1	0.5	0.8	10	0.9	0.94	1.23	55	6	2.7	6.9	-	11.2	11.9	12.4	13.2
ESTNB20 10-15-09	1	0.5	0.8	15	0.9	0.94	1.39	60	6	2.7	5.7	-	16.2	17.1	17.8	18.8
ESTNB20 10-20-04	1	0.5	0.8	20	0.4	0.94	1.21	65	6	5.09	4.7	21.2	22.3	23	23.6	25.7
ESTNB20 10-20-09	1	0.5	0.8	20	0.4	0.94	1.54	65	6	2.7	4.8	-	21.3	22.4	23.1	24.6
ESTNB20 10-25-09	1	0.5	0.8	25	0.4	0.94	1.7	70	6	2.7	4.2	-	26.4	27.6	28.4	30.8
ESTNB20 10-30-04	1	0.5	0.8	30	0.4	0.94	1.35	75	6	5.09	3.6	31.3	32.7	33.6	34.8	38.5
ESTNB20 10-30-09	1	0.5	0.8	30	0.9	0.94	1.86	75	6	2.7	3.7	-	31.4	32.8	33.7	36.9
ESTNB20 10-35-09	1	0.5	0.8	35	0.9	0.94	2.02	80	6	2.7	3.3	-	36.5	38	39	43.1
ESTNB20 10-40-09	1	0.5	0.8	40	0.9	0.94	2.17	85	6	2.7	3	-	41.6	43.2	44.4	-
ESTNB20 10-50-09	1	0.5	0.8	50	0.9	0.94	2.49	95	6	2.7	2.5	-	51.7	53.5	55.5	-
ESTNB20 10-60-09	1	0.5	0.8	60	0.9	0.94	2.8	105	6	2.7	2.2	-	61.8	63.8	66.6	-
ESTNB20 10-70-09	1	0.5	0.8	70	0.9	0.94	3.11	115	6	2.7	1.9	-	71.9	74	-	-
ESTNB20 15-8-04	1.5	0.75	1.35	8	0.4	1.42	1.51	55	6	7.07	7.3	8.9	9.4	9.7	10	10.6
ESTNB20 15-10-04	1.5	0.75	1.35	10	0.4	1.42	1.54	55	6	7.07	6.6	10.9	11.5	11.9	12.2	12.9
ESTNB20 15-12-04	1.5	0.75	1.35	12	0.4	1.42	1.57	55	6	7.07	6	13	13.6	14	14.4	15.4
ESTNB20 15-15-09	1.5	0.75	1.35	15	0.9	1.42	1.85	60	6	3.89	5.4	-	16.4	17.2	17.8	18.8
ESTNB20 15-20-09	1.5	0.75	1.35	20	0.9	1.42	2.01	65	6	3.89	4.5	-	21.4	22.4	23.2	24.7
ESTNB20 15-30-09	1.5	0.75	1.35	30	0.9	1.42	2.32	75	6	3.89	3.4	-	31.5	32.9	33.7	37
ESTNB20 18-4-04	1.8	0.9	1.6	4	0.4	1.73	1.76	50	6	4.38	9.2	4.6	4.8	4.9	5.1	5.4
ESTNB20 18-8-04	1.8	0.9	1.6	8	0.4	1.73	1.82	50	6	6.61	7.1	8.6	9	9.2	9.4	10.2
ESTNB20 18-12-04	1.8	0.9	1.6	12	0.4	1.73	1.88	55	6	6.61	5.8	12.9	13.5	14	14.4	15.4
ESTNB20 18-16-04	1.8	0.9	1.6	16	0.4	1.73	1.93	60	6	6.61	4.9	17	17.7	18.3	18.7	20.5
ESTNB20 18-20-04	1.8	0.9	1.6	20	0.4	1.73	1.99	65	6	6.61	4.3	21.2	22.3	23	23.6	25.6
ESTNB20 18-24-04	1.8	0.9	1.6	24	0.4	1.73	2.04	65	6	6.61	3.8	25.3	26.5	27.3	27.9	30.8
ESTNB20 18-28-04	1.8	0.9	1.6	28	0.4	1.73	2.1	70	6	6.61	3.4	29.4	30.6	31.5	32.4	35.9
ESTNB20 18-32-04	1.8	0.9	1.6	32	0.4	1.73	2.15	70	6	6.61	3	33.4	34.8	35.7	37.1	-

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	○		○	◎						

ESTNB20

2 Flutes Tapered Neck Ball End Mill

Endmill

EDP No	DC	RE	APMX	LUX	CA	DN ¹	DN ²	OAL	DCON MS	LU	BHTA	Effective length by inclination angle				
												0.5°	1°	1.5°	2°	3°
ESTNB20 18-36-04	1.8	0.9	1.6	36	0.4	1.73	2.21	75	6	6.61	2.8	37.5	38.9	39.9	41.7	-
ESTNB20 18-38-04	1.8	0.9	1.6	38	0.4	1.73	2.24	80	6	6.61	2.7	39.5	41	42	44	-
ESTNB20 18-40-04	1.8	0.9	1.6	40	0.4	1.73	2.27	80	6	6.61	2.6	41.5	43.1	44.2	46.3	-
ESTNB20 20-8-04	2	1	1.7	8	0.4	1.92	2.01	50	6	7.42	7	8.7	9	9.2	9.5	10.2
ESTNB20 20-12-04	2	1	1.7	12	0.4	1.92	2.06	55	6	7.42	5.7	13	13.6	14	14.4	15.4
ESTNB20 20-16-04	2	1	1.7	16	0.4	1.92	2.12	60	6	7.42	4.8	17	17.7	18.3	18.7	20.5
ESTNB20 20-20-04	2	1	1.7	20	0.4	1.92	2.18	65	6	7.42	4.1	21.3	22.3	23	23.6	25.6
ESTNB20 20-20-09	2	1	1.7	20	0.9	1.92	2.5	65	6	4.24	4.2	-	21.4	22.4	23.2	24.6
ESTNB20 20-25-09	2	1	1.7	25	0.9	1.92	2.65	65	6	4.24	3.6	-	26.5	27.7	28.5	30.8
ESTNB20 20-30-04	2	1	1.7	30	0.4	1.92	2.32	70	6	7.42	3.1	31.4	32.7	33.6	34.8	38.5
ESTNB20 20-30-09	2	1	1.7	30	0.9	1.92	2.81	70	6	4.24	3.2	-	31.6	32.9	33.7	36.9
ESTNB20 20-35-09	2	1	1.7	35	0.9	1.92	2.97	75	6	4.24	2.8	-	36.6	38	39	-
ESTNB20 20-40-04	2	1	1.7	40	0.4	1.92	2.46	80	6	7.42	2.5	41.5	43.1	44.2	46.3	-
ESTNB20 20-40-09	2	1	1.7	40	0.9	1.92	3.12	80	6	4.24	2.6	-	41.7	43.2	44.5	-
ESTNB20 20-50-09	2	1	1.7	50	0.9	1.92	3.44	90	6	4.24	2.1	-	51.5	53.5	55.5	-
ESTNB20 20-60-09	2	1	1.7	60	0.9	1.92	3.75	100	6	4.24	1.8	-	61.9	63.8	-	-
ESTNB20 20-70-09	2	1	1.7	70	0.9	1.92	4.07	110	6	4.24	1.8	-	72	74.1	-	-
ESTNB20 30-8-04	3	1.5	2.5	8	0.4	2.86	2.94	50	6	8.5	6.3	8.8	9.1	9.3	9.5	10.3
ESTNB20 30-16-04	3	1.5	2.5	16	0.4	2.86	3.05	55	6	12.52	4.1	17.2	17.8	18.3	18.7	20.6
ESTNB20 30-20-04	3	1.5	2.5	20	0.4	2.86	3.1	60	6	12.52	3.4	21.2	22	22.6	23.3	25.7
ESTNB20 30-30-04	3	1.5	2.5	30	0.4	2.86	3.24	70	6	12.52	2.5	31.6	32.8	33.7	34.9	-
ESTNB20 30-30-09	3	1.5	2.5	30	0.9	2.86	3.72	70	6	6.95	2.6	-	31.8	33	33.8	-
ESTNB20 30-40-04	3	1.5	2.5	40	0.4	2.86	3.38	80	6	12.52	2	41.7	43.2	44.3	-	-
ESTNB20 30-40-09	3	1.5	2.5	40	0.9	2.86	4.04	80	6	6.95	2	-	41.9	43.3	-	-
ESTNB20 30-50-09	3	1.5	2.5	50	0.9	2.86	4.35	90	6	6.95	1.7	-	52	53.6	-	-
ESTNB20 30-60-09	3	1.5	2.5	60	0.9	2.86	4.67	100	6	6.95	1.4	-	62.1	-	-	-
ESTNB20 30-70-09	3	1.5	2.5	70	0.9	2.86	4.98	110	6	6.95	1.2	-	72.1	-	-	-
ESTNB20 40-20-10	4	2	8	20	1	3.86	4.28	70	8	12.01	5	20.5	21.6	22.3	22.8	23.5
ESTNB20 40-30-10	4	2	8	30	1	3.86	4.63	80	8	12.01	3.51	22	31.6	32.5	33.2	34.16
ESTNB20 40-40-10	4	2	8	40	1	3.86	4.98	90	8	12.01	2.7	22	42	43.4	44.3	-
ESTNB20 40-50-10	4	2	8	50	1	3.86	5.33	100	8	12.01	2.2	22	52	53.6	54.7	-
ESTNB20 40-60-10	4	2	8	60	1	3.86	5.68	110	8	12.01	1.9	22	62	63.8	-	-
ESTNB20 50-30-10	5	2.5	10	30	1	4.86	5.56	80	8	14.01	2.8	25.5	31.7	32.6	33.2	-
ESTNB20 50-40-10	5	2.5	10	40	1	4.86	5.91	90	8	14.01	2.1	25.5	41.7	42.8	43.5	-

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	~325	HRC30~50	~FCD500					
◎	○		○	◎						

ESTNB20

2 Flutes Tapered Neck Ball End Mill

Endmill

EDP No	DC	RE	APMX	LUX	CA	DN ¹	DN ²	OAL	DCON MS	LU	BHTA	Effective length by inclination angle				
												0.5°	1°	1.5°	2°	3°
ESTNB20 50-60-10	5	2.5	10	60	1	4.86	6.61	110	8	14.01	1.5	25.5	62.1	-	-	-
ESTNB20 60-30-10	6	3	12	30	1	5.86	6.49	80	8	16.01	1.9	29	31.8	32.6	-	-
ESTNB20 60-40-10	6	3	12	40	1	5.86	6.84	90	8	16.01	1.5	29	41.8	-	-	-
ESTNB20 60-50-10	6	3	12	50	1	5.86	7.19	100	8	16.01	1.2	29	51.8	-	-	-
ESTNB20 60-60-10	6	3	12	60	1	5.86	7.54	110	10	16.01	1.9	29	62.2	63.9	-	-
ESTNB20 60-70-10	6	3	12	70	1	5.86	7.89	120	10	16.01	1.7	29	72.2	74.1	-	-
ESTNB20 60-80-10	6	3	12	80	1	5.86	8.23	130	10	16.01	1.5	29	82.2	-	-	-
ESTNB20 80-50-10	8	4	14	50	1	7.86	9.12	110	10	18.01	1.2	32	51.9	-	-	-
ESTNB20 80-60-10	8	4	14	60	1	7.86	9.47	120	10	18.01	1	32	-	-	-	-
ESTNB20 80-70-10	8	4	14	70	1	7.86	9.82	130	10	18.01	0.9	32	-	-	-	-
ESTNB20 80-80-10	8	4	14	80	1	7.86	10.16	140	12	18.01	1.5	32	82.3	-	-	-
ESTNB20 100-60-10	10	5	18	60	1	9.86	11.33	130	12	22.01	1.1	39	62.1	-	-	-
ESTNB20 100-75-10	10	5	18	75	1	9.86	11.85	140	12	22.01	0.9	39	-	-	-	-

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

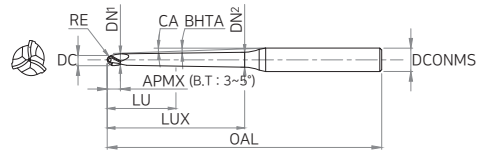
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	Steel HRc30~50	~FCD500					
◎	○		○	◎						

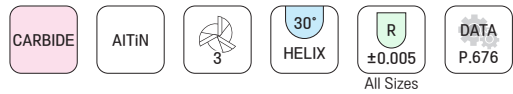
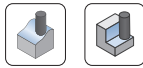
ESTNB30

3 Flutes Tapered Neck Ball End Mill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.015	h5



EDP No	DC	RE	APMX	LUX	CA	DN ¹	DN ²	OAL	DCONMS	LU	BHTA	Effective length by inclination angle				
												0.5°	1°	1.5°	2°	3°
ESTNB30 20-8-04	2	1	1.7	8	0.4	1.92	2.01	50	6	7.42	7	8.7	9	9.2	9.5	10.2
ESTNB30 20-12-04	2	1	1.7	12	0.4	1.92	2.06	55	6	7.42	5.7	13	13.6	14	14.4	15.4
ESTNB30 20-16-04	2	1	1.7	16	0.4	1.92	2.12	60	6	7.42	4.8	17	17.7	18.3	18.7	20.5
ESTNB30 20-20-04	2	1	1.7	20	0.4	1.92	2.18	65	6	7.42	4.1	21.3	22.3	23	23.6	25.6
ESTNB30 20-20-09	2	1	1.7	20	0.9	1.92	2.5	65	6	4.24	4.2	-	21.4	22.4	23.2	24.6
ESTNB30 20-25-09	2	1	1.7	25	0.9	1.92	2.65	65	6	4.24	3.6	-	26.5	27.7	28.5	30.8
ESTNB30 20-30-04	2	1	1.7	30	0.4	1.92	2.32	70	6	7.42	3.1	31.4	32.7	33.6	34.8	38.5
ESTNB30 20-30-09	2	1	1.7	30	0.9	1.92	2.81	70	6	4.24	3.2	-	31.6	32.9	33.7	36.9
ESTNB30 20-35-09	2	1	1.7	35	0.9	1.92	2.97	75	6	4.24	2.8	-	36.6	38	39	-
ESTNB30 20-40-04	2	1	1.7	40	0.4	1.92	2.46	80	6	7.42	2.5	41.5	43.1	44.2	46.3	-
ESTNB30 20-40-09	2	1	1.7	40	0.9	1.92	3.12	80	6	4.24	2.6	-	41.7	43.2	44.5	-
ESTNB30 20-50-09	2	1	1.7	50	0.9	1.92	3.44	90	6	4.24	2.1	-	51.8	53.5	55.5	-
ESTNB30 20-60-09	2	1	1.7	60	0.9	1.92	3.75	100	6	4.24	1.8	-	61.9	63.8	-	-
ESTNB30 20-70-09	2	1	1.7	70	0.9	1.92	4.07	110	6	4.24	1.6	-	72	74.1	-	-
ESTNB30 30-8-04	3	1.5	2.5	8	0.4	2.86	2.94	50	6	8.5	6.3	8.8	9.1	9.3	9.5	10.3
ESTNB30 30-16-04	3	1.5	2.5	16	0.4	2.86	3.05	55	6	12.52	4.1	17.2	17.8	18.3	18.7	20.6
ESTNB30 30-20-04	3	1.5	2.5	20	0.4	2.86	3.1	60	6	12.52	3.4	21.2	22	22.6	23.3	25.7
ESTNB30 30-30-04	3	1.5	2.5	30	0.4	2.86	3.24	70	6	12.52	2.5	31.6	32.8	33.7	34.9	-
ESTNB30 30-30-09	3	1.5	2.5	30	0.9	2.86	3.72	70	6	6.95	2.6	-	31.8	33	33.8	-
ESTNB30 30-40-04	3	1.5	2.5	40	0.4	2.86	3.38	80	6	12.52	2	41.7	43.2	44.3	-	-

► Applicable Working Material

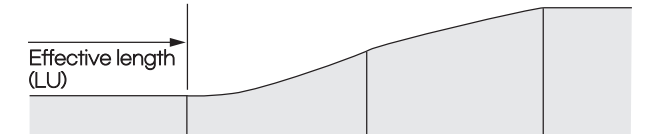
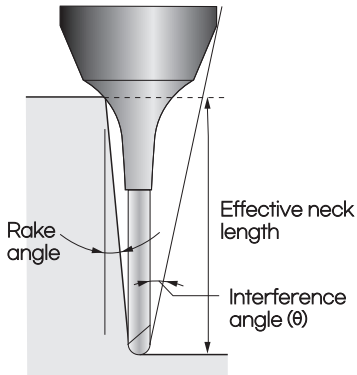
○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	~325	HRC30~50	~FCD500					
◎	○		○	◎						

ESTNB30

3 Flutes Tapered Neck Ball End Mill

Endmill



※ The marked effective neck length is the default value to prevent interference with the workpiece.

EDP No	DC	RE	APMX	LUX	CA	DN ¹	DN ²	OAL	DCON MS	LU	BHTA	Effective length by inclination angle				
												0.5°	1°	1.5°	2°	3°
ESTNB30 30-40-09	3	1.5	2.5	40	0.9	2.86	4.04	80	6	6.95	2	-	41.9	43.3	-	-
ESTNB30 30-50-09	3	1.5	2.5	50	0.9	2.86	4.35	90	6	6.95	1.7	-	52	53.6	-	-
ESTNB30 30-60-09	3	1.5	2.5	60	0.9	2.86	4.67	100	6	6.95	1.4	-	62.1	-	-	-
ESTNB30 30-70-09	3	1.5	2.5	70	0.9	2.86	4.98	110	6	6.95	1.2	-	72.1	-	-	-
ESTNB30 40-20-10	4	2	8	20	1	3.86	4.28	70	8	12.01	5	20.5	21.6	22.3	22.8	23.5
ESTNB30 40-30-10	4	2	8	30	1	3.86	4.63	80	8	12.01	3.6	22	31.6	32.5	33.2	34.1
ESTNB30 40-40-10	4	2	8	40	1	3.86	4.98	90	8	12.01	2.7	22	42	43.4	44.3	-
ESTNB30 40-50-10	4	2	8	50	1	3.86	5.33	100	8	12.01	2.2	22	52	53.6	54.7	-
ESTNB30 40-60-10	4	2	8	60	1	3.86	5.68	110	8	12.01	1.9	22	62	63.8	-	-
ESTNB30 50-30-10	5	2.5	10	30	1	4.86	5.56	80	8	14.01	2.8	25.5	31.7	32.6	33.2	-
ESTNB30 50-40-10	5	2.5	10	40	1	4.86	5.91	90	8	14.01	2.1	25.5	41.7	42.8	43.5	-
ESTNB30 50-60-10	5	2.5	10	60	1	4.86	6.61	110	8	12.52	1.5	25.5	62.1	-	-	-

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
◎	○		○	◎						

U-Wing Endmill **NEW**

Mid Hardness HRc 30 ~50

Characteristics

- Suitable for processing mold steel, mid hardness steel HRc 30~50
- New coatings excellent for wear resistance and lubrication
- Excellent for complex mold processing by securing various specifications and rib types

Features

- Suitable for mid hardness steel, mold steel processing from HRc30-50
- Improvement of wear resistance and increased lubricity through AlCrN-based Coating
- Strengthened cutting edge of ball end mills with ultra-fine material
- Enhanced chipping resistance of flat end mill through application of high toughness material
- Range of shapes and specifications suitable for complex mold processing
- Suitable for precision processing by applying high precision tolerances on h5 shank, cutting diameter and radius

Cutting edge

- Improved chipping resistance
- New cutting edge to cope with a variety of mold processing and improved performance and tool life



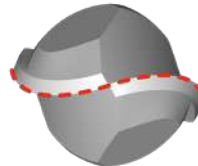
Adopted new raw material

- Separated raw material by geometry to maximize tool characteristics and to increase versatility



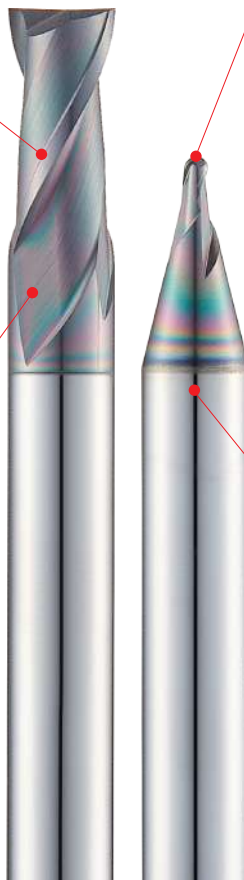
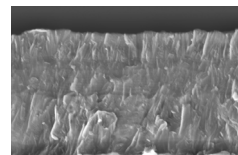
S curved gash shape

- Improved cutting and wear resistance by dispersing processing loads



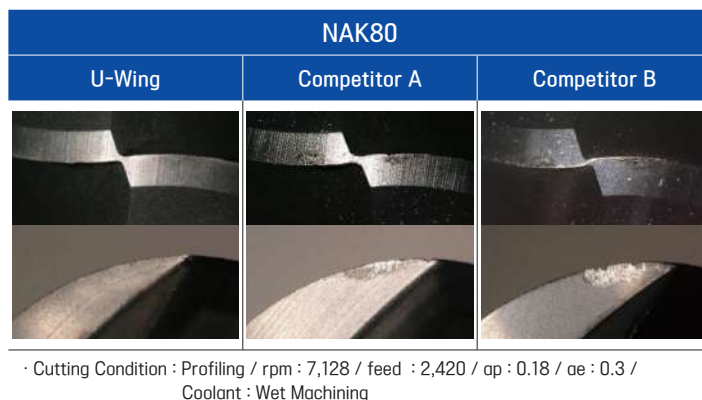
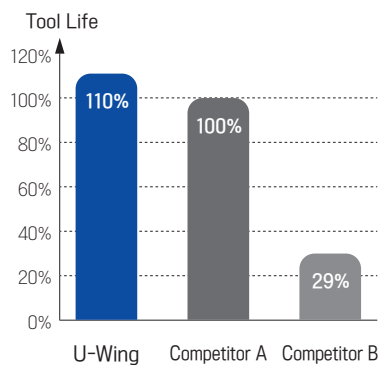
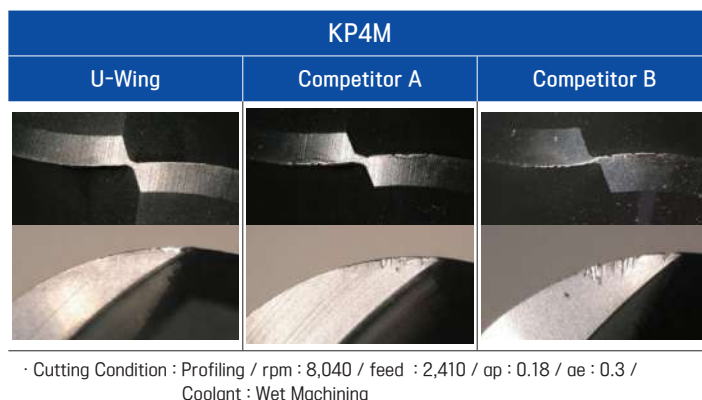
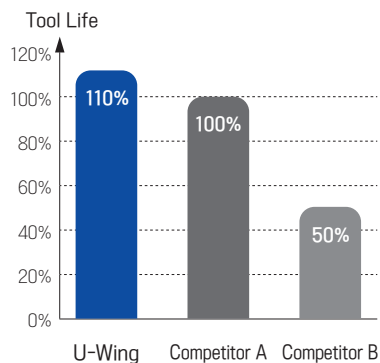
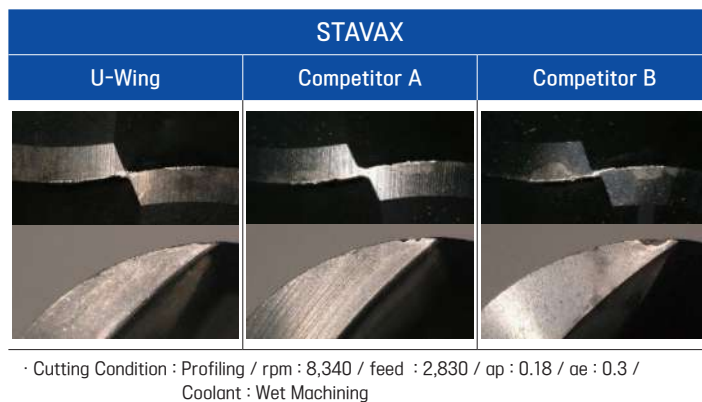
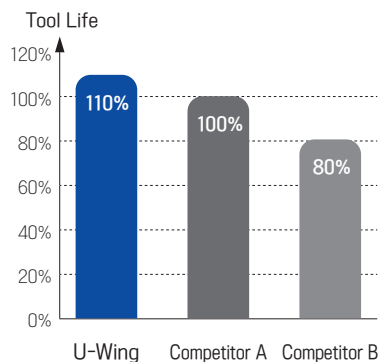
AlCrN base New Coating

- Improved the wear-resistance & oxidation resistance
- Reinforced the lubrication by containing the Cr
- Improved heat resistance



Case Study

► 2F R3.0 Ball End Mill

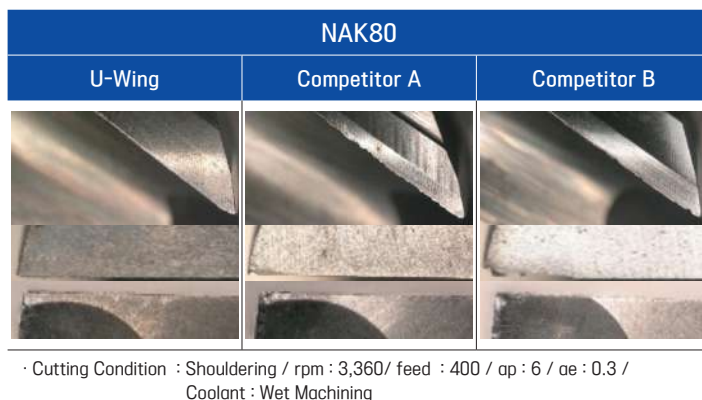
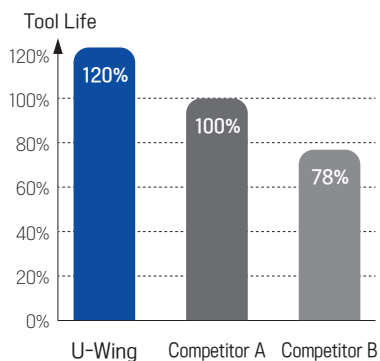
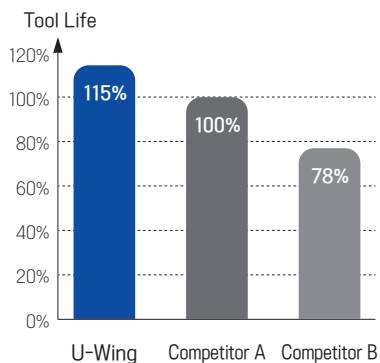
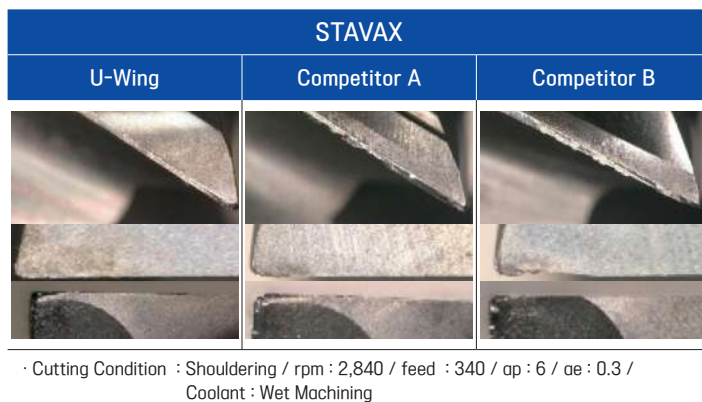
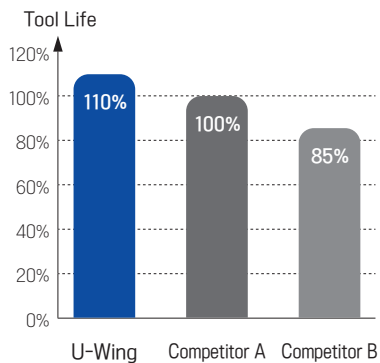


U-Wing Endmill **NEW**

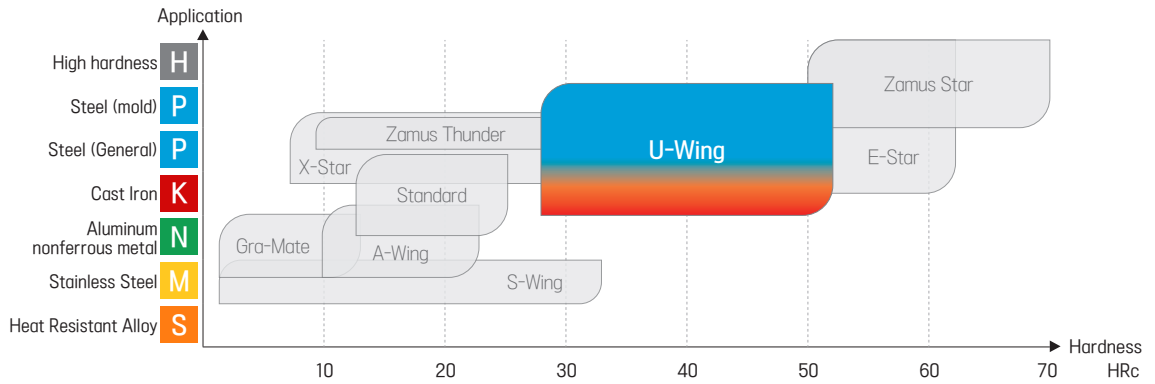
Mid Hardness HRc 30 ~50

Case Study

► 4F D6.0 Square End Mill



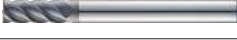
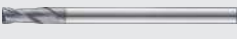
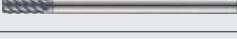
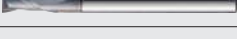
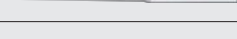
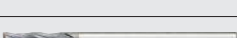
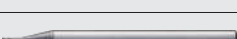
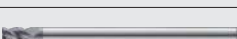
Applications

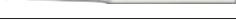
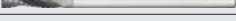
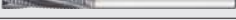


U-Wing Endmill **NEW**

Mid Hardness HRc 30 ~50

Contents

Section		EDP No	Geometry	Product	Diameter(DC)		Page
Shape	Flute				Min	Max	
Square	2F	UE502		2 Flutes Square End Mill	0.1	25	183
	4F	UE504		4 Flutes Square End Mill	0.8	25	185
	4F	UE504H		4 Flutes 45° Helix Square End Mill	1	20	186
	6F	UE506		6 Flutes Square End Mill	6	25	187
	2F	UE512		2 Flutes Long Neck Square End Mill	0.1	12	188
	4F	UE514		4 Flutes Long Neck Square End Mill	1	12	191
	2F	UE522		2 Flutes Square End Mill	1	25	193
	4F	UE524		4 Flutes Square End Mill	1	25	196
	4F	ULE504		4 Flutes Automatic CNC Square End Mill	3	16	199
	2F	UXE502		2 Flutes Square End Mill For Heavy Cuts	0.1	20	200
	4F	UXE504		4 Flutes Square End Mill For Heavy Cuts	1	20	202
	2F	UTE502		2 Flutes Tapered Square End Mill	0.3	10	204
	4F	UTE504		4 Flutes Tapered Square End Mill	0.8	10	207
Radius	2F	UR502		2 Flutes Radius End Mill	0.2	20	211
	4F	UR504		4 Flutes Radius End Mill	3	20	215
	6F	UR506		6 Flutes Radius End Mill	6	20	217
	2F	UR512		2 Flutes Neck Type Radius End Mill	0.2	20	218
	2F	UR542		2 Flutes Tapered Neck Radius End Mill	0.2	4	225
	4F	UR544		4 Flutes Tapered Neck Radius End Mill	1	4	236
	4F	UXR504		4 Flutes Multi Helix Radius End Mill	1	20	245
	4F	UXR514		4 Flutes Multi Helix Neck Radius End Mill	1	20	248
	3F	UDR503		3 Flutes double Radius End Mill	6	20	254
	4F	USPM4		4 Flutes Radius End Mill For High Speed Machining	1	20	255
	4F	UTR504		4 Flutes Tapered Radius End Mill	0.8	2.5	257
Ball	2F	UB502		2 Flutes Ball End Mill	0.1	25	262

Section		EDP No	Geometry	Product	Diameter(DC)		Page
Shape	Flute				Min	Max	
Ball	2F	UB502-P		2 Flutes High Precision Ball End Mill	0.1	12	265
	3F	UB503		3 Flutes Ball End Mill	1	12	266
	4F	UB504		4 Flutes Ball End Mill	1	12	267
	2F	UB512		2 Flutes Long Neck Ball End Mill	0.1	12	268
	2F	UB512 S6		2 Flutes Long Neck Ball End Mill (Shank 6)	0.5	2	272
	2F	UB532		2 Flutes Lollipop Style Ball End Mill	3	12	274
	2F	UB542		2 Flutes Tapered Neck Ball End Mill	0.1	12	275
	2F	UTB502		2 Flutes Tapered Ball End Mill	0.3	2	289
	2F	USB502		2 Flutes Straight Neck Ball End Mill	3	20	292
Roughing	3~5F	UF50		3~5 Flutes Chamfer Pitch Roughing End Mill	3	25	293
	3~5F	UF51		3~5 Flutes Fine Pitch Roughing End Mill	3	25	294
	3~5F	UF51-H		3~5 Flutes 45° Helix Fine Pitch Roughing End Mill	3	25	295

U-Wing Endmill NEW

Mid Hardness HRc 30 ~50

EDP No. System

*If expressed as an integer, the decimal point is omitted.

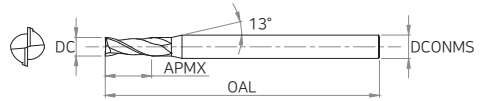
U	R	5	0	2	030	10	25	-	S3
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩

① Section	② Geometry	③ Grade	④ Length, Shank Type	⑤ Flutes	⑥ Cutting Dia	⑦ Corner R	⑧ Neck Length	⑨ OAL	⑩ Detailed characteristics
U : U-Wing	E : Square	5 : Grade	0 : Straight	2 : 2Flute	0.1	0.05	0.2	35	P : Precision Tolerance
	R : Radius		1 : Neck	3 : 3Flute	~	~	~	~	S3~S6 : Shank Dia
	B : Ball		2 : Long Shank	4 : 4Flute	25	5	300	300	H : High Helix
	SB : Straight Ball		3 : Lollipop	5 : 5Flute					
	SPM : Speed Power Mill		4 : Tapered Neck	6 : 6Flute					
	XE : Heavy Cut Square								
	XR : Multi Helix Radius								
	TE : Tapered Square								
	TR : Tapered Radius								
	TB : Tapered Ball								
	DR : Double Radius								
	F : Roughing								
	LE : Square (Lathe)								

Ex) 2 Flute / Cutting Dia $\varnothing 3$ / Corner R 1.0 / Neck Length 6mm / Shank Dia 4 / 50 Grade / Corner Radius Neck Type U-Wing End Mill

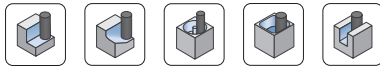
UE502

2 Flutes Square End Mill



► Tolerance

DC		Shank Dia
Ø0.1 ~ Ø6	0 ~ -0.012	h5
Ø6.5 ~ Ø25	0 ~ -0.015	



EDP No	DC	APMX	OAL	DCONMS	EDP No	DC	APMX	OAL	DCONMS
UE502 001S3	0.1	0.2	40	3	UE502 0075	0.75	1.5	40	4
UE502 001	0.1	0.2	40	4	UE502 008S3	0.8	1.6	40	3
UE502 0015	0.15	0.3	40	4	UE502 008	0.8	1.6	40	4
UE502 002S3	0.2	0.4	40	3	UE502 0085	0.85	1.7	40	4
UE502 002	0.2	0.4	40	4	UE502 009S3	0.9	1.8	40	3
UE502 0025	0.25	0.5	40	4	UE502 009	0.9	1.8	40	4
UE502 003S3	0.3	0.6	40	3	UE502 0095	0.95	2	40	4
UE502 003	0.3	0.6	40	4	UE502 010S3	1	2.5	50	3
UE502 0035	0.35	0.7	40	4	UE502 010S4	1	2.5	50	4
UE502 004S3	0.4	0.8	40	3	UE502 010	1	2.5	50	6
UE502 004	0.4	0.8	40	4	UE502 011S4	1.1	3	50	4
UE502 0045	0.45	0.9	40	4	UE502 012S3	1.2	3	50	3
UE502 005S3	0.5	1	40	3	UE502 012S4	1.2	3	50	4
UE502 005	0.5	1	40	4	UE502 012	1.2	3	50	6
UE502 0055	0.55	1.1	40	4	UE502 013S4	1.3	3	50	4
UE502 006S3	0.6	1.2	40	3	UE502 014S4	1.4	4	50	4
UE502 006	0.6	1.2	40	4	UE502 015S3	1.5	4	50	3
UE502 0065	0.65	1.3	40	4	UE502 015S4	1.5	4	50	4
UE502 007S3	0.7	1.4	40	3	UE502 015	1.5	4	50	6
UE502 007	0.7	1.4	40	4	UE502 016S4	1.6	4	50	4

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○		○	◎	◎	○					

Endmill

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

UE502

2 Flutes Square End Mill

Endmill

EDP No	DC	APMX	OAL	DCONMS	EDP No	DC	APMX	OAL	DCONMS
UE502 017S4	1.7	4	50	4	UE502 065	6.5	18	60	8
UE502 018S4	1.8	5	50	4	UE502 070	7	20	60	8
UE502 019S4	1.9	5	50	4	UE502 075	7.5	20	60	8
UE502 020S3	2	6	50	3	UE502 080	8	20	70	8
UE502 020S4	2	6	50	4	UE502 085	8.5	22	70	10
UE502 020	2	6	50	6	UE502 090	9	22	70	10
UE502 021S4	2.1	6	50	4	UE502 095	9.5	24	70	10
UE502 022S4	2.2	6	50	4	UE502 100	10	25	75	10
UE502 023S4	2.3	6	50	4	UE502 105	10.5	26	75	12
UE502 024S4	2.4	6	50	4	UE502 110	11	30	75	12
UE502 025S3	2.5	7	50	3	UE502 115	11.5	30	80	12
UE502 025	2.5	7	50	6	UE502 120	12	30	80	12
UE502 025S4	2.5	8	50	4	UE502 130	13	35	100	12
UE502 026S4	2.6	8	50	4	UE502 140S16	14	35	100	16
UE502 027S4	2.7	8	50	4	UE502 140	14	35	100	14
UE502 028S4	2.8	8	50	4	UE502 140S12	14	35	100	12
UE502 029S4	2.9	8	50	4	UE502 150	15	38	100	16
UE502 030S3	3	8	50	3	UE502 160	16	40	100	16
UE502 030S4	3	8	50	4	UE502 170	17	42	100	16
UE502 030	3	8	50	6	UE502 180	18	45	100	18
UE502 035S4	3.5	10	50	4	UE502 180S16	18	45	100	16
UE502 035	3.5	10	50	6	UE502 190	19	45	100	20
UE502 040080S4	4	10	80	4	UE502 200	20	45	100	20
UE502 040S4	4	10	50	4	UE502 210	21	45	100	20
UE502 040	4	10	50	6	UE502 220	22	45	100	20
UE502 045	4.5	14	50	6	UE502 230	23	50	120	25
UE502 050	5	15	60	6	UE502 240	24	50	120	25
UE502 055	5.5	15	60	6	UE502 250	25	50	120	25
UE502 060	6	15	60	6					

Copper
-Mate

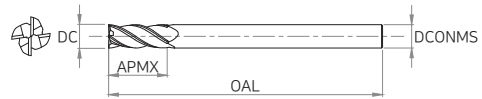
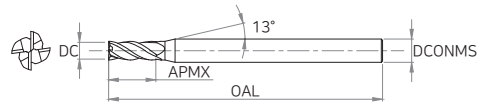
Gra
-Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

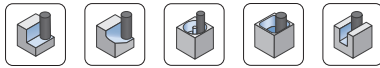
H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
○		○	◎	◎	○					

UE504 4 Flutes Square End Mill



► Tolerance

DC		Shank Dia
Ø0.8 ~ Ø25	0 ~ -0.03	h5



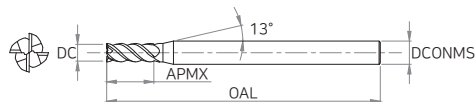
EDP No	DC	APMX	OAL	DCONMS	EDP No	DC	APMX	OAL	DCONMS
UE504 008	0.8	1.6	40	4	UE504 105	10.5	26	75	12
UE504 009	0.9	1.8	40	4	UE504 110	11	30	75	12
UE504 010	1	2.5	50	6	UE504 115	11.5	30	80	12
UE504 012	1.2	3	50	6	UE504 120	12	30	80	12
UE504 015	1.5	4	50	6	UE504 125	12.5	30	80	12
UE504 020	2	6	50	6	UE504 130	13	35	100	12
UE504 025	2.5	7	50	6	UE504 140	14	35	100	16
UE504 030	3	8	50	6	UE504 140S14	14	35	100	14
UE504 035	3.5	10	50	6	UE504 140S12	14	35	100	12
UE504 040	4	10	50	6	UE504 150	15	38	100	16
UE504 045	4.5	14	50	6	UE504 160	16	40	100	16
UE504 050	5	15	60	6	UE504 170	17	42	100	16
UE504 055	5.5	15	60	6	UE504 180	18	45	100	18
UE504 060	6	15	60	6	UE504 180S16	18	45	100	16
UE504 065	6.5	18	60	8	UE504 190	19	45	100	20
UE504 070	7	20	60	8	UE504 200	20	45	100	20
UE504 075	7.5	20	60	8	UE504 210	21	45	100	20
UE504 080	8	20	70	8	UE504 220	22	45	100	20
UE504 085	8.5	22	70	10	UE504 230	23	50	120	25
UE504 090	9	22	70	10	UE504 240	24	50	120	25
UE504 095	9.5	24	70	10	UE504 250	25	50	120	25
UE504 100	10	25	75	10					

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

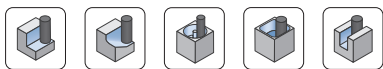
H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○		○	◎	◎	○					

UE504H 4 Flutes 45° Helix Square End Mill



► Tolerance

DC		Shank Dia
Ø1 ~ Ø20	0 ~ -0.03	h5



EDP No	DC	APMX	OAL	DCONMS	EDP No	DC	APMX	OAL	DCONMS
UE504H 010	1	2.5	50	6	UE504H 06030	6	30	80	6
UE504H 01004	1	4	60	6	UE504H 080	8	20	70	8
UE504H 01006	1	6	60	6	UE504H 08030	8	30	80	8
UE504H 015	1.5	4	50	6	UE504H 08035	8	35	90	8
UE504H 01506	1.5	6	60	6	UE504H 08040	8	40	90	8
UE504H 01508	1.5	8	60	6	UE504H 100	10	25	75	10
UE504H 020	2	6	50	6	UE504H 10030	10	30	80	10
UE504H 02008	2	8	60	6	UE504H 10040	10	40	90	10
UE504H 02010	2	10	60	6	UE504H 10050	10	50	100	10
UE504H 030	3	8	50	6	UE504H 120	12	30	80	12
UE504H 03010	3	10	70	6	UE504H 12040	12	40	90	12
UE504H 03012	3	12	70	6	UE504H 12050	12	50	100	12
UE504H 03016	3	16	70	6	UE504H 12060	12	60	110	12
UE504H 040	4	10	50	6	UE504H 160	16	40	100	16
UE504H 04012	4	12	70	6	UE504H 16050	16	50	110	16
UE504H 04016	4	16	70	6	UE504H 16060	16	60	120	16
UE504H 04020	4	20	70	6	UE504H 160110	16	110	200	16
UE504H 050	5	15	50	6	UE504H 200	20	45	100	20
UE504H 05030	5	30	80	6	UE504H 20060	20	60	120	20
UE504H 060	6	15	60	6	UE504H 20070	20	70	130	20
UE504H 06020	6	20	70	6	UE504H 200110	20	110	200	20

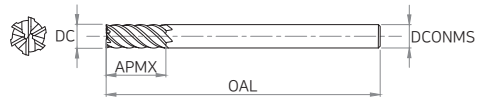
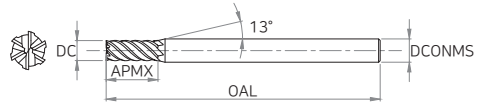
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
○		○	◎	◎	○					

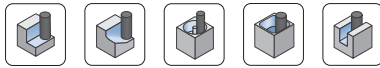
UE506

6 Flutes Square End Mill



► Tolerance

DC		Shank Dia
Ø6 ~ Ø25	0 ~ -0.03	h5



EDP No	DC	APMX	OAL	DCONMS	EDP No	DC	APMX	OAL	DCONMS
UE506 060	6	15	60	6	UE506 12060150	12	60	150	12
UE506 06020	6	20	70	6	UE506 12060	12	60	110	12
UE506 06030110	6	30	110	6	UE506 130	13	32	85	14
UE506 06030	6	30	80	6	UE506 140	14	32	85	14
UE506 070	7	18	60	8	UE506 160	16	40	100	16
UE506 080	8	20	70	8	UE506 16050	16	50	110	16
UE506 08030	8	30	80	8	UE506 16060	16	60	120	16
UE506 08035	8	35	90	8	UE506 16090	16	90	150	16
UE506 08040130	8	40	130	8	UE506 160110250	16	110	250	16
UE506 08040	8	40	90	8	UE506 160110	16	110	200	16
UE506 090	9	22	70	10	UE506 180	18	44	100	18
UE506 100	10	25	75	10	UE506 200	20	45	100	20
UE506 10030	10	30	80	10	UE506 20060	20	60	120	20
UE506 10040	10	40	90	10	UE506 20070	20	70	130	20
UE506 10050150	10	50	150	10	UE506 200110300	20	110	300	20
UE506 10050	10	50	100	10	UE506 200110250	20	110	250	20
UE506 110	11	26	75	12	UE506 200110	20	110	200	20
UE506 120	12	30	80	12	UE506 250	25	50	120	25
UE506 12040	12	40	90	12	UE506 251	25	92	180	25
UE506 12050	12	50	100	12					

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	~325	HRc30~50	~FCD500					
○		○	◎	◎	○					

Endmill

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

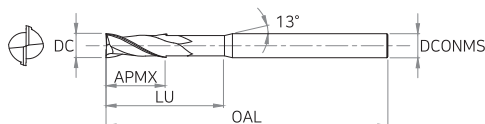
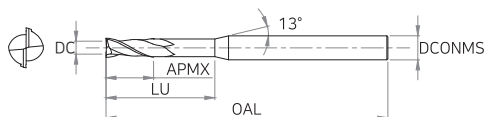
Standard

Copper
-Mate

Gra
-Mate

UE512 2 Flutes Long Neck Square End Mill

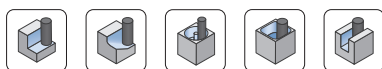
Endmill



► Tolerance

DC	Shank Dia
Ø0.1 ~ Ø6	0 ~ -0.012
Ø8 ~ Ø12	0 ~ -0.015

h5



EDP No	DC	APMX	LU	OAL	DCON MS	EDP No	DC	APMX	LU	OAL	DCON MS
UE512 001003	0.1	0.15	0.3	40	4	UE512 00501	0.5	0.7	1	45	4
UE512 001005	0.1	0.15	0.5	40	4	UE512 005015	0.5	0.7	1.5	45	4
UE512 00101	0.1	0.15	1	40	4	UE512 00502	0.5	0.7	2	45	4
UE512 002005	0.2	0.3	0.5	40	4	UE512 005025	0.5	0.7	2.5	45	4
UE512 00201	0.2	0.3	1	40	4	UE512 00503	0.5	0.7	3	45	4
UE512 002015	0.2	0.3	1.5	40	4	UE512 00504	0.5	0.7	4	45	4
UE512 00202	0.2	0.3	2	40	4	UE512 00505	0.5	0.7	5	45	4
UE512 00301	0.3	0.5	1	40	4	UE512 00506	0.5	0.7	6	45	4
UE512 003015	0.3	0.5	1.5	40	4	UE512 00508	0.5	0.7	8	45	4
UE512 00302	0.3	0.5	2	40	4	UE512 00510	0.5	0.7	10	45	4
UE512 003025	0.3	0.5	2.5	40	4	UE512 00512	0.5	0.7	12	45	4
UE512 00303	0.3	0.5	3	40	4	UE512 00514	0.5	0.7	14	45	4
UE512 00304	0.3	0.5	4	40	4	UE512 00516	0.5	0.7	16	45	4
UE512 00305	0.3	0.5	5	40	4	UE512 00602	0.6	0.9	2	45	4
UE512 00401	0.4	0.6	1	40	4	UE512 00603	0.6	0.9	3	45	4
UE512 004015	0.4	0.6	1.5	40	4	UE512 00604	0.6	0.9	4	45	4
UE512 00402	0.4	0.6	2	40	4	UE512 00605	0.6	0.9	5	45	4
UE512 004025	0.4	0.6	2.5	40	4	UE512 00606	0.6	0.9	6	45	4
UE512 00403	0.4	0.6	3	40	4	UE512 00608	0.6	0.9	8	45	4
UE512 00404	0.4	0.6	4	40	4	UE512 00610	0.6	0.9	10	45	4
UE512 00405	0.4	0.6	5	40	4	UE512 00612	0.6	0.9	12	45	4
UE512 00406	0.4	0.6	6	40	4	UE512 00614	0.6	0.9	14	45	4
UE512 00408	0.4	0.6	8	40	4	UE512 00616	0.6	0.9	16	45	4
UE512 00410	0.4	0.6	10	40	4	UE512 00702	0.7	1.2	2	45	4

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	~325	HRC30~50	~FCD500					
○		○	◎	◎	○					

UE512

2 Flutes Long Neck Square End Mill

Endmill

EDP No	DC	APMX	LU	OAL	DCON MS	EDP No	DC	APMX	LU	OAL	DCON MS
UE512 00704	0.7	1.2	4	45	4	UE512 01210	1.2	1.8	10	50	4
UE512 00706	0.7	1.2	6	45	4	UE512 01212	1.2	1.8	12	50	4
UE512 00708	0.7	1.2	8	45	4	UE512 01214	1.2	1.8	14	50	4
UE512 00710	0.7	1.2	10	45	4	UE512 01216	1.2	1.8	16	50	4
UE512 00712	0.7	1.2	12	45	4	UE512 01220	1.2	1.8	20	50	4
UE512 00802	0.8	1.2	2	45	4	UE512 01226	1.2	1.8	26	60	4
UE512 00803	0.8	1.2	3	45	4	UE512 01230	1.2	1.8	30	70	4
UE512 00804	0.8	1.2	4	45	4	UE512 01406	1.4	2.1	6	50	4
UE512 00805	0.8	1.2	5	45	4	UE512 01408	1.4	2.1	8	50	4
UE512 00806	0.8	1.2	6	45	4	UE512 01410	1.4	2.1	10	50	4
UE512 00808	0.8	1.2	8	45	4	UE512 01414	1.4	2.1	14	50	4
UE512 00810	0.8	1.2	10	45	4	UE512 01416	1.4	2.1	16	50	4
UE512 00812	0.8	1.2	12	45	4	UE512 01420	1.4	2.1	20	50	4
UE512 00814	0.8	1.2	14	45	4	UE512 01504	1.5	2.3	4	50	4
UE512 00816	0.8	1.2	16	45	4	UE512 01505	1.5	2.3	5	50	4
UE512 00820	0.8	1.2	20	45	4	UE512 01506	1.5	2.3	6	50	4
UE512 00906	0.9	1.3	6	45	4	UE512 01507	1.5	2.3	7	50	4
UE512 00908	0.9	1.3	8	45	4	UE512 01508	1.5	2.3	8	50	4
UE512 00910	0.9	1.3	10	45	4	UE512 01510	1.5	2.3	10	50	4
UE512 01002	1	1.5	2	50	4	UE512 01512	1.5	2.3	12	50	4
UE512 01003	1	1.5	3	50	4	UE512 01514	1.5	2.3	14	50	4
UE512 01004	1	1.5	4	50	4	UE512 01516	1.5	2.3	16	50	4
UE512 01005	1	1.5	5	50	4	UE512 01518	1.5	2.3	18	50	4
UE512 01006	1	1.5	6	50	4	UE512 01520	1.5	2.3	20	50	4
UE512 01007	1	1.5	7	50	4	UE512 01522	1.5	2.3	22	60	4
UE512 01008	1	1.5	8	50	4	UE512 01526	1.5	2.3	26	60	4
UE512 01010	1	1.5	10	50	4	UE512 01530	1.5	2.3	30	70	4
UE512 01012	1	1.5	12	50	4	UE512 01608	1.6	2.3	8	50	4
UE512 01014	1	1.5	14	50	4	UE512 01610	1.6	2.3	10	50	4
UE512 01016	1	1.5	16	50	4	UE512 01612	1.6	2.3	12	50	4
UE512 01018	1	1.5	18	50	4	UE512 01616	1.6	2.3	16	50	4
UE512 01020	1	1.5	20	50	4	UE512 01620	1.6	2.3	20	50	4
UE512 01022	1	1.5	22	60	4	UE512 01808	1.8	2.7	8	50	4
UE512 01026	1	1.5	26	60	4	UE512 01810	1.8	2.7	10	50	4
UE512 01030	1	1.5	30	70	4	UE512 01812	1.8	2.7	12	50	4
UE512 01040	1	1.5	40	80	4	UE512 01816	1.8	2.7	16	50	4
UE512 01050	1	1.5	50	100	4	UE512 01820	1.8	2.7	20	50	4
UE512 01204	1.2	1.8	4	50	4	UE512 02006	2	3	6	50	4
UE512 01206	1.2	1.8	6	50	4	UE512 02008	2	3	8	50	4
UE512 01208	1.2	1.8	8	50	4	UE512 02010	2	3	10	50	4

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○		○	◎	◎	○					

UE512

2 Flutes Long Neck Square End Mill

Endmill

	EDP No	DC	APMX	LU	OAL	DCON MS		EDP No	DC	APMX	LU	OAL	DCON MS
Zamus Star	UE512 02012	2	3	12	50	4		UE512 03045	3	4.5	45	90	6
	UE512 02014	2	3	14	50	4		UE512 03050	3	4.5	50	100	6
	UE512 02016	2	3	16	50	4		UE512 03060	3	4.5	60	100	6
	UE512 02018	2	3	18	50	4		UE512 04008	4	6	8	50	6
	UE512 02020	2	3	20	50	4		UE512 04010	4	6	10	50	6
E-Star	UE512 02022	2	3	22	60	4		UE512 04012	4	6	12	50	6
	UE512 02026	2	3	26	60	4		UE512 04014	4	6	14	60	6
	UE512 02030	2	3	30	70	4		UE512 04016	4	6	16	60	6
	UE512 02035	2	3	35	70	4		UE512 04018	4	6	18	60	6
	UE512 02040	2	3	40	80	4		UE512 04020	4	6	20	60	6
U-Wing	UE512 02045	2	3	45	90	4		UE512 04022	4	6	22	65	6
	UE512 02050	2	3	50	100	4		UE512 04026	4	6	26	65	6
	UE512 02060	2	3	60	110	4		UE512 04030	4	6	30	70	6
	UE512 02508	2.5	4	8	50	4		UE512 04035	4	6	35	70	6
	UE512 02510	2.5	4	10	50	4		UE512 04040	4	6	40	80	6
Zamus Thunder	UE512 02512	2.5	4	12	50	4		UE512 04045	4	6	45	90	6
	UE512 02514	2.5	4	14	50	4		UE512 04050	4	6	50	100	6
	UE512 02516	2.5	4	16	50	4		UE512 04060	4	6	60	100	6
	UE512 02518	2.5	4	18	50	4		UE512 05016	5	8	16	60	6
	UE512 02520	2.5	4	20	50	4		UE512 05020	5	8	20	60	6
X-Star	UE512 02522	2.5	4	22	60	4		UE512 05026	5	8	26	65	6
	UE512 02526	2.5	4	26	60	4		UE512 05030	5	8	30	70	6
	UE512 02530	2.5	4	30	70	4		UE512 05035	5	8	35	75	6
	UE512 02535	2.5	4	35	70	4		UE512 05040	5	8	40	80	6
	UE512 02540	2.5	4	40	80	4		UE512 05050	5	8	50	90	6
S-Wing	UE512 02545	2.5	4	45	90	4		UE512 05060	5	8	60	100	6
	UE512 02550	2.5	4	50	100	4		UE512 06015	6	9	15	60	6
	UE512 03006	3	4.5	6	50	6		UE512 06020	6	9	20	60	6
	UE512 03008	3	4.5	8	50	6		UE512 06030	6	9	30	70	6
	UE512 03010	3	4.5	10	50	6		UE512 06032	6	9	32	90	6
A-Wing	UE512 03012	3	4.5	12	50	6		UE512 08025	8	12	25	70	8
	UE512 03014	3	4.5	14	60	6		UE512 08030	8	12	30	80	8
	UE512 03016	3	4.5	16	60	6		UE512 08042	8	12	42	100	8
	UE512 03018	3	4.5	18	60	6		UE512 10030	10	15	30	75	10
	UE512 03020	3	4.5	20	60	6		UE512 10035	10	15	35	80	10
Standard	UE512 03022	3	4.5	22	65	6		UE512 10045	10	15	45	100	10
	UE512 03026	3	4.5	26	65	6		UE512 12035	12	20	35	80	12
	UE512 03030	3	4.5	30	70	6		UE512 12040	12	20	40	90	12
	UE512 03035	3	4.5	35	70	6		UE512 12050	12	20	50	110	12
	UE512 03040	3	4.5	40	80	6							

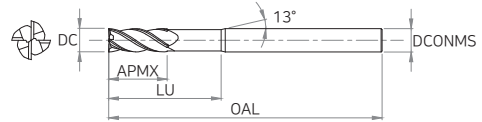
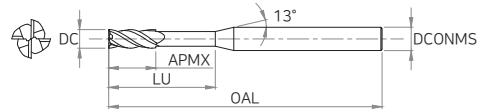
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
○		○	◎	◎	○					

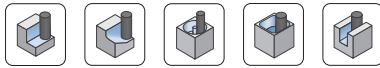
UE514 4 Flutes Long Neck Square End Mill

Endmill



► Tolerance

DC		Shank Dia
Ø1 ~ Ø12	0 ~ -0.03	h5



EDP No	DC	APMX	LU	OAL	DCON MS	EDP No	DC	APMX	LU	OAL	DCON MS
UE514 01002	1	1.5	2	50	4	UE514 01214	1.2	1.8	14	50	4
UE514 01003	1	1.5	3	50	4	UE514 01216	1.2	1.8	16	50	4
UE514 01004	1	1.5	4	50	4	UE514 01220	1.2	1.8	20	50	4
UE514 01005	1	1.5	5	50	4	UE514 01226	1.2	1.8	26	60	4
UE514 01006	1	1.5	6	50	4	UE514 01230	1.2	1.8	30	70	4
UE514 01007	1	1.5	7	50	4	UE514 01504	1.5	2.3	4	50	4
UE514 01008	1	1.5	8	50	4	UE514 01505	1.5	2.3	5	50	4
UE514 01010	1	1.5	10	50	4	UE514 01506	1.5	2.3	6	50	4
UE514 01012	1	1.5	12	50	4	UE514 01507	1.5	2.3	7	50	4
UE514 01014	1	1.5	14	50	4	UE514 01508	1.5	2.3	8	50	4
UE514 01016	1	1.5	16	50	4	UE514 01510	1.5	2.3	10	50	4
UE514 01018	1	1.5	18	50	4	UE514 01512	1.5	2.3	12	50	4
UE514 01020	1	1.5	20	50	4	UE514 01514	1.5	2.3	14	50	4
UE514 01022	1	1.5	22	60	4	UE514 01516	1.5	2.3	16	50	4
UE514 01026	1	1.5	26	60	4	UE514 01518	1.5	2.3	18	50	4
UE514 01030	1	1.5	30	70	4	UE514 01520	1.5	2.3	20	50	4
UE514 01040	1	1.5	40	80	4	UE514 01522	1.5	2.3	22	60	4
UE514 01050	1	1.5	50	100	4	UE514 01526	1.5	2.3	26	60	4
UE514 01204	1.2	1.8	4	50	4	UE514 01530	1.5	2.3	30	70	4
UE514 01206	1.2	1.8	6	50	4	UE514 02006	2	3	6	50	4
UE514 01208	1.2	1.8	8	50	4	UE514 02008	2	3	8	50	4
UE514 01210	1.2	1.8	10	50	4	UE514 02010	2	3	10	50	4
UE514 01212	1.2	1.8	12	50	4	UE514 02012	2	3	12	50	4

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○		○	◎	◎	○					

UE514

4 Flutes Long Neck Square End Mill

Endmill

	EDP No	DC	APMX	LU	OAL	DCON MS		EDP No	DC	APMX	LU	OAL	DCON MS
Zamus Star	UE514 02014	2	3	14	50	4		UE514 03045	3	4.5	45	90	6
	UE514 02016	2	3	16	50	4		UE514 03050	3	4.5	50	100	6
	UE514 02018	2	3	18	50	4		UE514 03060	3	4.5	60	100	6
	UE514 02020	2	3	20	50	4		UE514 04008	4	4.5	8	50	6
	UE514 02022	2	3	22	60	4		UE514 04010	4	4.5	10	50	6
E-Star	UE514 02026	2	3	26	60	4		UE514 04012	4	4.5	12	50	6
	UE514 02030	2	3	30	70	4		UE514 04014	4	4.5	14	60	6
	UE514 02035	2	3	35	70	4		UE514 04016	4	4.5	16	60	6
	UE514 02040	2	3	40	80	4		UE514 04018	4	4.5	18	60	6
	UE514 02045	2	3	45	90	4		UE514 04020	4	4.5	20	60	6
U-Wing	UE514 02050	2	3	50	100	4		UE514 04022	4	4.5	22	65	6
	UE514 02060	2	3	60	110	4		UE514 04026	4	4.5	26	65	6
	UE514 02508	2.5	4	8	50	4		UE514 04030	4	4.5	30	70	6
	UE514 02510	2.5	4	10	50	4		UE514 04035	4	4.5	35	70	6
	UE514 02512	2.5	4	12	50	4		UE514 04040	4	4.5	40	80	6
Zamus Thunder	UE514 02514	2.5	4	14	50	4		UE514 04045	4	4.5	45	90	6
	UE514 02516	2.5	4	16	50	4		UE514 04050	4	4.5	50	100	6
	UE514 02518	2.5	4	18	50	4		UE514 04060	4	4.5	60	100	6
	UE514 02520	2.5	4	20	50	4		UE514 05016	5	8	16	60	6
	UE514 02522	2.5	4	22	60	4		UE514 05020	5	8	20	60	6
X-Star	UE514 02526	2.5	4	26	60	4		UE514 05026	5	8	26	65	6
	UE514 02530	2.5	4	30	70	4		UE514 05030	5	8	30	70	6
	UE514 02535	2.5	4	35	70	4		UE514 05035	5	8	35	75	6
	UE514 02540	2.5	4	40	80	4		UE514 05040	5	8	40	80	6
	UE514 02545	2.5	4	45	90	4		UE514 05050	5	8	50	90	6
S-Wing	UE514 02550	2.5	4	50	100	4		UE514 05060	5	8	60	100	6
	UE514 03006	3	4.5	6	50	6		UE514 06015	6	9	15	60	6
	UE514 03008	3	4.5	8	50	6		UE514 06020	6	9	20	60	6
	UE514 03010	3	4.5	10	50	6		UE514 06030	6	9	30	70	6
	UE514 03012	3	4.5	12	50	6		UE514 06032	6	9	32	90	6
A-Wing	UE514 03014	3	4.5	14	60	6		UE514 08025	8	12	25	70	8
	UE514 03016	3	4.5	16	60	6		UE514 08030	8	12	30	80	8
	UE514 03018	3	4.5	18	60	6		UE514 08042	8	12	42	100	8
	UE514 03020	3	4.5	20	60	6		UE514 10030	10	15	30	75	10
	UE514 03022	3	4.5	22	65	6		UE514 10035	10	15	35	80	10
Standard	UE514 03026	3	4.5	26	65	6		UE514 10045	10	15	45	100	10
	UE514 03030	3	4.5	30	70	6		UE514 12035	12	20	35	80	12
	UE514 03035	3	4.5	35	70	6		UE514 12040	12	20	40	90	12
	UE514 03040	3	4.5	40	80	6		UE514 12050	12	20	50	110	12

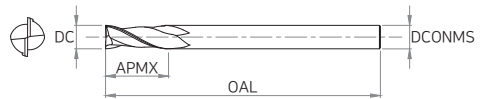
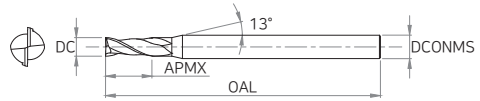
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FC500					
○		○	◎	◎	○					

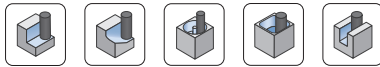
UE522

2 Flutes Square End Mill



► Tolerance

DC		Shank Dia
$\phi 1 \sim \phi 6$	0 ~ -0.012	h5
$\phi 7 \sim \phi 25$	0 ~ -0.015	



EDP No	DC	APMX	OAL	DCONMS	EDP No	DC	APMX	OAL	DCONMS
UE522 01003	1	3	60	6	UE522 02010	2	10	60	6
UE522 01004	1	4	60	6	UE522 02012	2	12	60	6
UE522 01005	1	5	60	6	UE522 02014	2	14	60	6
UE522 01006	1	6	60	6	UE522 02016	2	16	60	6
UE522 01007	1	7	60	6	UE522 02510	2.5	10	60	6
UE522 01008	1	8	60	6	UE522 02512	2.5	12	60	6
UE522 01010	1	10	60	6	UE522 02516	2.5	16	60	6
UE522 01012	1	12	60	6	UE522 02520	2.5	20	60	6
UE522 01204	1.2	4	60	6	UE522 02526	2.5	26	60	6
UE522 01206	1.2	6	60	6	UE522 03010	3	10	70	6
UE522 01208	1.2	8	60	6	UE522 03012	3	12	70	6
UE522 01210	1.2	10	60	6	UE522 03014	3	14	70	6
UE522 01212	1.2	12	60	6	UE522 03016	3	16	70	6
UE522 01506	1.5	6	60	6	UE522 03016S3	3	16	100	3
UE522 01508	1.5	8	60	6	UE522 03020	3	20	70	6
UE522 01510	1.5	10	60	6	UE522 03026	3	26	70	6
UE522 01512	1.5	12	60	6	UE522 03030	3	30	70	6
UE522 01514	1.5	14	60	6	UE522 04012	4	12	70	6
UE522 01516	1.5	16	60	6	UE522 04016	4	16	70	6
UE522 02008	2	8	60	6	UE522 04020	4	20	70	6

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○		○	◎	◎	○					

Endmill

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

UE522

2 Flutes Square End Mill

Endmill

	EDP No	DC	APMX	OAL	DCONMS		EDP No	DC	APMX	OAL	DCONMS
Zamus Star	UE522 04020S4	4	20	100	4		UE522 09045	9	45	100	10
	UE522 04026	4	26	70	6		UE522 10025	10	25	100	10
	UE522 04030	4	30	70	6		UE522 10030100	10	30	100	10
	UE522 05015	5	15	70	6		UE522 10030	10	30	80	10
	UE522 05020	5	20	70	6		UE522 10035	10	35	90	10
E-Star	UE522 05025100	5	25	100	6		UE522 10040120	10	40	120	10
	UE522 05025	5	25	70	6		UE522 10040	10	40	90	10
	UE522 05030	5	30	80	6		UE522 10045	10	45	100	10
U-Wing	UE522 05035	5	35	90	6		UE522 10050200	10	50	200	10
	UE522 05040	5	40	100	6		UE522 10050150	10	50	150	10
	UE522 06015080	6	15	80	6		UE522 10050	10	50	100	10
Zamus Thunder	UE522 06015	6	15	60	6		UE522 10055	10	55	150	10
	UE522 06020090	6	20	90	6		UE522 10060200	10	60	200	10
	UE522 06020	6	20	70	6		UE522 10060155	10	60	155	10
X-Star	UE522 06025	6	25	75	6		UE522 10060	10	60	110	10
	UE522 06030150	6	30	150	6		UE522 11050	11	50	110	12
	UE522 06030100	6	30	100	6		UE522 12035	12	35	90	12
S-Wing	UE522 06030	6	30	80	6		UE522 12040120	12	40	120	12
	UE522 06035	6	35	90	6		UE522 12040	12	40	100	12
	UE522 06040120	6	40	120	6		UE522 12045	12	45	130	12
A-Wing	UE522 06040	6	40	90	6		UE522 12050150	12	50	150	12
	UE522 06045	6	45	150	6		UE522 12050	12	50	100	12
	UE522 07035	7	35	85	8		UE522 12055	12	55	110	12
Standard	UE522 08020	8	20	100	8		UE522 12060200	12	60	200	12
	UE522 08025	8	25	80	8		UE522 12060150	12	60	150	12
	UE522 08030100	8	30	100	8		UE522 12060	12	60	110	12
Copper -Mate	UE522 08030	8	30	80	8		UE522 12065	12	65	150	12
	UE522 08035	8	35	90	8		UE522 12070200	12	70	200	12
	UE522 08040150	8	40	150	8		UE522 12070	12	70	120	12
Gra -Mate	UE522 08040120	8	40	120	8		UE522 14040	14	40	110	16
	UE522 08040	8	40	90	8		UE522 14050	14	50	110	16
	UE522 08045	8	45	100	8		UE522 14060150	14	60	150	16
	UE522 08050150	8	50	150	8		UE522 14060	14	60	120	16
	UE522 08050	8	50	100	8		UE522 16040150	16	40	150	16

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	Steel ~HB225	HB225 ~325	HRc30~50	~FCD500					
○		○	◎	◎	○					

UE522

2 Flutes Square End Mill

Endmill

EDP No	DC	APMX	OAL	DCONMS	EDP No	DC	APMX	OAL	DCONMS
UE522 16040	16	40	120	16	UE522 20050150	20	50	150	20
UE522 16050150	16	50	150	16	UE522 20050	20	50	110	20
UE522 16050	16	50	110	16	UE522 20060	20	60	130	20
UE522 16060	16	60	120	16	UE522 20070	20	70	130	20
UE522 16070200	16	70	200	16	UE522 20080	20	80	150	20
UE522 16070150	16	70	150	16	UE522 20090200	20	90	200	20
UE522 16070	16	70	130	16	UE522 20090	20	90	150	20
UE522 16080	16	80	150	16	UE522 200110	20	110	200	20
UE522 16090	16	90	150	16	UE522 200120	20	120	250	20
UE522 160110	16	110	200	16	UE522 22075	22	75	150	20
UE522 160120	16	120	250	16	UE522 220110	22	110	200	20
UE522 18050	18	50	120	20	UE522 25070	25	70	150	25
UE522 18060	18	60	120	18	UE522 25090	25	90	150	25
UE522 18070	18	70	130	20	UE522 250110	25	110	200	25
UE522 180100	18	100	200	20	UE522 250120	25	120	250	25

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

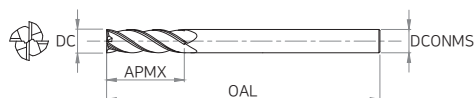
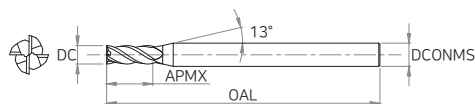
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	Steel HRc30~50	~FCD500					
○		○	◎	◎	○					

UE524 4 Flutes Square End Mill

Endmill



► Tolerance

DC		Shank Dia
Ø1 ~ Ø25	0 ~ -0.03	h5



EDP No	DC	APMX	OAL	DCONMS	EDP No	DC	APMX	OAL	DCONMS
UE524 01003	1	3	60	6	UE524 01526	1.5	26	60	6
UE524 01004	1	4	60	6	UE524 02008	2	8	60	6
UE524 01005	1	5	60	6	UE524 02008S4	2	8	40	4
UE524 01006	1	6	60	6	UE524 02010	2	10	60	6
UE524 01007	1	7	60	6	UE524 02012	2	12	60	6
UE524 01008	1	8	60	6	UE524 02014	2	14	60	6
UE524 01010	1	10	60	6	UE524 02016	2	16	60	6
UE524 01012	1	12	60	6	UE524 02510	2.5	10	60	6
UE524 01204	1.2	4	60	6	UE524 02512	2.5	12	60	6
UE524 01206	1.2	6	60	6	UE524 02516	2.5	16	60	6
UE524 01208	1.2	8	60	6	UE524 02520	2.5	20	60	6
UE524 01210	1.2	10	60	6	UE524 02526	2.5	26	60	6
UE524 01212	1.2	12	60	6	UE524 03010	3	10	70	6
UE524 01506	1.5	6	60	6	UE524 03012	3	12	70	6
UE524 01508	1.5	8	60	6	UE524 03014	3	14	70	6
UE524 01510	1.5	10	60	6	UE524 03016	3	16	70	6
UE524 01512	1.5	12	60	6	UE524 03016S3	3	16	100	3
UE524 01514	1.5	14	60	6	UE524 03020	3	20	70	6
UE524 01516	1.5	16	60	6	UE524 03026	3	26	70	6
UE524 01520	1.5	20	60	6	UE524 03030	3	30	70	6

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FC500					
○		○	◎	◎	○					

UE524

4 Flutes Square End Mill

Endmill

EDP No	DC	APMX	OAL	DCONMS	EDP No	DC	APMX	OAL	DCONMS
UE524 03035	3	35	90	6	UE524 08040	8	40	90	8
UE524 04012	4	12	70	6	UE524 08045	8	45	100	8
UE524 04016	4	16	70	6	UE524 08050150	8	50	150	8
UE524 04020	4	20	70	6	UE524 08050	8	50	100	8
UE524 04020S4	4	20	100	4	UE524 08060	8	60	155	8
UE524 04026	4	26	70	6	UE524 08080	8	80	200	8
UE524 04030	4	30	70	6	UE524 09045	9	45	100	10
UE524 05015	5	15	70	6	UE524 10025	10	25	100	10
UE524 05020	5	20	70	6	UE524 100100	10	30	100	10
UE524 05025100	5	25	100	6	UE524 10030	10	30	80	10
UE524 05025	5	25	70	6	UE524 10035	10	35	90	10
UE524 05030	5	30	80	6	UE524 10040120	10	40	120	10
UE524 05035	5	35	90	6	UE524 10040	10	40	90	10
UE524 05040	5	40	100	6	UE524 10045	10	45	100	10
UE524 06015080	6	15	80	6	UE524 10050200	10	50	200	10
UE524 06015	6	15	60	6	UE524 10050150	10	50	150	10
UE524 06020090	6	20	90	6	UE524 10050	10	50	100	10
UE524 06020	6	20	70	6	UE524 10055	10	55	150	10
UE524 06025	6	25	75	6	UE524 10060200	10	60	200	10
UE524 06030150	6	30	150	6	UE524 10060155	10	60	155	10
UE524 06030100	6	30	100	6	UE524 10060	10	60	110	10
UE524 06030	6	30	80	6	UE524 10080200	10	80	200	10
UE524 06035	6	35	90	6	UE524 11050	11	50	110	12
UE524 06040120	6	40	120	6	UE524 12030	12	30	110	12
UE524 06040	6	40	90	6	UE524 12035	12	35	90	12
UE524 06045	6	45	150	6	UE524 12040120	12	40	120	12
UE524 07035	7	35	85	8	UE524 12040	12	40	100	12
UE524 08020	8	20	100	8	UE524 12045	12	45	130	12
UE524 08025	8	25	80	8	UE524 12050150	12	50	150	12
UE524 08030100	8	30	100	8	UE524 12050	12	50	100	12
UE524 08030	8	30	80	8	UE524 12055	12	55	110	12
UE524 08035	8	35	90	8	UE524 12060200	12	60	200	12
UE524 08040150	8	40	150	8	UE524 12060150	12	60	150	12
UE524 08040120	8	40	120	8	UE524 12060	12	60	110	12

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○		○	◎	◎	○					

UE524 4 Flutes Square End Mill

Endmill

EDP No	DC	APMX	OAL	DCONMS	EDP No	DC	APMX	OAL	DCONMS
UE524 12065	12	65	150	12	UE524 180100	18	100	200	20
UE524 12070200	12	70	200	12	UE524 20050150	20	50	150	20
UE524 12070	12	70	120	12	UE524 20050	20	50	110	20
UE524 12080	12	80	200	12	UE524 20060	20	60	130	20
UE524 14040	14	40	110	16	UE524 20070	20	70	130	20
UE524 14050	14	50	110	16	UE524 20080	20	80	150	20
UE524 14060	14	60	150	16	UE524 20090200	20	90	200	20
UE524 16040	16	40	150	16	UE524 20090	20	90	150	20
UE524 16050150	16	50	150	16	UE524 200100	20	100	200	20
UE524 16050	16	50	110	16	UE524 200110	20	110	200	20
UE524 16060	16	60	120	16	UE524 200120	20	120	250	20
UE524 16070200	16	70	200	16	UE524 200130	20	130	250	20
UE524 16070150	16	70	150	16	UE524 22075	22	75	150	20
UE524 16070	16	70	130	16	UE524 220110	22	110	200	20
UE524 16080	16	80	150	16	UE524 25070	25	70	150	25
UE524 16090	16	90	150	16	UE524 25090	25	90	150	25
UE524 160100	16	100	200	16	UE524 250100	25	100	200	25
UE524 160110	16	110	200	16	UE524 250110	25	110	200	25
UE524 160120	16	120	250	16	UE524 250120	25	120	250	25
UE524 18050	18	50	120	20	UE524 250150	25	150	250	25
UE524 18070	18	70	130	20					

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

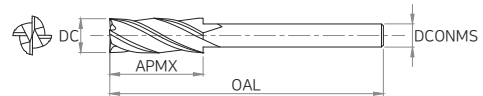
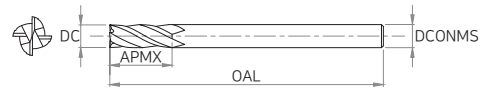
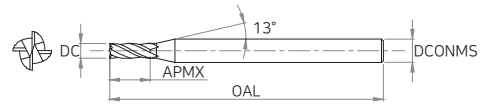
Gra
-Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

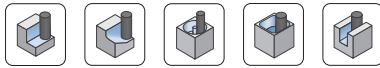
H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	~325	HRC30~50	~FCD500					
○		○	◎	◎	○					

ULE504 4 Flutes Automatic CNC Square End Mill



► Tolerance

DC		Shank Dia
Ø3 ~ Ø16	0 ~ -0.02	h5



EDP No	DC	APMX	OAL	DCONMS
ULE504 030S04	3	3	35	4
ULE504 040S04	4	4	35	4
ULE504 060S06	6	6	35	6
ULE504 070S07	7	20	45	7
ULE504 080S08	8	8	45	8
ULE504 080S06	8	8	35	6
ULE504 080S07	8	15	45	7
ULE504 090S07	9	15	45	7
ULE504 100S06	10	10	35	6
ULE504 100S10	10	15	45	10
ULE504 100S07	10	15	45	7
ULE504 110S07	11	15	45	7
ULE504 120S10	12	12	45	10
ULE504 120S06	12	12	35	6
ULE504 120S07	12	15	45	7
ULE504 120-25S10	12	25	55	10
ULE504 130S10	13	25	55	10
ULE504 140S10	14	25	55	10
ULE504 140S07	14	25	55	7
ULE504 160S10	16	25	60	10

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	Steel HRc30~50	~FCD500					
○		○	◎	◎	○					

Endmill

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

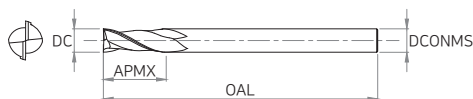
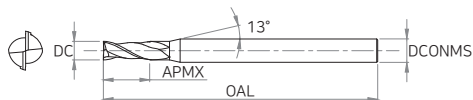
A-Wing

Standard

Copper
-Mate

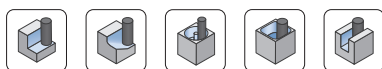
Gra
-Mate

UXE502 2 Flutes Square End Mill For Heavy Cuts



► Tolerance

DC		Shank Dia
Ø0.1 ~ Ø7	0 ~ -0.012	h5
Ø8 ~ Ø20	0 ~ -0.015	



EDP No	DC	APMX	OAL	DCONMS	EDP No	DC	APMX	OAL	DCONMS
UXE502 001001	0.1	0.1	40	4	UXE502 007021	0.7	2.1	40	4
UXE502 001	0.1	0.2	40	4	UXE502 008008	0.8	0.8	40	4
UXE502 001003	0.1	0.3	40	4	UXE502 0008	0.8	1.6	40	4
UXE502 002002	0.2	0.2	40	4	UXE502 008024	0.8	2.4	40	4
UXE502 002	0.2	0.4	40	4	UXE502 009009	0.9	0.9	40	4
UXE502 002006	0.2	0.6	40	4	UXE502 009	0.9	1.8	40	4
UXE502 003003	0.3	0.3	40	4	UXE502 009027	0.9	2.7	40	4
UXE502 003	0.3	0.6	40	4	UXE502 01001	1	1	40	6
UXE502 003009	0.3	0.9	40	4	UXE502 01002	1	2	40	6
UXE502 004004	0.4	0.4	40	4	UXE502 010	1	2.5	50	6
UXE502 004	0.4	0.8	40	4	UXE502 01003	1	3	50	6
UXE502 004012	0.4	1.2	40	4	UXE502 01004	1	4	50	6
UXE502 005005	0.5	0.5	40	4	UXE502 01006	1	6	50	6
UXE502 005	0.5	1	40	4	UXE502 01202	1.2	2	40	6
UXE502 005015	0.5	1.5	40	4	UXE502 012	1.2	3	50	6
UXE502 006006	0.6	0.6	40	4	UXE502 01204	1.2	4	50	6
UXE502 006	0.6	1.2	40	4	UXE502 01206	1.2	6	50	6
UXE502 006018	0.6	1.8	40	4	UXE502 015015	1.5	1.5	40	6
UXE502 007007	0.7	0.7	40	4	UXE502 01503	1.5	3	40	6
UXE502 007	0.7	1.4	40	4	UXE502 015	1.5	4	50	6

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
○		○	◎	◎	○					

UXE502

2 Flutes Square End Mill For Heavy Cuts

Endmill

EDP No	DC	APMX	OAL	DCONMS	EDP No	DC	APMX	OAL	DCONMS
UXE502 01506	1.5	6	50	6	UXE502 05010	5	10	50	6
UXE502 01508	1.5	8	50	6	UXE502 050	5	15	60	6
UXE502 01510	1.5	10	50	6	UXE502 05020	5	20	60	6
UXE502 02002	2	2	40	6	UXE502 05025	5	25	60	6
UXE502 02004	2	4	40	6	UXE502 05513	5.5	13	50	6
UXE502 020	2	6	50	6	UXE502 06006	6	6	50	6
UXE502 02008	2	8	50	6	UXE502 06012	6	12	50	6
UXE502 02010	2	10	50	6	UXE502 060	6	15	60	6
UXE502 02012	2	12	50	6	UXE502 06020	6	20	60	6
UXE502 025025	2.5	2.5	40	6	UXE502 06025	6	25	60	6
UXE502 02505	2.5	5	40	6	UXE502 06513	6.5	13	60	8
UXE502 025	2.5	7	50	6	UXE502 07018	7	18	60	8
UXE502 02510	2.5	10	50	6	UXE502 08016	8	16	60	8
UXE502 02512	2.5	12	50	6	UXE502 080	8	20	70	8
UXE502 03003	3	3	40	6	UXE502 08025	8	25	70	8
UXE502 03006	3	6	40	6	UXE502 08030	8	30	70	8
UXE502 030	3	8	50	6	UXE502 10022	10	22	65	10
UXE502 03010	3	10	50	6	UXE502 100	10	25	75	10
UXE502 03012	3	12	50	6	UXE502 10030	10	30	75	10
UXE502 03014	3	14	50	6	UXE502 10035	10	35	75	10
UXE502 03510	3.5	10	50	6	UXE502 12026	12	26	70	12
UXE502 04004	4	4	40	6	UXE502 120	12	30	80	12
UXE502 04008	4	8	40	6	UXE502 12035	12	35	80	12
UXE502 040	4	10	50	6	UXE502 12040	12	40	80	12
UXE502 04012	4	12	50	6	UXE502 140	14	35	100	16
UXE502 04014	4	14	50	6	UXE502 160	16	32	100	16
UXE502 04016	4	16	50	6	UXE502 16040	16	40	100	16
UXE502 04511	4.5	11	50	6	UXE502 180	18	45	100	20
UXE502 05005	5	5	50	6	UXE502 200	20	45	100	20

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

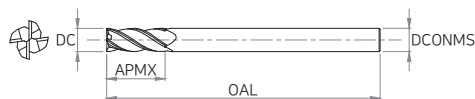
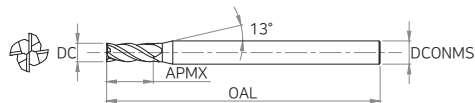
Gra
-Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

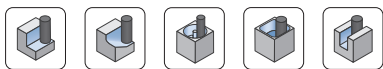
H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○		○	◎	◎	○					

UXE504 4 Flutes Square End Mill For Heavy Cuts



► Tolerance

DC		Shank Dia
Ø1 ~ Ø25	0 ~ -0.03	h5



EDP No	DC	APMX	OAL	DCONMS	EDP No	DC	APMX	OAL	DCONMS
UXE504 01001	1	1	40	6	UXE504 02010	2	10	50	6
UXE504 01002	1	2	40	6	UXE504 02012	2	12	50	6
UXE504 010	1	2.5	50	6	UXE504 025025	2.5	2.5	40	6
UXE504 01003	1	3	50	6	UXE504 02505	2.5	5	40	6
UXE504 01004	1	4	50	6	UXE504 025	2.5	7	50	6
UXE504 01006	1	6	50	6	UXE504 02510	2.5	10	50	6
UXE504 01202	1.2	2	40	6	UXE504 02512	2.5	12	50	6
UXE504 012	1.2	3	50	6	UXE504 03003	3	3	40	6
UXE504 01204	1.2	4	50	6	UXE504 03006	3	6	40	6
UXE504 01206	1.2	6	50	6	UXE504 030	3	8	50	6
UXE504 015015	1.5	1.5	40	6	UXE504 03010	3	10	50	6
UXE504 01503	1.5	3	40	6	UXE504 03012	3	12	50	6
UXE504 015	1.5	4	50	6	UXE504 03014	3	14	50	6
UXE504 01506	1.5	6	50	6	UXE504 04004	4	4	40	6
UXE504 01508	1.5	8	50	6	UXE504 04008	4	8	40	6
UXE504 01510	1.5	10	50	6	UXE504 040	4	10	50	6
UXE504 02002	2	2	40	6	UXE504 04012	4	12	50	6
UXE504 02004	2	4	40	6	UXE504 04014	4	14	50	6
UXE504 020	2	6	50	6	UXE504 04016	4	16	50	6
UXE504 02008	2	8	50	6	UXE504 05005	5	5	50	6

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
○		○	◎	◎	○					

UXE504

4 Flutes Square End Mill For Heavy Cuts

Endmill

EDP No	DC	APMX	OAL	DCONMS	EDP No	DC	APMX	OAL	DCONMS
UXE504 05010	5	10	50	6	UXE504 10022	10	22	65	10
UXE504 050	5	15	60	6	UXE504 100	10	25	75	10
UXE504 05020	5	20	60	6	UXE504 10030	10	30	75	10
UXE504 05025	5	25	60	6	UXE504 10035	10	35	75	10
UXE504 06006	6	6	50	6	UXE504 12026	12	26	70	12
UXE504 06012	6	12	50	6	UXE504 120	12	30	80	12
UXE504 060	6	15	60	6	UXE504 12035	12	35	80	12
UXE504 06020	6	20	60	6	UXE504 12040	12	40	80	12
UXE504 06025	6	25	60	6	UXE504 140	14	35	100	16
UXE504 08016	8	16	60	8	UXE504 16032	16	32	100	16
UXE504 080	8	20	70	8	UXE504 160	16	40	100	16
UXE504 08025	8	25	70	8	UXE504 180	18	45	100	20
UXE504 08030	8	30	70	8	UXE504 200	20	45	100	20

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

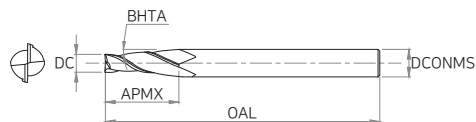
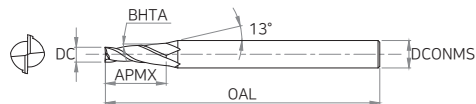
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○		○	◎	◎	○					

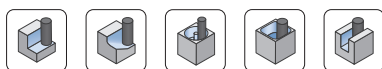
UTE502 2 Flutes Tapered Square End Mill

Endmill



► Tolerance

DC	Shank Dia
Ø0.3 ~ Ø10	0 ~ -0.03 h5



EDP No	DC	BHTA	APMX	OAL	DCON MS	EDP No	DC	BHTA	APMX	OAL	DCON MS
UTE502 003005	0.3	0.5	1.2	40	4	UTE502 00503	0.5	3	2	45	4
UTE502 0030	0.3	1	1.2	40	4	UTE502 00505	0.5	5	2.5	45	4
UTE502 003015	0.3	1.5	1.2	40	4	UTE502 00507	0.5	7	2.5	45	4
UTE502 00302	0.3	2	1.2	40	4	UTE502 00510	0.5	10	2.5	45	4
UTE502 00303	0.3	3	1.5	40	4	UTE502 006005	0.6	0.5	2.4	45	4
UTE502 00305	0.3	5	1.5	40	4	UTE502 00601	0.6	1	2.4	45	4
UTE502 00307	0.3	7	1.5	40	4	UTE502 006015	0.6	1.5	2.4	45	4
UTE502 00310	0.3	10	1.5	40	4	UTE502 00602	0.6	2	2.4	45	4
UTE502 004005	0.4	0.5	1.6	40	4	UTE502 00603	0.6	3	2.4	45	4
UTE502 00401	0.4	1	1.6	40	4	UTE502 00605	0.6	5	3	45	4
UTE502 004015	0.4	1.5	1.6	40	4	UTE502 00607	0.6	7	3	45	4
UTE502 00402	0.4	2	1.6	40	4	UTE502 00610	0.6	10	3	45	4
UTE502 00403	0.4	3	1.6	40	4	UTE502 007005	0.7	0.5	2.8	45	4
UTE502 00405	0.4	5	2	40	4	UTE502 00701	0.7	1	2.8	45	4
UTE502 00407	0.4	7	2	40	4	UTE502 007015	0.7	1.5	2.8	45	4
UTE502 00410	0.4	10	2	40	4	UTE502 00702	0.7	2	2.8	45	4
UTE502 005005	0.5	0.5	2	45	4	UTE502 00703	0.7	3	2.8	45	4
UTE502 00501	0.5	1	2	45	4	UTE502 00705	0.7	5	3.5	45	4
UTE502 005015	0.5	1.5	2	45	4	UTE502 00707	0.7	7	3.5	45	4
UTE502 00502	0.5	2	2	45	4	UTE502 00710	0.7	10	3.5	45	4

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	Steel ~HB225	HB225 ~325	HRc30~50	~FC500					
○		○	◎	◎	○					

UTE502

2 Flutes Tapered Square End Mill

Endmill

EDP No	DC	BHTA	APMX	OAL	DCON MS	EDP No	DC	BHTA	APMX	OAL	DCON MS
UTE502 008005	0.8	0.5	3.2	45	4	UTE502 025015	2.5	1.5	10	50	6
UTE502 00801	0.8	1	3.2	45	4	UTE502 02502	2.5	2	12	50	6
UTE502 008015	0.8	1.5	3.2	45	4	UTE502 02503	2.5	3	12	50	6
UTE502 00802	0.8	2	3.2	45	4	UTE502 02505	2.5	5	14	50	6
UTE502 00803	0.8	3	3.2	45	4	UTE502 02507	2.5	7	14	50	6
UTE502 00805	0.8	5	4	45	4	UTE502 02510	2.5	10	14	50	8
UTE502 00807	0.8	7	4	45	4	UTE502 030005	3	0.5	12	50	6
UTE502 00810	0.8	10	4	45	4	UTE502 03001	3	1	12	50	6
UTE502 010005	1	0.5	4	50	4	UTE502 030015	3	1.5	12	50	6
UTE502 01001	1	1	4	50	4	UTE502 03002	3	2	14	50	6
UTE502 010015	1	1.5	4	50	4	UTE502 03003	3	3	14	50	6
UTE502 01002	1	2	6	50	4	UTE502 03005	3	5	16	50	6
UTE502 01003	1	3	6	50	4	UTE502 03007	3	7	16	50	8
UTE502 01005	1	5	8	50	4	UTE502 03010	3	10	16	50	10
UTE502 01007	1	7	8	50	4	UTE502 040005	4	0.5	16	60	6
UTE502 01010	1	10	8	50	4	UTE502 04001	4	1	16	60	6
UTE502 015005	1.5	0.5	6	50	4	UTE502 040015	4	1.5	16	60	6
UTE502 01501	1.5	1	6	50	4	UTE502 04002	4	2	16	60	6
UTE502 015015	1.5	1.5	6	50	4	UTE502 04003	4	3	19	60	6
UTE502 01502	1.5	2	8	50	4	UTE502 04005	4	5	22	65	8
UTE502 01503	1.5	3	8	50	4	UTE502 04007	4	7	16	65	8
UTE502 01505	1.5	5	10	50	4	UTE502 04010	4	10	17	65	10
UTE502 01507	1.5	7	10	50	4	UTE502 060005	6	0.5	20	65	8
UTE502 01510	1.5	10	10	50	6	UTE502 06001	6	1	20	65	8
UTE502 020005	2	0.5	8	50	4	UTE502 060015	6	1.5	20	65	8
UTE502 020015	2	1.5	8	50	4	UTE502 06002	6	2	20	65	8
UTE502 02001	2	1	8	50	4	UTE502 06003	6	3	19	65	8
UTE502 02002	2	2	10	50	4	UTE502 06005	6	5	22	75	10
UTE502 02003	2	3	10	50	4	UTE502 06007	6	7	24	75	12
UTE502 02005	2	5	12	50	6	UTE502 06010	6	10	17	75	12
UTE502 02007	2	7	12	50	6	UTE502 070005	7	0.5	28	70	8
UTE502 02010	2	10	12	50	8	UTE502 07001	7	1	28	70	8
UTE502 025005	2.5	0.5	10	50	6	UTE502 070015	7	1.5	28	70	10
UTE502 02501	2.5	1	10	50	6	UTE502 07002	7	2	28	80	10

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○		○	◎	◎	○					

UTE502 2 Flutes Tapered Square End Mill

Endmill

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

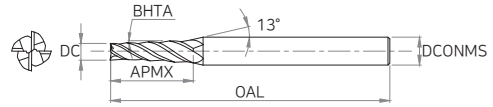
EDP No	DC	BHTA	APMX	OAL	DCON MS	EDP No	DC	BHTA	APMX	OAL	DCON MS
UTE502 07003	7	3	28	80	10	UTE502 08010S25	8	10	48	150	25
UTE502 07005	7	5	28	80	12	UTE502 100005	10	0.5	40	90	12
UTE502 080005	8	0.5	35	90	10	UTE502 10001	10	1	40	90	12
UTE502 08001	8	1	35	90	10	UTE502 100015	10	1.5	38	90	12
UTE502 080015	8	1.5	35	90	10	UTE502 10002	10	2	40	75	16
UTE502 08002	8	2	28	90	10	UTE502 10003	10	3	40	100	16
UTE502 08003	8	3	38	90	12	UTE502 10005	10	5	34	100	16
UTE502 08005	8	5	45	100	16	UTE502 10007	10	7	40	90	20
UTE502 08007	8	7	32	90	16	UTE502 10010	10	10	42	100	25
UTE502 08010	8	10	34	100	20						

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

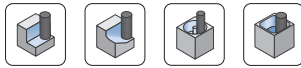
H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○		○	◎	◎	○					

UTE504 4 Flutes Tapered Square End Mill



► Tolerance

DC		Shank Dia
∅0.8 ~ ∅10	0 ~ -0.03	h5



EDP No	DC	BHTA	APMX	OAL	DCON MS	EDP No	DC	BHTA	APMX	OAL	DCON MS
UTE504 00800504	0.8	0.5	4	45	4	UTE504 01000504	1	0.5	4	50	4
UTE504 00801004	0.8	1	4	45	4	UTE504 01001004	1	1	4	50	4
UTE504 00801504	0.8	1.5	4	45	4	UTE504 01001504	1	1.5	4	50	4
UTE504 00802004	0.8	2	4	45	4	UTE504 01002004	1	2	4	50	4
UTE504 00800506	0.8	0.5	6	45	4	UTE504 01003004	1	3	4	50	4
UTE504 00801006	0.8	1	6	45	4	UTE504 01000506	1	0.5	6	50	4
UTE504 00801506	0.8	1.5	6	45	4	UTE504 01001006	1	1	6	50	4
UTE504 00802006	0.8	2	6	45	4	UTE504 01001506	1	1.5	6	50	4
UTE504 00800508	0.8	0.5	8	45	4	UTE504 01002006	1	2	6	50	4
UTE504 00801008	0.8	1	8	45	4	UTE504 01003006	1	3	6	50	4
UTE504 00801508	0.8	1.5	8	45	4	UTE504 01000508	1	0.5	8	50	4
UTE504 00802008	0.8	2	8	45	4	UTE504 01001008	1	1	8	50	4
UTE504 00800510	0.8	0.5	10	45	4	UTE504 01001508	1	1.5	8	50	4
UTE504 00801010	0.8	1	10	45	4	UTE504 01002008	1	2	8	50	4
UTE504 00801510	0.8	1.5	10	45	4	UTE504 01003008	1	3	8	50	4
UTE504 00802010	0.8	2	10	45	4	UTE504 01000510	1	0.5	10	50	4
UTE504 00800512	0.8	0.5	12	45	4	UTE504 01001010	1	1	10	50	4
UTE504 00801012	0.8	1	12	45	4	UTE504 01001510	1	1.5	10	50	4
UTE504 00801512	0.8	1.5	12	45	4	UTE504 01002010	1	2	10	50	4
UTE504 00802012	0.8	2	12	45	4	UTE504 01003010	1	3	10	50	4

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○		○	◎	◎	○					

Endmill

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

UTE504 4 Flutes Tapered Square End Mill

Endmill

EDP No	DC	BHTA	APMX	OAL	DCON MS	EDP No	DC	BHTA	APMX	OAL	DCON MS
UTE504 01000512	1	0.5	12	50	4	UTE504 01203016	1.2	3	16	50	4
UTE504 01001012	1	1	12	50	4	UTE504 01500506	1.5	0.5	6	50	4
UTE504 01001512	1	1.5	12	50	4	UTE504 01501006	1.5	1	6	50	4
UTE504 01002012	1	2	12	50	4	UTE504 01501506	1.5	1.5	6	50	4
UTE504 01003012	1	3	12	50	4	UTE504 01502006	1.5	2	6	50	4
UTE504 01000516	1	0.5	16	50	4	UTE504 01503006	1.5	3	6	50	4
UTE504 01001016	1	1	16	50	4	UTE504 01500508	1.5	0.5	8	50	4
UTE504 01001516	1	1.5	16	50	4	UTE504 01501008	1.5	1	8	50	4
UTE504 01002016	1	2	16	50	4	UTE504 01501508	1.5	1.5	8	50	4
UTE504 01003016	1	3	16	50	4	UTE504 01502008	1.5	2	8	50	4
UTE504 01200506	1.2	0.5	6	50	4	UTE504 01503008	1.5	3	8	50	4
UTE504 01201006	1.2	1	6	50	4	UTE504 01500510	1.5	0.5	10	50	4
UTE504 01201506	1.2	1.5	6	50	4	UTE504 01501010	1.5	1	10	50	4
UTE504 01202006	1.2	2	6	50	4	UTE504 01501510	1.5	1.5	10	50	4
UTE504 01203006	1.2	3	6	50	4	UTE504 01502010	1.5	2	10	50	4
UTE504 01200508	1.2	0.5	8	50	4	UTE504 01503010	1.5	3	10	50	4
UTE504 01201008	1.2	1	8	50	4	UTE504 01500512	1.5	0.5	12	50	4
UTE504 01201508	1.2	1.5	8	50	4	UTE504 01501012	1.5	1	12	50	4
UTE504 01202008	1.2	2	8	50	4	UTE504 01501512	1.5	1.5	12	50	4
UTE504 01203008	1.2	3	8	50	4	UTE504 01502012	1.5	2	12	50	4
UTE504 01200510	1.2	0.5	10	50	4	UTE504 01503012	1.5	3	12	50	4
UTE504 01201010	1.2	1	10	50	4	UTE504 01500516	1.5	0.5	16	50	4
UTE504 01201510	1.2	1.5	10	50	4	UTE504 01501016	1.5	1	16	50	4
UTE504 01202010	1.2	2	10	50	4	UTE504 01501516	1.5	1.5	16	50	4
UTE504 01203010	1.2	3	10	50	4	UTE504 01502016	1.5	2	16	50	4
UTE504 01200512	1.2	0.5	12	50	4	UTE504 01503016	1.5	3	16	50	4
UTE504 01201512	1.2	1.5	12	50	4	UTE504 01500520	1.5	0.5	20	60	4
UTE504 01201012	1.2	1	12	50	4	UTE504 01501020	1.5	1	20	60	4
UTE504 01202012	1.2	2	12	50	4	UTE504 01501520	1.5	1.5	20	60	4
UTE504 01203012	1.2	3	12	50	4	UTE504 01502020	1.5	2	20	60	4
UTE504 01200516	1.2	0.5	16	50	4	UTE504 01503020	1.5	3	20	60	4
UTE504 01201016	1.2	1	16	50	4	UTE504 02000508	2	0.5	8	50	4
UTE504 01201516	1.2	1.5	16	50	4	UTE504 02001008	2	1	8	50	4
UTE504 01202016	1.2	2	16	50	4	UTE504 02001508	2	1.5	8	50	4

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○		○	◎	◎	○					

UTE504

4 Flutes Tapered Square End Mill

Endmill

EDP No	DC	BHTA	APMX	OAL	DCON MS	EDP No	DC	BHTA	APMX	OAL	DCON MS
UTE504 02002008	2	2	8	50	4	UTE504 02501012	2.5	1	12	50	4
UTE504 02003008	2	3	8	50	4	UTE504 02502012	2.5	2	12	50	4
UTE504 02000510	2	0.5	10	50	4	UTE504 02503012	2.5	3	12	50	4
UTE504 02001010	2	1	10	50	4	UTE504 02500516	2.5	0.5	16	50	4
UTE504 02001510	2	1.5	10	50	4	UTE504 02501016	2.5	1	16	50	4
UTE504 02002010	2	2	10	50	4	UTE504 02501516	2.5	1.5	16	50	4
UTE504 02003010	2	3	10	50	4	UTE504 02502016	2.5	2	16	50	4
UTE504 02000512	2	0.5	12	50	4	UTE504 02503016	2.5	3	16	50	6
UTE504 02001012	2	1	12	50	4	UTE504 02500520	2.5	0.5	20	60	4
UTE504 02001512	2	1.5	12	50	4	UTE504 02501020	2.5	1	20	60	4
UTE504 02002012	2	2	12	50	4	UTE504 02501520	2.5	1.5	20	60	4
UTE504 02003012	2	3	12	50	4	UTE504 02502020	2.5	2	20	60	4
UTE504 02000516	2	0.5	16	50	4	UTE504 02503020	2.5	3	20	60	6
UTE504 02001016	2	1	16	50	4	UTE504 02500525	2.5	0.5	25	60	4
UTE504 02001516	2	1.5	16	50	4	UTE504 02501025	2.5	1	25	60	4
UTE504 02002016	2	2	16	50	4	UTE504 02501525	2.5	1.5	25	60	4
UTE504 02003016	2	3	16	50	4	UTE504 02502025	2.5	2	25	60	6
UTE504 02000520	2	0.5	20	60	4	UTE504 02503025	2.5	3	25	60	6
UTE504 02001020	2	1	20	60	4	UTE504 02500530	2.5	0.5	30	60	4
UTE504 02001520	2	1.5	20	60	4	UTE504 02501030	2.5	1	30	60	4
UTE504 02002020	2	2	20	60	4	UTE504 02501530	2.5	1.5	30	60	6
UTE504 02003020	2	3	20	60	6	UTE504 02502030	2.5	2	30	60	6
UTE504 02000525	2	0.5	25	60	4	UTE504 02503030	2.5	3	30	60	6
UTE504 02001025	2	1	25	60	4	UTE504 030005	3	0.5	12	50	6
UTE504 02001525	2	1.5	25	60	4	UTE504 03001	3	1	12	50	6
UTE504 02002025	2	2	25	60	4	UTE504 030015	3	1.5	12	50	6
UTE504 02003025	2	3	25	60	6	UTE504 03002	3	2	14	50	6
UTE504 02500510	2.5	0.5	10	50	4	UTE504 03003	3	3	14	50	6
UTE504 02501010	2.5	1	10	50	4	UTE504 03005	3	5	16	50	6
UTE504 02501510	2.5	1.5	10	50	4	UTE504 03007	3	7	16	50	8
UTE504 02502010	2.5	2	10	50	4	UTE504 03010	3	10	16	50	10
UTE504 02503010	2.5	3	10	50	4	UTE504 040005	4	0.5	16	60	6
UTE504 02500512	2.5	0.5	12	50	4	UTE504 04001	4	1	16	60	6
UTE504 02501512	2.5	1.5	12	50	4	UTE504 040015	4	1.5	16	60	6

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○		○	◎	◎	○					

UTE504 4 Flutes Tapered Square End Mill

Endmill

EDP No	DC	BHTA	APMX	OAL	DCON MS	EDP No	DC	BHTA	APMX	OAL	DCON MS
UTE504 04002	4	2	16	60	6	UTE504 07005	7	5	28	80	12
UTE504 04003	4	3	19	60	6	UTE504 080005	8	0.5	35	90	10
UTE504 04005	4	5	22	65	8	UTE504 08001	8	1	35	90	10
UTE504 04007	4	7	16	65	8	UTE504 080015	8	1.5	35	90	10
UTE504 04010	4	10	17	65	10	UTE504 08002	8	2	28	90	10
UTE504 060005	6	0.5	20	65	8	UTE504 08003	8	3	38	90	12
UTE504 06001	6	1	20	65	8	UTE504 08005	8	5	45	100	16
UTE504 060015	6	1.5	20	65	8	UTE504 08007	8	7	32	90	16
UTE504 06002	6	2	20	65	8	UTE504 08010	8	10	34	100	20
UTE504 06003	6	3	19	65	8	UTE504 100005	10	0.5	40	90	12
UTE504 06005	6	5	22	75	10	UTE504 10001	10	1	40	90	12
UTE504 06007	6	7	24	75	12	UTE504 100015	10	1.5	38	90	12
UTE504 06010	6	10	17	75	12	UTE504 10002	10	2	40	90	16
UTE504 070005	7	0.5	28	70	8	UTE504 10003	10	3	40	100	16
UTE504 07001	7	1	28	70	8	UTE504 10005	10	5	34	100	16
UTE504 070015	7	1.5	28	70	10	UTE504 10007	10	7	40	90	20
UTE504 07002	7	2	28	80	10	UTE504 10010	10	10	42	100	25
UTE504 07003	7	3	28	80	10						

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

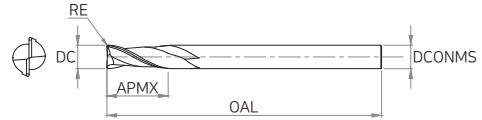
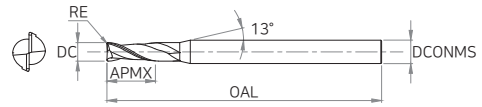
Gra
-Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

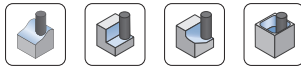
H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
○		○	◎	◎	○					

UR502 2 Flutes Radius End Mill



► Tolerance

DC		Shank Dia
∅0.2 ~ ∅6	0 ~ -0.012	h5
∅7 ~ ∅20	0 ~ -0.015	



∅6 OR UNDER ABOVE ∅6

EDP No	DC	RE	APMX	OAL	DCON MS	EDP No	DC	RE	APMX	OAL	DCON MS
UR502 002002	0.2	0.02	0.4	40	4	UR502 01001	1	0.1	2.5	50	6
UR502 002005	0.2	0.05	0.4	40	4	UR502 01002	1	0.2	2.5	50	6
UR502 003002	0.3	0.02	0.6	40	4	UR502 01003	1	0.3	2.5	50	6
UR502 003005	0.3	0.05	0.6	40	4	UR502 012005	1.2	0.05	3	50	6
UR502 004005	0.4	0.05	0.8	40	4	UR502 01201	1.2	0.1	3	50	6
UR502 00401	0.4	0.1	0.8	40	4	UR502 01202	1.2	0.2	3	50	6
UR502 005005	0.5	0.05	1	40	4	UR502 01203	1.2	0.3	3	50	6
UR502 00501	0.5	0.1	1	40	4	UR502 015005	1.5	0.05	4	50	6
UR502 006005	0.6	0.05	1.2	40	4	UR502 01501	1.5	0.1	4	50	6
UR502 00601	0.6	0.1	1.2	40	4	UR502 01502	1.5	0.2	4	50	6
UR502 00602	0.6	0.2	1.2	40	4	UR502 01503	1.5	0.3	4	50	6
UR502 007005	0.7	0.05	1.4	40	4	UR502 01505	1.5	0.5	4	50	6
UR502 00701	0.7	0.1	1.4	40	4	UR502 02001	2	0.1	6	50	6
UR502 00702	0.7	0.2	1.4	40	4	UR502 02002	2	0.2	6	50	6
UR502 008005	0.8	0.05	1.6	40	4	UR502 02003	2	0.3	6	50	6
UR502 00801	0.8	0.1	1.6	40	4	UR502 02005	2	0.5	6	50	6
UR502 00802	0.8	0.2	1.6	40	4	UR502 02501	2.5	0.1	7	60	6
UR502 009005	0.9	0.05	1.8	40	4	UR502 02502	2.5	0.2	7	60	6
UR502 00901	0.9	0.1	1.8	40	4	UR502 02503	2.5	0.3	7	60	6
UR502 010005	1	0.05	2.5	50	6	UR502 02505	2.5	0.5	7	60	6

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○		○	◎	◎	○					

Endmill

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

UR502

2 Flutes Radius End Mill

Endmill

	EDP No	DC	RE	APMX	OAL	DCON MS		EDP No	DC	RE	APMX	OAL	DCON MS
Zamus Star	UR502 03001	3	0.1	8	60	6		UR502 05503	5.5	0.3	13	90	6
	UR502 03002	3	0.2	8	60	6		UR502 05505	5.5	0.5	13	90	6
	UR502 03003	3	0.3	8	60	6		UR502 05510	5.5	1	13	90	6
	UR502 03005	3	0.5	8	60	6		UR502 06001	6	0.1	15	90	6
	UR502 03010	3	1	8	60	6		UR502 06002	6	0.2	15	90	6
E-Star	UR502 03501	3.5	0.1	10	70	6		UR502 06003	6	0.3	15	90	6
	UR502 03502	3.5	0.2	10	70	6		UR502 0600360	6	0.3	15	60	6
	UR502 03503	3.5	0.3	10	70	6		UR502 06005	6	0.5	15	90	6
U-Wing	UR502 03505	3.5	0.5	10	70	6		UR502 06005110	6	0.5	15	110	6
	UR502 04001	4	0.1	10	70	6		UR502 06005130	6	0.5	15	130	6
	UR502 04001100S4	4	0.1	10	100	4		UR502 0600560	6	0.5	15	60	6
	UR502 04001S4	4	0.1	10	70	4		UR502 06010	6	1	15	90	6
	UR502 04002	4	0.2	10	70	6		UR502 06010110	6	1	15	110	6
Zamus Thunder	UR502 04002100S4	4	0.2	10	100	4		UR502 06010130	6	1	15	130	6
	UR502 04002S4	4	0.2	10	70	4		UR502 0601060	6	1	15	60	6
	UR502 04003	4	0.3	10	70	6		UR502 06015	6	1.5	15	90	6
X-Star	UR502 04003100S4	4	0.3	10	100	4		UR502 06020	6	2	15	90	6
	UR502 04003S4	4	0.3	10	70	4		UR502 07001	7	0.1	16	90	8
	UR502 04005	4	0.5	10	70	6		UR502 07002	7	0.2	16	90	8
	UR502 04005100S4	4	0.5	10	100	4		UR502 07003	7	0.3	16	90	8
	UR502 04005S4	4	0.5	10	70	4		UR502 07005	7	0.5	16	90	8
S-Wing	UR502 04010	4	1	10	70	6		UR502 07010	7	1	16	90	8
	UR502 04010100S4	4	1	10	100	4		UR502 07020	7	2	16	90	8
	UR502 04010S4	4	1	10	70	4		UR502 08001	8	0.1	20	100	8
	UR502 04501	4.5	0.1	11	80	6		UR502 08002	8	0.2	20	100	8
	UR502 04502	4.5	0.2	11	80	6		UR502 08003	8	0.3	20	100	8
A-Wing	UR502 04503	4.5	0.3	11	80	6		UR502 0800370	8	0.3	20	70	8
	UR502 04505	4.5	0.5	11	80	6		UR502 08005	8	0.5	20	100	8
	UR502 05001	5	0.1	13	90	6		UR502 08005120	8	0.5	20	120	8
	UR502 05002	5	0.2	13	90	6		UR502 08005150	8	0.5	20	150	8
	UR502 05003	5	0.3	13	90	6		UR502 0800570	8	0.5	20	70	8
Standard	UR502 05005	5	0.5	13	90	6		UR502 08010	8	1	20	100	8
	UR502 05010	5	1	13	90	6		UR502 08010120	8	1	20	120	8
	UR502 05501	5.5	0.1	13	90	6		UR502 08010150	8	1	20	150	8
Copper -Mate	UR502 05502	5.5	0.2	13	90	6		UR502 0801070	8	1	20	70	8

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
○		○	◎	◎	○					

UR502

2 Flutes Radius End Mill

Endmill

EDP No	DC	RE	APMX	OAL	DCON MS	EDP No	DC	RE	APMX	OAL	DCON MS
UR502 08015	8	1.5	20	100	8	UR502 04010S4	4	1	10	70	4
UR502 08020	8	2	20	100	8	UR502 04501	4.5	0.1	11	80	6
UR502 08025	8	2.5	20	100	8	UR502 04502	4.5	0.2	11	80	6
UR502 08003	8	3	20	100	8	UR502 04503	4.5	0.3	11	80	6
UR502 10001	10	0.1	25	100	10	UR502 04505	4.5	0.5	11	80	6
UR502 10002	10	0.2	25	100	10	UR502 05001	5	0.1	13	90	6
UR502 10003	10	0.3	25	100	10	UR502 05002	5	0.2	13	90	6
UR502 1000375	10	0.3	25	75	10	UR502 05003	5	0.3	13	90	6
UR502 10005	10	0.5	25	100	10	UR502 05005	5	0.5	13	90	6
UR502 10005130	10	0.5	25	130	10	UR502 05010	5	1	13	90	6
UR502 10005150	10	0.5	25	150	10	UR502 05501	5.5	0.1	13	90	6
UR502 1000575	10	0.5	25	75	10	UR502 05502	5.5	0.2	13	90	6
UR502 10010	10	1	25	100	10	UR502 05503	5.5	0.3	13	90	6
UR502 10010130	10	1	25	130	10	UR502 05505	5.5	0.5	13	90	6
UR502 10010150	10	1	25	150	10	UR502 05510	5.5	1	13	90	6
UR502 1001075	10	1	25	75	10	UR502 06001	6	0.1	15	90	6
UR502 10015	10	1.5	25	100	10	UR502 06002	6	0.2	15	90	6
UR502 10020	10	2	25	100	10	UR502 06003	6	0.3	15	90	6
UR502 10025	10	2.5	25	100	10	UR502 0600360	6	0.3	15	60	6
UR502 10030	10	3	25	100	10	UR502 06005	6	0.5	15	90	6
UR502 03505	3.5	0.5	10	70	6	UR502 06005110	6	0.5	15	110	6
UR502 04001	4	0.1	10	70	6	UR502 06005130	6	0.5	15	130	6
UR502 04001100S4	4	0.1	10	100	4	UR502 0600560	6	0.5	15	60	6
UR502 04001S4	4	0.1	10	70	4	UR502 06010	6	1	15	90	6
UR502 04002	4	0.2	10	70	6	UR502 06010110	6	1	15	110	6
UR502 04002100S4	4	0.2	10	100	4	UR502 06010130	6	1	15	130	6
UR502 04002S4	4	0.2	10	70	4	UR502 0601060	6	1	15	60	6
UR502 04003	4	0.3	10	70	6	UR502 06015	6	1.5	15	90	6
UR502 04003100S4	4	0.3	10	100	4	UR502 06020	6	2	15	90	6
UR502 04003S4	4	0.3	10	70	4	UR502 07001	7	0.1	16	90	8
UR502 04005	4	0.5	10	70	6	UR502 07002	7	0.2	16	90	8
UR502 04005100S4	4	0.5	10	100	4	UR502 07003	7	0.3	16	90	8
UR502 04005S4	4	0.5	10	70	4	UR502 07005	7	0.5	16	90	8
UR502 04010	4	1	10	70	6	UR502 07010	7	1	16	90	8
UR502 04010100S4	4	1	10	100	4	UR502 07020	7	2	16	90	8

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	~325	HRc30~50	~FCD500					
○		○	◎	◎	○					

UR502

2 Flutes Radius End Mill

Endmill

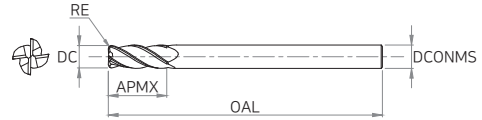
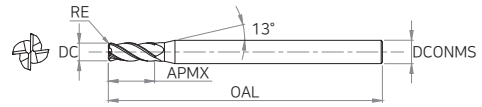
	EDP No	DC	RE	APMX	OAL	DCON MS		EDP No	DC	RE	APMX	OAL	DCON MS
Zamus Star	UR502 08001	8	0.1	20	100	8		UR502 11005	11	0.5	25	110	12
	UR502 08002	8	0.2	20	100	8		UR502 11010	11	1	25	110	12
	UR502 08003	8	0.3	20	100	8		UR502 11020	11	2	25	110	12
	UR502 0800370	8	0.3	20	70	8		UR502 12001	12	0.1	30	110	12
	UR502 08005	8	0.5	20	100	8		UR502 12002	12	0.2	30	110	12
E-Star	UR502 08005120	8	0.5	20	120	8		UR502 12003	12	0.3	30	110	12
	UR502 08005150	8	0.5	20	150	8		UR502 1200380	12	0.3	30	80	12
	UR502 0800570	8	0.5	20	70	8		UR502 12005	12	0.5	30	110	12
U-Wing	UR502 08010	8	1	20	100	8		UR502 12005130	12	0.5	30	130	12
	UR502 08010120	8	1	20	120	8		UR502 12005150	12	0.5	30	150	12
	UR502 08010150	8	1	20	150	8		UR502 1200580	12	0.5	30	80	12
	UR502 0801070	8	1	20	70	8		UR502 12010	12	1	30	110	12
Zamus Thunder	UR502 08015	8	1.5	20	100	8		UR502 12010130	12	1	30	130	12
	UR502 08020	8	2	20	100	8		UR502 12010150	12	1	30	150	12
	UR502 08025	8	2.5	20	100	8		UR502 1201080	12	1	30	80	12
	UR502 08030	8	3	20	100	8		UR502 12015	12	1.5	30	110	12
X-Star	UR502 10001	10	0.1	25	100	10		UR502 12020	12	2	30	110	12
	UR502 10002	10	0.2	25	100	10		UR502 12025	12	2.5	30	110	12
	UR502 10003	10	0.3	25	100	10		UR502 12030	12	3	30	110	12
	UR502 1000375	10	0.3	25	75	10		UR502 12040	12	4	30	110	12
S-Wing	UR502 10005	10	0.5	25	100	10		UR502 12050	12	5	30	110	12
	UR502 10005130	10	0.5	25	130	10		UR502 14005	14	0.5	30	150	16
	UR502 10005150	10	0.5	25	150	10		UR502 14010	14	1	30	150	16
A-Wing	UR502 1000575	10	0.5	25	75	10		UR502 14020	14	2	30	150	16
	UR502 10010	10	1	25	100	10		UR502 16005	16	0.5	32	150	16
	UR502 10010130	10	1	25	130	10		UR502 16010	16	1	32	150	16
Standard	UR502 10010150	10	1	25	150	10		UR502 16015	16	1.5	32	150	16
	UR502 1001075	10	1	25	75	10		UR502 16020	16	2	32	150	16
	UR502 10015	10	1.5	25	100	10		UR502 16030	16	3	32	150	16
	UR502 10020	10	2	25	100	10		UR502 20005	20	0.5	38	150	20
Copper -Mate	UR502 10025	10	2.5	25	100	10		UR502 20010	20	1	38	150	20
	UR502 10030	10	3	25	100	10		UR502 20015	20	1.5	38	150	20
	UR502 10040	10	4	25	100	10		UR502 20020	20	2	38	150	20
Gra -Mate	UR502 11002	11	0.2	25	110	12		UR502 20030	20	3	38	150	20
	UR502 11003	11	0.3	25	110	12							

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

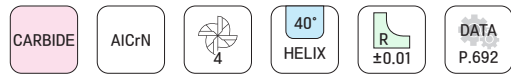
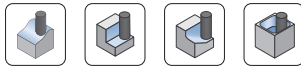
H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	Steel ~HB225	HB225 ~325	HRc30~50	~FCD500					
○		○	◎	◎	○					

UR504 4 Flutes Radius End Mill



► Tolerance

DC		Shank Dia
ø3 ~ ø20	0 ~ -0.03	h5



EDP No	DC	RE	APMX	OAL	DCON MS	EDP No	DC	RE	APMX	OAL	DCON MS
UR504 03002	3	0.2	8	60	6	UR504 06003060	6	0.3	15	60	6
UR504 03002S4	3	0.2	8	60	4	UR504 06005	6	0.5	15	90	6
UR504 03003	3	0.3	8	60	6	UR504 06005060	6	0.5	15	60	6
UR504 03005	3	0.5	8	60	6	UR504 06010	6	1	15	90	6
UR504 03005S4	3	0.5	8	60	4	UR504 06010060	6	1	15	60	6
UR504 04002	4	0.2	10	70	6	UR504 08003	8	0.3	20	100	8
UR504 04002S4	4	0.2	10	70	4	UR504 08003070	8	0.3	20	70	8
UR504 04003	4	0.3	10	70	6	UR504 08005	8	0.5	20	100	8
UR504 04005	4	0.5	10	70	6	UR504 08005070	8	0.5	20	70	8
UR504 04005S4	4	0.5	10	70	4	UR504 08010	8	1	20	100	8
UR504 04010	4	1	10	70	6	UR504 08010070	8	1	20	70	8
UR504 04010S4	4	1	10	70	4	UR504 08015	8	1.5	20	100	8
UR504 05002	5	0.2	13	90	6	UR504 08020	8	2	20	100	8
UR504 05003	5	0.3	13	90	6	UR504 10003	10	0.3	25	100	10
UR504 05003060	5	0.3	13	60	6	UR504 10003075	10	0.3	25	75	10
UR504 05005	5	0.5	13	90	6	UR504 10005	10	0.5	25	100	10
UR504 05005060	5	0.5	13	60	6	UR504 1000575	10	0.5	25	75	10
UR504 05010	5	1	13	90	6	UR504 10010	10	1	25	100	10
UR504 06002	6	0.2	13	90	6	UR504 10010075	10	1	25	75	10
UR504 06003	6	0.3	15	90	6	UR504 10015	10	1.5	25	100	10

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○		○	◎	◎	○					

Endmill

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

UR504 4 Flutes Radius End Mill

Endmill

EDP No	DC	RE	APMX	OAL	DCON MS	EDP No	DC	RE	APMX	OAL	DCON MS
UR504 10020	10	2	25	100	10	UR504 16010	16	1	32	150	16
UR504 10025	10	2.5	25	100	10	UR504 16010100	16	1	32	100	16
UR504 12003	12	0.3	30	110	12	UR504 16015	16	1.5	32	150	16
UR504 12003080	12	0.3	30	80	12	UR504 16015100	16	1.5	32	100	16
UR504 12005	12	0.5	30	110	12	UR504 16020	16	2	32	150	16
UR504 12005080	12	0.5	30	80	12	UR504 16020100	16	2	32	100	16
UR504 12010	12	1	30	110	12	UR504 20005	20	0.5	38	150	20
UR504 12010080	12	1	30	80	12	UR504 20005100	20	0.5	38	100	20
UR504 12015	12	1.5	30	110	12	UR504 20010	20	1	38	150	20
UR504 12020	12	2	30	110	12	UR504 20010100	20	1	38	100	20
UR504 12025	12	2.5	30	110	12	UR504 20015	20	1.5	38	150	20
UR504 12030	12	3	30	110	12	UR504 20015100	20	1.5	38	100	20
UR504 16005	16	0.5	32	150	16	UR504 20020	20	2	38	150	20
UR504 16005100	16	0.5	32	100	16	UR504 20020100	20	2	38	100	20

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

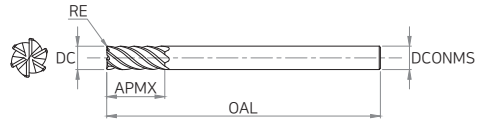
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
○		○	◎	◎	○					

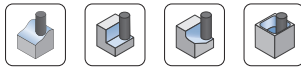
UR506

6 Flutes Radius End Mill



► Tolerance

DC		Shank Dia
Ø6 ~ Ø20	0 ~ -0.03	h5



EDP No	DC	RE	APMX	OAL	DCONMS
UR506 06003	6	0.3	15	90	6
UR506 06005	6	0.5	15	90	6
UR506 06010	6	1	15	90	6
UR506 08003	8	0.3	20	100	8
UR506 08005	8	0.5	20	100	8
UR506 08010	8	1	20	100	8
UR506 10003	10	0.3	25	100	10
UR506 10005	10	0.5	25	100	10
UR506 10010	10	1	25	100	10
UR506 12003	12	0.3	30	110	12
UR506 12005	12	0.5	30	110	12
UR506 12010	12	1	30	110	12
UR506 16005	16	0.5	32	150	16
UR506 16010	16	1	32	150	16
UR506 16015	16	1.5	32	150	16
UR506 16020	16	2	32	150	16
UR506 20005	20	0.5	38	150	20
UR506 20010	20	1	38	150	20
UR506 20015	20	1.5	38	150	20
UR506 20020	20	2	38	150	20

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	~325	HRc30~50	~FCD500					
○		○	◎	◎	○					

Endmill

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

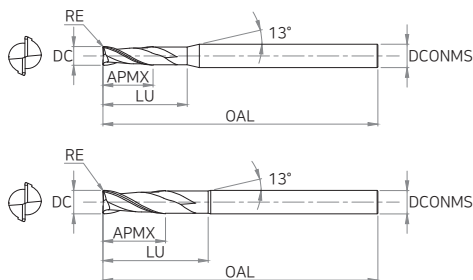
Standard

Copper
-Mate

Gra
-Mate

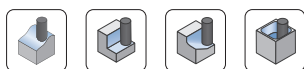
UR512

2 Flutes Neck Type Radius End Mill



► Tolerance

DC		Shank Dia
Ø0.2 ~ Ø6	0 ~ -0.012	h5
Ø8 ~ Ø20	0 ~ -0.015	



Ø6 OR UNDER ABOVE Ø6

EDP No	DC	RE	APMX	LU	OAL	DCON MS	EDP No	DC	RE	APMX	LU	OAL	DCON MS
UR512 002002005	0.2	0.02	0.3	0.5	40	4	UR512 0040101	0.4	0.1	0.6	1	40	4
UR512 00200201	0.2	0.02	0.3	1	40	4	UR512 00401015	0.4	0.1	0.6	1.5	40	4
UR512 002002015	0.2	0.02	0.3	1.5	40	4	UR512 0040102	0.4	0.1	0.6	2	40	4
UR512 00200202	0.2	0.02	0.3	2	40	4	UR512 00401025	0.4	0.1	0.6	2.5	40	4
UR512 002005005	0.2	0.05	0.3	0.5	40	4	UR512 0040103	0.4	0.1	0.6	3	40	4
UR512 00200501	0.2	0.05	0.3	1	40	4	UR512 0040104	0.4	0.1	0.6	4	40	4
UR512 002005015	0.2	0.05	0.3	1.5	40	4	UR512 00500501	0.5	0.05	0.7	1	45	4
UR512 00200502	0.2	0.05	0.3	2	40	4	UR512 005005015	0.5	0.05	0.7	1.5	45	4
UR512 00300201	0.3	0.02	0.5	1	40	4	UR512 00500502	0.5	0.05	0.7	2	45	4
UR512 00300202	0.3	0.02	0.5	2	40	4	UR512 005005025	0.5	0.05	0.7	2.5	45	4
UR512 00300203	0.3	0.02	0.5	3	40	4	UR512 00500503	0.5	0.05	0.7	3	45	4
UR512 00300501	0.3	0.05	0.5	1	40	4	UR512 00500504	0.5	0.05	0.7	4	45	4
UR512 00300502	0.3	0.05	0.5	2	40	4	UR512 00500505	0.5	0.05	0.7	5	45	4
UR512 00300503	0.3	0.05	0.5	3	40	4	UR512 00500506	0.5	0.05	0.7	6	45	4
UR512 00400501	0.4	0.05	0.6	1	40	4	UR512 0050101	0.5	0.1	0.7	1	45	4
UR512 004005015	0.4	0.05	0.6	1.5	40	4	UR512 00501015	0.5	0.1	0.7	1.5	45	4
UR512 00400502	0.4	0.05	0.6	2	40	4	UR512 0050102	0.5	0.1	0.7	2	45	4
UR512 004005025	0.4	0.05	0.6	2.5	40	4	UR512 00501025	0.5	0.1	0.7	2.5	45	4
UR512 00400503	0.4	0.05	0.6	3	40	4	UR512 0050103	0.5	0.1	0.7	3	45	4
UR512 00400504	0.4	0.05	0.6	4	40	4	UR512 0050104	0.5	0.1	0.7	4	45	4

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○		○	◎	◎	○					

UR512

2 Flutes Neck Type Radius End Mill

Endmill

EDP No	DC	RE	APMX	LU	OAL	DCON MS	EDP No	DC	RE	APMX	LU	OAL	DCON MS
UR512 0050105	0.5	0.1	0.7	5	45	4	UR512 0070210	0.7	0.2	1.2	10	45	4
UR512 0050106	0.5	0.1	0.7	6	45	4	UR512 00800502	0.8	0.05	1.2	2	45	4
UR512 00600502	0.6	0.05	0.9	2	45	4	UR512 00800503	0.8	0.05	1.2	3	45	4
UR512 00600503	0.6	0.05	0.9	3	45	4	UR512 00800504	0.8	0.05	1.2	4	45	4
UR512 00600504	0.6	0.05	0.9	4	45	4	UR512 00800506	0.8	0.05	1.2	6	45	4
UR512 00600506	0.6	0.05	0.9	6	45	4	UR512 00800508	0.8	0.05	1.2	8	45	4
UR512 00600508	0.6	0.05	0.9	8	45	4	UR512 00800510	0.8	0.05	1.2	10	45	4
UR512 00600510	0.6	0.05	0.9	10	45	4	UR512 0080102	0.8	0.1	1.2	2	45	4
UR512 0060102	0.6	0.1	0.9	2	45	4	UR512 0080103	0.8	0.1	1.2	3	45	4
UR512 0060103	0.6	0.1	0.9	3	45	4	UR512 0080104	0.8	0.1	1.2	4	45	4
UR512 0060104	0.6	0.1	0.9	4	45	4	UR512 0080106	0.8	0.1	1.2	6	45	4
UR512 0060106	0.6	0.1	0.9	6	45	4	UR512 0080108	0.8	0.1	1.2	8	45	4
UR512 0060108	0.6	0.1	0.9	8	45	4	UR512 0080110	0.8	0.1	1.2	10	45	4
UR512 0060110	0.6	0.1	0.9	10	45	4	UR512 0080202	0.8	0.2	1.2	2	45	4
UR512 0060202	0.6	0.2	0.9	2	45	4	UR512 0080203	0.8	0.2	1.2	3	45	4
UR512 0060203	0.6	0.2	0.9	3	45	4	UR512 0080204	0.8	0.2	1.2	4	45	4
UR512 0060204	0.6	0.2	0.9	4	45	4	UR512 0080206	0.8	0.2	1.2	6	45	4
UR512 0060206	0.6	0.2	0.9	6	45	4	UR512 0080208	0.8	0.2	1.2	8	45	4
UR512 0060208	0.6	0.2	0.9	8	45	4	UR512 0080210	0.8	0.2	1.2	10	45	4
UR512 0060210	0.6	0.2	0.9	10	45	4	UR512 01000503	1	0.05	1.5	3	50	4
UR512 00700502	0.7	0.05	1.2	2	45	4	UR512 01000504	1	0.05	1.5	4	50	4
UR512 00700504	0.7	0.05	1.2	4	45	4	UR512 01000506	1	0.05	1.5	6	50	4
UR512 00700506	0.7	0.05	1.2	6	45	4	UR512 01000508	1	0.05	1.5	8	50	4
UR512 00700508	0.7	0.05	1.2	8	45	4	UR512 01000510	1	0.05	1.5	10	50	4
UR512 00700510	0.7	0.05	1.2	10	45	4	UR512 01000512	1	0.05	1.5	12	50	4
UR512 0070102	0.7	0.1	1.2	2	45	4	UR512 01000514	1	0.05	1.5	14	50	4
UR512 0070104	0.7	0.1	1.2	4	45	4	UR512 01000516	1	0.05	1.5	16	50	4
UR512 0070106	0.7	0.1	1.2	6	45	4	UR512 01000520	1	0.05	1.5	20	50	4
UR512 0070108	0.7	0.1	1.2	8	45	4	UR512 0100103	1	0.1	1.5	3	50	4
UR512 0070110	0.7	0.1	1.2	10	45	4	UR512 0100104	1	0.1	1.5	4	50	4
UR512 0070202	0.7	0.2	1.2	2	45	4	UR512 0100106	1	0.1	1.5	6	50	4
UR512 0070204	0.7	0.2	1.2	4	45	4	UR512 0100108	1	0.1	1.5	8	50	4
UR512 0070206	0.7	0.2	1.2	6	45	4	UR512 0100110	1	0.1	1.5	10	50	4
UR512 0070208	0.7	0.2	1.2	8	45	4	UR512 0100112	1	0.1	1.5	12	50	4

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○		○	◎	◎	○					

UR512

2 Flutes Neck Type Radius End Mill

Endmill

	EDP No	DC	RE	APMX	LU	OAL	DCON MS		EDP No	DC	RE	APMX	LU	OAL	DCON MS
Zamus Star	UR512 0100114	1	0.1	1.5	14	50	4		UR512 0120112	1.2	0.1	1.8	12	50	4
	UR512 0100116	1	0.1	1.5	16	50	4		UR512 0120116	1.2	0.1	1.8	16	50	4
	UR512 0100120	1	0.1	1.5	20	50	4		UR512 0120120	1.2	0.1	1.8	20	50	4
	UR512 0100203	1	0.2	1.5	3	50	4		UR512 0120203	1.2	0.2	1.8	3	50	4
	UR512 0100204	1	0.2	1.5	4	50	4		UR512 0120204	1.2	0.2	1.8	4	50	4
E-Star	UR512 0100206	1	0.2	1.5	6	50	4		UR512 0120206	1.2	0.2	1.8	6	50	4
	UR512 0100208	1	0.2	1.5	8	50	4		UR512 0120208	1.2	0.2	1.8	8	50	4
	UR512 0100210	1	0.2	1.5	10	50	4		UR512 0120210	1.2	0.2	1.8	10	50	4
U-Wing	UR512 0100212	1	0.2	1.5	12	50	4		UR512 0120212	1.2	0.2	1.8	12	50	4
	UR512 0100214	1	0.2	1.5	14	50	4		UR512 0120216	1.2	0.2	1.8	16	50	4
	UR512 0100216	1	0.2	1.5	16	50	4		UR512 0120220	1.2	0.2	1.8	20	50	4
	UR512 0100220	1	0.2	1.5	20	50	4		UR512 0120303	1.2	0.3	1.8	3	50	4
Zamus Thunder	UR512 0100303	1	0.3	1.5	3	50	4		UR512 0120304	1.2	0.3	1.8	4	50	4
	UR512 0100304	1	0.3	1.5	4	50	4		UR512 0120306	1.2	0.3	1.8	6	50	4
	UR512 0100306	1	0.3	1.5	6	50	4		UR512 0120308	1.2	0.3	1.8	8	50	4
	UR512 0100308	1	0.3	1.5	8	50	4		UR512 0120310	1.2	0.3	1.8	10	50	4
X-Star	UR512 0100310	1	0.3	1.5	10	50	4		UR512 0120312	1.2	0.3	1.8	12	50	4
	UR512 0100312	1	0.3	1.5	12	50	4		UR512 0120316	1.2	0.3	1.8	16	50	4
	UR512 0100314	1	0.3	1.5	14	50	4		UR512 0120320	1.2	0.3	1.8	20	50	4
S-Wing	UR512 0100316	1	0.3	1.5	16	50	4		UR512 01500504	1.5	0.05	2.3	4	50	4
	UR512 0100320	1	0.3	1.5	20	50	4		UR512 01500506	1.5	0.05	2.3	6	50	4
	UR512 01200503	1.2	0.05	1.8	3	50	4		UR512 01500508	1.5	0.05	2.3	8	50	4
A-Wing	UR512 01200504	1.2	0.05	1.8	4	50	4		UR512 01500510	1.5	0.05	2.3	10	50	4
	UR512 01200506	1.2	0.05	1.8	6	50	4		UR512 01500512	1.5	0.05	2.3	12	50	4
	UR512 01200508	1.2	0.05	1.8	8	50	4		UR512 01500514	1.5	0.05	2.3	14	50	4
	UR512 01200510	1.2	0.05	1.8	10	50	4		UR512 01500516	1.5	0.05	2.3	16	50	4
Standard	UR512 01200512	1.2	0.05	1.8	12	50	4		UR512 01500520	1.5	0.05	2.3	20	50	4
	UR512 01200516	1.2	0.05	1.8	16	50	4		UR512 01500522	1.5	0.05	2.3	22	60	4
	UR512 01200520	1.2	0.05	1.8	20	50	4		UR512 01500526	1.5	0.05	2.3	26	60	4
	UR512 0120103	1.2	0.1	1.8	3	50	4		UR512 0150104	1.5	0.1	2.3	4	50	4
Copper -Mate	UR512 0120104	1.2	0.1	1.8	4	50	4		UR512 0150106	1.5	0.1	2.3	6	50	4
	UR512 0120106	1.2	0.1	1.8	6	50	4		UR512 0150108	1.5	0.1	2.3	8	50	4
	UR512 0120108	1.2	0.1	1.8	8	50	4		UR512 0150110	1.5	0.1	2.3	10	50	4
Gra -Mate	UR512 0120110	1.2	0.1	1.8	10	50	4		UR512 0150112	1.5	0.1	2.3	12	50	4

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
○		○	◎	◎	○					

UR512

2 Flutes Neck Type Radius End Mill

Endmill

EDP No	DC	RE	APMX	LU	OAL	DCON MS	EDP No	DC	RE	APMX	LU	OAL	DCON MS
UR512 0150114	1.5	0.1	2.3	14	50	4	UR512 0150526	1.5	0.5	2.3	26	60	4
UR512 0150116	1.5	0.1	2.3	16	50	4	UR512 0200106	2	0.1	3	6	50	4
UR512 0150120	1.5	0.1	2.3	20	50	4	UR512 0200108	2	0.1	3	8	50	4
UR512 0150122	1.5	0.1	2.3	22	60	4	UR512 0200110	2	0.1	3	10	50	4
UR512 0150126	1.5	0.1	2.3	26	60	4	UR512 0200112	2	0.1	3	12	50	4
UR512 0150204	1.5	0.2	2.3	4	50	4	UR512 0200114	2	0.1	3	14	50	4
UR512 0150206	1.5	0.2	2.3	6	50	4	UR512 0200116	2	0.1	3	16	50	4
UR512 0150208	1.5	0.2	2.3	8	50	4	UR512 0200120	2	0.1	3	20	50	4
UR512 0150210	1.5	0.2	2.3	10	50	4	UR512 0200122	2	0.1	3	22	60	4
UR512 0150212	1.5	0.2	2.3	12	50	4	UR512 0200126	2	0.1	3	26	60	4
UR512 0150214	1.5	0.2	2.3	14	50	4	UR512 0200130	2	0.1	3	30	70	4
UR512 0150216	1.5	0.2	2.3	16	50	4	UR512 0200206	2	0.2	3	6	50	4
UR512 0150220	1.5	0.2	2.3	20	50	4	UR512 0200208	2	0.2	3	8	50	4
UR512 0150222	1.5	0.2	2.3	22	60	4	UR512 0200210	2	0.2	3	10	50	4
UR512 0150226	1.5	0.2	2.3	26	60	4	UR512 0200212	2	0.2	3	12	50	4
UR512 0150304	1.5	0.3	2.3	4	50	4	UR512 0200214	2	0.2	3	14	50	4
UR512 0150306	1.5	0.3	2.3	6	50	4	UR512 0200216	2	0.2	3	16	50	4
UR512 0150308	1.5	0.3	2.3	8	50	4	UR512 0200220	2	0.2	3	20	50	4
UR512 0150310	1.5	0.3	2.3	10	50	4	UR512 0200222	2	0.2	3	22	60	4
UR512 0150312	1.5	0.3	2.3	12	50	4	UR512 0200226	2	0.2	3	26	60	4
UR512 0150314	1.5	0.3	2.3	14	50	4	UR512 0200230	2	0.2	3	30	70	4
UR512 0150316	1.5	0.3	2.3	16	50	4	UR512 0200306	2	0.3	3	6	50	4
UR512 0150320	1.5	0.3	2.3	20	50	4	UR512 0200308	2	0.3	3	8	50	4
UR512 0150322	1.5	0.3	2.3	22	60	4	UR512 0200310	2	0.3	3	10	50	4
UR512 0150326	1.5	0.3	2.3	26	60	4	UR512 0200312	2	0.3	3	12	50	4
UR512 0150504	1.5	0.5	2.3	4	50	4	UR512 0200314	2	0.3	3	14	50	4
UR512 0150506	1.5	0.5	2.3	6	50	4	UR512 0200316	2	0.3	3	16	50	4
UR512 0150508	1.5	0.5	2.3	8	50	4	UR512 0200320	2	0.3	3	20	50	4
UR512 0150510	1.5	0.5	2.3	10	50	4	UR512 0200322	2	0.3	3	22	60	4
UR512 0150512	1.5	0.5	2.3	12	50	4	UR512 0200326	2	0.3	3	26	60	4
UR512 0150514	1.5	0.5	2.3	14	50	4	UR512 0200330	2	0.3	3	30	70	4
UR512 0150516	1.5	0.5	2.3	16	50	4	UR512 0200506	2	0.5	3	6	50	4
UR512 0150520	1.5	0.5	2.3	20	50	4	UR512 0200508	2	0.5	3	8	50	4
UR512 0150522	1.5	0.5	2.3	22	60	4	UR512 0200510	2	0.5	3	10	50	4

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○		○	◎	◎	○					

UR512

2 Flutes Neck Type Radius End Mill

Endmill

	EDP No	DC	RE	APMX	LU	OAL	DCON MS		EDP No	DC	RE	APMX	LU	OAL	DCON MS
Zamus Star	UR512 0200512	2	0.5	3	12	50	4		UR512 0250514	2.5	0.5	4	14	50	4
	UR512 0200514	2	0.5	3	14	50	4		UR512 0250516	2.5	0.5	4	16	50	4
	UR512 0200516	2	0.5	3	16	50	4		UR512 0250520	2.5	0.5	4	20	50	4
	UR512 0200520	2	0.5	3	20	50	4		UR512 0250526	2.5	0.5	4	26	60	4
	UR512 0200522	2	0.5	3	22	60	4		UR512 0250530	2.5	0.5	4	30	70	4
E-Star	UR512 0200526	2	0.5	3	26	60	4		UR512 0300108	3	0.1	4.5	8	50	6
	UR512 0200530	2	0.5	3	30	70	4		UR512 0300110	3	0.1	4.5	10	50	6
	UR512 0250108	2.5	0.1	4	8	50	4		UR512 0300112	3	0.1	4.5	12	50	6
U-Wing	UR512 0250110	2.5	0.1	4	10	50	4		UR512 0300114	3	0.1	4.5	14	60	6
	UR512 0250112	2.5	0.1	4	12	50	4		UR512 0300116	3	0.1	4.5	16	60	6
	UR512 0250114	2.5	0.1	4	14	50	4		UR512 0300120	3	0.1	4.5	20	60	6
	UR512 0250116	2.5	0.1	4	16	50	4		UR512 0300126	3	0.1	4.5	26	65	6
Zamus Thunder	UR512 0250120	2.5	0.1	4	20	50	4		UR512 0300130	3	0.1	4.5	30	70	6
	UR512 0250126	2.5	0.1	4	26	60	4		UR512 0300135	3	0.1	4.5	35	70	6
	UR512 0250130	2.5	0.1	4	30	70	4		UR512 0300140	3	0.1	4.5	40	80	6
X-Star	UR512 0250208	2.5	0.2	4	8	50	4		UR512 0300208	3	0.2	4.5	8	50	6
	UR512 0250210	2.5	0.2	4	10	50	4		UR512 0300210	3	0.2	4.5	10	50	6
	UR512 0250212	2.5	0.2	4	12	50	4		UR512 0300212	3	0.2	4.5	12	50	6
	UR512 0250214	2.5	0.2	4	14	50	4		UR512 0300214	3	0.2	4.5	14	60	6
	UR512 0250216	2.5	0.2	4	16	50	4		UR512 0300216	3	0.2	4.5	16	60	6
S-Wing	UR512 0250220	2.5	0.2	4	20	50	4		UR512 0300220	3	0.2	4.5	20	60	6
	UR512 0250226	2.5	0.2	4	26	60	4		UR512 0300226	3	0.2	4.5	26	65	6
	UR512 0250230	2.5	0.2	4	30	70	4		UR512 0300230	3	0.2	4.5	30	70	6
A-Wing	UR512 0250308	2.5	0.3	4	8	50	4		UR512 0300235	3	0.2	4.5	35	70	6
	UR512 0250310	2.5	0.3	4	10	50	4		UR512 0300240	3	0.2	4.5	40	80	6
	UR512 0250312	2.5	0.3	4	12	50	4		UR512 0300308	3	0.3	4.5	8	50	6
	UR512 0250314	2.5	0.3	4	14	50	4		UR512 0300310	3	0.3	4.5	10	50	6
Standard	UR512 0250316	2.5	0.3	4	16	50	4		UR512 0300312	3	0.3	4.5	12	50	6
	UR512 0250320	2.5	0.3	4	20	50	4		UR512 0300314	3	0.3	4.5	14	60	6
	UR512 0250326	2.5	0.3	4	26	60	4		UR512 0300316	3	0.3	4.5	16	60	6
	UR512 0250330	2.5	0.3	4	30	70	4		UR512 0300320	3	0.3	4.5	20	60	6
Copper -Mate	UR512 0250508	2.5	0.5	4	8	50	4		UR512 0300326	3	0.3	4.5	26	65	6
	UR512 0250510	2.5	0.5	4	10	50	4		UR512 0300330	3	0.3	4.5	30	70	6
	UR512 0250512	2.5	0.5	4	12	50	4		UR512 0300335	3	0.3	4.5	35	70	6

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
○		○	◎	◎	○					

UR512 2 Flutes Neck Type Radius End Mill

Endmill

EDP No	DC	RE	APMX	LU	OAL	DCON MS	EDP No	DC	RE	APMX	LU	OAL	DCON MS
UR512 0300340	3	0.3	4.5	40	80	6	UR512 0400214	4	0.2	6	14	60	6
UR512 0300508	3	0.5	4.5	8	50	6	UR512 0400216	4	0.2	6	16	60	6
UR512 0300510	3	0.5	4.5	10	50	6	UR512 0400220	4	0.2	6	20	60	6
UR512 0300512	3	0.5	4.5	12	50	6	UR512 0400226	4	0.2	6	26	65	6
UR512 0300514	3	0.5	4.5	14	60	6	UR512 0400230	4	0.2	6	30	65	6
UR512 0300516	3	0.5	4.5	16	60	6	UR512 0400235	4	0.2	6	35	70	6
UR512 0300520	3	0.5	4.5	20	60	6	UR512 0400240	4	0.2	6	40	80	6
UR512 0300526	3	0.5	4.5	26	65	6	UR512 0400245	4	0.2	6	45	90	6
UR512 0300530	3	0.5	4.5	30	70	6	UR512 0400250	4	0.2	6	50	100	6
UR512 0300535	3	0.5	4.5	35	70	6	UR512 0400310	4	0.3	6	10	50	6
UR512 0300540	3	0.5	4.5	40	80	6	UR512 0400312	4	0.3	6	12	50	6
UR512 0301008	3	1	4.5	8	50	6	UR512 0400314	4	0.3	6	14	60	6
UR512 0301010	3	1	4.5	10	50	6	UR512 0400316	4	0.3	6	16	60	6
UR512 0301012	3	1	4.5	12	50	6	UR512 0400320	4	0.3	6	20	60	6
UR512 0301014	3	1	4.5	14	60	6	UR512 0400326	4	0.3	6	26	65	6
UR512 0301016	3	1	4.5	16	60	6	UR512 0400330	4	0.3	6	30	65	6
UR512 0301020	3	1	4.5	20	60	6	UR512 0400335	4	0.3	6	35	70	6
UR512 0301026	3	1	4.5	26	65	6	UR512 0400340	4	0.3	6	40	80	6
UR512 0301030	3	1	4.5	30	70	6	UR512 0400345	4	0.3	6	45	90	6
UR512 0301035	3	1	4.5	35	70	6	UR512 0400350	4	0.3	6	50	100	6
UR512 0301040	3	1	4.5	40	80	6	UR512 0400510	4	0.5	6	10	50	6
UR512 0400110	4	0.1	6	10	50	6	UR512 0400512	4	0.5	6	12	50	6
UR512 0400112	4	0.1	6	12	50	6	UR512 0400514	4	0.5	6	14	60	6
UR512 0400114	4	0.1	6	14	60	6	UR512 0400516	4	0.5	6	16	60	6
UR512 0400116	4	0.1	6	16	60	6	UR512 0400520	4	0.5	6	20	60	6
UR512 0400120	4	0.1	6	20	60	6	UR512 0400526	4	0.5	6	26	65	6
UR512 0400126	4	0.1	6	26	65	6	UR512 0400530	4	0.5	6	30	65	6
UR512 0400130	4	0.1	6	30	65	6	UR512 0400535	4	0.5	6	35	70	6
UR512 0400135	4	0.1	6	35	70	6	UR512 0400540	4	0.5	6	40	80	6
UR512 0400140	4	0.1	6	40	80	6	UR512 0400545	4	0.5	6	45	90	6
UR512 0400145	4	0.1	6	45	90	6	UR512 0400550	4	0.5	6	50	100	6
UR512 0400150	4	0.1	6	50	100	6	UR512 0401010	4	1	6	10	50	6
UR512 0400210	4	0.2	6	10	50	6	UR512 0401012	4	1	6	12	50	6
UR512 0400212	4	0.2	6	12	50	6	UR512 0401014	4	1	6	14	60	6

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○		○	◎	◎	○					

UR512

2 Flutes Neck Type Radius End Mill

Endmill

EDP No	DC	RE	APMX	LU	OAL	DCON MS	EDP No	DC	RE	APMX	LU	OAL	DCON MS
UR512 0401016	4	1	6	16	60	6	UR512 08010	8	1	12	25	70	8
UR512 0401020	4	1	6	20	60	6	UR512 08010100	8	1	20	35	100	8
UR512 0401026	4	1	6	26	65	6	UR512 08015	8	1.5	12	25	70	8
UR512 0401030	4	1	6	30	65	6	UR512 08020	8	2	12	25	70	8
UR512 0401035	4	1	6	35	70	6	UR512 10001	10	0.1	15	30	75	10
UR512 0401040	4	1	6	40	80	6	UR512 10002	10	0.2	15	30	75	10
UR512 0401045	4	1	6	45	90	6	UR512 10003	10	0.3	15	30	75	10
UR512 0401050	4	1	6	50	100	6	UR512 10003100	10	0.3	25	40	100	10
UR512 05001	5	0.1	8	15	60	6	UR512 10005	10	0.5	15	30	75	10
UR512 05002	5	0.2	8	15	60	6	UR512 10005100	10	0.5	25	40	100	10
UR512 05003	5	0.3	8	15	60	6	UR512 10010	10	1	15	30	75	10
UR512 05005	5	0.5	8	15	60	6	UR512 10010100	10	1	25	40	100	10
UR512 05010	5	1	8	15	60	6	UR512 10015	10	1.5	15	30	75	10
UR512 05015	5	1.5	8	15	60	6	UR512 10020	10	2	15	30	75	10
UR512 05020	5	2	8	15	60	6	UR512 12002	12	0.2	18	32	80	12
UR512 06001	6	0.1	9	20	60	6	UR512 12003	12	0.3	18	32	80	12
UR512 06002	6	0.2	9	20	60	6	UR512 12003110	12	0.3	30	45	110	12
UR512 06003	6	0.3	9	20	60	6	UR512 12005	12	0.5	18	32	80	12
UR512 0600390	6	0.3	15	30	90	6	UR512 12005110	12	0.5	30	45	110	12
UR512 06005	6	0.5	9	20	60	6	UR512 12010	12	1	18	32	80	12
UR512 0600590	6	0.5	15	30	90	6	UR512 12010110	12	1	30	45	110	12
UR512 06010	6	1	9	20	60	6	UR512 12015	12	1.5	18	32	80	12
UR512 0601090	6	1	15	30	90	6	UR512 12020	12	2	18	32	80	12
UR512 06015	6	1.5	9	20	60	6	UR512 16005	16	0.5	20	35	100	16
UR512 06020	6	2	9	20	60	6	UR512 16005150	16	0.5	35	50	150	16
UR512 08001	8	0.1	12	25	70	8	UR512 16010	16	1	20	35	100	16
UR512 08002	8	0.2	12	25	70	8	UR512 16010150	16	1	35	50	150	16
UR512 08003	8	0.3	12	25	70	8	UR512 20005	20	0.5	25	40	100	20
UR512 08003100	8	0.3	20	35	100	8	UR512 20005150	20	0.5	40	55	150	20
UR512 08005	8	0.5	12	25	70	8	UR512 20010	20	1	25	40	100	20
UR512 08005100	8	0.5	20	35	100	8	UR512 20010150	20	1	40	55	150	20

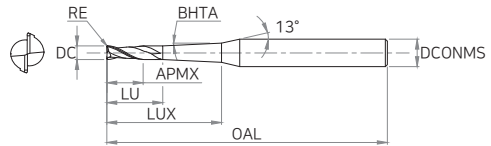
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	~325	HRC30~50	~FCD500					
○		○	◎	◎	○					

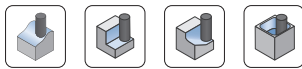
UR542

2 Flutes Tapered Neck Radius End Mill



► Tolerance

DC		Shank Dia
ø0.2 ~ ø4	0 ~ -0.012	h5



EDP No	DC	RE	BHTA	APMX	LU	LUX	OAL	DCONMS
UR542 0020050101	0.2	0.05	1	0.3	0.4	1	40	4
UR542 0020050102	0.2	0.05	1	0.3	0.4	2	40	4
UR542 0020050103	0.2	0.05	1	0.3	0.4	3	40	4
UR542 0020050201	0.2	0.05	2	0.3	0.4	1	40	4
UR542 0020050202	0.2	0.05	2	0.3	0.4	2	40	4
UR542 0020050203	0.2	0.05	2	0.3	0.4	3	40	4
UR542 0030050102	0.3	0.05	1	0.5	0.6	2	40	4
UR542 0030050103	0.3	0.05	1	0.5	0.6	3	40	4
UR542 0030050104	0.3	0.05	1	0.5	0.6	4	40	4
UR542 0030050105	0.3	0.05	1	0.5	0.6	5	40	4
UR542 0030050202	0.3	0.05	2	0.5	0.6	2	40	4
UR542 0030050203	0.3	0.05	2	0.5	0.6	3	40	4
UR542 0030050204	0.3	0.05	2	0.5	0.6	4	40	4
UR542 0030050205	0.3	0.05	2	0.5	0.6	5	40	4
UR542 0040050102	0.4	0.05	1	0.6	0.8	2	50	4
UR542 0040050103	0.4	0.05	1	0.6	0.8	3	50	4
UR542 0040050104	0.4	0.05	1	0.6	0.8	4	50	4
UR542 0040050105	0.4	0.05	1	0.6	0.8	5	50	4
UR542 0040050106	0.4	0.05	1	0.6	0.8	6	50	4
UR542 0040050202	0.4	0.05	2	0.6	0.8	2	50	4

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○		○	◎	◎	○					

Endmill

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

UR542

2 Flutes Tapered Neck Radius End Mill

Endmill

	EDP No	DC	RE	BHTA	APMX	LU	LUX	OAL	DCONMS
Zamus Star	UR542 0040050203	0.4	0.05	2	0.6	0.8	3	50	4
	UR542 0040050204	0.4	0.05	2	0.6	0.8	4	50	4
	UR542 0040050205	0.4	0.05	2	0.6	0.8	5	50	4
	UR542 0040050206	0.4	0.05	2	0.6	0.8	6	50	4
	UR542 004010102	0.4	0.1	1	0.6	0.8	2	50	4
E-Star	UR542 004010103	0.4	0.1	1	0.6	0.8	3	50	4
	UR542 004010104	0.4	0.1	1	0.6	0.8	4	50	4
	UR542 004010105	0.4	0.1	1	0.6	0.8	5	50	4
U-Wing	UR542 004010106	0.4	0.1	1	0.6	0.8	6	50	4
	UR542 004010202	0.4	0.1	2	0.6	0.8	2	50	4
	UR542 004010203	0.4	0.1	2	0.6	0.8	3	50	4
	UR542 004010204	0.4	0.1	2	0.6	0.8	4	50	4
Zamus Thunder	UR542 004010205	0.4	0.1	2	0.6	0.8	5	50	4
	UR542 004010206	0.4	0.1	2	0.6	0.8	6	50	4
	UR542 0050050104	0.5	0.05	1	0.7	1	4	50	4
X-Star	UR542 0050050106	0.5	0.05	1	0.7	1	6	50	4
	UR542 0050050108	0.5	0.05	1	0.7	1	8	50	4
	UR542 0050050110	0.5	0.05	1	0.7	1	10	50	4
	UR542 0050050204	0.5	0.05	2	0.7	1	4	50	4
S-Wing	UR542 0050050206	0.5	0.05	2	0.7	1	6	50	4
	UR542 0050050208	0.5	0.05	2	0.7	1	8	50	4
	UR542 0050050210	0.5	0.05	2	0.7	1	10	50	4
A-Wing	UR542 005010104	0.5	0.1	1	0.7	1	4	50	4
	UR542 005010106	0.5	0.1	1	0.7	1	6	50	4
	UR542 005010108	0.5	0.1	1	0.7	1	8	50	4
	UR542 005010110	0.5	0.1	1	0.7	1	10	50	4
Standard	UR542 005010204	0.5	0.1	2	0.7	1	4	50	4
	UR542 005010206	0.5	0.1	2	0.7	1	6	50	4
	UR542 005010208	0.5	0.1	2	0.7	1	8	50	4
Copper -Mate	UR542 005010210	0.5	0.1	2	0.7	1	10	50	4
	UR542 006010104	0.6	0.1	1	0.9	1.2	4	50	4
Gra -Mate	UR542 006010106	0.6	0.1	1	0.9	1.2	6	50	4
	UR542 006010108	0.6	0.1	1	0.9	1.2	8	50	4
	UR542 006010110	0.6	0.1	1	0.9	1.2	10	50	4

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	Steel ~HB225	HB225 ~325	HRc30~50	~FCD500					
○		○	◎	◎	○					

UR542

2 Flutes Tapered Neck Radius End Mill

Endmill

EDP No	DC	RE	BHTA	APMX	LU	LUX	OAL	DCONMS
UR542 006010108	0.6	0.1	1	0.9	1.2	8	50	4
UR542 006010110	0.6	0.1	1	0.9	1.2	10	50	4
UR542 006010112	0.6	0.1	1	0.9	1.2	12	50	4
UR542 006010204	0.6	0.1	2	0.9	1.2	4	50	4
UR542 006010206	0.6	0.1	2	0.9	1.2	6	50	4
UR542 006010208	0.6	0.1	2	0.9	1.2	8	50	4
UR542 006010210	0.6	0.1	2	0.9	1.2	10	50	4
UR542 006010212	0.6	0.1	2	0.9	1.2	12	50	4
UR542 006020104	0.6	0.2	1	0.9	1.2	4	50	4
UR542 006020106	0.6	0.2	1	0.9	1.2	6	50	4
UR542 006020108	0.6	0.2	1	0.9	1.2	8	50	4
UR542 006020110	0.6	0.2	1	0.9	1.2	10	50	4
UR542 006020112	0.6	0.2	1	0.9	1.2	12	50	4
UR542 006020204	0.6	0.2	2	0.9	1.2	4	50	4
UR542 006020206	0.6	0.2	2	0.9	1.2	6	50	4
UR542 006020208	0.6	0.2	2	0.9	1.2	8	50	4
UR542 006020210	0.6	0.2	2	0.9	1.2	10	50	4
UR542 006020212	0.6	0.2	2	0.9	1.2	12	50	4
UR542 008010104	0.8	0.1	1	1.2	1.6	4	50	4
UR542 008010106	0.8	0.1	1	1.2	1.6	6	50	4
UR542 008010108	0.8	0.1	1	1.2	1.6	8	50	4
UR542 008010110	0.8	0.1	1	1.2	1.6	10	50	4
UR542 008010112	0.8	0.1	1	1.2	1.6	12	50	4
UR542 008010116	0.8	0.1	1	1.2	1.6	16	50	4
UR542 008010204	0.8	0.1	2	1.2	1.6	4	50	4
UR542 008010206	0.8	0.1	2	1.2	1.6	6	50	4
UR542 008010208	0.8	0.1	2	1.2	1.6	8	50	4
UR542 008010210	0.8	0.1	2	1.2	1.6	10	50	4
UR542 008010212	0.8	0.1	2	1.2	1.6	12	50	4
UR542 008010216	0.8	0.1	2	1.2	1.6	16	50	4
UR542 008020104	0.8	0.2	1	1.2	1.6	4	50	4
UR542 008020106	0.8	0.2	1	1.2	1.6	6	50	4
UR542 008020108	0.8	0.2	1	1.2	1.6	8	50	4
UR542 008020110	0.8	0.2	1	1.2	1.6	10	50	4

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	Steel HRc30~50	~FCD500					
○		○	◎	◎	○					

UR542

2 Flutes Tapered Neck Radius End Mill

Endmill

	EDP No	DC	RE	BHTA	APMX	LU	LUX	OAL	DCONMS
Zamus Star	UR542 008020104	0.8	0.2	1	1.2	1.6	4	50	4
	UR542 008020106	0.8	0.2	1	1.2	1.6	6	50	4
	UR542 008020108	0.8	0.2	1	1.2	1.6	8	50	4
	UR542 008020110	0.8	0.2	1	1.2	1.6	10	50	4
	UR542 008020112	0.8	0.2	1	1.2	1.6	12	50	4
E-Star	UR542 008020116	0.8	0.2	1	1.2	1.6	16	50	4
	UR542 008020204	0.8	0.2	2	1.2	1.6	4	50	4
	UR542 008020206	0.8	0.2	2	1.2	1.6	6	50	4
U-Wing	UR542 008020208	0.8	0.2	2	1.2	1.6	8	50	4
	UR542 008020210	0.8	0.2	2	1.2	1.6	10	50	4
	UR542 008020212	0.8	0.2	2	1.2	1.6	12	50	4
	UR542 008020216	0.8	0.2	2	1.2	1.6	16	50	4
Zamus Thunder	UR542 010010106	1	0.1	1	1.5	2.5	6	50	4
	UR542 010010108	1	0.1	1	1.5	2.5	8	50	4
	UR542 010010110	1	0.1	1	1.5	2.5	10	50	4
	UR542 010010112	1	0.1	1	1.5	2.5	12	50	4
X-Star	UR542 010010116	1	0.1	1	1.5	2.5	16	50	4
	UR542 010010120	1	0.1	1	1.5	2.5	20	50	4
	UR542 010010125	1	0.1	1	1.5	2.5	25	60	4
S-Wing	UR542 010010130	1	0.1	1	1.5	2.5	30	70	4
	UR542 010010140	1	0.1	1	1.5	2.5	40	80	4
	UR542 010010150	1	0.1	1	1.5	2.5	50	90	6
A-Wing	UR542 010010206	1	0.1	2	1.5	2.5	6	50	4
	UR542 010010208	1	0.1	2	1.5	2.5	8	50	4
	UR542 010010210	1	0.1	2	1.5	2.5	10	50	4
	UR542 010010212	1	0.1	2	1.5	2.5	12	50	4
Standard	UR542 010010216	1	0.1	2	1.5	2.5	16	50	4
	UR542 010010220	1	0.1	2	1.5	2.5	20	50	4
	UR542 010010225	1	0.1	2	1.5	2.5	25	60	4
Copper -Mate	UR542 010010230	1	0.1	2	1.5	2.5	30	70	4
	UR542 010010240	1	0.1	2	1.5	2.5	40	80	4
	UR542 010010250	1	0.1	2	1.5	2.5	50	90	6
Gra -Mate	UR542 010020106	1	0.2	1	1.5	2.5	6	50	4
	UR542 010020108	1	0.2	1	1.5	2.5	8	50	4

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○		○	◎	◎	○					

UR542

2 Flutes Tapered Neck Radius End Mill

Endmill

EDP No	DC	RE	BHTA	APMX	LU	LUX	OAL	DCONMS
UR542 010020110	1	0.2	1	1.5	2.5	10	50	4
UR542 010020112	1	0.2	1	1.5	2.5	12	50	4
UR542 010020116	1	0.2	1	1.5	2.5	16	50	4
UR542 010020120	1	0.2	1	1.5	2.5	20	50	4
UR542 010020125	1	0.2	1	1.5	2.5	25	60	4
UR542 010020130	1	0.2	1	1.5	2.5	30	70	4
UR542 010020140	1	0.2	1	1.5	2.5	40	80	4
UR542 010020150	1	0.2	1	1.5	2.5	50	90	6
UR542 010020206	1	0.2	2	1.5	2.5	6	50	4
UR542 010020208	1	0.2	2	1.5	2.5	8	50	4
UR542 010020210	1	0.2	2	1.5	2.5	10	50	4
UR542 010020212	1	0.2	2	1.5	2.5	12	50	4
UR542 010020216	1	0.2	2	1.5	2.5	16	50	4
UR542 010020220	1	0.2	2	1.5	2.5	20	50	4
UR542 010020225	1	0.2	2	1.5	2.5	25	60	4
UR542 010020230	1	0.2	2	1.5	2.5	30	70	4
UR542 010020240	1	0.2	2	1.5	2.5	40	80	4
UR542 010020250	1	0.2	2	1.5	2.5	50	90	6
UR542 012010108	1.2	0.1	1	1.8	3	8	50	4
UR542 012010112	1.2	0.1	1	1.8	3	12	50	4
UR542 012010116	1.2	0.1	1	1.8	3	16	50	4
UR542 012010120	1.2	0.1	1	1.8	3	20	50	4
UR542 012010125	1.2	0.1	1	1.8	3	25	60	4
UR542 012010130	1.2	0.1	1	1.8	3	30	70	4
UR542 012010208	1.2	0.1	2	1.8	3	8	50	4
UR542 012010212	1.2	0.1	2	1.8	3	12	50	4
UR542 012010216	1.2	0.1	2	1.8	3	16	50	4
UR542 012010220	1.2	0.1	2	1.8	3	20	50	4
UR542 012010225	1.2	0.1	2	1.8	3	25	60	4
UR542 012010230	1.2	0.1	2	1.8	3	30	70	4
UR542 012020108	1.2	0.2	1	1.8	3	8	50	4
UR542 012020112	1.2	0.2	1	1.8	3	12	50	4
UR542 012020116	1.2	0.2	1	1.8	3	16	50	4
UR542 012020120	1.2	0.2	1	1.8	3	20	50	4

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○		○	◎	◎	○					

UR542

2 Flutes Tapered Neck Radius End Mill

Endmill

	EDP No	DC	RE	BHTA	APMX	LU	LUX	OAL	DCONMS
Zamus Star	UR542 012020125	1.2	0.2	1	1.8	3	25	60	4
	UR542 012020130	1.2	0.2	1	1.8	3	30	70	4
	UR542 012020208	1.2	0.2	2	1.8	3	8	50	4
	UR542 012020212	1.2	0.2	2	1.8	3	12	50	4
	UR542 012020216	1.2	0.2	2	1.8	3	16	50	4
E-Star	UR542 012020220	1.2	0.2	2	1.8	3	20	50	4
	UR542 012020225	1.2	0.2	2	1.8	3	25	60	4
	UR542 012020230	1.2	0.2	2	1.8	3	30	70	4
U-Wing	UR542 015010108	1.5	0.1	1	2.3	3	8	50	4
	UR542 015010110	1.5	0.1	1	2.3	3	10	50	4
	UR542 015010112	1.5	0.1	1	2.3	3	12	50	4
	UR542 015010116	1.5	0.1	1	2.3	3	16	50	4
Zamus Thunder	UR542 015010120	1.5	0.1	1	2.3	3	20	50	4
	UR542 015010125	1.5	0.1	1	2.3	3	25	60	4
	UR542 015010130	1.5	0.1	1	2.3	3	30	70	4
	UR542 015010140	1.5	0.1	1	2.3	3	40	80	4
X-Star	UR542 015010150	1.5	0.1	1	2.3	3	50	90	4
	UR542 015010208	1.5	0.1	2	2.3	3	8	50	4
	UR542 015010210	1.5	0.1	2	2.3	3	10	50	4
S-Wing	UR542 015010212	1.5	0.1	2	2.3	3	12	50	4
	UR542 015010216	1.5	0.1	2	2.3	3	16	50	4
	UR542 015010220	1.5	0.1	2	2.3	3	20	50	4
A-Wing	UR542 015010225	1.5	0.1	2	2.3	3	25	60	4
	UR542 015010230	1.5	0.1	2	2.3	3	30	70	4
	UR542 015010240	1.5	0.1	2	2.3	3	40	80	6
	UR542 015010250	1.5	0.1	2	2.3	3	50	90	6
Standard	UR542 015020108	1.5	0.2	1	2.3	3	8	50	4
	UR542 015020110	1.5	0.2	1	2.3	3	10	50	4
	UR542 015020112	1.5	0.2	1	2.3	3	12	50	4
Copper -Mate	UR542 015020116	1.5	0.2	1	2.3	3	16	50	4
	UR542 015020120	1.5	0.2	1	2.3	3	20	50	4
	UR542 015020125	1.5	0.2	1	2.3	3	25	60	4
Gra -Mate	UR542 015020130	1.5	0.2	1	2.3	3	30	70	4
	UR542 015020140	1.5	0.2	1	2.3	3	40	80	4

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	~325	HRC30~50	~FCD500					
○		○	◎	◎	○					

UR542

2 Flutes Tapered Neck Radius End Mill

Endmill

EDP No	DC	RE	BHTA	APMX	LU	LUX	OAL	DCONMS
UR542 015020150	1.5	0.2	1	2.3	3	50	90	4
UR542 015020208	1.5	0.2	2	2.3	3	8	50	4
UR542 015020210	1.5	0.2	2	2.3	3	10	50	4
UR542 015020212	1.5	0.2	2	2.3	3	12	50	4
UR542 015020216	1.5	0.2	2	2.3	3	16	50	4
UR542 015020220	1.5	0.2	2	2.3	3	20	50	4
UR542 015020225	1.5	0.2	2	2.3	3	25	60	4
UR542 015020230	1.5	0.2	2	2.3	3	30	70	4
UR542 015020240	1.5	0.2	2	2.3	3	40	80	6
UR542 015020250	1.5	0.2	2	2.3	3	50	90	6
UR542 015030108	1.5	0.3	1	2.3	3	8	50	4
UR542 015030110	1.5	0.3	1	2.3	3	10	50	4
UR542 015030112	1.5	0.3	1	2.3	3	12	50	4
UR542 015030116	1.5	0.3	1	2.3	3	16	50	4
UR542 015030120	1.5	0.3	1	2.3	3	20	50	4
UR542 015030125	1.5	0.3	1	2.3	3	25	60	4
UR542 015030130	1.5	0.3	1	2.3	3	30	70	4
UR542 015030140	1.5	0.3	1	2.3	3	40	80	4
UR542 015030150	1.5	0.3	1	2.3	3	50	90	4
UR542 015030208	1.5	0.3	2	2.3	3	8	50	4
UR542 015030210	1.5	0.3	2	2.3	3	10	50	4
UR542 015030212	1.5	0.3	2	2.3	3	12	50	4
UR542 015030216	1.5	0.3	2	2.3	3	16	50	4
UR542 015030220	1.5	0.3	2	2.3	3	20	50	4
UR542 015030225	1.5	0.3	2	2.3	3	25	60	4
UR542 015030230	1.5	0.3	2	2.3	3	30	70	4
UR542 015030240	1.5	0.3	2	2.3	3	40	80	6
UR542 015030250	1.5	0.3	2	2.3	3	50	90	6
UR542 020010110	2	0.1	1	2	5	10	50	4
UR542 020010112	2	0.1	1	2	5	12	50	4
UR542 020010116	2	0.1	1	2	5	16	50	4
UR542 020010120	2	0.1	1	2	5	20	50	4
UR542 020010125	2	0.1	1	2	5	25	60	4
UR542 020010130	2	0.1	1	2	5	30	70	4

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	Steel HRc30~50	~FCD500					
○		○	◎	◎	○					

UR542

2 Flutes Tapered Neck Radius End Mill

Endmill

	EDP No	DC	RE	BHTA	APMX	LU	LUX	OAL	DCONMS
Zamus Star	UR542 020010140	2	0.1	1	2	5	40	80	6
	UR542 020010150	2	0.1	1	2	5	50	100	6
	UR542 020010160	2	0.1	1	2	5	60	100	6
	UR542 020010180	2	0.1	1	2	5	80	140	6
	UR542 020010210	2	0.1	2	2	5	10	50	4
E-Star	UR542 020010212	2	0.1	2	2	5	12	50	4
	UR542 020010216	2	0.1	2	2	5	16	50	4
	UR542 020010220	2	0.1	2	2	5	20	50	4
U-Wing	UR542 020010225	2	0.1	2	2	5	25	60	4
	UR542 020010230	2	0.1	2	2	5	30	70	4
	UR542 020010240	2	0.1	2	2	5	40	80	6
	UR542 020010250	2	0.1	2	2	5	50	100	6
Zamus Thunder	UR542 020010260	2	0.1	2	2	5	60	100	6
	UR542 020010280	2	0.1	2	2	5	80	140	8
	UR542 020020110	2	0.2	1	2	5	10	50	4
X-Star	UR542 020020112	2	0.2	1	2	5	12	50	4
	UR542 020020116	2	0.2	1	2	5	16	50	4
	UR542 020020120	2	0.2	1	2	5	20	50	4
	UR542 020020125	2	0.2	1	2	5	25	60	4
S-Wing	UR542 020020130	2	0.2	1	2	5	30	70	4
	UR542 020020140	2	0.2	1	2	5	40	80	6
	UR542 020020150	2	0.2	1	2	5	50	100	6
A-Wing	UR542 020020160	2	0.2	1	2	5	60	100	6
	UR542 020020180	2	0.2	1	2	5	80	140	6
	UR542 020020210	2	0.2	2	2	5	10	50	4
	UR542 020020212	2	0.2	2	2	5	12	50	4
Standard	UR542 020020216	2	0.2	2	2	5	16	50	4
	UR542 020020220	2	0.2	2	2	5	20	50	4
	UR542 020020225	2	0.2	2	2	5	25	60	4
Copper -Mate	UR542 020020230	2	0.2	2	2	5	30	70	4
	UR542 020020240	2	0.2	2	2	5	40	80	6
	UR542 020020250	2	0.2	2	2	5	50	100	6
Gra -Mate	UR542 020020260	2	0.2	2	2	5	60	100	6
	UR542 020020280	2	0.2	2	2	5	80	140	8

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○		○	◎	◎	○					

UR542

2 Flutes Tapered Neck Radius End Mill

Endmill

EDP No	DC	RE	BHTA	APMX	LU	LUX	OAL	DCONMS
UR542 020030110	2	0.3	1	2	5	10	50	4
UR542 020030112	2	0.3	1	2	5	12	50	4
UR542 020030116	2	0.3	1	2	5	16	50	4
UR542 020030120	2	0.3	1	2	5	20	50	4
UR542 020030125	2	0.3	1	2	5	25	60	4
UR542 020030130	2	0.3	1	2	5	30	70	4
UR542 020030140	2	0.3	1	2	5	40	80	6
UR542 020030150	2	0.3	1	2	5	50	100	6
UR542 020030160	2	0.3	1	2	5	60	100	6
UR542 020030180	2	0.3	1	2	5	80	140	6
UR542 020030210	2	0.3	2	2	5	10	50	4
UR542 020030212	2	0.3	2	2	5	12	50	4
UR542 020030216	2	0.3	2	2	5	16	50	4
UR542 020030220	2	0.3	2	2	5	20	50	4
UR542 020030225	2	0.3	2	2	5	25	60	4
UR542 020030230	2	0.3	2	2	5	30	70	4
UR542 020030240	2	0.3	2	2	5	40	80	6
UR542 020030250	2	0.3	2	2	5	50	100	6
UR542 020030260	2	0.3	2	2	5	60	100	6
UR542 020030280	2	0.3	2	2	5	80	140	8
UR542 020050110	2	0.5	1	2	5	10	50	4
UR542 020050112	2	0.5	1	2	5	12	50	4
UR542 020050116	2	0.5	1	2	5	16	50	4
UR542 020050120	2	0.5	1	2	5	20	50	4
UR542 020050125	2	0.5	1	2	5	25	60	4
UR542 020050130	2	0.5	1	2	5	30	70	4
UR542 020050140	2	0.5	1	2	5	40	80	6
UR542 020050150	2	0.5	1	2	5	50	100	6
UR542 020050160	2	0.5	1	2	5	60	100	6
UR542 020050180	2	0.5	1	2	5	80	140	6
UR542 020050210	2	0.5	2	2	5	10	50	4
UR542 020050212	2	0.5	2	2	5	12	50	4
UR542 020050216	2	0.5	2	2	5	16	50	4
UR542 020050220	2	0.5	2	2	5	20	50	4

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○		○	◎	◎	○					

UR542

2 Flutes Tapered Neck Radius End Mill

Endmill

	EDP No	DC	RE	BHTA	APMX	LU	LUX	OAL	DCONMS
Zamus Star	UR542 020050225	2	0.5	2	2	5	25	60	4
	UR542 020050230	2	0.5	2	2	5	30	70	4
	UR542 020050240	2	0.5	2	2	5	40	80	6
	UR542 020050250	2	0.5	2	2	5	50	100	6
	UR542 020050260	2	0.5	2	2	5	60	100	6
E-Star	UR542 020050280	2	0.5	2	2	5	80	140	8
	UR542 030020116	3	0.2	1	4.5	6	16	60	6
	UR542 030020120	3	0.2	1	4.5	6	20	65	6
U-Wing	UR542 030020130	3	0.2	1	4.5	6	30	70	6
	UR542 030020140	3	0.2	1	4.5	6	40	80	6
	UR542 030020150	3	0.2	1	4.5	6	50	90	6
	UR542 030020160	3	0.2	1	4.5	6	60	100	6
Zamus Thunder	UR542 030020216	3	0.2	2	4.5	6	16	60	6
	UR542 030020220	3	0.2	2	4.5	6	20	65	6
	UR542 030020230	3	0.2	2	4.5	6	30	70	6
	UR542 030020240	3	0.2	2	4.5	6	40	80	6
X-Star	UR542 030020250	3	0.2	2	4.5	6	50	90	8
	UR542 030020260	3	0.2	2	4.5	6	60	100	8
	UR542 030020270	3	0.2	2	4.5	6	70	120	8
S-Wing	UR542 030030116	3	0.3	1	4.5	6	16	60	6
	UR542 030030120	3	0.3	1	4.5	6	20	65	6
	UR542 030030130	3	0.3	1	4.5	6	30	70	6
A-Wing	UR542 030030140	3	0.3	1	4.5	6	40	80	6
	UR542 030030150	3	0.3	1	4.5	6	50	90	6
	UR542 030030160	3	0.3	1	4.5	6	60	100	6
	UR542 030030216	3	0.3	2	4.5	6	16	60	6
Standard	UR542 030030220	3	0.3	2	4.5	6	20	65	6
	UR542 030030230	3	0.3	2	4.5	6	30	70	6
	UR542 030030240	3	0.3	2	4.5	6	40	80	6
Copper-Mate	UR542 030030250	3	0.3	2	4.5	6	50	90	8
	UR542 030030260	3	0.3	2	4.5	6	60	100	8
	UR542 030030270	3	0.3	2	4.5	6	70	120	8
Gra-Mate	UR542 030050116	3	0.5	1	4.5	6	16	60	6
	UR542 030050120	3	0.5	1	4.5	6	20	65	6

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
○		○	◎	◎	○					

UR542

2 Flutes Tapered Neck Radius End Mill

Endmill

EDP No	DC	RE	BHTA	APMX	LU	LUX	OAL	DCONMS
UR542 030050130	3	0.5	1	4.5	6	30	70	6
UR542 030050140	3	0.5	1	4.5	6	40	80	6
UR542 030050150	3	0.5	1	4.5	6	50	90	6
UR542 030050160	3	0.5	1	4.5	6	60	100	6
UR542 030050216	3	0.5	2	4.5	6	16	60	6
UR542 030050220	3	0.5	2	4.5	6	20	65	6
UR542 030050230	3	0.5	2	4.5	6	30	70	6
UR542 030050240	3	0.5	2	4.5	6	40	80	6
UR542 030050250	3	0.5	2	4.5	6	50	90	8
UR542 030050260	3	0.5	2	4.5	6	60	100	8
UR542 030050270	3	0.5	2	4.5	6	70	120	8
UR542 040020140	4	0.2	1	6	8	40	90	6
UR542 040020150	4	0.2	1	6	8	50	100	6
UR542 040020160	4	0.2	1	6	8	60	110	6
UR542 040020170	4	0.2	1	6	8	70	120	8
UR542 040020240	4	0.2	2	6	8	40	90	8
UR542 040020250	4	0.2	2	6	8	50	100	8
UR542 040020260	4	0.2	2	6	8	60	110	8
UR542 040020270	4	0.2	2	6	8	70	120	10
UR542 040030140	4	0.3	1	6	8	40	90	6
UR542 040030150	4	0.3	1	6	8	50	100	6
UR542 040030160	4	0.3	1	6	8	60	110	6
UR542 040030170	4	0.3	1	6	8	70	120	8
UR542 040030240	4	0.3	2	6	8	40	90	8
UR542 040030250	4	0.3	2	6	8	50	100	8
UR542 040030260	4	0.3	2	6	8	60	110	8
UR542 040030270	4	0.3	2	6	8	70	120	10
UR542 040050140	4	0.5	1	6	8	40	90	6
UR542 040050150	4	0.5	1	6	8	50	100	6
UR542 040050160	4	0.5	1	6	8	60	110	6
UR542 040050170	4	0.5	1	6	8	70	120	8
UR542 040050240	4	0.5	2	6	8	40	90	8
UR542 040050250	4	0.5	2	6	8	50	100	8
UR542 040050260	4	0.5	2	6	8	60	110	8
UR542 040050270	4	0.5	2	6	8	70	120	10

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

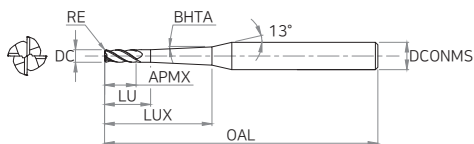
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○		○	◎	◎	○					

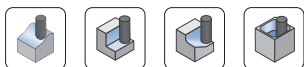
UR544

4 Flutes Tapered Neck Radius End Mill



► Tolerance

DC		Shank Dia
Ø1 ~ Ø4	0 ~ -0.012	h5



EDP No	DC	RE	BHTA	APMX	LU	LUX	OAL	DCONMS
UR544 010010106	1	0.1	1	1.5	2.5	6	50	4
UR544 010010108	1	0.1	1	1.5	2.5	8	50	4
UR544 010010110	1	0.1	1	1.5	2.5	10	50	4
UR544 010010112	1	0.1	1	1.5	2.5	12	50	4
UR544 010010116	1	0.1	1	1.5	2.5	16	50	4
UR544 010010120	1	0.1	1	1.5	2.5	20	50	4
UR544 010010125	1	0.1	1	1.5	2.5	25	60	4
UR544 010010130	1	0.1	1	1.5	2.5	30	70	4
UR544 010010140	1	0.1	1	1.5	2.5	40	80	4
UR544 010010150	1	0.1	1	1.5	2.5	50	90	4
UR544 010010206	1	0.1	2	1.5	2.5	6	50	4
UR544 010010208	1	0.1	2	1.5	2.5	8	50	4
UR544 010010210	1	0.1	2	1.5	2.5	10	50	4
UR544 010010212	1	0.1	2	1.5	2.5	12	50	4
UR544 010010216	1	0.1	2	1.5	2.5	16	50	4
UR544 010010220	1	0.1	2	1.5	2.5	20	50	4
UR544 010010225	1	0.1	2	1.5	2.5	25	60	4
UR544 010010230	1	0.1	2	1.5	2.5	30	70	4
UR544 010010240	1	0.1	2	1.5	2.5	40	80	4
UR544 010010250	1	0.1	2	1.5	2.5	50	90	6

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FC500					
○		○	◎	◎	○					

UR544

4 Flutes Tapered Neck Radius End Mill

Endmill

EDP No	DC	RE	BHTA	APMX	LU	LUX	OAL	DCONMS
UR544 010020106	1	0.2	1	1.5	2.5	6	50	4
UR544 010020108	1	0.2	1	1.5	2.5	8	50	4
UR544 010020110	1	0.2	1	1.5	2.5	10	50	4
UR544 010020112	1	0.2	1	1.5	2.5	12	50	4
UR544 010020116	1	0.2	1	1.5	2.5	16	50	4
UR544 010020120	1	0.2	1	1.5	2.5	20	50	4
UR544 010020125	1	0.2	1	1.5	2.5	25	60	4
UR544 010020130	1	0.2	1	1.5	2.5	30	70	4
UR544 010020140	1	0.2	1	1.5	2.5	40	80	4
UR544 010020150	1	0.2	1	1.5	2.5	50	90	4
UR544 010020206	1	0.2	2	1.5	2.5	6	50	4
UR544 010020208	1	0.2	2	1.5	2.5	8	50	4
UR544 010020210	1	0.2	2	1.5	2.5	10	50	4
UR544 010020212	1	0.2	2	1.5	2.5	12	50	4
UR544 010020216	1	0.2	2	1.5	2.5	16	50	4
UR544 010020220	1	0.2	2	1.5	2.5	20	50	4
UR544 010020225	1	0.2	2	1.5	2.5	25	60	4
UR544 010020230	1	0.2	2	1.5	2.5	30	70	4
UR544 010020240	1	0.2	2	1.5	2.5	40	80	4
UR544 010020250	1	0.2	2	1.5	2.5	50	90	6
UR544 012010108	1.2	0.1	1	1.8	3	8	50	4
UR544 012010112	1.2	0.1	1	1.8	3	12	50	4
UR544 012010116	1.2	0.1	1	1.8	3	16	50	4
UR544 012010120	1.2	0.1	1	1.8	3	20	50	4
UR544 012010125	1.2	0.1	1	1.8	3	25	60	4
UR544 012010130	1.2	0.1	1	1.8	3	30	70	4
UR544 012010208	1.2	0.1	2	1.8	3	8	50	4
UR544 012010212	1.2	0.1	2	1.8	3	12	50	4
UR544 012010216	1.2	0.1	2	1.8	3	16	50	4
UR544 012010220	1.2	0.1	2	1.8	3	20	50	4
UR544 012010225	1.2	0.1	2	1.8	3	25	60	4
UR544 012010230	1.2	0.1	2	1.8	3	30	70	4
UR544 012020108	1.2	0.2	1	1.8	3	8	50	4
UR544 012020112	1.2	0.2	1	1.8	3	12	50	4

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○		○	◎	◎	○					

UR544

4 Flutes Tapered Neck Radius End Mill

Endmill

	EDP No	DC	RE	BHTA	APMX	LU	LUX	OAL	DCONMS
Zamus Star	UR544 012020116	1.2	0.2	1	1.8	3	16	50	4
	UR544 012020120	1.2	0.2	1	1.8	3	20	50	4
	UR544 012020125	1.2	0.2	1	1.8	3	25	60	4
	UR544 012020130	1.2	0.2	1	1.8	3	30	70	4
	UR544 012020208	1.2	0.2	2	1.8	3	8	50	4
E-Star	UR544 012020212	1.2	0.2	2	1.8	3	12	50	4
	UR544 012020216	1.2	0.2	2	1.8	3	16	50	4
	UR544 012020220	1.2	0.2	2	1.8	3	20	50	4
U-Wing	UR544 012020225	1.2	0.2	2	1.8	3	25	60	4
	UR544 012020230	1.2	0.2	2	1.8	3	30	70	4
	UR544 015010108	1.5	0.1	1	2.3	3	8	50	4
Zamus Thunder	UR544 015010110	1.5	0.1	1	2.3	3	10	50	4
	UR544 015010112	1.5	0.1	1	2.3	3	12	50	4
	UR544 015010116	1.5	0.1	1	2.3	3	16	50	4
	UR544 015010120	1.5	0.1	1	2.3	3	20	50	4
	UR544 015010125	1.5	0.1	1	2.3	3	25	60	4
X-Star	UR544 015010130	1.5	0.1	1	2.3	3	30	70	4
	UR544 015010140	1.5	0.1	1	2.3	3	40	80	4
	UR544 015010150	1.5	0.1	1	2.3	3	50	90	4
S-Wing	UR544 015010208	1.5	0.1	2	2.3	3	8	50	4
	UR544 015010210	1.5	0.1	2	2.3	3	10	50	4
	UR544 015010212	1.5	0.1	2	2.3	3	12	50	4
A-Wing	UR544 015010216	1.5	0.1	2	2.3	3	16	50	4
	UR544 015010220	1.5	0.1	2	2.3	3	20	50	4
	UR544 015010225	1.5	0.1	2	2.3	3	25	60	4
Standard	UR544 015010230	1.5	0.1	2	2.3	3	30	70	4
	UR544 015010240	1.5	0.1	2	2.3	3	40	80	6
	UR544 015010250	1.5	0.1	2	2.3	3	50	90	6
Copper -Mate	UR544 015020108	1.5	0.2	1	2.3	3	8	50	4
	UR544 015020110	1.5	0.2	1	2.3	3	10	50	4
	UR544 015020112	1.5	0.2	1	2.3	3	12	50	4
	UR544 015020116	1.5	0.2	1	2.3	3	16	50	4
Gra -Mate	UR544 015020120	1.5	0.2	1	2.3	3	20	50	4
	UR544 015020125	1.5	0.2	1	2.3	3	25	60	4

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	~325	HRC30~50	~FCD500					
○		○	◎	◎	○					

UR544

4 Flutes Tapered Neck Radius End Mill

Endmill

EDP No	DC	RE	BHTA	APMX	LU	LUX	OAL	DCONMS
UR544 015020130	1.5	0.2	1	2.3	3	30	70	4
UR544 015020140	1.5	0.2	1	2.3	3	40	80	4
UR544 015020150	1.5	0.2	1	2.3	3	50	90	4
UR544 015020208	1.5	0.2	2	2.3	3	8	50	4
UR544 015020210	1.5	0.2	2	2.3	3	10	50	4
UR544 015020212	1.5	0.2	2	2.3	3	12	50	4
UR544 015020216	1.5	0.2	2	2.3	3	16	50	4
UR544 015020220	1.5	0.2	2	2.3	3	20	50	4
UR544 015020225	1.5	0.2	2	2.3	3	25	60	4
UR544 015020230	1.5	0.2	2	2.3	3	30	70	4
UR544 015020240	1.5	0.2	2	2.3	3	40	80	6
UR544 015020250	1.5	0.2	2	2.3	3	50	90	6
UR544 015030108	1.5	0.3	1	2.3	3	8	50	4
UR544 015030110	1.5	0.3	1	2.3	3	10	50	4
UR544 015030112	1.5	0.3	1	2.3	3	12	50	4
UR544 015030116	1.5	0.3	1	2.3	3	16	50	4
UR544 015030120	1.5	0.3	1	2.3	3	20	50	4
UR544 015030125	1.5	0.3	1	2.3	3	25	60	4
UR544 015030130	1.5	0.3	1	2.3	3	30	70	4
UR544 015030140	1.5	0.3	1	2.3	3	40	80	4
UR544 015030150	1.5	0.3	1	2.3	3	50	90	4
UR544 015030208	1.5	0.3	2	2.3	3	8	50	4
UR544 015030210	1.5	0.3	2	2.3	3	10	50	4
UR544 015030212	1.5	0.3	2	2.3	3	12	50	4
UR544 015030216	1.5	0.3	2	2.3	3	16	50	4
UR544 015030220	1.5	0.3	2	2.3	3	20	50	4
UR544 015030225	1.5	0.3	2	2.3	3	25	60	4
UR544 015030230	1.5	0.3	2	2.3	3	30	70	4
UR544 015030240	1.5	0.3	2	2.3	3	40	80	6
UR544 015030250	1.5	0.3	2	2.3	3	50	90	6
UR544 020010110	2	0.1	1	2	5	10	50	4
UR544 020010112	2	0.1	1	2	5	12	50	4
UR544 020010116	2	0.1	1	2	5	16	50	4
UR544 020010120	2	0.1	1	2	5	20	50	4

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○		○	◎	◎	○					

UR544

4 Flutes Tapered Neck Radius End Mill

Endmill

	EDP No	DC	RE	BHTA	APMX	LU	LUX	OAL	DCONMS
Zamus Star	UR544 020010125	2	0.1	1	2	5	25	60	4
	UR544 020010130	2	0.1	1	2	5	30	70	4
	UR544 020010140	2	0.1	1	2	5	40	80	6
	UR544 020010150	2	0.1	1	2	5	50	100	6
	UR544 020010160	2	0.1	1	2	5	60	100	6
E-Star	UR544 020010180	2	0.1	1	2	5	80	140	6
	UR544 020010210	2	0.1	2	2	5	10	50	4
	UR544 020010212	2	0.1	2	2	5	12	50	4
U-Wing	UR544 020010216	2	0.1	2	2	5	16	50	4
	UR544 020010220	2	0.1	2	2	5	20	50	4
	UR544 020010225	2	0.1	2	2	5	25	60	4
Zamus Thunder	UR544 020010230	2	0.1	2	2	5	30	70	4
	UR544 020010240	2	0.1	2	2	5	40	80	6
	UR544 020010250	2	0.1	2	2	5	50	100	6
	UR544 020010260	2	0.1	2	2	5	60	100	6
	UR544 020010280	2	0.1	2	2	5	80	140	8
X-Star	UR544 020020110	2	0.2	1	2	5	10	50	4
	UR544 020020112	2	0.2	1	2	5	12	50	4
	UR544 020020116	2	0.2	1	2	5	16	50	4
S-Wing	UR544 020020120	2	0.2	1	2	5	20	50	4
	UR544 020020125	2	0.2	1	2	5	25	60	4
	UR544 020020130	2	0.2	1	2	5	30	70	4
A-Wing	UR544 020020140	2	0.2	1	2	5	40	80	6
	UR544 020020150	2	0.2	1	2	5	50	100	6
	UR544 020020160	2	0.2	1	2	5	60	100	6
Standard	UR544 020020180	2	0.2	1	2	5	80	140	6
	UR544 020020210	2	0.2	2	2	5	10	50	4
	UR544 020020212	2	0.2	2	2	5	12	50	4
Copper -Mate	UR544 020020216	2	0.2	2	2	5	16	50	4
	UR544 020020220	2	0.2	2	2	5	20	50	4
	UR544 020020225	2	0.2	2	2	5	25	60	4
Gra -Mate	UR544 020020230	2	0.2	2	2	5	30	70	4
	UR544 020020240	2	0.2	2	2	5	40	80	6
	UR544 020020250	2	0.2	2	2	5	50	100	6

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○		○	◎	◎	○					

UR544

4 Flutes Tapered Neck Radius End Mill

Endmill

EDP No	DC	RE	BHTA	APMX	LU	LUX	OAL	DCONMS
UR544 020020260	2	0.2	2	2	5	60	100	6
UR544 020020280	2	0.2	2	2	5	80	140	8
UR544 020030110	2	0.3	1	2	5	10	50	4
UR544 020030112	2	0.3	1	2	5	12	50	4
UR544 020030116	2	0.3	1	2	5	16	50	4
UR544 020030120	2	0.3	1	2	5	20	50	4
UR544 020030125	2	0.3	1	2	5	25	60	4
UR544 020030130	2	0.3	1	2	5	30	70	4
UR544 020030140	2	0.3	1	2	5	40	80	6
UR544 020030150	2	0.3	1	2	5	50	100	6
UR544 020030160	2	0.3	1	2	5	60	100	6
UR544 020030180	2	0.3	1	2	5	80	140	6
UR544 020030210	2	0.3	2	2	5	10	50	4
UR544 020030212	2	0.3	2	2	5	12	50	4
UR544 020030216	2	0.3	2	2	5	16	50	4
UR544 020030220	2	0.3	2	2	5	20	50	4
UR544 020030225	2	0.3	2	2	5	25	60	4
UR544 020030230	2	0.3	2	2	5	30	70	4
UR544 020030240	2	0.3	2	2	5	40	80	6
UR544 020030250	2	0.3	2	2	5	50	100	6
UR544 020030260	2	0.3	2	2	5	60	100	6
UR544 020030280	2	0.3	2	2	5	80	140	8
UR544 020050110	2	0.5	1	2	5	10	50	4
UR544 020050112	2	0.5	1	2	5	12	50	4
UR544 020050116	2	0.5	1	2	5	16	50	4
UR544 020050120	2	0.5	1	2	5	20	50	4
UR544 020050125	2	0.5	1	2	5	25	60	4
UR544 020050130	2	0.5	1	2	5	30	70	4
UR544 020050140	2	0.5	1	2	5	40	80	6
UR544 020050150	2	0.5	1	2	5	50	100	6
UR544 020050160	2	0.5	1	2	5	60	100	6
UR544 020050180	2	0.5	1	2	5	80	140	6
UR544 020050210	2	0.5	2	2	5	10	50	4
UR544 020050212	2	0.5	2	2	5	12	50	4

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○		○	◎	◎	○					

UR544

4 Flutes Tapered Neck Radius End Mill

Endmill

	EDP No	DC	RE	BHTA	APMX	LU	LUX	OAL	DCONMS
Zamus Star	UR544 020050216	2	0.5	2	2	5	16	50	4
	UR544 020050220	2	0.5	2	2	5	20	50	4
	UR544 020050225	2	0.5	2	2	5	25	60	4
	UR544 020050230	2	0.5	2	2	5	30	70	4
	UR544 020050240	2	0.5	2	2	5	40	80	6
E-Star	UR544 020050250	2	0.5	2	2	5	50	100	6
	UR544 020050260	2	0.5	2	2	5	60	100	6
	UR544 020050280	2	0.5	2	2	5	80	140	8
U-Wing	UR544 030020116	3	0.2	1	4.5	6	16	60	6
	UR544 030020120	3	0.2	1	4.5	6	20	65	6
	UR544 030020130	3	0.2	1	4.5	6	30	70	6
	UR544 030020140	3	0.2	1	4.5	6	40	80	6
Zamus Thunder	UR544 030020150	3	0.2	1	4.5	6	50	90	6
	UR544 030020160	3	0.2	1	4.5	6	60	100	6
	UR544 030020216	3	0.2	2	4.5	6	16	60	6
	UR544 030020220	3	0.2	2	4.5	6	20	65	6
X-Star	UR544 030020230	3	0.2	2	4.5	6	30	70	6
	UR544 030020240	3	0.2	2	4.5	6	40	80	6
	UR544 030020250	3	0.2	2	4.5	6	50	90	8
S-Wing	UR544 030020260	3	0.2	2	4.5	6	60	100	8
	UR544 030020270	3	0.2	2	4.5	6	70	120	8
	UR544 030030116	3	0.3	1	4.5	6	16	60	6
A-Wing	UR544 030030120	3	0.3	1	4.5	6	20	65	6
	UR544 030030130	3	0.3	1	4.5	6	30	70	6
	UR544 030030140	3	0.3	1	4.5	6	40	80	6
	UR544 030030150	3	0.3	1	4.5	6	50	90	6
Standard	UR544 030030160	3	0.3	1	4.5	6	60	100	6
	UR544 030030216	3	0.3	2	4.5	6	16	60	6
	UR544 030030220	3	0.3	2	4.5	6	20	65	6
Copper -Mate	UR544 030030230	3	0.3	2	4.5	6	30	70	6
	UR544 030030240	3	0.3	2	4.5	6	40	80	6
	UR544 030030250	3	0.3	2	4.5	6	50	90	8
Gra -Mate	UR544 030030260	3	0.3	2	4.5	6	60	100	8
	UR544 030030270	3	0.3	2	4.5	6	70	120	8

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
○		○	◎	◎	○					

UR544

4 Flutes Tapered Neck Radius End Mill

Endmill

EDP No	DC	RE	BHTA	APMX	LU	LUX	OAL	DCONMS
UR544 030050116	3	0.5	1	4.5	6	16	60	6
UR544 030050120	3	0.5	1	4.5	6	20	65	6
UR544 030050130	3	0.5	1	4.5	6	30	70	6
UR544 030050140	3	0.5	1	4.5	6	40	80	6
UR544 030050150	3	0.5	1	4.5	6	50	90	6
UR544 030050160	3	0.5	1	4.5	6	60	100	6
UR544 030050216	3	0.5	2	4.5	6	16	60	6
UR544 030050220	3	0.5	2	4.5	6	20	65	6
UR544 030050230	3	0.5	2	4.5	6	30	70	6
UR544 030050240	3	0.5	2	4.5	6	40	80	6
UR544 030050250	3	0.5	2	4.5	6	50	90	8
UR544 030050260	3	0.5	2	4.5	6	60	100	8
UR544 030050270	3	0.5	2	4.5	6	70	120	8
UR544 040020140	4	0.2	1	6	8	40	90	6
UR544 040020150	4	0.2	1	6	8	50	100	6
UR544 040020160	4	0.2	1	6	8	60	110	6
UR544 040020170	4	0.2	1	6	8	70	120	8
UR544 040020240	4	0.2	2	6	8	40	90	8
UR544 040020250	4	0.2	2	6	8	50	100	8
UR544 040020260	4	0.2	2	6	8	60	110	8
UR544 040020270	4	0.2	2	6	8	70	120	10
UR544 040030140	4	0.3	1	6	8	40	90	6
UR544 040030150	4	0.3	1	6	8	50	100	6
UR544 040030160	4	0.3	1	6	8	60	110	6
UR544 040030170	4	0.3	1	6	8	70	120	8
UR544 040030240	4	0.3	2	6	8	40	90	8
UR544 040030250	4	0.3	2	6	8	50	100	8
UR544 040030260	4	0.3	2	6	8	60	110	8
UR544 040030270	4	0.3	2	6	8	70	120	10
UR544 040050140	4	0.5	1	6	8	40	90	6
UR544 040050150	4	0.5	1	6	8	50	100	6
UR544 040050160	4	0.5	1	6	8	60	110	6
UR544 040050170	4	0.5	1	6	8	70	120	8
UR544 040050240	4	0.5	2	6	8	40	90	8

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○		○	◎	◎	○					

UR544

4 Flutes Tapered Neck Radius End Mill

Endmill

EDP No	DC	RE	BHTA	APMX	LU	LUX	OAL	DCONMS
UR544 040050250	4	0.5	2	6	8	50	100	8
UR544 040050260	4	0.5	2	6	8	60	110	8
UR544 040050270	4	0.5	2	6	8	70	120	10

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

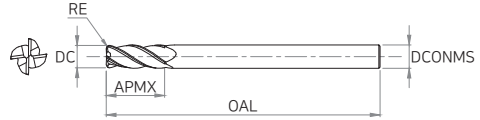
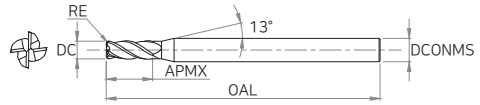
Gra
-Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

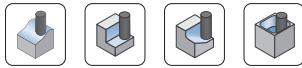
H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
○		○	◎	◎	○					

UXR504 4 Flutes Multi Helix Radius End Mill



► Tolerance

DC		Shank Dia
~ Ø6	0 ~ -0.012	h5
Ø8 ~ Ø20	0 ~ -0.015	



EDP No	DC	RE	APMX	OAL	DCON MS	EDP No	DC	RE	APMX	OAL	DCON MS
UXR504 010005	1	0.05	2.5	50	6	UXR504 02505	2.5	0.5	7	60	6
UXR504 01001	1	0.1	2.5	50	6	UXR504 03001	3	0.1	8	60	6
UXR504 01002	1	0.2	2.5	50	6	UXR504 03002	3	0.2	8	60	6
UXR504 01003	1	0.3	2.5	50	6	UXR504 03003	3	0.3	8	60	6
UXR504 012005	1.2	0.05	3	50	6	UXR504 03005	3	0.5	8	60	6
UXR504 01201	1.2	0.1	3	50	6	UXR504 03010	3	1	8	60	6
UXR504 01202	1.2	0.2	3	50	6	UXR504 03501	3.5	0.1	10	70	6
UXR504 01203	1.2	0.3	3	50	6	UXR504 03502	3.5	0.2	10	70	6
UXR504 015005	1.5	0.05	4	50	6	UXR504 03503	3.5	0.3	10	70	6
UXR504 01501	1.5	0.1	4	50	6	UXR504 03505	3.5	0.5	10	70	6
UXR504 01502	1.5	0.2	4	50	6	UXR504 04001	4	0.1	10	70	6
UXR504 01503	1.5	0.3	4	50	6	UXR504 04001100S4	4	0.1	10	100	4
UXR504 01505	1.5	0.5	4	50	6	UXR504 04001S4	4	0.1	10	70	4
UXR504 02001	2	0.1	6	50	6	UXR504 04002	4	0.2	10	70	6
UXR504 02002	2	0.2	6	50	6	UXR504 04002100S4	4	0.2	10	100	4
UXR504 02003	2	0.3	6	50	6	UXR504 04002S4	4	0.2	10	70	4
UXR504 02005	2	0.5	6	50	6	UXR504 04003	4	0.3	10	70	6
UXR504 02501	2.5	0.1	7	60	6	UXR504 04003100S4	4	0.3	10	100	4
UXR504 02502	2.5	0.2	7	60	6	UXR504 04003S4	4	0.3	10	70	4
UXR504 02503	2.5	0.3	7	60	6	UXR504 04005	4	0.5	10	70	6

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○		○	◎	◎	○					

Endmill

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

UXR504

4 Flutes Multi Helix Radius End Mill

Endmill

	EDP No	DC	RE	APMX	OAL	DCON MS		EDP No	DC	RE	APMX	OAL	DCON MS
Zamus Star	UXR504 04005100S4	4	0.5	10	100	4		UXR504 07001	7	0.1	16	90	8
	UXR504 04005S4	4	0.5	10	70	4		UXR504 07002	7	0.2	16	90	8
	UXR504 04010	4	1	10	70	6		UXR504 07003	7	0.3	16	90	8
	UXR504 04010100S4	4	1	10	100	4		UXR504 07005	7	0.5	16	90	8
	UXR504 04010S4	4	1	10	70	4		UXR504 07010	7	1	16	90	8
E-Star	UXR504 04501	4.5	0.1	11	80	6		UXR504 07020	7	2	16	90	8
	UXR504 04502	4.5	0.2	11	80	6		UXR504 08001	8	0.1	20	100	8
	UXR504 04503	4.5	0.3	11	80	6		UXR504 08002	8	0.2	20	100	8
U-Wing	UXR504 04505	4.5	0.5	11	80	6		UXR504 08003	8	0.3	20	100	8
	UXR504 05001	5	0.1	13	90	6		UXR504 08003070	8	0.3	20	70	8
	UXR504 05002	5	0.2	13	90	6		UXR504 08005	8	0.5	20	100	8
	UXR504 05003	5	0.3	13	90	6		UXR504 08005070	8	0.5	20	70	8
Zamus Thunder	UXR504 05005	5	0.5	13	90	6		UXR504 08005120	8	0.5	20	120	8
	UXR504 05010	5	1	13	90	6		UXR504 08005150	8	0.5	20	150	8
	UXR504 05501	5.5	0.1	13	90	6		UXR504 08010	8	1	20	100	8
	UXR504 05502	5.5	0.2	13	90	6		UXR504 08010070	8	1	20	70	8
X-Star	UXR504 05503	5.5	0.3	13	90	6		UXR504 08010120	8	1	20	120	8
	UXR504 05505	5.5	0.5	13	90	6		UXR504 08010150	8	1	20	150	8
	UXR504 05510	5.5	1	13	90	6		UXR504 08015	8	1.5	20	100	8
S-Wing	UXR504 06001	6	0.1	15	90	6		UXR504 08015070	8	1.5	20	70	8
	UXR504 06001060	6	0.1	15	60	6		UXR504 08020	8	2	20	100	8
	UXR504 06002	6	0.2	15	90	6		UXR504 08020070	8	2	20	70	8
A-Wing	UXR504 06002060	6	0.2	15	60	6		UXR504 08025	8	2.5	20	100	8
	UXR504 06003	6	0.3	15	90	6		UXR504 08030	8	3	20	100	8
	UXR504 06005	6	0.5	15	90	6		UXR504 10001	10	0.1	25	100	10
	UXR504 06005060	6	0.5	15	60	6		UXR504 10002	10	0.2	25	100	10
Standard	UXR504 06005110	6	0.5	15	110	6		UXR504 10003	10	0.3	25	100	10
	UXR504 06005130	6	0.5	15	130	6		UXR504 10003075	10	0.3	25	75	10
	UXR504 06010	6	1	15	90	6		UXR504 10005	10	0.5	25	100	10
	UXR504 06010060	6	1	15	60	6		UXR504 10005075	10	0.5	25	75	10
Copper -Mate	UXR504 06010110	6	1	15	110	6		UXR504 10005130	10	0.5	22	130	10
	UXR504 06010130	6	1	15	130	6		UXR504 10005150	10	0.5	22	150	10
	UXR504 06015	6	1.5	15	90	6		UXR504 10010	10	1	25	100	10
Gra -Mate	UXR504 06020	6	2	15	90	6		UXR504 10010075	10	1	25	75	10

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
○		○	◎	◎	○					

UXR504

4 Flutes Multi Helix Radius End Mill

Endmill

EDP No	DC	RE	APMX	OAL	DCON MS	EDP No	DC	RE	APMX	OAL	DCON MS
UXR504 10010130	10	1	22	130	10	UXR504 12025	12	2.5	30	110	12
UXR504 10010150	10	1	22	150	10	UXR504 12025080	12	2.5	30	80	12
UXR504 10015	10	1.5	25	100	10	UXR504 12030	12	3	30	110	12
UXR504 10020	10	2	25	100	10	UXR504 12030080	12	3	30	80	12
UXR504 10025	10	2.5	25	100	10	UXR504 12040	12	4	30	110	12
UXR504 10030	10	3	25	100	10	UXR504 12050	12	5	30	110	12
UXR504 10040	10	4	25	100	10	UXR504 14005	14	0.5	35	150	16
UXR504 11002	11	0.2	25	110	12	UXR504 14010	14	1	35	150	16
UXR504 11003	11	0.3	25	110	12	UXR504 14020	14	2	35	150	16
UXR504 11005	11	0.5	25	110	12	UXR504 16005	16	0.5	40	100	16
UXR504 11010	11	1	25	110	12	UXR504 16005150	16	0.5	40	150	16
UXR504 11020	11	2	25	110	12	UXR504 16010	16	1	40	100	16
UXR504 12001	12	0.1	30	110	12	UXR504 16010150	16	1	40	150	16
UXR504 12002	12	0.2	30	110	12	UXR504 16015	16	1.5	40	100	16
UXR504 12003	12	0.3	30	110	12	UXR504 16015150	16	1.5	40	150	16
UXR504 12003080	12	0.3	30	80	12	UXR504 16020	16	2	40	100	16
UXR504 12005	12	0.5	30	110	12	UXR504 16020150	16	2	40	150	16
UXR504 12005080	12	0.5	30	80	12	UXR504 16030	16	3	40	100	16
UXR504 12005130	12	0.5	30	130	12	UXR504 20005	20	0.5	45	110	20
UXR504 15005150	12	0.5	30	150	12	UXR504 20005150	20	0.5	45	150	20
UXR504 12010	12	1	30	110	12	UXR504 20010	20	1	45	110	20
UXR504 12010080	12	1	30	80	12	UXR504 20010150	20	1	45	150	20
UXR504 12010130	12	1	30	130	12	UXR504 20015	20	1.5	45	110	20
UXR504 12010150	12	1	30	150	12	UXR504 20015150	20	1.5	45	150	20
UXR504 12015	12	1.5	30	110	12	UXR504 20020	20	2	45	110	20
UXR504 12015080	12	1.5	30	80	12	UXR504 20020150	20	2	45	150	20
UXR504 12020	12	2	30	110	12	UXR504 20030	20	3	45	110	20
UXR504 12020080	12	2	30	80	12						

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

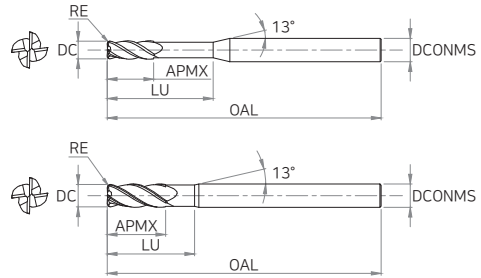
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○		○	◎	◎	○					

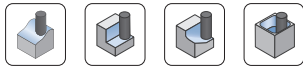
UXR514

4 Flutes Multi Helix Neck Radius End Mill



► Tolerance

DC		Shank Dia
Ø1 ~ Ø20	0 ~ -0.03	h5



EDP No	DC	RE	APMX	LU	OAL	DCON MS	EDP No	DC	RE	APMX	LU	OAL	DCON MS
UXR514 01000503	1	0.05	1.5	3	50	4	UXR514 0100206	1	0.2	1.5	6	50	4
UXR514 01000504	1	0.05	1.5	4	50	4	UXR514 0100208	1	0.2	1.5	8	50	4
UXR514 01000506	1	0.05	1.5	6	50	4	UXR514 0100210	1	0.2	1.5	10	50	4
UXR514 01000508	1	0.05	1.5	8	50	4	UXR514 0100212	1	0.2	1.5	12	50	4
UXR514 01000510	1	0.05	1.5	10	50	4	UXR514 0100214	1	0.2	1.5	14	50	4
UXR514 01000512	1	0.05	1.5	12	50	4	UXR514 0100216	1	0.2	1.5	16	50	4
UXR514 01000514	1	0.05	1.5	14	50	4	UXR514 0100220	1	0.2	1.5	20	50	4
UXR514 01000516	1	0.05	1.5	16	50	4	UXR514 0100303	1	0.3	1.5	3	50	4
UXR514 01000520	1	0.05	1.5	20	50	4	UXR514 0100304	1	0.3	1.5	4	50	4
UXR514 0100103	1	0.1	1.5	3	50	4	UXR514 0100306	1	0.3	1.5	6	50	4
UXR514 0100104	1	0.1	1.5	4	50	4	UXR514 0100308	1	0.3	1.5	8	50	4
UXR514 0100106	1	0.1	1.5	6	50	4	UXR514 0100310	1	0.3	1.5	10	50	4
UXR514 0100108	1	0.1	1.5	8	50	4	UXR514 0100312	1	0.3	1.5	12	50	4
UXR514 0100110	1	0.1	1.5	10	50	4	UXR514 0100314	1	0.3	1.5	14	50	4
UXR514 0100112	1	0.1	1.5	12	50	4	UXR514 0100316	1	0.3	1.5	16	50	4
UXR514 0100114	1	0.1	1.5	14	50	4	UXR514 0100320	1	0.3	1.5	20	50	4
UXR514 0100116	1	0.1	1.5	16	50	4	UXR514 01200503	1.2	0.05	1.8	3	50	4
UXR514 0100120	1	0.1	1.5	20	50	4	UXR514 01200504	1.2	0.05	1.8	4	50	4
UXR514 0100203	1	0.2	1.5	3	50	4	UXR514 01200506	1.2	0.05	1.8	6	50	4
UXR514 0100204	1	0.2	1.5	4	50	4	UXR514 01200508	1.2	0.05	1.8	8	50	4

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	~325	HRC30~50	~FCD500					
○		○	◎	◎	○					

UXR514

4 Flutes Multi Helix Neck Radius End Mill

Endmill

EDP No	DC	RE	APMX	LU	OAL	DCON MS	EDP No	DC	RE	APMX	LU	OAL	DCON MS
UXR514 01200510	1.2	0.05	1.8	10	50	4	UXR514 01500516	1.5	0.05	2.3	16	50	4
UXR514 01200512	1.2	0.05	1.8	12	50	4	UXR514 01500520	1.5	0.05	2.3	20	50	4
UXR514 01200516	1.2	0.05	1.8	16	50	4	UXR514 01500522	1.5	0.05	2.3	22	60	4
UXR514 01200520	1.2	0.05	1.8	20	50	4	UXR514 01500526	1.5	0.05	2.3	26	60	4
UXR514 0120103	1.2	0.1	1.8	3	50	4	UXR514 0150104	1.5	0.1	2.3	4	50	4
UXR514 0120104	1.2	0.1	1.8	4	50	4	UXR514 0150106	1.5	0.1	2.3	6	50	4
UXR514 0120106	1.2	0.1	1.8	6	50	4	UXR514 0150108	1.5	0.1	2.3	8	50	4
UXR514 0120108	1.2	0.1	1.8	8	50	4	UXR514 0150110	1.5	0.1	2.3	10	50	4
UXR514 0120110	1.2	0.1	1.8	10	50	4	UXR514 0150112	1.5	0.1	2.3	12	50	4
UXR514 0120112	1.2	0.1	1.8	12	50	4	UXR514 0150114	1.5	0.1	2.3	14	50	4
UXR514 0120116	1.2	0.1	1.8	16	50	4	UXR514 0150116	1.5	0.1	2.3	16	50	4
UXR514 0120120	1.2	0.1	1.8	20	50	4	UXR514 0150120	1.5	0.1	2.3	20	50	4
UXR514 0120203	1.2	0.2	1.8	3	50	4	UXR514 0150122	1.5	0.1	2.3	22	60	4
UXR514 0120204	1.2	0.2	1.8	4	50	4	UXR514 0150126	1.5	0.1	2.3	26	60	4
UXR514 0120206	1.2	0.2	1.8	6	50	4	UXR514 0150204	1.5	0.2	2.3	4	50	4
UXR514 0120208	1.2	0.2	1.8	8	50	4	UXR514 0150206	1.5	0.2	2.3	6	50	4
UXR514 0120210	1.2	0.2	1.8	10	50	4	UXR514 0150208	1.5	0.2	2.3	8	50	4
UXR514 0120212	1.2	0.2	1.8	12	50	4	UXR514 0150210	1.5	0.2	2.3	10	50	4
UXR514 0120216	1.2	0.2	1.8	16	50	4	UXR514 0150212	1.5	0.2	2.3	12	50	4
UXR514 0120220	1.2	0.2	1.8	20	50	4	UXR514 0150214	1.5	0.2	2.3	14	50	4
UXR514 0120303	1.2	0.3	1.8	3	50	4	UXR514 0150216	1.5	0.2	2.3	16	50	4
UXR514 0120304	1.2	0.3	1.8	4	50	4	UXR514 0150220	1.5	0.2	2.3	20	50	4
UXR514 0120306	1.2	0.3	1.8	6	50	4	UXR514 0150222	1.5	0.2	2.3	22	60	4
UXR514 0120308	1.2	0.3	1.8	8	50	4	UXR514 0150226	1.5	0.2	2.3	26	60	4
UXR514 0120310	1.2	0.3	1.8	10	50	4	UXR514 0150304	1.5	0.3	2.3	4	50	4
UXR514 0120312	1.2	0.3	1.8	12	50	4	UXR514 0150306	1.5	0.3	2.3	6	50	4
UXR514 0120316	1.2	0.3	1.8	16	50	4	UXR514 0150308	1.5	0.3	2.3	8	50	4
UXR514 0120320	1.2	0.3	1.8	20	50	4	UXR514 0150310	1.5	0.3	2.3	10	50	4
UXR514 01500504	1.5	0.05	2.3	4	50	4	UXR514 0150312	1.5	0.3	2.3	12	50	4
UXR514 01500506	1.5	0.05	2.3	6	50	4	UXR514 0150314	1.5	0.3	2.3	14	50	4
UXR514 01500508	1.5	0.05	2.3	8	50	4	UXR514 0150316	1.5	0.3	2.3	16	50	4
UXR514 01500510	1.5	0.05	2.3	10	50	4	UXR514 0150320	1.5	0.3	2.3	20	50	4
UXR514 01500512	1.5	0.05	2.3	12	50	4	UXR514 0150322	1.5	0.3	2.3	22	60	4
UXR514 01500514	1.5	0.05	2.3	14	50	4	UXR514 0150326	1.5	0.3	2.3	26	60	4

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○		○	◎	◎	○					

UXR514

4 Flutes Multi Helix Neck Radius End Mill

Endmill

	EDP No	DC	RE	APMX	LU	OAL	DCON MS		EDP No	DC	RE	APMX	LU	OAL	DCON MS
Zamus Star	UXR514 0150504	1.5	0.5	2.3	4	50	4		UXR514 0200314	2	0.3	3	14	50	4
	UXR514 0150506	1.5	0.5	2.3	6	50	4		UXR514 0200316	2	0.3	3	16	50	4
	UXR514 0150508	1.5	0.5	2.3	8	50	4		UXR514 0200320	2	0.3	3	20	50	4
	UXR514 0150510	1.5	0.5	2.3	10	50	4		UXR514 0200322	2	0.3	3	22	60	4
	UXR514 0150512	1.5	0.5	2.3	12	50	4		UXR514 0200326	2	0.3	3	26	60	4
E-Star	UXR514 0150514	1.5	0.5	2.3	14	50	4		UXR514 0200330	2	0.3	3	30	70	4
	UXR514 0150516	1.5	0.5	2.3	16	50	4		UXR514 0200506	2	0.5	3	6	50	4
	UXR514 0150520	1.5	0.5	2.3	20	50	4		UXR514 0200508	2	0.5	3	8	50	4
U-Wing	UXR514 0150522	1.5	0.5	2.3	22	60	4		UXR514 0200510	2	0.5	3	10	50	4
	UXR514 0150526	1.5	0.5	2.3	26	60	4		UXR514 0200512	2	0.5	3	12	50	4
	UXR514 0200106	2	0.1	3	6	50	4		UXR514 0200514	2	0.5	3	14	50	4
	UXR514 0200108	2	0.1	3	8	50	4		UXR514 0200516	2	0.5	3	16	50	4
Zamus Thunder	UXR514 0200110	2	0.1	3	10	50	4		UXR514 0200520	2	0.5	3	20	50	4
	UXR514 0200112	2	0.1	3	12	50	4		UXR514 0200522	2	0.5	3	22	60	4
	UXR514 0200114	2	0.1	3	14	50	4		UXR514 0200526	2	0.5	3	26	60	4
	UXR514 0200116	2	0.1	3	16	50	4		UXR514 0200530	2	0.5	3	30	70	4
X-Star	UXR514 0200120	2	0.1	3	20	50	4		UXR514 0250108	2.5	0.1	4	8	50	4
	UXR514 0200122	2	0.1	3	22	60	4		UXR514 0250110	2.5	0.1	4	10	50	4
	UXR514 0200126	2	0.1	3	26	60	4		UXR514 0250112	2.5	0.1	4	12	50	4
S-Wing	UXR514 0200130	2	0.1	3	30	70	4		UXR514 0250114	2.5	0.1	4	14	50	4
	UXR514 0200206	2	0.2	3	6	50	4		UXR514 0250116	2.5	0.1	4	16	50	4
	UXR514 0200208	2	0.2	3	8	50	4		UXR514 0250120	2.5	0.1	4	20	50	4
A-Wing	UXR514 0200210	2	0.2	3	10	50	4		UXR514 0250126	2.5	0.1	4	26	60	4
	UXR514 0200212	2	0.2	3	12	50	4		UXR514 0250130	2.5	0.1	4	30	70	4
	UXR514 0200214	2	0.2	3	14	50	4		UXR514 0250208	2.5	0.2	4	8	50	4
	UXR514 0200216	2	0.2	3	16	50	4		UXR514 0250210	2.5	0.2	4	10	50	4
Standard	UXR514 0200220	2	0.2	3	20	50	4		UXR514 0250212	2.5	0.2	4	12	50	4
	UXR514 0200222	2	0.2	3	22	60	4		UXR514 0250214	2.5	0.2	4	14	50	4
	UXR514 0200226	2	0.2	3	26	60	4		UXR514 0250216	2.5	0.2	4	16	50	4
	UXR514 0200230	2	0.2	3	30	70	4		UXR514 0250220	2.5	0.2	4	20	50	4
Copper -Mate	UXR514 0200306	2	0.3	3	6	50	4		UXR514 0250226	2.5	0.2	4	26	60	4
	UXR514 0200308	2	0.3	3	8	50	4		UXR514 0250230	2.5	0.2	4	30	70	4
	UXR514 0200310	2	0.3	3	10	50	4		UXR514 0250308	2.5	0.3	4	8	50	4
Gra -Mate	UXR514 0200312	2	0.3	3	12	50	4		UXR514 0250310	2.5	0.3	4	10	50	4

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	~325	HRC30~50	~FC500					
○		○	◎	◎	○					

UXR514

4 Flutes Multi Helix Neck Radius End Mill

Endmill

EDP No	DC	RE	APMX	LU	OAL	DCON MS	EDP No	DC	RE	APMX	LU	OAL	DCON MS
UXR514 0250312	2.5	0.3	4	12	50	4	UXR514 0300308	3	0.3	4.5	8	50	6
UXR514 0250314	2.5	0.3	4	14	50	4	UXR514 0300310	3	0.3	4.5	10	50	6
UXR514 0250316	2.5	0.3	4	16	50	4	UXR514 0300312	3	0.3	4.5	12	50	6
UXR514 0250320	2.5	0.3	4	20	50	4	UXR514 0300314	3	0.3	4.5	14	60	6
UXR514 0250326	2.5	0.3	4	26	60	4	UXR514 0300316	3	0.3	4.5	16	60	6
UXR514 0250330	2.5	0.3	4	30	70	4	UXR514 0300320	3	0.3	4.5	20	60	6
UXR514 0250508	2.5	0.5	4	8	50	4	UXR514 0300326	3	0.3	4.5	26	65	6
UXR514 0250510	2.5	0.5	4	10	50	4	UXR514 0300330	3	0.3	4.5	30	70	6
UXR514 0250512	2.5	0.5	4	12	50	4	UXR514 0300335	3	0.3	4.5	35	70	6
UXR514 0250514	2.5	0.5	4	14	50	4	UXR514 0300340	3	0.3	4.5	40	80	6
UXR514 0250516	2.5	0.5	4	16	50	4	UXR514 0300508	3	0.5	4.5	8	50	6
UXR514 0250520	2.5	0.5	4	20	50	4	UXR514 0300510	3	0.5	4.5	10	50	6
UXR514 0250526	2.5	0.5	4	26	60	4	UXR514 0300512	3	0.5	4.5	12	50	6
UXR514 0250530	2.5	0.5	4	30	70	4	UXR514 0300514	3	0.5	4.5	14	60	6
UXR514 0300108	3	0.1	4.5	8	50	6	UXR514 0300516	3	0.5	4.5	16	60	6
UXR514 0300110	3	0.1	4.5	10	50	6	UXR514 0300520	3	0.5	4.5	20	60	6
UXR514 0300112	3	0.1	4.5	12	50	6	UXR514 0300526	3	0.5	4.5	26	65	6
UXR514 0300114	3	0.1	4.5	14	60	6	UXR514 0300530	3	0.5	4.5	30	70	6
UXR514 0300116	3	0.1	4.5	16	60	6	UXR514 0300535	3	0.5	4.5	35	70	6
UXR514 0300120	3	0.1	4.5	20	60	6	UXR514 0300540	3	0.5	4.5	40	80	6
UXR514 0300126	3	0.1	4.5	26	65	6	UXR514 0301008	3	1	4.5	8	50	6
UXR514 0300130	3	0.1	4.5	30	70	6	UXR514 0301010	3	1	4.5	10	50	6
UXR514 0300135	3	0.1	4.5	35	70	6	UXR514 0301012	3	1	4.5	12	50	6
UXR514 0300140	3	0.1	4.5	40	80	6	UXR514 0301014	3	1	4.5	14	60	6
UXR514 0300208	3	0.2	4.5	8	50	6	UXR514 0301016	3	1	4.5	16	60	6
UXR514 0300210	3	0.2	4.5	10	50	6	UXR514 0301020	3	1	4.5	20	60	6
UXR514 0300212	3	0.2	4.5	12	50	6	UXR514 0301026	3	1	4.5	26	65	6
UXR514 0300214	3	0.2	4.5	14	60	6	UXR514 0301030	3	1	4.5	30	70	6
UXR514 0300216	3	0.2	4.5	16	60	6	UXR514 0301035	3	1	4.5	35	70	6
UXR514 0300220	3	0.2	4.5	20	60	6	UXR514 0301040	3	1	4.5	40	80	6
UXR514 0300226	3	0.2	4.5	26	65	6	UXR514 0400110	4	0.1	6	10	50	6
UXR514 0300230	3	0.2	4.5	30	70	6	UXR514 0400112	4	0.1	6	12	50	6
UXR514 0300235	3	0.2	4.5	35	70	6	UXR514 0400114	4	0.1	6	14	60	6
UXR514 0300240	3	0.2	4.5	40	80	6	UXR514 0400116	4	0.1	6	16	60	6

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○		○	◎	◎	○					

UXR514

4 Flutes Multi Helix Neck Radius End Mill

Endmill

	EDP No	DC	RE	APMX	LU	OAL	DCON MS		EDP No	DC	RE	APMX	LU	OAL	DCON MS
Zamus Star	UXR514 0400120	4	0.1	6	20	60	6		UXR514 0400526	4	0.5	6	26	65	6
	UXR514 0400126	4	0.1	6	26	65	6		UXR514 0400530	4	0.5	6	30	70	6
	UXR514 0400130	4	0.1	6	30	70	6		UXR514 0400535	4	0.5	6	35	70	6
	UXR514 0400135	4	0.1	6	35	70	6		UXR514 0400540	4	0.5	6	40	80	6
	UXR514 0400140	4	0.1	6	40	80	6		UXR514 0400545	4	0.5	6	45	90	6
E-Star	UXR514 0400145	4	0.1	6	45	90	6		UXR514 0400550	4	0.5	6	50	100	6
	UXR514 0400150	4	0.1	6	50	100	6		UXR514 0401010	4	1	6	10	50	6
	UXR514 0400210	4	0.2	6	10	50	6		UXR514 0401012	4	1	6	12	50	6
U-Wing	UXR514 0400212	4	0.2	6	12	50	6		UXR514 0401014	4	1	6	14	60	6
	UXR514 0400214	4	0.2	6	14	60	6		UXR514 0401016	4	1	6	16	60	6
	UXR514 0400216	4	0.2	6	16	60	6		UXR514 0401020	4	1	6	20	60	6
	UXR514 0400220	4	0.2	6	20	60	6		UXR514 0401026	4	1	6	26	65	6
Zamus Thunder	UXR514 0400226	4	0.2	6	26	65	6		UXR514 0401030	4	1	6	30	70	6
	UXR514 0400230	4	0.2	6	30	70	6		UXR514 0401035	4	1	6	35	70	6
	UXR514 0400235	4	0.2	6	35	70	6		UXR514 0401040	4	1	6	40	80	6
	UXR514 0400240	4	0.2	6	40	80	6		UXR514 0401045	4	1	6	45	90	6
X-Star	UXR514 0400245	4	0.2	6	45	90	6		UXR514 0401050	4	1	6	50	100	6
	UXR514 0400250	4	0.2	6	50	100	6		UXR514 05001	5	0.1	8	15	60	6
	UXR514 0400310	4	0.3	6	10	50	6		UXR514 05002	5	0.2	8	15	60	6
S-Wing	UXR514 0400312	4	0.3	6	12	50	6		UXR514 05003	5	0.3	8	15	60	6
	UXR514 0400314	4	0.3	6	14	60	6		UXR514 05005	5	0.5	8	15	60	6
	UXR514 0400316	4	0.3	6	16	60	6		UXR514 05010	5	1	8	15	60	6
A-Wing	UXR514 0400320	4	0.3	6	20	60	6		UXR514 05015	5	1.5	8	15	60	6
	UXR514 0400326	4	0.3	6	26	65	6		UXR514 05020	5	2	8	15	60	6
	UXR514 0400330	4	0.3	6	30	70	6		UXR514 06001	6	0.1	9	20	60	6
	UXR514 0400335	4	0.3	6	35	70	6		UXR514 06002	6	0.2	9	20	60	6
Standard	UXR514 0400340	4	0.3	6	40	80	6		UXR514 06003	6	0.3	9	20	60	6
	UXR514 0400345	4	0.3	6	45	90	6		UXR514 06003090	6	0.3	15	30	90	6
	UXR514 0400350	4	0.3	6	50	100	6		UXR514 06005	6	0.5	9	20	60	6
	UXR514 0400510	4	0.5	6	10	50	6		UXR514 06005090	6	0.5	15	30	90	6
Copper -Mate	UXR514 0400512	4	0.5	6	12	50	6		UXR514 06010	6	1	9	20	60	6
	UXR514 0400514	4	0.5	6	14	60	6		UXR514 06010090	6	1	15	30	90	6
	UXR514 0400516	4	0.5	6	16	60	6		UXR514 06015	6	1.5	9	20	60	6
Gra -Mate	UXR514 0400520	4	0.5	6	20	60	6		UXR514 06020	6	2	9	20	60	6

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	~325	HRC30~50	~FCD500					
○		○	◎	◎	○					

UXR514

4 Flutes Multi Helix Neck Radius End Mill

Endmill

EDP No	DC	RE	APMX	LU	OAL	DCON MS	EDP No	DC	RE	APMX	LU	OAL	DCON MS
UXR514 08001	8	0.1	12	25	70	8	UXR514 10020	10	2	15	30	75	10
UXR514 08002	8	0.2	12	25	70	8	UXR514 12002	12	0.2	18	32	80	12
UXR514 08003	8	0.3	12	25	70	8	UXR514 12003	12	0.3	18	32	80	12
UXR514 08003100	8	0.3	20	35	100	8	UXR514 12003110	12	0.3	30	45	110	12
UXR514 08005	8	0.5	12	25	70	8	UXR514 12005	12	0.5	18	32	80	12
UXR514 08005100	8	0.5	20	35	100	8	UXR514 12005110	12	0.5	30	45	110	12
UXR514 08010	8	1	12	25	70	8	UXR514 12010	12	1	18	32	80	12
UXR514 08010100	8	1	20	35	100	8	UXR514 12010110	12	1	30	45	110	12
UXR514 08015	8	1.5	12	25	70	8	UXR514 12015	12	1.5	18	32	80	12
UXR514 08020	8	2	12	25	70	8	UXR514 12020	12	2	18	32	80	12
UXR514 10001	10	0.1	15	30	75	10	UXR514 16005	16	0.5	20	35	100	16
UXR514 10002	10	0.2	15	30	75	10	UXR514 16005150	16	0.5	35	50	150	16
UXR514 10003	10	0.3	15	30	75	10	UXR514 16010	16	1	20	35	100	16
UXR514 10003100	10	0.3	25	40	100	10	UXR514 16010150	16	1	35	50	150	16
UXR514 10005	10	0.5	15	30	75	10	UXR514 20005	20	0.5	25	40	100	20
UXR514 10005100	10	0.5	25	40	100	10	UXR514 20005150	20	0.5	40	55	150	20
UXR514 10010	10	1	15	30	75	10	UXR514 20010	20	1	25	40	100	20
UXR514 10010100	10	1	25	40	100	10	UXR514 20010150	20	1	40	55	150	20
UXR514 10015	10	1.5	15	30	75	10							

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	Steel HRc30~50	~FCD500					
○		○	◎	◎	○					

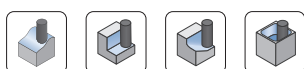
UDR503

3 Flutes double Radius End Mill



► Tolerance

DC		Shank Dia
ø6 ~ ø20	0 ~ -0.02	h5



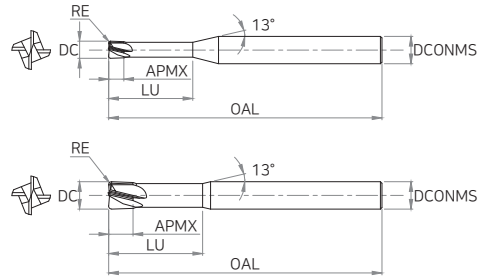
EDP No	DC	RE¹	RE²	APMX	OAL	DCONMS
UDR503 06005	6	0.5	6	10	90	6
UDR503 06010	6	1	6	10	90	6
UDR503 06020	6	2	6	10	90	6
UDR503 08005	8	0.5	8	16	100	8
UDR503 08010	8	1	8	16	100	8
UDR503 08020	8	2	8	16	100	8
UDR503 10005	10	0.5	10	20	100	10
UDR503 10010	10	1	10	20	100	10
UDR503 10020	10	2	10	20	100	10
UDR503 12005	12	0.5	12	24	110	12
UDR503 12010	12	1	12	24	110	12
UDR503 12020	12	2	12	24	110	12
UDR503 16005	16	0.5	16	32	150	16
UDR503 16010	16	1	16	32	150	16
UDR503 20005	20	0.5	20	40	150	20
UDR503 20010	20	1	20	40	150	20

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

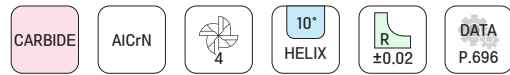
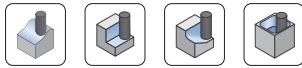
H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
○		○	◎	◎	○					

USPM4 4 Flutes Radius End Mill For High Speed Machining



► Tolerance

DC		Shank Dia
Ø1 ~ Ø20	0 ~ -0.03	h5



EDP No	DC	RE	APMX	LU	OAL	DCON MS	EDP No	DC	RE	APMX	LU	OAL	DCON MS
USPM4 010-01	1	0.1	1	2.5	50	6	USPM4 060-05	6	0.5	6	15	60	6
USPM4 010-02	1	0.2	1	2.5	50	6	USPM4 060-05L	6	0.5	6	15	90	6
USPM4 010-03	1	0.3	1	2.5	50	6	USPM4 060-10	6	1	6	15	60	6
USPM4 015-02	1.5	0.2	1.5	4	50	6	USPM4 060-10L	6	1	6	15	90	6
USPM4 015-03	1.5	0.3	1.5	4	50	6	USPM4 060-20	6	2	6	15	60	6
USPM4 015-05	1.5	0.5	1.5	4	50	6	USPM4 060-20L	6	2	6	15	90	6
USPM4 020-02	2	0.2	2	6	50	6	USPM4 080-02	8	0.2	8	20	70	8
USPM4 020-03	2	0.3	2	6	50	6	USPM4 080-02L	8	0.2	8	20	100	8
USPM4 020-05	2	0.5	2	6	50	6	USPM4 080-03	8	0.3	8	20	70	8
USPM4 030-02	3	0.2	3	8	50	6	USPM4 080-03L	8	0.3	8	20	100	8
USPM4 030-03	3	0.3	3	8	50	6	USPM4 080-05	8	0.5	8	20	70	8
USPM4 030-05	3	0.5	3	8	50	6	USPM4 080-05L	8	0.5	8	20	100	8
USPM4 040-02	4	0.2	4	10	50	6	USPM4 080-10	8	1	8	20	70	8
USPM4 040-03	4	0.3	4	10	50	6	USPM4 080-10L	8	1	8	20	100	8
USPM4 040-05	4	0.5	4	10	50	6	USPM4 080-20	8	2	8	20	70	8
USPM4 040-10	4	1	4	10	50	6	USPM4 080-20L	8	2	8	20	100	8
USPM4 060-02	6	0.2	6	15	60	6	USPM4 100-02	10	0.2	10	25	75	10
USPM4 060-02L	6	0.2	6	15	90	6	USPM4 100-02L	10	0.2	10	25	100	10
USPM4 060-03	6	0.3	6	15	60	6	USPM4 100-03	10	0.3	10	25	75	10
USPM4 060-03L	6	0.3	6	15	90	6	USPM4 100-03L	10	0.3	10	25	100	10

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○		○	◎	◎	○					

USPM4

4 Flutes Radius End Mill For High Speed Machining

Endmill

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

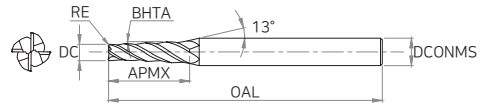
EDP No	DC	RE	APMX	LU	OAL	DCON MS	EDP No	DC	RE	APMX	LU	OAL	DCON MS
USPM4 100-05	10	0.5	10	25	75	10	USPM4 120-20	12	2	12	30	80	12
USPM4 100-05L	10	0.5	10	25	100	10	USPM4 120-20L	12	2	12	30	110	12
USPM4 100-10	10	1	10	25	75	10	USPM4 120-30	12	3	12	30	80	12
USPM4 100-10L	10	1	10	25	100	10	USPM4 120-30L	12	3	12	30	110	12
USPM4 100-15	10	1.5	10	25	75	10	USPM4 160-05	16	0.5	16	35	100	16
USPM4 100-15L	10	1.5	10	25	100	10	USPM4 160-05L	16	0.5	16	35	150	16
USPM4 100-20	10	2	10	25	75	10	USPM4 160-10	16	1	16	35	100	16
USPM4 100-20L	10	2	10	25	100	10	USPM4 160-10L	16	1	16	35	150	16
USPM4 120-03	12	0.3	12	30	80	12	USPM4 160-20	16	2	16	35	100	16
USPM4 120-03L	12	0.3	12	30	110	12	USPM4 160-20L	16	2	16	35	150	16
USPM4 120-05	12	0.5	12	30	80	12	USPM4 200-05	20	0.5	20	40	100	20
USPM4 120-05L	12	0.5	12	30	110	12	USPM4 200-05L	20	0.5	20	40	150	20
USPM4 120-10	12	1	12	30	80	12	USPM4 200-10	20	1	20	40	100	20
USPM4 120-10L	12	1	12	30	110	12	USPM4 200-10L	20	1	20	40	150	20
USPM4 120-15	12	1.5	12	30	80	12	USPM4 200-20	20	2	20	40	100	20
USPM4 120-15L	12	1.5	12	30	110	12	USPM4 200-20L	20	2	20	40	150	20

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

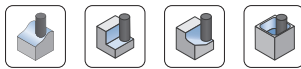
H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
○		○	◎	◎	○					

UTR504 4 Flutes Tapered Radius End Mill



► Tolerance

DC		Shank Dia
∅0.8 ~ ∅2.5	0 ~ -0.03	h5



EDP No	DC	RE	APMX	BHTA	OAL	DCONMS	EDP No	DC	RE	APMX	BHTA	OAL	DCONMS
UTR504 008010104	0.8	0.1	4	1	45	4	UTR504 0100101510	1	0.1	10	1.5	50	4
UTR504 008010106	0.8	0.1	6	1	45	4	UTR504 0100101512	1	0.1	12	1.5	50	4
UTR504 008010108	0.8	0.1	8	1	45	4	UTR504 010010204	1	0.1	4	2	50	4
UTR504 0080101504	0.8	0.1	4	1.5	45	4	UTR504 010010206	1	0.1	6	2	50	4
UTR504 0080101506	0.8	0.1	6	1.5	45	4	UTR504 010010208	1	0.1	8	2	50	4
UTR504 0080101508	0.8	0.1	8	1.5	45	4	UTR504 010010210	1	0.1	10	2	50	4
UTR504 008020104	0.8	0.2	4	1	45	4	UTR504 010010212	1	0.1	12	2	50	4
UTR504 008020106	0.8	0.2	6	1	45	4	UTR504 010010304	1	0.1	4	3	50	4
UTR504 008020108	0.8	0.2	8	1	45	4	UTR504 010010306	1	0.1	6	3	50	4
UTR504 0080201504	0.8	0.2	4	1.5	45	4	UTR504 010010308	1	0.1	8	3	50	4
UTR504 0080201506	0.8	0.2	6	1.5	45	4	UTR504 010010310	1	0.1	10	3	50	4
UTR504 0080201508	0.8	0.2	8	1.5	45	4	UTR504 010010312	1	0.1	12	3	50	4
UTR504 010010104	1	0.1	4	1	50	4	UTR504 010020104	1	0.2	4	1	50	4
UTR504 010010106	1	0.1	6	1	50	4	UTR504 010020106	1	0.2	6	1	50	4
UTR504 010010108	1	0.1	8	1	50	4	UTR504 010020108	1	0.2	8	1	50	4
UTR504 010010110	1	0.1	10	1	50	4	UTR504 010020110	1	0.2	10	1	50	4
UTR504 010010112	1	0.1	12	1	50	4	UTR504 010020112	1	0.2	12	1	50	4
UTR504 0100101504	1	0.1	4	1.5	50	4	UTR504 0100201504	1	0.2	4	1.5	50	4
UTR504 0100101506	1	0.1	6	1.5	50	4	UTR504 0100201506	1	0.2	6	1.5	50	4
UTR504 0100101508	1	0.1	8	1.5	50	4	UTR504 0100201508	1	0.2	8	1.5	50	4

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○		○	◎	◎	○					

Endmill

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

UTR504

4 Flutes Tapered Radius End Mill

Endmill

	EDP No	DC	RE	APMX	BHTA	OAL	DCON MS		EDP No	DC	RE	APMX	BHTA	OAL	DCON MS
Zamus Star	UTR504 0100201510	1	0.2	10	1.5	50	4		UTR504 012010110	1.2	0.1	10	1	50	4
	UTR504 0100201512	1	0.2	12	1.5	50	4		UTR504 012010112	1.2	0.1	12	1	50	4
	UTR504 010020204	1	0.2	4	2	50	4		UTR504 012010206	1.2	0.1	6	2	50	4
	UTR504 010020206	1	0.2	6	2	50	4		UTR504 012010208	1.2	0.1	8	2	50	4
E-Star	UTR504 010020208	1	0.2	8	2	50	4		UTR504 012010210	1.2	0.1	10	2	50	4
	UTR504 010020210	1	0.2	10	2	50	4		UTR504 012010212	1.2	0.1	12	2	50	4
	UTR504 010020212	1	0.2	12	2	50	4		UTR504 012010306	1.2	0.1	6	3	50	4
	UTR504 010020304	1	0.2	4	3	50	4		UTR504 012010308	1.2	0.1	8	3	50	4
U-Wing	UTR504 010020306	1	0.2	6	3	50	4		UTR504 012010310	1.2	0.1	10	3	50	4
	UTR504 010020308	1	0.2	8	3	50	4		UTR504 012010312	1.2	0.1	12	3	50	4
	UTR504 010020310	1	0.2	10	3	50	4		UTR504 012020106	1.2	0.2	6	1	50	4
	UTR504 010020312	1	0.2	12	3	50	4		UTR504 012020108	1.2	0.2	8	1	50	4
Zamus Thunder	UTR504 010030104	1	0.3	4	1	50	4		UTR504 012020110	1.2	0.2	10	1	50	4
	UTR504 010030106	1	0.3	6	1	50	4		UTR504 012020112	1.2	0.2	12	1	50	4
	UTR504 010030108	1	0.3	8	1	50	4		UTR504 012020206	1.2	0.2	6	2	50	4
	UTR504 010030110	1	0.3	10	1	50	4		UTR504 012020208	1.2	0.2	8	2	50	4
X-Star	UTR504 010030112	1	0.3	12	1	50	4		UTR504 012020210	1.2	0.2	10	2	50	4
	UTR504 0100301504	1	0.3	4	1.5	50	4		UTR504 012020212	1.2	0.2	12	2	50	4
	UTR504 0100301506	1	0.3	6	1.5	50	4		UTR504 012020306	1.2	0.2	6	3	50	4
	UTR504 0100301508	1	0.3	8	1.5	50	4		UTR504 012020308	1.2	0.2	8	3	50	4
S-Wing	UTR504 0100301510	1	0.3	10	1.5	50	4		UTR504 012020310	1.2	0.2	10	3	50	4
	UTR504 0100301512	1	0.3	12	1.5	50	4		UTR504 012020312	1.2	0.2	12	3	50	4
	UTR504 010030204	1	0.3	4	2	50	4		UTR504 012030106	1.2	0.3	6	1	50	4
	UTR504 010030206	1	0.3	6	2	50	4		UTR504 012030108	1.2	0.3	8	1	50	4
A-Wing	UTR504 010030208	1	0.3	8	2	50	4		UTR504 012030110	1.2	0.3	10	1	50	4
	UTR504 010030210	1	0.3	10	2	50	4		UTR504 012030112	1.2	0.3	12	1	50	4
	UTR504 010030212	1	0.3	12	2	50	4		UTR504 012030206	1.2	0.3	6	2	50	4
	UTR504 010030304	1	0.3	4	3	50	4		UTR504 012030208	1.2	0.3	8	2	50	4
Standard	UTR504 010030306	1	0.3	6	3	50	4		UTR504 012030210	1.2	0.3	10	2	50	4
	UTR504 010030308	1	0.3	8	3	50	4		UTR504 012030212	1.2	0.3	12	2	50	4
	UTR504 010030310	1	0.3	10	3	50	4		UTR504 012030306	1.2	0.3	6	3	50	4
	UTR504 010030312	1	0.3	12	3	50	4		UTR504 012030308	1.2	0.3	8	3	50	4
Copper -Mate	UTR504 012010106	1.2	0.1	6	1	50	4		UTR504 012030310	1.2	0.3	10	3	50	4
	UTR504 012010108	1.2	0.1	8	1	50	4		UTR504 012030312	1.2	0.3	12	3	50	4

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	~325	HRc30~50	~FCD500					
○		○	◎	◎	○					

UTR504

4 Flutes Tapered Radius End Mill

Endmill

EDP No	DC	RE	APMX	BHTA	OAL	DCON MS	EDP No	DC	RE	APMX	BHTA	OAL	DCON MS
UTR504 015010106	1.5	0.1	6	1	50	4	UTR504 015020316	1.5	0.2	16	3	50	4
UTR504 015010108	1.5	0.1	8	1	50	4	UTR504 015020320	1.5	0.2	20	3	60	4
UTR504 015010110	1.5	0.1	10	1	50	4	UTR504 015030106	1.5	0.3	6	1	50	4
UTR504 015010112	1.5	0.1	12	1	50	4	UTR504 015030108	1.5	0.3	8	1	50	4
UTR504 015010116	1.5	0.1	16	1	50	4	UTR504 015030110	1.5	0.3	10	1	50	4
UTR504 015010120	1.5	0.1	20	1	60	4	UTR504 015030112	1.5	0.3	12	1	50	4
UTR504 015010206	1.5	0.1	6	2	50	4	UTR504 015030116	1.5	0.3	16	1	50	4
UTR504 015010208	1.5	0.1	8	2	50	4	UTR504 015030120	1.5	0.3	20	1	60	4
UTR504 015010210	1.5	0.1	10	2	50	4	UTR504 015030206	1.5	0.3	6	2	50	4
UTR504 015010212	1.5	0.1	12	2	50	4	UTR504 015030208	1.5	0.3	8	2	50	4
UTR504 015010216	1.5	0.1	16	2	50	4	UTR504 015030210	1.5	0.3	10	2	50	4
UTR504 015010220	1.5	0.1	20	2	60	4	UTR504 015030212	1.5	0.3	12	2	50	4
UTR504 015010306	1.5	0.1	6	3	50	4	UTR504 015030216	1.5	0.3	16	2	50	4
UTR504 015010308	1.5	0.1	8	3	50	4	UTR504 015030220	1.5	0.3	20	2	60	4
UTR504 015010310	1.5	0.1	10	3	50	4	UTR504 015030306	1.5	0.3	6	3	50	4
UTR504 015010312	1.5	0.1	12	3	50	4	UTR504 015030308	1.5	0.3	8	3	50	4
UTR504 015010316	1.5	0.1	16	3	50	4	UTR504 015030310	1.5	0.3	10	3	50	4
UTR504 015010320	1.5	0.1	20	3	60	4	UTR504 015030312	1.5	0.3	12	3	50	4
UTR504 015020106	1.5	0.2	6	1	50	4	UTR504 015030316	1.5	0.3	16	3	50	4
UTR504 015020108	1.5	0.2	8	1	50	4	UTR504 015030320	1.5	0.3	20	3	60	4
UTR504 015020110	1.5	0.2	10	1	50	4	UTR504 020010108	2	0.1	8	1	50	4
UTR504 015020112	1.5	0.2	12	1	50	4	UTR504 020010110	2	0.1	10	1	50	4
UTR504 015020116	1.5	0.2	16	1	50	4	UTR504 020010112	2	0.1	12	1	50	4
UTR504 015020120	1.5	0.2	20	1	60	4	UTR504 020010116	2	0.1	16	1	50	4
UTR504 015020206	1.5	0.2	6	2	50	4	UTR504 020010120	2	0.1	20	1	60	4
UTR504 015020208	1.5	0.2	8	2	50	4	UTR504 020010125	2	0.1	25	1	60	4
UTR504 015020210	1.5	0.2	10	2	50	4	UTR504 020010208	2	0.1	8	2	50	4
UTR504 015020212	1.5	0.2	12	2	50	4	UTR504 020010210	2	0.1	10	2	50	4
UTR504 015020216	1.5	0.2	16	2	50	4	UTR504 020010212	2	0.1	12	2	50	4
UTR504 015020220	1.5	0.2	20	2	60	4	UTR504 020010216	2	0.1	16	2	50	4
UTR504 015020306	1.5	0.2	6	3	50	4	UTR504 020010220	2	0.1	20	2	60	4
UTR504 015020308	1.5	0.2	8	3	50	4	UTR504 020010225	2	0.1	25	2	60	4
UTR504 015020310	1.5	0.2	10	3	50	4	UTR504 020010308	2	0.1	8	3	50	4
UTR504 015020312	1.5	0.2	12	3	50	4	UTR504 020010310	2	0.1	10	3	50	4

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○		○	◎	◎	○					

UTR504

4 Flutes Tapered Radius End Mill

Endmill

	EDP No	DC	RE	APMX	BHTA	OAL	DCON MS		EDP No	DC	RE	APMX	BHTA	OAL	DCON MS
Zamus Star	UTR504 020010312	2	0.1	12	3	50	4		UTR504 020030308	2	0.3	8	3	50	4
	UTR504 020010316	2	0.1	16	3	50	4		UTR504 020030310	2	0.3	10	3	50	4
	UTR504 020010320	2	0.1	20	3	60	6		UTR504 020030312	2	0.3	12	3	50	4
	UTR504 020010325	2	0.1	25	3	60	6		UTR504 020030316	2	0.3	16	3	50	4
	UTR504 020020108	2	0.2	8	1	50	4		UTR504 020030320	2	0.3	20	3	60	6
E-Star	UTR504 020020110	2	0.2	10	1	50	4		UTR504 020030325	2	0.3	25	3	60	6
	UTR504 020020112	2	0.2	12	1	50	4		UTR504 025010110	2.5	0.1	10	1	50	4
	UTR504 020020116	2	0.2	16	1	50	4		UTR504 025010112	2.5	0.1	12	1	50	4
U-Wing	UTR504 020020120	2	0.2	20	1	60	4		UTR504 025010116	2.5	0.1	16	1	50	4
	UTR504 020020125	2	0.2	25	1	60	4		UTR504 025010120	2.5	0.1	20	1	60	4
	UTR504 020020208	2	0.2	8	2	50	4		UTR504 025010125	2.5	0.1	25	1	60	4
	UTR504 020020210	2	0.2	10	2	50	4		UTR504 025010130	2.5	0.1	30	1	60	4
Zamus Thunder	UTR504 020020212	2	0.2	12	2	50	4		UTR504 025010210	2.5	0.1	10	2	50	4
	UTR504 020020216	2	0.2	16	2	50	4		UTR504 025010212	2.5	0.1	12	2	50	4
	UTR504 020020220	2	0.2	20	2	60	4		UTR504 025010216	2.5	0.1	16	2	50	4
	UTR504 020020225	2	0.2	25	2	60	4		UTR504 025010220	2.5	0.1	20	2	60	4
X-Star	UTR504 020020308	2	0.2	8	3	50	4		UTR504 025010225	2.5	0.1	25	2	60	6
	UTR504 020020310	2	0.2	10	3	50	4		UTR504 025010230	2.5	0.1	30	2	60	6
	UTR504 020020312	2	0.2	12	3	50	4		UTR504 025010310	2.5	0.1	10	3	50	4
	UTR504 020020316	2	0.2	16	3	50	4		UTR504 025010312	2.5	0.1	12	3	50	4
S-Wing	UTR504 020020320	2	0.2	20	3	60	6		UTR504 025010316	2.5	0.1	16	3	50	6
	UTR504 020020325	2	0.2	25	3	60	6		UTR504 025010320	2.5	0.1	20	3	60	6
	UTR504 020030108	2	0.3	8	1	50	4		UTR504 025010325	2.5	0.1	25	3	60	6
A-Wing	UTR504 020030110	2	0.3	10	1	50	4		UTR504 025010330	2.5	0.1	30	3	60	6
	UTR504 020030112	2	0.3	12	1	50	4		UTR504 025020110	2.5	0.2	10	1	50	4
	UTR504 020030116	2	0.3	16	1	50	4		UTR504 025020112	2.5	0.2	12	1	50	4
Standard	UTR504 020030120	2	0.3	20	1	60	4		UTR504 025020116	2.5	0.2	16	1	50	4
	UTR504 020030125	2	0.3	25	1	60	4		UTR504 025020120	2.5	0.2	20	1	60	4
	UTR504 020030208	2	0.3	8	2	50	4		UTR504 025020125	2.5	0.2	25	1	60	4
	UTR504 020030210	2	0.3	10	2	50	4		UTR504 025020130	2.5	0.2	30	1	60	4
Copper -Mate	UTR504 020030212	2	0.3	12	2	50	4		UTR504 025020210	2.5	0.2	10	2	50	4
	UTR504 020030216	2	0.3	16	2	50	4		UTR504 025020212	2.5	0.2	12	2	50	4
	UTR504 020030220	2	0.3	20	2	60	4		UTR504 025020216	2.5	0.2	16	2	50	4
	UTR504 020030225	2	0.3	25	2	60	4		UTR504 025020220	2.5	0.2	20	2	60	4

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
○		○	◎	◎	○					

UTR504

4 Flutes Tapered Radius End Mill

Endmill

EDP No	DC	RE	APMX	BHTA	OAL	DCON MS	EDP No	DC	RE	APMX	BHTA	OAL	DCON MS
UTR504 025020225	2.5	0.2	25	2	60	6	UTR504 025030130	2.5	0.3	30	1	60	4
UTR504 025020230	2.5	0.2	30	2	60	6	UTR504 025030210	2.5	0.3	10	2	50	4
UTR504 025020310	2.5	0.2	10	3	50	4	UTR504 025030212	2.5	0.3	12	2	50	4
UTR504 025020312	2.5	0.2	12	3	50	4	UTR504 025030216	2.5	0.3	16	2	50	4
UTR504 025020316	2.5	0.2	16	3	50	6	UTR504 025030220	2.5	0.3	20	2	60	4
UTR504 025020320	2.5	0.2	20	3	60	6	UTR504 025030225	2.5	0.3	25	2	60	6
UTR504 025020325	2.5	0.2	25	3	60	6	UTR504 025030230	2.5	0.3	30	2	60	6
UTR504 025020330	2.5	0.2	30	3	60	6	UTR504 025030310	2.5	0.3	10	3	50	4
UTR504 025030110	2.5	0.3	10	1	50	4	UTR504 025030312	2.5	0.3	12	3	50	4
UTR504 025030112	2.5	0.3	12	1	50	4	UTR504 025030316	2.5	0.3	16	3	50	6
UTR504 025030116	2.5	0.3	16	1	50	4	UTR504 025030320	2.5	0.3	20	3	60	6
UTR504 025030120	2.5	0.3	20	1	60	4	UTR504 025030325	2.5	0.3	25	3	60	6
UTR504 025030125	2.5	0.3	25	1	60	4	UTR504 025030330	2.5	0.3	30	3	60	6

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

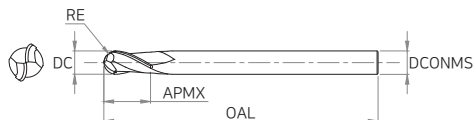
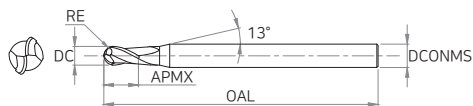
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○		○	◎	◎	○					

UB502 2 Flutes Ball End Mill

Endmill



► Tolerance

DC		Shank Dia
Ø0.1 ~ Ø6	0 ~ -0.012	h5
Ø6.5 ~ Ø25	0 ~ -0.015	



Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

EDP No	DC	RE	APMX	OAL	DCON MS	EDP No	DC	RE	APMX	OAL	DCON MS
UB502 001S	0.1	0.05	0.1	40	4	UB502 006S3	0.6	0.3	1.2	40	3
UB502 001	0.1	0.05	0.2	40	4	UB502 007S	0.7	0.35	0.7	40	4
UB502 001S3	0.1	0.05	0.2	40	3	UB502 007	0.7	0.35	1.4	40	4
UB502 0015S	0.15	0.075	0.15	40	4	UB502 007S3	0.7	0.35	1.4	40	3
UB502 0015	0.15	0.075	0.3	40	4	UB502 008S	0.8	0.4	0.8	40	4
UB502 0015S3	0.15	0.075	0.3	40	3	UB502 008	0.8	0.4	1.6	40	4
UB502 002S	0.2	0.1	0.2	40	4	UB502 008S3	0.8	0.4	1.6	40	3
UB502 002	0.2	0.1	0.4	40	4	UB502 009S	0.9	0.45	0.9	40	4
UB502 002S3	0.2	0.1	0.4	40	3	UB502 009	0.9	0.45	1.8	40	4
UB502 003S	0.3	0.15	0.3	40	4	UB502 009S3	0.9	0.45	1.8	40	3
UB502 003	0.3	0.15	0.6	40	4	UB502 010S	1	0.5	1.5	40	6
UB502 003S3	0.3	0.15	0.6	40	3	UB502 010S3	1	0.5	2.5	50	3
UB502 004S	0.4	0.2	0.4	40	4	UB502 010S4	1	0.5	2.5	50	4
UB502 004	0.4	0.2	0.8	40	4	UB502 010	1	0.5	2.5	50	6
UB502 004S3	0.4	0.2	0.8	40	3	UB502 010070	1	0.5	2.5	70	6
UB502 005S	0.5	0.25	0.5	40	4	UB502 010100	1	0.5	2.5	100	6
UB502 005	0.5	0.25	1	40	4	UB502 012S	1.2	0.6	2	40	6
UB502 005S3	0.5	0.25	1	40	3	UB502 012S3	1.2	0.6	3	50	3
UB502 006S	0.6	0.3	0.6	40	4	UB502 012S4	1.2	0.6	3	50	4
UB502 006	0.6	0.3	1.2	40	4	UB502 012	1.2	0.6	3	50	6

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	~325	HRC30~50	~FCD500					
○		○	◎	◎	○					

UB502

2 Flutes Ball End Mill

Endmill

EDP No	DC	RE	APMX	OAL	DCON MS	EDP No	DC	RE	APMX	OAL	DCON MS
UB502 012070	1.2	0.6	3	70	6	UB502 045	4.5	2.25	9	80	6
UB502 012100	1.2	0.6	3	100	6	UB502 050S	5	2.5	7.5	60	6
UB502 015S	1.5	0.75	2.5	40	6	UB502 050	5	2.5	10	80	6
UB502 015S3	1.5	0.75	4	50	3	UB502 050S5	5	2.5	10	80	5
UB502 015S4	1.5	0.75	4	50	4	UB502 055	5.5	2.75	11	90	6
UB502 015	1.5	0.75	4	50	6	UB502 060S	6	3	9	50	6
UB502 015070	1.5	0.75	4	70	6	UB502 060060	6	3	9	60	6
UB502 015100	1.5	0.75	4	100	6	UB502 060080	6	3	9	80	6
UB502 020S	2	1	3	40	6	UB502 060	6	3	12	90	6
UB502 020S3	2	1	5	50	3	UB502 060110	6	3	12	110	6
UB502 020S4	2	1	5	50	4	UB502 060130	6	3	12	130	6
UB502 020	2	1	5	50	6	UB502 060150	6	3	12	150	6
UB502 020080	2	1	5	80	6	UB502 065	6.5	3.25	13	90	8
UB502 020100	2	1	5	100	6	UB502 070	7	3.5	14	90	8
UB502 025S	2.5	1.25	4	40	6	UB502 080S	8	4	12	50	8
UB502 025S3	2.5	1.25	6	60	3	UB502 080060	8	4	12	60	8
UB502 025S4	2.5	1.25	6	60	4	UB502 080080	8	4	12	80	8
UB502 025	2.5	1.25	6	60	6	UB502 080090	8	4	12	90	8
UB502 025080	2.5	1.25	6	80	6	UB502 080	8	4	14	100	8
UB502 025100	2.5	1.25	6	100	6	UB502 080130	8	4	14	130	8
UB502 030S	3	1.5	4.5	40	6	UB502 080150	8	4	14	150	8
UB502 030S3	3	1.5	6	60	3	UB502 085	8.5	4.25	16	100	10
UB502 030S4	3	1.5	6	60	4	UB502 090	9	4.5	18	100	10
UB502 030	3	1.5	6	60	6	UB502 100S	10	5	15	50	10
UB502 030080	3	1.5	6	80	6	UB502 100060	10	5	15	60	10
UB502 030100	3	1.5	6	100	6	UB502 100080	10	5	15	80	10
UB502 035	3.5	1.75	8	70	6	UB502 100090	10	5	15	90	10
UB502 040S	4	2	6	50	6	UB502 100	10	5	18	100	10
UB502 040S4	4	2	8	70	4	UB502 100130	10	5	18	130	10
UB502 040	4	2	8	70	6	UB502 100150	10	5	18	150	10
UB502 040100S4	4	2	8	100	4	UB502 100180	10	5	18	180	10
UB502 040120S4	4	2	8	120	4	UB502 100200	10	5	18	200	10
UB502 040100	4	2	8	100	6	UB502 110	11	5.5	20	100	12
UB502 040120	4	2	8	120	6	UB502 120S	12	6	18	60	12

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○		○	◎	◎	○					

UB502

2 Flutes Ball End Mill

Endmill

EDP No	DC	RE	APMX	OAL	DCON MS	EDP No	DC	RE	APMX	OAL	DCON MS
UB502 120080	12	6	18	80	12	UB502 160100	16	8	24	100	16
UB502 120090	12	6	18	90	12	UB502 160130	16	8	24	130	16
UB502 120100	12	6	18	100	12	UB502 160	16	8	30	150	16
UB502 120	12	6	24	110	12	UB502 160180	16	8	30	180	16
UB502 120130	12	6	24	130	12	UB502 160200	16	8	30	200	16
UB502 120150	12	6	24	150	12	UB502 180S16	18	9	34	150	16
UB502 120180	12	6	24	180	12	UB502 180	18	9	34	150	18
UB502 120200	12	6	24	200	12	UB502 200100	20	10	30	100	20
UB502 130	13	6.5	24	100	12	UB502 200130	20	10	30	130	20
UB502 140S12	14	7	26	100	12	UB502 200	20	10	38	150	20
UB502 140	14	7	26	100	14	UB502 200200	20	10	38	200	20
UB502 140S16	14	7	26	100	16	UB502 250120	25	12.5	50	120	25
UB502 150	15	7.5	28	140	16	UB502 250180	25	12.5	50	180	25

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

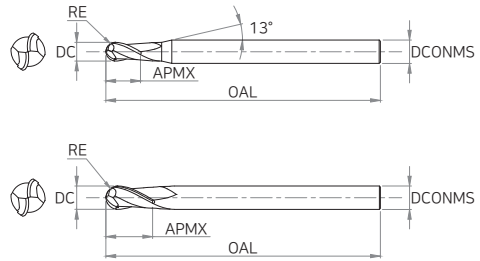
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
○		○	◎	◎	○					

UB502-P

2 Flutes High Precision Ball End Mill



► Tolerance

DC		Shank Dia
∅0.1 ~ ∅6	0 ~ -0.012	h5
∅8 ~ ∅12	0 ~ -0.015	



EDP No	DC	RE	APMX	OAL	DCON MS	EDP No	DC	RE	APMX	OAL	DCON MS
UB502 001P	0.1	0.05	0.2	40	4	UB502 012P	1.2	0.6	3	50	6
UB502 0015P	0.15	0.075	0.3	40	4	UB502 015P	1.5	0.75	4	50	6
UB502 002P	0.2	0.1	0.4	40	4	UB502 020P	2	1	5	50	6
UB502 003P	0.3	0.15	0.6	40	4	UB502 025P	2.5	1.25	6	60	6
UB502 004P	0.4	0.2	0.8	40	4	UB502 030P	3	1.5	6	60	6
UB502 005P	0.5	0.25	1	40	4	UB502 040P	4	2	8	70	6
UB502 006P	0.6	0.3	1.2	40	4	UB502 050P	5	2.5	10	80	6
UB502 007P	0.7	0.35	1.4	40	4	UB502 060P	6	3	12	90	6
UB502 008P	0.8	0.4	1.6	40	4	UB502 080P	8	4	14	100	8
UB502 009P	0.9	0.45	1.8	40	4	UB502 100P	10	5	18	100	10
UB502 010P	1	0.5	2.5	50	6	UB502 120P	12	6	24	110	12

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○		○	◎	◎	○					

Endmill

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

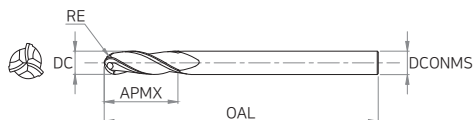
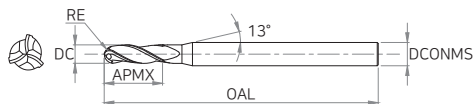
Standard

Copper
-Mate

Gra
-Mate

UB503

3 Flutes Ball End Mill



► Tolerance

DC		Shank Dia
Ø1 ~ Ø12	0 ~ -0.02	h5



R3 OR UNDER

ABOVE R3

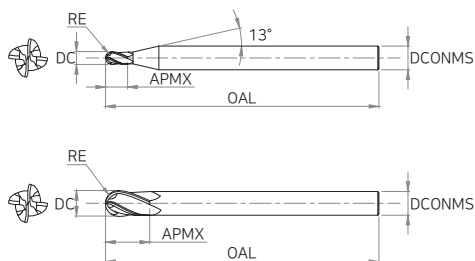
EDP No	DC	RE	APMX	OAL	DCONMS
UB503 010	1	0.5	1	50	6
UB503 015	1.5	0.75	1.5	50	6
UB503 020	2	1	2	50	6
UB503 030	3	1.5	3	60	6
UB503 040	4	2	4	70	6
UB503 050	5	2.5	5	80	6
UB503 060	6	3	6	90	6
UB503 080	8	4	8	100	8
UB503 100	10	5	10	100	10
UB503 120	12	6	12	110	12

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

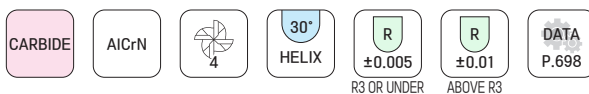
H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	Steel ~HB225	HB225 ~325	Steel HRC30~50	~FC500					
○		○	◎	◎	○					

UB504 4 Flutes Ball End Mill



► Tolerance

DC		Shank Dia
Ø1 ~ Ø12	0 ~ -0.02	h5



EDP No	DC	RE	APMX	OAL	DCONMS
UB504 010	1	0.5	1	50	6
UB504 015	1.5	0.75	1.5	50	6
UB504 020	2	1	2	50	6
UB504 030	3	1.5	3	60	6
UB504 040	4	2	4	70	6
UB504 050	5	2.5	5	80	6
UB504 060	6	3	6	90	6
UB504 080	8	4	8	100	8
UB504 100	10	5	10	100	10
UB504 120	12	6	12	110	12

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○		○	◎	◎	○					

Endmill

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

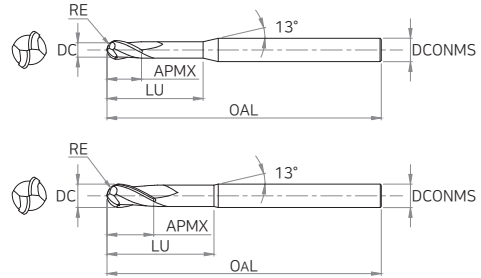
Standard

Copper
-Mate

Gra
-Mate

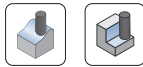
UB512

2 Flutes Long Neck Ball End Mill



► Tolerance

DC		Shank Dia
Ø0.1 ~ Ø6	0 ~ -0.012	h5
Ø8 ~ Ø12	0 ~ -0.015	



EDP No	DC	RE	APMX	LU	OAL	DCON MS	EDP No	DC	RE	APMX	LU	OAL	DCON MS
UB512 001002	0.1	0.05	0.1	0.2	40	4	UB512 00403	0.4	0.2	0.4	3	40	4
UB512 001003	0.1	0.05	0.1	0.3	40	4	UB512 00404	0.4	0.2	0.4	4	40	4
UB512 001005	0.1	0.05	0.1	0.5	40	4	UB512 00405	0.4	0.2	0.4	5	40	4
UB512 00101	0.1	0.05	0.1	1	40	4	UB512 00406	0.4	0.2	0.4	6	40	4
UB512 002005	0.2	0.1	0.2	0.5	40	4	UB512 00408	0.4	0.2	0.4	8	40	4
UB512 00201	0.2	0.1	0.2	1	40	4	UB512 00410	0.4	0.2	0.4	10	40	4
UB512 002015	0.2	0.1	0.2	1.5	40	4	UB512 00501	0.5	0.25	0.5	1	45	4
UB512 00202	0.2	0.1	0.2	2	40	4	UB512 005015	0.5	0.25	0.5	1.5	45	4
UB512 00203	0.2	0.1	0.2	3	40	4	UB512 00502	0.5	0.25	0.5	2	45	4
UB512 00301	0.3	0.15	0.3	1	40	4	UB512 005025	0.5	0.25	0.5	2.5	45	4
UB512 003015	0.3	0.15	0.3	1.5	40	4	UB512 00503	0.5	0.25	0.5	3	45	4
UB512 00302	0.3	0.15	0.3	2	40	4	UB512 00504	0.5	0.25	0.5	4	45	4
UB512 003025	0.3	0.15	0.3	2.5	40	4	UB512 00505	0.5	0.25	0.5	5	45	4
UB512 00303	0.3	0.15	0.3	3	40	4	UB512 00506	0.5	0.25	0.5	6	45	4
UB512 00304	0.3	0.15	0.3	4	40	4	UB512 00508	0.5	0.25	0.5	8	45	4
UB512 00305	0.3	0.15	0.3	5	40	4	UB512 00510	0.5	0.25	0.5	10	45	4
UB512 00401	0.4	0.2	0.4	1	40	4	UB512 00512	0.5	0.25	0.5	12	45	4
UB512 004015	0.4	0.2	0.4	1.5	40	4	UB512 00514	0.5	0.25	0.5	14	45	4
UB512 00402	0.4	0.2	0.4	2	40	4	UB512 00516	0.5	0.25	0.5	16	45	4
UB512 004025	0.4	0.2	0.4	2.5	40	4	UB512 00601	0.6	0.3	0.6	1	45	4

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
○		○	◎	◎	○					

UB512

2 Flutes Long Neck Ball End Mill

Endmill

EDP No	DC	RE	APMX	LU	OAL	DCON MS	EDP No	DC	RE	APMX	LU	OAL	DCON MS
UB512 00602	0.6	0.3	0.6	2	45	4	UB512 010025	1	0.5	1	2.5	50	4
UB512 00603	0.6	0.3	0.6	3	45	4	UB512 01003	1	0.5	1	3	50	4
UB512 00604	0.6	0.3	0.6	4	45	4	UB512 01004	1	0.5	1	4	50	4
UB512 00605	0.6	0.3	0.6	5	45	4	UB512 01005	1	0.5	1	5	50	4
UB512 00606	0.6	0.3	0.6	6	45	4	UB512 01006	1	0.5	1	6	50	4
UB512 00608	0.6	0.3	0.6	8	45	4	UB512 01007	1	0.5	1	7	50	4
UB512 00610	0.6	0.3	0.6	10	45	4	UB512 01008	1	0.5	1	8	50	4
UB512 00612	0.6	0.3	0.6	12	45	4	UB512 01009	1	0.5	1	9	50	4
UB512 00614	0.6	0.3	0.6	14	45	4	UB512 01010	1	0.5	1	10	50	4
UB512 00616	0.6	0.3	0.6	16	45	4	UB512 01012	1	0.5	1	12	50	4
UB512 00702	0.7	0.35	0.7	2	45	4	UB512 01014	1	0.5	1	14	50	4
UB512 00704	0.7	0.35	0.7	4	45	4	UB512 01016	1	0.5	1	16	50	4
UB512 00706	0.7	0.35	0.7	6	45	4	UB512 01018	1	0.5	1	18	50	4
UB512 00708	0.7	0.35	0.7	8	45	4	UB512 01020	1	0.5	1	20	55	4
UB512 00710	0.7	0.35	0.7	10	45	4	UB512 01022	1	0.5	1	22	60	4
UB512 00712	0.7	0.35	0.7	12	45	4	UB512 01026	1	0.5	1	26	60	4
UB512 00801	0.8	0.4	0.8	1	45	4	UB512 01030	1	0.5	1	30	70	4
UB512 00802	0.8	0.4	0.8	2	45	4	UB512 01040	1	0.5	1	40	80	4
UB512 00803	0.8	0.4	0.8	3	45	4	UB512 01050	1	0.5	1	50	100	4
UB512 00804	0.8	0.4	0.8	4	45	4	UB512 01204	1.2	0.6	1.2	4	50	4
UB512 00805	0.8	0.4	0.8	5	45	4	UB512 01206	1.2	0.6	1.2	6	50	4
UB512 00806	0.8	0.4	0.8	6	45	4	UB512 01208	1.2	0.6	1.2	8	50	4
UB512 00807	0.8	0.4	0.8	7	45	4	UB512 01210	1.2	0.6	1.2	10	50	4
UB512 00808	0.8	0.4	0.8	8	45	4	UB512 01212	1.2	0.6	1.2	12	50	4
UB512 00810	0.8	0.4	0.8	10	45	4	UB512 01214	1.2	0.6	1.2	14	50	4
UB512 00812	0.8	0.4	0.8	12	45	4	UB512 01216	1.2	0.6	1.2	16	50	4
UB512 00814	0.8	0.4	0.8	14	45	4	UB512 01220	1.2	0.6	1.2	20	55	4
UB512 00816	0.8	0.4	0.8	16	45	4	UB512 01226	1.2	0.6	1.2	26	60	4
UB512 00820	0.8	0.4	0.8	20	45	4	UB512 01406	1.4	0.7	1.4	6	50	4
UB512 00904	0.9	0.45	0.9	4	45	4	UB512 01408	1.4	0.7	1.4	8	50	4
UB512 00906	0.9	0.45	0.9	6	45	4	UB512 01410	1.4	0.7	1.4	10	50	4
UB512 00908	0.9	0.45	0.9	8	45	4	UB512 01412	1.4	0.7	1.4	12	50	4
UB512 00910	0.9	0.45	0.9	10	45	4	UB512 01416	1.4	0.7	1.4	16	50	4
UB512 01002	1	0.5	1	2	50	4	UB512 01503	1.5	0.75	1.5	3	50	4

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○		○	◎	◎	○					

UB512

2 Flutes Long Neck Ball End Mill

Endmill

	EDP No	DC	RE	APMX	LU	OAL	DCON MS		EDP No	DC	RE	APMX	LU	OAL	DCON MS
Zamus Star	UB512 01504	1.5	0.75	1.5	4	50	4		UB512 02010	2	1	2	10	50	4
	UB512 01505	1.5	0.75	1.5	5	50	4		UB512 02012	2	1	2	12	50	4
	UB512 01506	1.5	0.75	1.5	6	50	4		UB512 02014	2	1	2	14	50	4
	UB512 01507	1.5	0.75	1.5	7	50	4		UB512 02016	2	1	2	16	50	4
	UB512 01508	1.5	0.75	1.5	8	50	4		UB512 02018	2	1	2	18	55	4
E-Star	UB512 01510	1.5	0.75	1.5	10	50	4		UB512 02020	2	1	2	20	55	4
	UB512 01512	1.5	0.75	1.5	12	50	4		UB512 02022	2	1	2	22	60	4
	UB512 01514	1.5	0.75	1.5	14	50	4		UB512 02026	2	1	2	26	60	4
U-Wing	UB512 01516	1.5	0.75	1.5	16	50	4		UB512 02030	2	1	2	30	70	4
	UB512 01518	1.5	0.75	1.5	18	50	4		UB512 02035	2	1	2	35	70	4
	UB512 01520	1.5	0.75	1.5	20	55	4		UB512 02040	2	1	2	40	80	4
Zamus Thunder	UB512 01522	1.5	0.75	1.5	22	60	4		UB512 02045	2	1	2	45	90	4
	UB512 01526	1.5	0.75	1.5	26	60	4		UB512 02050	2	1	2	50	100	4
	UB512 01530	1.5	0.75	1.5	30	70	4		UB512 02060	2	1	2	60	110	4
X-Star	UB512 01535	1.5	0.75	1.5	35	70	4		UB512 02508	2.5	1.25	2.5	8	50	4
	UB512 01540	1.5	0.75	1.5	40	80	4		UB512 02510	2.5	1.25	2.5	10	50	4
	UB512 01604	1.6	0.8	1.6	4	50	4		UB512 02512	2.5	1.25	2.5	12	50	4
S-Wing	UB512 01606	1.6	0.8	1.6	6	50	4		UB512 02516	2.5	1.25	2.5	16	50	4
	UB512 01608	1.6	0.8	1.6	8	50	4		UB512 02520	2.5	1.25	2.5	20	50	4
	UB512 01610	1.6	0.8	1.6	10	50	4		UB512 02522	2.5	1.25	2.5	22	60	4
A-Wing	UB512 01612	1.6	0.8	1.6	12	50	4		UB512 02526	2.5	1.25	2.5	26	60	4
	UB512 01616	1.6	0.8	1.6	16	50	4		UB512 02530	2.5	1.25	2.5	30	70	4
	UB512 01620	1.6	0.8	1.6	20	50	4		UB512 02535	2.5	1.25	2.5	35	70	4
Standard	UB512 01804	1.8	0.9	1.8	4	50	4		UB512 02540	2.5	1.25	2.5	40	80	4
	UB512 01806	1.8	0.9	1.8	6	50	4		UB512 02545	2.5	1.25	2.5	45	90	4
	UB512 01808	1.8	0.9	1.8	8	50	4		UB512 02550	2.5	1.25	2.5	50	100	4
Copper -Mate	UB512 01810	1.8	0.9	1.8	10	50	4		UB512 03006	3	1.5	3	6	50	6
	UB512 01812	1.8	0.9	1.8	12	50	4		UB512 03008	3	1.5	3	8	50	6
	UB512 01816	1.8	0.9	1.8	16	50	4		UB512 03010	3	1.5	3	10	50	6
Gra -Mate	UB512 01820	1.8	0.9	1.8	20	50	4		UB512 03012	3	1.5	3	12	50	6
	UB512 02004	2	1	2	4	50	4		UB512 03014	3	1.5	3	14	60	6
	UB512 02005	2	1	2	5	50	4		UB512 03016	3	1.5	3	16	60	6
	UB512 02006	2	1	2	6	50	4		UB512 03018	3	1.5	3	18	60	6
	UB512 02008	2	1	2	8	50	4		UB512 03020	3	1.5	3	20	60	6

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
○		○	◎	◎	○					

UB512 2 Flutes Long Neck Ball End Mill

Endmill

EDP No	DC	RE	APMX	LU	OAL	DCON MS	EDP No	DC	RE	APMX	LU	OAL	DCON MS
UB512 03022	3	1.5	3	22	65	6	UB512 05020	5	2.5	6	20	60	6
UB512 03026	3	1.5	3	26	65	6	UB512 05026	5	2.5	6	26	65	6
UB512 03030	3	1.5	3	30	70	6	UB512 05030	5	2.5	6	30	70	6
UB512 03035	3	1.5	3	35	70	6	UB512 05035	5	2.5	6	35	70	6
UB512 03040	3	1.5	3	40	80	6	UB512 05040	5	2.5	6	40	80	6
UB512 03045	3	1.5	3	45	90	6	UB512 05045	5	2.5	6	45	90	6
UB512 03050	3	1.5	3	50	100	6	UB512 05050	5	2.5	6	50	100	6
UB512 03060	3	1.5	3	60	100	6	UB512 05055	5	2.5	6	55	100	6
UB512 04008	4	2	4	8	50	6	UB512 05060	5	2.5	6	60	100	6
UB512 04010	4	2	4	10	50	6	UB512 06020	6	3	8	20	60	6
UB512 04012	4	2	4	12	50	6	UB512 0602090	6	3	12	20	90	6
UB512 04014	4	2	4	14	60	6	UB512 06030	6	3	8	30	60	6
UB512 04016	4	2	4	16	60	6	UB512 0603090	6	3	12	30	90	6
UB512 04018	4	2	4	18	60	6	UB512 08025	8	4	10	25	70	8
UB512 04020	4	2	4	20	60	6	UB512 08025100	8	4	14	25	100	8
UB512 04022	4	2	4	22	65	6	UB512 08035	8	4	10	35	70	8
UB512 04026	4	2	4	26	65	6	UB512 08035100	8	4	14	35	100	8
UB512 04030	4	2	4	30	70	6	UB512 10030	10	5	12	30	75	10
UB512 04035	4	2	4	35	70	6	UB512 10030100	10	5	18	30	100	10
UB512 04040	4	2	4	40	80	6	UB512 10040	10	5	12	40	75	10
UB512 04045	4	2	4	45	90	6	UB512 10040100	10	5	18	40	100	10
UB512 04050	4	2	4	50	100	6	UB512 12032	12	6	14	32	80	12
UB512 04055	4	2	4	55	100	6	UB512 12032110	12	6	22	32	110	12
UB512 04060	4	2	4	60	100	6	UB512 12045	12	6	14	45	80	12
UB512 05015	5	2.5	6	15	60	6	UB512 12045110	12	6	22	45	110	12

Zamus Star

E-Star

U-Wing

Zamus Thunder

X-Star

S-Wing

A-Wing

Standard

Copper -Mate

Gra -Mate

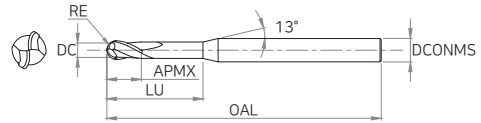
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○		○	◎	◎	○					

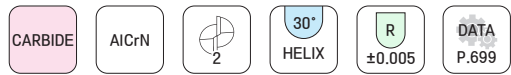
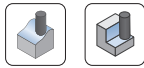
UB512 S6

2 Flutes Long Neck Ball End Mill (Shank 6)



► Tolerance

DC	Shank Dia
Ø0.5 ~ Ø2	0 ~ -0.012 h5



EDP No	DC	RE	APMX	LU	OAL	DCON MS	EDP No	DC	RE	APMX	LU	OAL	DCON MS
UB512 00501S6	0.5	0.25	0.5	1	45	6	UB512 00808S6	0.8	0.4	0.8	8	45	6
UB512 00502S6	0.5	0.25	0.5	2	45	6	UB512 00810S6	0.8	0.4	0.8	10	45	6
UB512 00504S6	0.5	0.25	0.5	4	45	6	UB512 00812S6	0.8	0.4	0.8	12	45	6
UB512 00601S6	0.6	0.3	0.6	1	45	6	UB512 00814S6	0.8	0.4	0.8	14	45	6
UB512 00602S6	0.6	0.3	0.6	2	45	6	UB512 00816S6	0.8	0.4	0.8	16	45	6
UB512 00603S6	0.6	0.3	0.6	3	45	6	UB512 00820S6	0.8	0.4	0.8	20	55	6
UB512 00604S6	0.6	0.3	0.6	4	45	6	UB512 01002S6	1	0.5	1	2	50	6
UB512 00605S6	0.6	0.3	0.6	5	45	6	UB512 01003S6	1	0.5	1	3	50	6
UB512 00606S6	0.6	0.3	0.6	6	45	6	UB512 01004S6	1	0.5	1	4	50	6
UB512 00608S6	0.6	0.3	0.6	8	45	6	UB512 01005S6	1	0.5	1	5	50	6
UB512 00610S6	0.6	0.3	0.6	10	45	6	UB512 01006S6	1	0.5	1	6	50	6
UB512 00612S6	0.6	0.3	0.6	12	45	6	UB512 01007S6	1	0.5	1	7	50	6
UB512 00614S6	0.6	0.3	0.6	14	45	6	UB512 01008S6	1	0.5	1	8	50	6
UB512 00616S6	0.6	0.3	0.6	16	45	6	UB512 01009S6	1	0.5	1	9	50	6
UB512 00801S6	0.8	0.4	0.8	1	45	6	UB512 01010S6	1	0.5	1	10	50	6
UB512 00802S6	0.8	0.4	0.8	2	45	6	UB512 01012S6	1	0.5	1	12	50	6
UB512 00803S6	0.8	0.4	0.8	3	45	6	UB512 01014S6	1	0.5	1	14	50	6
UB512 00804S6	0.8	0.4	0.8	4	45	6	UB512 01016S6	1	0.5	1	16	50	6
UB512 00805S6	0.8	0.4	0.8	5	45	6	UB512 01018S6	1	0.5	1	18	50	6
UB512 00806S6	0.8	0.4	0.8	6	45	6	UB512 01020S6	1	0.5	1	20	55	6

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	~325	HRC30~50	~FC500					
○		○	◎	◎	○					

UB512 S6

2 Flutes Long Neck Ball End Mill (Shank 6)

Endmill

EDP No	DC	RE	APMX	LU	OAL	DCON MS	EDP No	DC	RE	APMX	LU	OAL	DCON MS
UB512 01022S6	1	0.5	1	22	60	6	UB512 01540S6	1.5	0.75	1.5	40	80	6
UB512 01026S6	1	0.5	1	26	60	6	UB512 02004S6	2	1	2	4	50	6
UB512 01030S6	1	0.5	1	30	70	6	UB512 02006S6	2	1	2	6	50	6
UB512 01503S6	1.5	0.75	1.5	3	50	6	UB512 02008S6	2	1	2	8	50	6
UB512 01504S6	1.5	0.75	1.5	4	50	6	UB512 02010S6	2	1	2	10	50	6
UB512 01506S6	1.5	0.75	1.5	6	50	6	UB512 02012S6	2	1	2	12	50	6
UB512 01508S6	1.5	0.75	1.5	8	50	6	UB512 02014S6	2	1	2	14	50	6
UB512 01510S6	1.5	0.75	1.5	10	50	6	UB512 02016S6	2	1	2	16	50	6
UB512 01512S6	1.5	0.75	1.5	12	50	6	UB512 02018S6	2	1	2	18	50	6
UB512 01514S6	1.5	0.75	1.5	14	50	6	UB512 02020S6	2	1	2	20	50	6
UB512 01516S6	1.5	0.75	1.5	16	50	6	UB512 02022S6	2	1	2	22	60	6
UB512 01518S6	1.5	0.75	1.5	18	50	6	UB512 02026S6	2	1	2	26	60	6
UB512 01520S6	1.5	0.75	1.5	20	55	6	UB512 02030S6	2	1	2	30	70	6
UB512 01522S6	1.5	0.75	1.5	22	60	6	UB512 02035S6	2	1	2	35	70	6
UB512 01526S6	1.5	0.75	1.5	26	60	6	UB512 02040S6	2	1	2	40	80	6
UB512 01530S6	1.5	0.75	1.5	30	70	6	UB512 02045S6	2	1	2	45	90	6
UB512 01535S6	1.5	0.75	1.5	35	70	6	UB512 02050S6	2	1	2	50	100	6

Zamus Star

E-Star

U-Wing

Zamus Thunder

X-Star

S-Wing

A-Wing

Standard

Copper-Mate

Gra-Mate

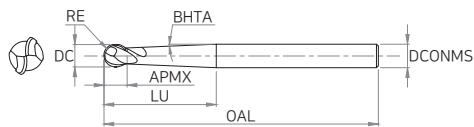
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	Steel HRc30~50	~FCD500					
○		○	◎	◎	○					

UB532

2 Flutes Lollipop Style Ball End Mill



► Tolerance

DC	Shank Dia
Ø3 ~ Ø12	0 ~ -0.03 h5



EDP No	DC	RE	BHTA	APMX	LU	OAL	DCONMS
UB532 030	3	1.5	1.5	2.3	16	80	6
UB532 040	4	2	1.5	3.1	20	80	6
UB532 050	5	2.5	1.5	3.9	25	80	6
UB532 060	6	3	1.5	4.9	30	100	6
UB532 080	8	4	1.5	6.3	35	100	8
UB532 100	10	5	1.5	7.9	40	100	10
UB532 120	12	6	1.5	9.5	50	100	12

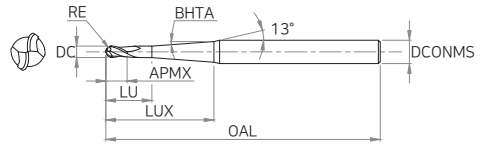
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
○		○	◎	◎	○					

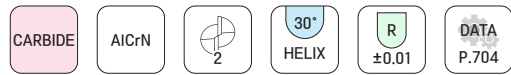
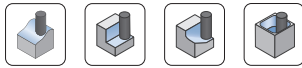
UB542

2 Flutes Tapered Neck Ball End Mill



► Tolerance

DC		Shank Dia
Ø0.1 ~ Ø6	0 ~ -0.012	h5
Ø8 ~ Ø12	0 ~ -0.015	



EDP No	DC	RE	BHTA	APMX	LU	LUX	OAL	DCONMS
UB542 00105005	0.1	0.05	0.5	0.1	-	0.5	40	4
UB542 0010501	0.1	0.05	0.5	0.1	-	1	40	4
UB542 00110005	0.1	0.05	1	0.1	-	0.5	40	4
UB542 0011001	0.1	0.05	1	0.1	-	1	40	4
UB542 00115005	0.1	0.05	1.5	0.1	-	0.5	40	4
UB542 0011501	0.1	0.05	1.5	0.1	-	1	40	4
UB542 00120005	0.1	0.05	2	0.1	-	0.5	40	4
UB542 0012001	0.1	0.05	2	0.1	-	1	40	4
UB542 00130005	0.1	0.05	3	0.1	-	0.5	40	4
UB542 0013001	0.1	0.05	3	0.1	-	1	40	4
UB542 0020501	0.2	0.1	0.5	0.2	0.4	1	40	4
UB542 0020502	0.2	0.1	0.5	0.2	0.4	2	40	4
UB542 0020503	0.2	0.1	0.5	0.2	0.4	3	40	4
UB542 0021001	0.2	0.1	1	0.2	0.4	1	40	4
UB542 0021002	0.2	0.1	1	0.2	0.4	2	40	4
UB542 0021003	0.2	0.1	1	0.2	0.4	3	40	4
UB542 0021501	0.2	0.1	1.5	0.2	0.4	1	40	4
UB542 0021502	0.2	0.1	1.5	0.2	0.4	2	40	4
UB542 0021503	0.2	0.1	1.5	0.2	0.4	3	40	4
UB542 0022001	0.2	0.1	2	0.2	0.4	1	40	4

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○		○	◎	◎	○					

Endmill

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

UB542

2 Flutes Tapered Neck Ball End Mill

Endmill

	EDP No	DC	RE	BHTA	APMX	LU	LUX	OAL	DCONMS
Zamus Star	UB542 0022002	0.2	0.1	2	0.2	0.4	2	40	4
	UB542 0022003	0.2	0.1	2	0.2	0.4	3	40	4
	UB542 0023001	0.2	0.1	3	0.2	0.4	1	40	4
E-Star	UB542 0023002	0.2	0.1	3	0.2	0.4	2	40	4
	UB542 0023003	0.2	0.1	3	0.2	0.4	3	40	4
	UB542 0025002	0.2	0.1	5	0.2	0.4	2	40	4
U-Wing	UB542 0025003	0.2	0.1	5	0.2	0.4	3	40	4
	UB542 0030502	0.3	0.15	0.5	0.3	0.6	2	40	4
	UB542 0030503	0.3	0.15	0.5	0.3	0.6	3	40	4
Zamus Thunder	UB542 0030504	0.3	0.15	0.5	0.3	0.6	4	40	4
	UB542 0030505	0.3	0.15	0.5	0.3	0.6	5	40	4
	UB542 0031002	0.3	0.15	1	0.3	0.6	2	40	4
X-Star	UB542 0031003	0.3	0.15	1	0.3	0.6	3	40	4
	UB542 0031004	0.3	0.15	1	0.3	0.6	4	40	4
	UB542 0031005	0.3	0.15	1	0.3	0.6	5	40	4
S-Wing	UB542 0031502	0.3	0.15	1.5	0.3	0.6	2	40	4
	UB542 0031503	0.3	0.15	1.5	0.3	0.6	3	40	4
	UB542 0031504	0.3	0.15	1.5	0.3	0.6	4	40	4
A-Wing	UB542 0031505	0.3	0.15	1.5	0.3	0.6	5	40	4
	UB542 0032002	0.3	0.15	2	0.3	0.6	2	40	4
	UB542 0032003	0.3	0.15	2	0.3	0.6	3	40	4
Standard	UB542 0032004	0.3	0.15	2	0.3	0.6	4	40	4
	UB542 0032005	0.3	0.15	2	0.3	0.6	5	40	4
	UB542 0033002	0.3	0.15	3	0.3	0.6	2	40	4
Copper -Mate	UB542 0033003	0.3	0.15	3	0.3	0.6	3	40	4
	UB542 0033004	0.3	0.15	3	0.3	0.6	4	40	4
	UB542 0033005	0.3	0.15	3	0.3	0.6	5	40	4
Gra -Mate	UB542 0035005	0.3	0.15	5	0.3	0.6	5	40	4
	UB542 0040502	0.4	0.2	0.5	0.4	0.8	2	50	4
	UB542 0040503	0.4	0.2	0.5	0.4	0.8	3	50	4
	UB542 0040504	0.4	0.2	0.5	0.4	0.8	4	50	4
	UB542 0040505	0.4	0.2	0.5	0.4	0.8	5	50	4
	UB542 0040506	0.4	0.2	0.5	0.4	0.8	6	50	4
	UB542 0041002	0.4	0.2	1	0.4	0.8	2	50	4

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	Steel ~HB225	HB225 ~325	HRc30~50	~FCD500					
○		○	◎	◎	○					

UB542

2 Flutes Tapered Neck Ball End Mill

Endmill

EDP No	DC	RE	BHTA	APMX	LU	LUX	OAL	DCONMS
UB542 0041003	0.4	0.2	1	0.4	0.8	3	50	4
UB542 0041004	0.4	0.2	1	0.4	0.8	4	50	4
UB542 0041005	0.4	0.2	1	0.4	0.8	5	50	4
UB542 0041006	0.4	0.2	1	0.4	0.8	6	50	4
UB542 0041502	0.4	0.2	1.5	0.4	0.8	2	50	4
UB542 0041503	0.4	0.2	1.5	0.4	0.8	3	50	4
UB542 0041504	0.4	0.2	1.5	0.4	0.8	4	50	4
UB542 0041505	0.4	0.2	1.5	0.4	0.8	5	50	4
UB542 0041506	0.4	0.2	1.5	0.4	0.8	6	50	4
UB542 0042002	0.4	0.2	2	0.4	0.8	2	50	4
UB542 0042003	0.4	0.2	2	0.4	0.8	3	50	4
UB542 0042004	0.4	0.2	2	0.4	0.8	4	50	4
UB542 0042005	0.4	0.2	2	0.4	0.8	5	50	4
UB542 0042006	0.4	0.2	2	0.4	0.8	6	50	4
UB542 0043002	0.4	0.2	3	0.4	0.8	2	50	4
UB542 0043003	0.4	0.2	3	0.4	0.8	3	50	4
UB542 0043004	0.4	0.2	3	0.4	0.8	4	50	4
UB542 0043005	0.4	0.2	3	0.4	0.8	5	50	4
UB542 0043006	0.4	0.2	3	0.4	0.8	6	50	4
UB542 0045004	0.4	0.2	5	0.4	0.8	4	50	4
UB542 0045006	0.4	0.2	5	0.4	0.8	6	50	4
UB542 0050504	0.5	0.25	0.5	0.5	1	4	50	4
UB542 0050506	0.5	0.25	0.5	0.5	1	6	50	4
UB542 0050508	0.5	0.25	0.5	0.5	1	8	50	4
UB542 0050510	0.5	0.25	0.5	0.5	1	10	50	4
UB542 0051004	0.5	0.25	1	0.5	1	4	50	4
UB542 0051006	0.5	0.25	1	0.5	1	6	50	4
UB542 0051008	0.5	0.25	1	0.5	1	8	50	4
UB542 0051010	0.5	0.25	1	0.5	1	10	50	4
UB542 0051504	0.5	0.25	1.5	0.5	1	4	50	4
UB542 0051506	0.5	0.25	1.5	0.5	1	6	50	4
UB542 0051508	0.5	0.25	1.5	0.5	1	8	50	4
UB542 0051510	0.5	0.25	1.5	0.5	1	10	50	4
UB542 0052004	0.5	0.25	2	0.5	1	4	50	4

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○		○	◎	◎	○					

UB542

2 Flutes Tapered Neck Ball End Mill

Endmill

EDP No	DC	RE	BHTA	APMX	LU	LUX	OAL	DCONMS
UB542 0052006	0.5	0.25	2	0.5	1	6	50	4
UB542 0052008	0.5	0.25	2	0.5	1	8	50	4
UB542 0052010	0.5	0.25	2	0.5	1	10	50	4
UB542 0053004	0.5	0.25	3	0.5	1	4	50	4
UB542 0053006	0.5	0.25	3	0.5	1	6	50	4
UB542 0053008	0.5	0.25	3	0.5	1	8	50	4
UB542 0053010	0.5	0.25	3	0.5	1	10	50	4
UB542 0060504	0.6	0.3	0.5	0.6	1.2	4	50	4
UB542 0060506	0.6	0.3	0.5	0.6	1.2	6	50	4
UB542 0060508	0.6	0.3	0.5	0.6	1.2	8	50	4
UB542 0060510	0.6	0.3	0.5	0.6	1.2	10	50	4
UB542 0060512	0.6	0.3	0.5	0.6	1.2	12	50	4
UB542 0061004	0.6	0.3	1	0.6	1.2	4	50	4
UB542 0061006	0.6	0.3	1	0.6	1.2	6	50	4
UB542 0061008	0.6	0.3	1	0.6	1.2	8	50	4
UB542 0061010	0.6	0.3	1	0.6	1.2	10	50	4
UB542 0061012	0.6	0.3	1	0.6	1.2	12	50	4
UB542 0061504	0.6	0.3	1.5	0.6	1.2	4	50	4
UB542 0061506	0.6	0.3	1.5	0.6	1.2	6	50	4
UB542 0061508	0.6	0.3	1.5	0.6	1.2	8	50	4
UB542 0061510	0.6	0.3	1.5	0.6	1.2	10	50	4
UB542 0061512	0.6	0.3	1.5	0.6	1.2	12	50	4
UB542 0062004	0.6	0.3	2	0.6	1.2	4	50	4
UB542 0062006	0.6	0.3	2	0.6	1.2	6	50	4
UB542 0062008	0.6	0.3	2	0.6	1.2	8	50	4
UB542 0062010	0.6	0.3	2	0.6	1.2	10	50	4
UB542 0062012	0.6	0.3	2	0.6	1.2	12	50	4
UB542 0063004	0.6	0.3	3	0.6	1.2	4	50	4
UB542 0063006	0.6	0.3	3	0.6	1.2	6	50	4
UB542 0063008	0.6	0.3	3	0.6	1.2	8	50	4
UB542 0063010	0.6	0.3	3	0.6	1.2	10	50	4
UB542 0063012	0.6	0.3	3	0.6	1.2	12	50	4
UB542 0080504	0.8	0.4	0.5	0.8	1.6	4	50	4
UB542 0080506	0.8	0.4	0.5	0.8	1.6	6	50	4

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
○		○	◎	◎	○					

UB542

2 Flutes Tapered Neck Ball End Mill

Endmill

EDP No	DC	RE	BHTA	APMX	LU	LUX	OAL	DCONMS
UB542 0080508	0.8	0.4	0.5	0.8	1.6	8	50	4
UB542 0080510	0.8	0.4	0.5	0.8	1.6	10	50	4
UB542 0080512	0.8	0.4	0.5	0.8	1.6	12	50	4
UB542 0080516	0.8	0.4	0.5	0.8	1.6	16	50	4
UB542 0081004	0.8	0.4	1	0.8	1.6	4	50	4
UB542 0081006	0.8	0.4	1	0.8	1.6	6	50	4
UB542 0081008	0.8	0.4	1	0.8	1.6	8	50	4
UB542 0081010	0.8	0.4	1	0.8	1.6	10	50	4
UB542 0081012	0.8	0.4	1	0.8	1.6	12	50	4
UB542 0081016	0.8	0.4	1	0.8	1.6	16	50	4
UB542 0081504	0.8	0.4	1.5	0.8	1.6	4	50	4
UB542 0081506	0.8	0.4	1.5	0.8	1.6	6	50	4
UB542 0081508	0.8	0.4	1.5	0.8	1.6	8	50	4
UB542 0081510	0.8	0.4	1.5	0.8	1.6	10	50	4
UB542 0081512	0.8	0.4	1.5	0.8	1.6	12	50	4
UB542 0081516	0.8	0.4	1.5	0.8	1.6	16	50	4
UB542 0082004	0.8	0.4	2	0.8	1.6	4	50	4
UB542 0082006	0.8	0.4	2	0.8	1.6	6	50	4
UB542 0082008	0.8	0.4	2	0.8	1.6	8	50	4
UB542 0082010	0.8	0.4	2	0.8	1.6	10	50	4
UB542 0082012	0.8	0.4	2	0.8	1.6	12	50	4
UB542 0082016	0.8	0.4	2	0.8	1.6	16	50	4
UB542 0083004	0.8	0.4	3	0.8	1.6	4	50	4
UB542 0083006	0.8	0.4	3	0.8	1.6	6	50	4
UB542 0083008	0.8	0.4	3	0.8	1.6	8	50	4
UB542 0083010	0.8	0.4	3	0.8	1.6	10	50	4
UB542 0083012	0.8	0.4	3	0.8	1.6	12	50	4
UB542 0083016	0.8	0.4	3	0.8	1.6	16	50	4
UB542 0100506	1	0.5	0.5	1	2.5	6	50	4
UB542 0100508	1	0.5	0.5	1	2.5	8	50	4
UB542 0100510	1	0.5	0.5	1	2.5	10	50	4
UB542 0100512	1	0.5	0.5	1	2.5	12	50	4
UB542 0100516	1	0.5	0.5	1	2.5	16	50	4
UB542 0100520	1	0.5	0.5	1	2.5	20	50	4

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○		○	◎	◎	○					

UB542

2 Flutes Tapered Neck Ball End Mill

Endmill

	EDP No	DC	RE	BHTA	APMX	LU	LUX	OAL	DCONMS
Zamus Star	UB542 0100525	1	0.5	0.5	1	2.5	25	60	4
	UB542 0100530	1	0.5	0.5	1	2.5	30	70	4
	UB542 0100540	1	0.5	0.5	1	2.5	40	80	4
	UB542 0100550	1	0.5	0.5	1	2.5	50	90	4
	UB542 0101006	1	0.5	1	1	2.5	6	50	4
E-Star	UB542 0101008	1	0.5	1	1	2.5	8	50	4
	UB542 0101010	1	0.5	1	1	2.5	10	50	4
	UB542 0101012	1	0.5	1	1	2.5	12	50	4
U-Wing	UB542 0101016	1	0.5	1	1	2.5	16	50	4
	UB542 0101020	1	0.5	1	1	2.5	20	50	4
	UB542 0101025	1	0.5	1	1	2.5	25	60	4
	UB542 0101030	1	0.5	1	1	2.5	30	70	4
Zamus Thunder	UB542 0101040	1	0.5	1	1	2.5	40	80	4
	UB542 0101050	1	0.5	1	1	2.5	50	90	4
	UB542 0101506	1	0.5	1.5	1	2.5	6	50	4
	UB542 0101508	1	0.5	1.5	1	2.5	8	50	4
X-Star	UB542 0101510	1	0.5	1.5	1	2.5	10	50	4
	UB542 0101512	1	0.5	1.5	1	2.5	12	50	4
	UB542 0101516	1	0.5	1.5	1	2.5	16	50	4
S-Wing	UB542 0101520	1	0.5	1.5	1	2.5	20	50	4
	UB542 0101525	1	0.5	1.5	1	2.5	25	60	4
	UB542 0101530	1	0.5	1.5	1	2.5	30	70	4
A-Wing	UB542 0101540	1	0.5	1.5	1	2.5	40	80	4
	UB542 0101550	1	0.5	1.5	1	2.5	50	90	4
	UB542 0102006	1	0.5	2	1	2.5	6	50	4
Standard	UB542 0102008	1	0.5	2	1	2.5	8	50	4
	UB542 0102010	1	0.5	2	1	2.5	10	50	4
	UB542 0102012	1	0.5	2	1	2.5	12	50	4
	UB542 0102016	1	0.5	2	1	2.5	16	50	4
Copper-Mate	UB542 0102020	1	0.5	2	1	2.5	20	50	4
	UB542 0102025	1	0.5	2	1	2.5	25	60	4
	UB542 0102030	1	0.5	2	1	2.5	30	70	4
Gra-Mate	UB542 0102040	1	0.5	2	1	2.5	40	80	4
	UB542 0102050	1	0.5	2	1	2.5	50	90	6

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
○		○	◎	◎	○					

UB542

2 Flutes Tapered Neck Ball End Mill

Endmill

EDP No	DC	RE	BHTA	APMX	LU	LUX	OAL	DCONMS
UB542 0103006	1	0.5	3	1	2.5	6	50	4
UB542 0103008	1	0.5	3	1	2.5	8	50	4
UB542 0103010	1	0.5	3	1	2.5	10	50	4
UB542 0103012	1	0.5	3	1	2.5	12	50	4
UB542 0103016	1	0.5	3	1	2.5	16	50	4
UB542 0103020	1	0.5	3	1	2.5	20	50	4
UB542 0103025	1	0.5	3	1	2.5	25	60	4
UB542 0103030	1	0.5	3	1	2.5	30	70	6
UB542 0103040	1	0.5	3	1	2.5	40	80	6
UB542 0103050	1	0.5	3	1	2.5	50	90	6
UB542 0105030	1	0.5	5	1	2.5	30	70	6
UB542 0120508	1.2	0.6	0.5	1.2	3	8	50	4
UB542 0120512	1.2	0.6	0.5	1.2	3	12	50	4
UB542 0120516	1.2	0.6	0.5	1.2	3	16	50	4
UB542 0120520	1.2	0.6	0.5	1.2	3	20	50	4
UB542 0120525	1.2	0.6	0.5	1.2	3	25	60	4
UB542 0120530	1.2	0.6	0.5	1.2	3	30	70	4
UB542 0121008	1.2	0.6	1	1.2	3	8	50	4
UB542 0121012	1.2	0.6	1	1.2	3	12	50	4
UB542 0121016	1.2	0.6	1	1.2	3	16	50	4
UB542 0121020	1.2	0.6	1	1.2	3	20	50	4
UB542 0121025	1.2	0.6	1	1.2	3	25	60	4
UB542 0121030	1.2	0.6	1	1.2	3	30	70	4
UB542 0121508	1.2	0.6	1.5	1.2	3	8	50	4
UB542 0121512	1.2	0.6	1.5	1.2	3	12	50	4
UB542 0121516	1.2	0.6	1.5	1.2	3	16	50	4
UB542 0121520	1.2	0.6	1.5	1.2	3	20	50	4
UB542 0121525	1.2	0.6	1.5	1.2	3	25	60	4
UB542 0121530	1.2	0.6	1.5	1.2	3	30	70	4
UB542 0122008	1.2	0.6	2	1.2	3	8	50	4
UB542 0122012	1.2	0.6	2	1.2	3	12	50	4
UB542 0122016	1.2	0.6	2	1.2	3	16	50	4
UB542 0122020	1.2	0.6	2	1.2	3	20	50	4
UB542 0122025	1.2	0.6	2	1.2	3	25	60	4

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○		○	◎	◎	○					

UB542

2 Flutes Tapered Neck Ball End Mill

Endmill

EDP No	DC	RE	BHTA	APMX	LU	LUX	OAL	DCONMS
UB542 0122030	1.2	0.6	2	1.2	3	30	70	4
UB542 0123008	1.2	0.6	3	1.2	3	8	50	4
UB542 0123012	1.2	0.6	3	1.2	3	12	50	4
UB542 0123016	1.2	0.6	3	1.2	3	16	50	4
UB542 0123020	1.2	0.6	3	1.2	3	20	50	4
UB542 0123025	1.2	0.6	3	1.2	3	25	60	4
UB542 0123030	1.2	0.6	5	1.2	3	30	70	6
UB542 0150508	1.5	0.75	0.5	1.5	4	8	50	4
UB542 0150510	1.5	0.75	0.5	1.5	4	10	50	4
UB542 0150512	1.5	0.75	0.5	1.5	4	12	50	4
UB542 0150516	1.5	0.75	0.5	1.5	4	16	50	4
UB542 0150520	1.5	0.75	0.5	1.5	4	20	50	4
UB542 0150525	1.5	0.75	0.5	1.5	4	25	60	4
UB542 0150530	1.5	0.75	0.5	1.5	4	30	70	4
UB542 0150540	1.5	0.75	0.5	1.5	4	40	80	4
UB542 0150550	1.5	0.75	0.5	1.5	4	50	90	4
UB542 0151008	1.5	0.75	1	1.5	4	8	50	4
UB542 0151010	1.5	0.75	1	1.5	4	10	50	4
UB542 0151012	1.5	0.75	1	1.5	4	12	50	4
UB542 0151016	1.5	0.75	1	1.5	4	16	50	4
UB542 0151020	1.5	0.75	1	1.5	4	20	50	4
UB542 0151025	1.5	0.75	1	1.5	4	25	60	4
UB542 0151030	1.5	0.75	1	1.5	4	30	70	4
UB542 0151040	1.5	0.75	1	1.5	4	40	80	4
UB542 0151050	1.5	0.75	1	1.5	4	50	90	4
UB542 0151508	1.5	0.75	1.5	1.5	4	8	50	4
UB542 0151510	1.5	0.75	1.5	1.5	4	10	50	4
UB542 0151512	1.5	0.75	1.5	1.5	4	12	50	4
UB542 0151516	1.5	0.75	1.5	1.5	4	16	50	4
UB542 0151520	1.5	0.75	1.5	1.5	4	20	50	4
UB542 0151525	1.5	0.75	1.5	1.5	4	25	60	4
UB542 0151530	1.5	0.75	1.5	1.5	4	30	70	4
UB542 0151540	1.5	0.75	1.5	1.5	4	40	80	4
UB542 0151550	1.5	0.75	1.5	1.5	4	50	90	4

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	Steel ~HB225	HB225 ~325	HRc30~50	~FCD500					
○		○	◎	◎	○					

UB542

2 Flutes Tapered Neck Ball End Mill

Endmill

EDP No	DC	RE	BHTA	APMX	LU	LUX	OAL	DCONMS
UB542 0121016	1.2	0.6	1	1.2	3	16	50	4
UB542 0121020	1.2	0.6	1	1.2	3	20	50	4
UB542 0121025	1.2	0.6	1	1.2	3	25	60	4
UB542 0121030	1.2	0.6	1	1.2	3	30	70	4
UB542 0121508	1.2	0.6	1.5	1.2	3	8	50	4
UB542 0121512	1.2	0.6	1.5	1.2	3	12	50	4
UB542 0121516	1.2	0.6	1.5	1.2	3	16	50	4
UB542 0121520	1.2	0.6	1.5	1.2	3	20	50	4
UB542 0121525	1.2	0.6	1.5	1.2	3	25	60	4
UB542 0121530	1.2	0.6	1.5	1.2	3	30	70	4
UB542 0122008	1.2	0.6	2	1.2	3	8	50	4
UB542 0122012	1.2	0.6	2	1.2	3	12	50	4
UB542 0122016	1.2	0.6	2	1.2	3	16	50	4
UB542 0122020	1.2	0.6	2	1.2	3	20	50	4
UB542 0122025	1.2	0.6	2	1.2	3	25	60	4
UB542 0122030	1.2	0.6	2	1.2	3	30	70	4
UB542 0123008	1.2	0.6	3	1.2	3	8	50	4
UB542 0123012	1.2	0.6	3	1.2	3	12	50	4
UB542 0123016	1.2	0.6	3	1.2	3	16	50	4
UB542 0123020	1.2	0.6	3	1.2	3	20	50	4
UB542 0123025	1.2	0.6	3	1.2	3	25	60	4
UB542 0123030	1.2	0.6	5	1.2	3	30	70	6
UB542 0150508	1.5	0.75	0.5	1.5	4	8	50	4
UB542 0150510	1.5	0.75	0.5	1.5	4	10	50	4
UB542 0150512	1.5	0.75	0.5	1.5	4	12	50	4
UB542 0150516	1.5	0.75	0.5	1.5	4	16	50	4
UB542 0150520	1.5	0.75	0.5	1.5	4	20	50	4
UB542 0150525	1.5	0.75	0.5	1.5	4	25	60	4
UB542 0150530	1.5	0.75	0.5	1.5	4	30	70	4
UB542 0150540	1.5	0.75	0.5	1.5	4	40	80	4
UB542 0150550	1.5	0.75	0.5	1.5	4	50	90	4
UB542 0151008	1.5	0.75	1	1.5	4	8	50	4
UB542 0151010	1.5	0.75	1	1.5	4	10	50	4
UB542 0151012	1.5	0.75	1	1.5	4	12	50	4

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○		○	◎	◎	○					

UB542

2 Flutes Tapered Neck Ball End Mill

Endmill

	EDP No	DC	RE	BHTA	APMX	LU	LUX	OAL	DCONMS
Zamus Star	UB542 0151016	1.5	0.75	1	1.5	4	16	50	4
	UB542 0151020	1.5	0.75	1	1.5	4	20	50	4
	UB542 0151025	1.5	0.75	1	1.5	4	25	60	4
	UB542 0151030	1.5	0.75	1	1.5	4	30	70	4
	UB542 0151040	1.5	0.75	1	1.5	4	40	80	4
E-Star	UB542 0151050	1.5	0.75	1	1.5	4	50	90	4
	UB542 0151508	1.5	0.75	1.5	1.5	4	8	50	4
	UB542 0151510	1.5	0.75	1.5	1.5	4	10	50	4
U-Wing	UB542 0151512	1.5	0.75	1.5	1.5	4	12	50	4
	UB542 0151516	1.5	0.75	1.5	1.5	4	16	50	4
	UB542 0151520	1.5	0.75	1.5	1.5	4	20	50	4
	UB542 0151525	1.5	0.75	1.5	1.5	4	25	60	4
Zamus Thunder	UB542 0151530	1.5	0.75	1.5	1.5	4	30	70	4
	UB542 0151540	1.5	0.75	1.5	1.5	4	40	80	4
	UB542 0151550	1.5	0.75	1.5	1.5	4	50	90	4
X-Star	UB542 0152008	1.5	0.75	2	1.5	4	8	50	4
	UB542 0152010	1.5	0.75	2	1.5	4	10	50	4
	UB542 0152012	1.5	0.75	2	1.5	4	12	50	4
	UB542 0152016	1.5	0.75	2	1.5	4	16	50	4
S-Wing	UB542 0152020	1.5	0.75	2	1.5	4	20	50	4
	UB542 0152025	1.5	0.75	2	1.5	4	25	60	4
	UB542 0152030	1.5	0.75	2	1.5	4	30	70	4
A-Wing	UB542 0152040	1.5	0.75	2	1.5	4	40	80	6
	UB542 0152050	1.5	0.75	2	1.5	4	50	90	6
	UB542 0153020	1.5	0.75	3	1.5	4	20	50	6
Standard	UB542 0153030	1.5	0.75	3	1.5	4	30	70	6
	UB542 0153040	1.5	0.75	3	1.5	4	40	80	6
	UB542 0153050	1.5	0.75	3	1.5	4	50	90	8
	UB542 0155030	1.5	0.75	5	1.5	4	30	70	8
Copper -Mate	UB542 0200510	2	1	0.5	2	5	10	50	4
	UB542 0200512	2	1	0.5	2	5	12	50	4
	UB542 0200516	2	1	0.5	2	5	16	50	4
Gra -Mate	UB542 0200520	2	1	0.5	2	5	20	50	4
	UB542 0200525	2	1	0.5	2	5	25	60	4

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
○		○	◎	◎	○					

UB542

2 Flutes Tapered Neck Ball End Mill

Endmill

EDP No	DC	RE	BHTA	APMX	LU	LUX	OAL	DCONMS
UB542 0200530	2	1	0.5	2	5	30	70	4
UB542 0200540	2	1	0.5	2	5	40	80	4
UB542 0200550	2	1	0.5	2	5	50	100	6
UB542 0200560	2	1	0.5	2	5	60	100	6
UB542 0200580	2	1	0.5	2	5	80	140	6
UB542 0201010	2	1	1	2	5	10	50	4
UB542 0201012	2	1	1	2	5	12	50	4
UB542 0201016	2	1	1	2	5	16	50	4
UB542 0201020	2	1	1	2	5	20	50	4
UB542 0201025	2	1	1	2	5	25	60	4
UB542 0201030	2	1	1	2	5	30	70	4
UB542 0201040	2	1	1	2	5	40	80	6
UB542 0201050	2	1	1	2	5	50	100	6
UB542 0201060	2	1	1	2	5	60	100	6
UB542 0201080	2	1	1	2	5	80	140	6
UB542 0201510	2	1	1.5	2	5	10	50	4
UB542 0201512	2	1	1.5	2	5	12	50	4
UB542 0201516	2	1	1.5	2	5	16	50	4
UB542 0201520	2	1	1.5	2	5	20	50	4
UB542 0201525	2	1	1.5	2	5	25	60	4
UB542 0201530	2	1	1.5	2	5	30	70	6
UB542 0201540	2	1	1.5	2	5	40	80	6
UB542 0201550	2	1	1.5	2	5	50	100	6
UB542 0201560	2	1	1.5	2	5	60	100	6
UB542 0201580	2	1	1.5	2	5	80	140	6
UB542 0202010	2	1	2	2	5	10	50	4
UB542 0202012	2	1	2	2	5	12	50	4
UB542 0202016	2	1	2	2	5	16	50	4
UB542 0202020	2	1	2	2	5	20	55	4
UB542 0202025	2	1	2	2	5	25	60	4
UB542 0202030	2	1	2	2	5	30	70	4
UB542 0202040	2	1	2	2	5	40	80	6
UB542 0202050	2	1	2	2	5	50	90	6
UB542 0202060	2	1	2	2	5	60	100	6

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○		○	◎	◎	○					

UB542

2 Flutes Tapered Neck Ball End Mill

Endmill

EDP No	DC	RE	BHTA	APMX	LU	LUX	OAL	DCONMS
UB542 0202080	2	1	2	2	5	80	140	8
UB542 0203030	2	1	3	2	5	30	70	6
UB542 0203040	2	1	3	2	5	40	80	6
UB542 0203050	2	1	3	2	5	50	90	8
UB542 0203060	2	1	3	2	5	60	100	8
UB542 0203080	2	1	3	2	5	80	140	10
UB542 0205030	2	1	5	2	5	30	70	8
UB542 0205040	2	1	5	2	5	40	90	10
UB542 0300516	3	1.5	0.5	4.5	6	16	60	6
UB542 0300520	3	1.5	0.5	4.5	6	20	65	6
UB542 0300530	3	1.5	0.5	4.5	6	30	70	6
UB542 0300540	3	1.5	0.5	4.5	6	40	80	6
UB542 0300550	3	1.5	0.5	4.5	6	50	90	6
UB542 0300560	3	1.5	0.5	4.5	6	60	100	6
UB542 0301016	3	1.5	1	4.5	6	16	60	6
UB542 0301020	3	1.5	1	4.5	6	20	65	6
UB542 0301030	3	1.5	1	4.5	6	30	70	6
UB542 0301040	3	1.5	1	4.5	6	40	80	6
UB542 0301050	3	1.5	1	4.5	6	50	90	6
UB542 0301060	3	1.5	1	4.5	6	60	100	6
UB542 0301070	3	1.5	1	4.5	6	70	120	6
UB542 0301516	3	1.5	1.5	4.5	6	16	60	6
UB542 0301520	3	1.5	1.5	4.5	6	20	65	6
UB542 0301530	3	1.5	1.5	4.5	6	30	70	6
UB542 0301540	3	1.5	1.5	4.5	6	40	80	6
UB542 0301550	3	1.5	1.5	4.5	6	50	90	6
UB542 0301560	3	1.5	1.5	4.5	6	60	100	6
UB542 0302016	3	1.5	2	4.5	6	16	60	6
UB542 0302020	3	1.5	2	4.5	6	20	65	6
UB542 0302030	3	1.5	2	4.5	6	30	70	6
UB542 0302040	3	1.5	2	4.5	6	40	80	6
UB542 0302050	3	1.5	2	4.5	6	50	90	8
UB542 0303030	3	1.5	3	4.5	6	30	70	6
UB542 0303040	3	1.5	3	4.5	6	40	90	8

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	Steel ~HB225	HB225 ~325	HRc30~50	~FCD500					
○		○	◎	◎	○					

UB542

2 Flutes Tapered Neck Ball End Mill

Endmill

EDP No	DC	RE	BHTA	APMX	LU	LUX	OAL	DCONMS
UB542 0305030	3	1.5	5	4.5	6	30	70	8
UB542 0305040	3	1.5	5	4.5	6	40	90	10
UB542 0400540	4	2	0.5	6	8	40	90	6
UB542 0400550	4	2	0.5	6	8	50	100	6
UB542 0400560	4	2	0.5	6	8	60	110	6
UB542 0400570	4	2	0.5	6	8	70	120	6
UB542 0401040	4	2	1	6	8	40	90	6
UB542 0401050	4	2	1	6	8	50	100	6
UB542 0401060	4	2	1	6	8	60	110	8
UB542 0401070	4	2	1	6	8	70	120	8
UB542 0401540	4	2	1.5	6	8	40	90	6
UB542 0401550	4	2	1.5	6	8	50	100	8
UB542 0401560	4	2	1.5	6	8	60	110	8
UB542 0401570	4	2	1.5	6	8	70	120	8
UB542 0403050	4	2	3	6	8	50	100	10
UB542 0405050	4	2	5	6	8	50	100	12
UB542 0501060	5	2.5	1	10	13	60	120	8
UB542 0501560	5	2.5	1.5	10	13	60	120	8
UB542 0503040	5	2.5	3	10	13	40	120	8
UB542 0601060	6	3	1	12	15	60	120	8
UB542 0601090	6	3	1	12	15	90	150	10
UB542 0601560	6	3	1.5	12	15	60	120	10
UB542 0601590	6	3	1.5	12	15	90	150	10
UB542 0602060	6	3	2	12	15	60	120	10
UB542 0602090	6	3	2	12	15	90	150	12
UB542 0603060	6	3	3	12	15	60	120	12
UB542 0603090	6	3	3	12	15	90	150	14
UB542 08010100	8	4	1	14	18	100	150	12
UB542 0801070	8	4	1	14	18	70	130	10
UB542 08015100	8	4	1.5	14	18	100	150	14
UB542 0801570	8	4	1.5	14	18	70	130	12
UB542 08020100	8	4	2	14	18	100	150	14
UB542 0802070	8	4	2	14	18	70	130	12
UB542 08030100	8	4	3	14	18	100	150	18

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○		○	◎	◎	○					

UB542

2 Flutes Tapered Neck Ball End Mill

Endmill

EDP No	DC	RE	BHTA	APMX	LU	LUX	OAL	DCONMS
UB542 0803070	8	4	3	14	18	70	130	14
UB542 10010100	10	5	1	18	22	100	200	14
UB542 1001070	10	5	1	18	22	70	130	12
UB542 1001080	10	5	1	18	22	80	150	14
UB542 10015100	10	5	1.5	18	22	100	200	16
UB542 1001570	10	5	1.5	18	22	70	130	14
UB542 1001580	10	5	1.5	18	22	80	150	14
UB542 10020100	10	5	2	18	22	100	200	16
UB542 1002070	10	5	2	18	22	70	130	14
UB542 1002080	10	5	2	18	22	80	150	16
UB542 10030100	10	5	3	18	22	100	200	20
UB542 1003070	10	5	3	18	22	70	130	16
UB542 1003080	10	5	3	18	22	80	150	18
UB542 12010100	12	6	1	22	25	100	200	16
UB542 1201060	12	6	1	22	25	60	130	14
UB542 1201080	12	6	1	22	25	80	150	14
UB542 1201090	12	6	1	22	25	90	180	16
UB542 12015100	12	6	1.5	22	25	100	200	16
UB542 1201560	12	6	1.5	22	25	60	130	14
UB542 1201580	12	6	1.5	22	25	80	150	16
UB542 1201590	12	6	1.5	22	25	90	180	16
UB542 12020100	12	6	2	22	25	100	200	18
UB542 1202060	12	6	2	22	25	60	130	16
UB542 1202080	12	6	2	22	25	80	150	16
UB542 1202090	12	6	2	22	25	90	180	18
UB542 12030100	12	6	3	22	25	100	200	20
UB542 1203060	12	6	3	22	25	60	130	16
UB542 1203080	12	6	3	22	25	80	150	18
UB542 1203090	12	6	3	22	25	90	180	20

Copper
-Mate

Gra
-Mate

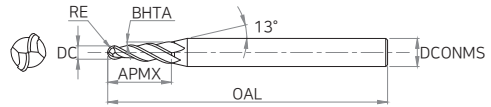
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○		○	◎	◎	○					

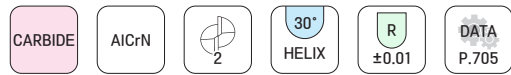
UTB502

2 Flutes Tapered Ball End Mill



► Tolerance

DC		Shank Dia
ø0.3 ~ ø2	0 ~ -0.03	h5



EDP No	DC	RE	BHTA	APMX	OAL	DCONMS
UTB502 00305	0.3	0.15	5	1.2	40	4
UTB502 00303	0.3	0.15	3	1.2	40	4
UTB502 00302	0.3	0.15	2	1.2	40	4
UTB502 003015	0.3	0.15	1.5	1.2	40	4
UTB502 00301	0.3	0.15	1	1.2	40	4
UTB502 003005	0.3	0.15	0.5	1.2	40	4
UTB502 00310	0.3	0.15	10	1.5	40	4
UTB502 00307	0.3	0.15	7	1.5	40	4
UTB502 00405	0.4	0.2	5	1.6	40	4
UTB502 00403	0.4	0.2	3	1.6	40	4
UTB502 00402	0.4	0.2	2	1.6	40	4
UTB502 004015	0.4	0.2	1.5	1.6	40	4
UTB502 00401	0.4	0.2	1	1.6	40	4
UTB502 004005	0.4	0.2	0.5	1.6	40	4
UTB502 00410	0.4	0.2	10	2	40	4
UTB502 00407	0.4	0.2	7	2	40	4
UTB502 00505	0.5	0.25	5	2	45	4
UTB502 00503	0.5	0.25	3	2	45	4
UTB502 00502	0.5	0.25	2	2	45	4
UTB502 005015	0.5	0.25	1.5	2	45	4

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	~325	HRc30~50	~FCD500					
○		○	◎	◎	○					

Endmill

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

UTB502 2 Flutes Tapered Ball End Mill

Endmill

EDP No	DC	RE	BHTA	APMX	OAL	DCONMS
UTB502 00501	0.5	0.25	1	2	45	4
UTB502 005005	0.5	0.25	0.5	2	45	4
UTB502 00510	0.5	0.25	10	2.5	45	4
UTB502 00507	0.5	0.25	7	2.5	45	4
UTB502 00605	0.6	0.3	5	2	45	4
UTB502 00603	0.6	0.3	3	2	45	4
UTB502 00602	0.6	0.3	2	2	45	4
UTB502 006015	0.6	0.3	1.5	2	45	4
UTB502 00601	0.6	0.3	1	2	45	4
UTB502 006005	0.6	0.3	0.5	2	45	4
UTB502 00610	0.6	0.3	10	2.5	45	4
UTB502 00607	0.6	0.3	7	2.5	45	4
UTB502 00705	0.7	0.35	5	2.5	45	4
UTB502 00703	0.7	0.35	3	2.5	45	4
UTB502 00702	0.7	0.35	2	2.5	45	4
UTB502 007015	0.7	0.35	1.5	2.5	45	4
UTB502 00701	0.7	0.35	1	2.5	45	4
UTB502 007005	0.7	0.35	0.5	2.5	45	4
UTB502 00710	0.7	0.35	10	3	45	4
UTB502 00707	0.7	0.35	7	3	45	4
UTB502 00810	0.8	0.4	10	3.2	45	4
UTB502 00807	0.8	0.4	7	3.2	45	4
UTB502 00805	0.8	0.4	5	3.2	45	4
UTB502 00803	0.8	0.4	3	3.2	45	4
UTB502 00802	0.8	0.4	2	3.2	45	4
UTB502 008015	0.8	0.4	1.5	3.2	45	4
UTB502 00801	0.8	0.4	1	3.2	45	4
UTB502 008005	0.8	0.4	0.5	3.2	45	4
UTB502 01010	1	0.5	10	4	50	4
UTB502 01007	1	0.5	7	4	50	4
UTB502 01005	1	0.5	5	4	50	4
UTB502 01003	1	0.5	3	4	50	4
UTB502 01002	1	0.5	2	4	50	4
UTB502 010015	1	0.5	1.5	4	50	4

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
○		○	◎	◎	○					

UTB502

2 Flutes Tapered Ball End Mill

Endmill

EDP No	DC	RE	BHTA	APMX	OAL	DCONMS
UTB502 01001	1	0.5	1	4	50	4
UTB502 010005	1	0.5	0.5	4	50	4
UTB502 015015	1.5	0.75	1.5	6	50	4
UTB502 01501	1.5	0.75	1	6	50	4
UTB502 015005	1.5	0.75	0.5	6	50	4
UTB502 01502	1.5	0.75	2	7	50	4
UTB502 01503	1.5	0.75	3	8	50	4
UTB502 01510	1.5	0.75	10	10	50	6
UTB502 01507	1.5	0.75	7	10	50	4
UTB502 01505	1.5	0.75	5	10	50	4
UTB502 020015	2	1	1.5	6	50	4
UTB502 02001	2	1	1	6	50	4
UTB502 020005	2	1	0.5	6	50	4
UTB502 02007	2	1	7	10	50	6
UTB502 02005	2	1	5	10	50	4
UTB502 02003	2	1	3	10	50	4
UTB502 02002	2	1	2	10	50	4
UTB502 02010	2	1	10	11	50	6

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

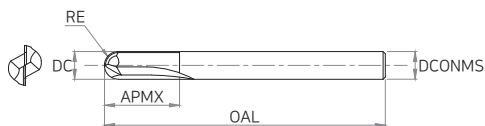
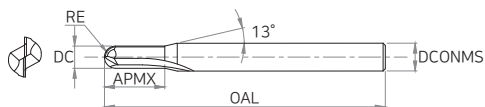
Gra
-Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○		○	◎	◎	○					

USB502 2 Flutes Straight Neck Ball End Mill



► Tolerance

DC		Shank Dia
Ø3 ~ Ø6	0 ~ -0.012	h5
Ø8 ~ Ø20	0 ~ -0.015	



R3 OR UNDER

ABOVE R3

EDP No	DC	RE	APMX	OAL	DCONMS
USB502 030	3	1.5	10	70	6
USB502 040	4	2	12	70	6
USB502 050	5	2.5	18	90	6
USB502 060	6	3	20	90	6
USB502 080	8	4	25	100	8
USB502 100	10	5	30	100	10
USB502 120	12	6	32	110	12
USB502 160	16	8	35	150	16
USB502 200	20	10	40	150	20

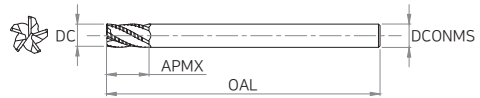
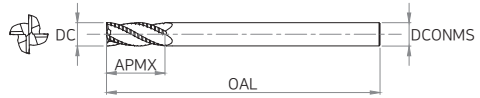
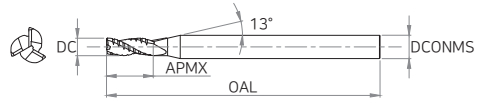
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
○		○	◎	◎	○					

UF50

3~5 Flutes Chamfer Pitch Roughing End Mill



► Tolerance

DC		Shank Dia
~ Ø6	0 ~ -0.012	h5
Ø8 ~ Ø25	0 ~ -0.015	



CARBIDE

AlCrN



EDP No	DC	RE	APMX	OAL	DCONMS	NOF	EDP No	DC	RE	APMX	OAL	DCONMS	NOF
UF50 3030	3	0.2	8	50	6	3	UF50 412030	12	0.3	30	80	12	4
UF50 3040	4	0.2	10	50	6	3	UF50 5130	13	0.5	35	100	12	5
UF50 4050	5	0.2	13	50	6	4	UF50 5140S16	14	0.5	35	100	16	5
UF50 4060	6	0.2	10	50	6	4	UF50 5140	14	0.5	35	100	14	5
UF50 406015	6	0.2	15	60	6	4	UF50 5150	15	0.5	35	100	16	5
UF50 4070	7	0.2	18	70	8	4	UF50 5160	16	1	25	80	16	5
UF50 4080	8	0.2	12	60	8	4	UF50 516040	16	1	40	100	16	5
UF50 408020	8	0.2	20	70	8	4	UF50 5180S20	18	1	40	100	20	5
UF50 4090	9	0.3	22	75	10	4	UF50 5180	18	1	40	100	18	5
UF50 4100	10	0.3	15	65	10	4	UF50 5200	20	1	25	80	20	5
UF50 410025	10	0.3	25	75	10	4	UF50 520045	20	1	45	100	20	5
UF50 4110	11	0.3	27	80	12	4	UF50 5250	25	1	45	100	25	5
UF50 4120	12	0.3	20	70	12	4							

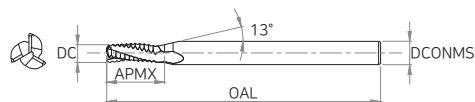
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	~325	HRc30~50	~FCD500					
○		○	◎	◎	○					

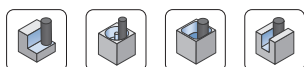
UF51

3~5 Flutes Fine Pitch Roughing End Mill



► Tolerance

DC		Shank Dia
Ø3	0 ~ -0.04	h5
Ø4 ~ Ø6	0 ~ -0.048	
Ø7 ~ Ø10	0 ~ -0.058	
Ø11 ~ Ø18	0 ~ -0.07	
Ø20 ~ Ø25	0 ~ -0.084	



EDP No	DC	APMX	OAL	DCONMS	NOF
UF51 3030	3	8	50	6	3
UF51 3040	4	10	50	6	3
UF51 3050	5	13	50	6	3
UF51 3060	6	15	60	6	3
UF51 306020	6	20	60	6	3
UF51 3070	7	18	70	8	3
UF51 3080	8	20	70	8	3
UF51 308025	8	25	70	8	3
UF51 4090	9	22	75	10	4
UF51 4100	10	25	75	10	4
UF51 410030	10	30	75	10	4
UF51 4110	11	27	80	12	4
UF51 4120	12	30	80	12	4
UF51 412035	12	35	80	12	4
UF51 4130	13	35	100	12	4
UF51 4140	14	35	100	16	4
UF51 4160	16	40	100	16	4
UF51 4180	18	40	100	18	4
UF51 4200	20	50	100	20	4
UF51 5250	25	50	100	25	5

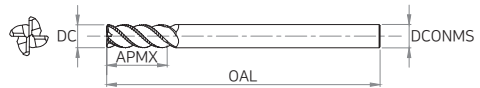
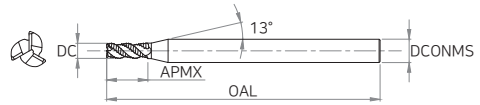
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
○		○	◎	◎	○					

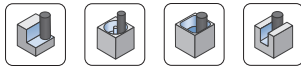
UF51-H

3~5 Flutes 45° Helix Fine Pitch Roughing End Mill



► Tolerance

DC		Shank Dia
Ø3 ~ Ø25	0 ~ -0.05	h5



EDP No	DC	APMX	OAL	DCONMS	NOF
UF51 3030H	3	8	50	6	3
UF51 3040H	4	10	50	6	3
UF51 4050H	5	13	50	6	4
UF51 4060H	6	10	50	6	4
UF51 406015H	6	15	60	6	4
UF51 4070H	7	18	70	8	4
UF51 4080H	8	12	60	8	4
UF51 408020H	8	20	70	8	4
UF51 4090H	9	22	75	10	4
UF51 4100H	10	15	65	10	4
UF51 410025H	10	25	75	10	4
UF51 4110H	11	27	80	12	4

EDP No	DC	APMX	OAL	DCONMS	NOF
UF51 4120H	12	20	70	12	4
UF51 412030H	12	30	80	12	4
UF51 5130H	13	35	100	12	5
UF51 5140S16H	14	35	100	16	5
UF51 5140H	14	35	100	14	5
UF51 5160H	16	25	80	16	5
UF51 516040H	16	40	100	16	5
UF51 5180S20H	18	40	100	20	5
UF51 5180H	18	40	100	18	5
UF51 5200H	20	25	80	20	5
UF51 520045H	20	45	100	20	5
UF51 5250H	25	45	100	25	5

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○		○	◎	◎	○					

Endmill

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

Zamus Thunder Endmill

Low Hardness HRc 10~30

Features

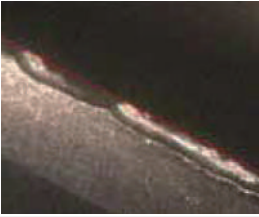
- Suitable for low hardness steel(HRc 10~30) : alloy steel, carbon steel, pre-harden, hardened steel etc.
- General purpose suitable for rough machining, finishing and curved and sloped surfaces

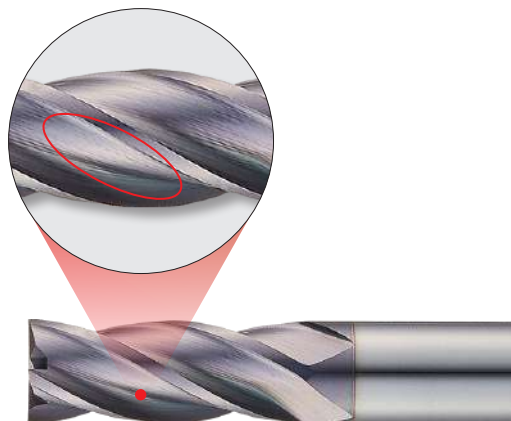
Characteristics

- Excellent Rake angle and Cutting edge considered the characteristics of workpiece.
- Improved chipping resistance and enhanced machinability by using high toughness materials
- TiAlN coating for enhanced oxidation resistance and chipping resistance

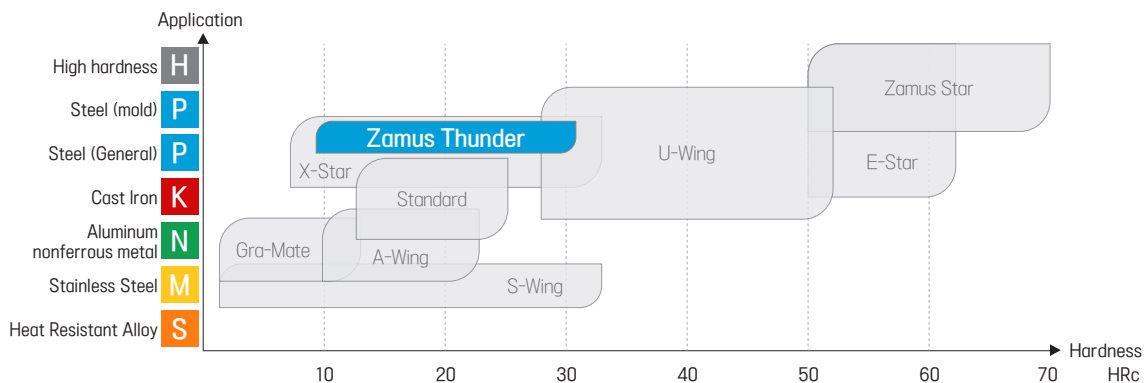
Case Study

► 4F D3.0 Square End Mill

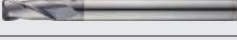
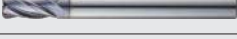
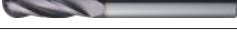
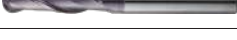
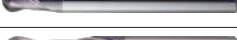
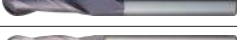
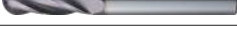
Zamus Thunder	Competitor
	
· Test Tool : ZE304100P · Material : STC3 / rpm : 4,515 / feed : 845 / ap : 10 / ae : 0.4	



Applications



Contents

Section		EDP No	Geometry	Product	Diameter(DC)		Page
Shape	Flute				Min	Max	
Square	2F	TX202		2 Flutes Short Shank Square End Mill	1	20	299
	4F	TX204		4 Flutes Short Shank Square End Mill	1	20	300
	2F	TX222		2 Flutes Long Square End Mill	3	20	301
	4F	TX224		4 Flutes Long Square End Mill	3	20	302
	2F	TX302		2 Flutes Square End Mill	1	20	303
	4F	TX304		4 Flutes Square End Mill	1	20	304
	4F	TX304H		4 Flutes 45° Helix Square End Mill	3	20	305
	2F	ZE302P		2 Flutes Square End Mill	1	20	306
	4F	ZE304P		4 Flutes Square End Mill	1	20	307
	2F	ZE322		2 Flutes Extra Long Square End Mill	3	20	308
	4F	ZE324		4 Flutes Extra Long Square End Mill	3	20	309
Radius	4F	ZR304H		4 Flutes 45° Helix Radius End Mill	3	12	310
	2F	ZR322		2 Flutes Long Shank Radius End Mill	3	12	311
	4F	ZR324		4 Flutes Long Shank Radius End Mill	3	12	312
	4F	ZR324H		4 Flutes 45° Helix Radius End Mill	6	12	313
Ball	2F	DB312		2 Flutes Ball End Mill	1	20	314
	2F	DB342		2 Flutes Tapered Neck Ball End Mill	1	12	315
	2F	TXB202		2 Flutes Short Shank Ball End Mill	1	20	316
	4F	TXB204		4 Flutes Short Shank Ball End Mill	2	20	317
	2F	TXB222		2 Flutes Long Ball End Mill	3	20	318
	2F	TXB232		2 Flutes Long Shank Ball End Mill	3	20	319
	2F	TXB302		2 Flutes Ball End Mill	1	20	320
	4F	TXB304		4 Flutes Ball End Mill	1	20	321

Zamus Thunder Endmill

Low Hardness HRc 10~30

EDP No. System

*If expressed as an integer, the decimal point is omitted.

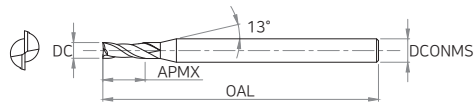


①	②	③	④	⑤	⑥	⑦	⑧
Type	Appearance	Grade	Length, Shank Type	Flute	Cutting Dia	Corner R	Shank Dia
D : Dynamic	E : Square	2 : Grade	0 : Straight	3 : 3 Flutes	1	0.05	0.2
Z : Zamus Endmill	R : Radius	3 : Grade	1 : Long Cutting Length	4 : 4 Flutes	~	~	~
T : Thunder	B : Ball		2 : Long Cutting Length	4H : 4 Flutes (Helix 45°)	20	5	300
	X : Square		3 : Long Shank				
	S : Square		4 : Tapered Neck				
	XB : Ball						

EX) 4 Flutes 45° Helix / Cutting Dia Ø8 / Corner R 1.0 / 30 Grade / Corner Radius Long Cutting Length Type Zamus End Mill

TX202

2 Flutes Short Shank Square End Mill



► Tolerance

DC	Shank Dia
Ø1 ~ Ø3	-0.014 ~ -0.028
Ø4 ~ Ø6	-0.02 ~ -0.038
Ø8 ~ Ø10	-0.025 ~ -0.047
Ø12 ~ Ø16	-0.032 ~ -0.059
Ø20 ~	-0.04 ~ -0.073

h6



CARBIDE

TIAIN



EDP No	DC	APMX	OAL	DCONMS
TX202 010	1	3	39	3
TX202 015	1.5	5	39	3
TX202 020	2	7	39	3
TX202 025	2.5	8	39	3
TX202 030	3	10	39	3
TX202 040	4	14	51	4
TX202 050	5	16	51	5
TX202 060	6	19	64	6
TX202 080	8	21	64	8
TX202 100	10	25	70	10
TX202 120	12	25	76	12
TX202 160	16	32	89	16
TX202 200	20	38	102	20

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
		◎	◎	○						

Endmill

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

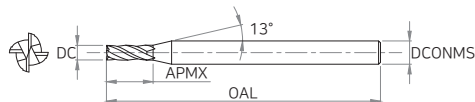
Standard

Copper
-Mate

Gra
-Mate

TX204

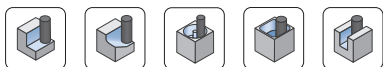
4 Flutes Short Shank Square End Mill



► Tolerance

DC	Shank Dia
Ø1 ~ Ø3	-0.014 ~ -0.028
Ø4 ~ Ø6	-0.02 ~ -0.038
Ø8 ~ Ø10	-0.025 ~ -0.047
Ø12 ~ Ø16	-0.032 ~ -0.059
Ø20 ~	-0.04 ~ -0.073

h6



EDP No	DC	APMX	OAL	DCONMS
TX204 010	1	3	39	3
TX204 015	1.5	5	39	3
TX204 020	2	7	39	3
TX204 025	2.5	8	39	3
TX204 030	3	10	39	3
TX204 040	4	14	51	4
TX204 050	5	16	51	5
TX204 060	6	19	64	6
TX204 080	8	21	64	8
TX204 100	10	25	70	10
TX204 120	12	25	76	12
TX204 160	16	32	89	16
TX204 200	20	38	102	20

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	~325	HRC30~50	~FCD500					
		◎	◎	○						

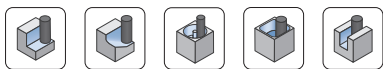
TX222

2 Flutes Long Square End Mill



► Tolerance

DC		Shank Dia
Ø3	-0.014 ~ -0.028	h6
Ø4 ~ Ø6	-0.02 ~ -0.038	
Ø8 ~ Ø10	-0.025 ~ -0.047	
Ø12 ~ Ø18	-0.032 ~ -0.059	
Ø20 ~	-0.04 ~ -0.073	



EDP No	DC	APMX	OAL	DCONMS
TX222 030	3	20	60	3
TX222 040	4	20	60	4
TX222 050	5	25	75	5
TX222 060	6	30	75	6
TX222 080	8	30	75	8
TX222 100	10	40	100	10
TX222 120	12	45	100	12
TX222 140	14	45	100	14
TX222 160	16	45	100	16
TX222 180	18	45	100	18
TX222 200	20	45	100	20

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
		◎	◎	○						

Endmill

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

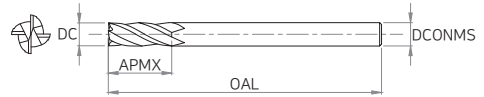
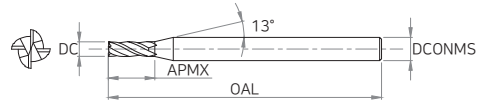
A-Wing

Standard

Copper
-Mate

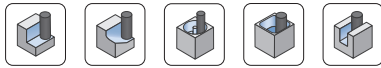
Gra
-Mate

TX224 4 Flutes Long Square End Mill



► Tolerance

DC		Shank Dia
ø3	-0.014 ~ -0.028	h6
ø4 ~ ø6	-0.02 ~ -0.038	
ø8 ~ ø10	-0.025 ~ -0.047	
ø12 ~ ø18	-0.032 ~ -0.059	
ø20 ~	-0.04 ~ -0.073	



EDP No	DC	APMX	OAL	DCONMS
TX224 030	3	20	60	3
TX224 040	4	20	60	4
TX224 050	5	25	75	5
TX224 060	6	30	75	6
TX224 080	8	30	75	8
TX224 081	8	30	100	8
TX224 100	10	40	100	10
TX224 120	12	45	100	12
TX224 140	14	45	100	14
TX224 160	16	45	100	16
TX224 180	18	45	100	18
TX224 200	20	45	100	20

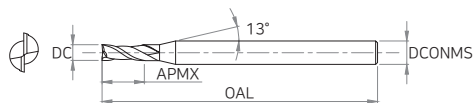
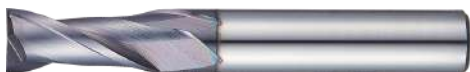
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
		◎	◎	○						

TX302

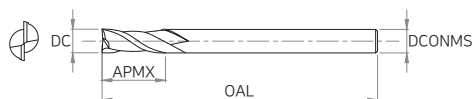
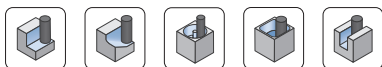
2 Flutes Square End Mill



► Tolerance

DC	Shank Dia
Ø1 ~ Ø3	-0.014 ~ -0.028
Ø4 ~ Ø6	-0.02 ~ -0.038
Ø7 ~ Ø10	-0.025 ~ -0.047
Ø12 ~ Ø18	-0.032 ~ -0.059
Ø20 ~	-0.04 ~ -0.073

h6



CARBIDE

TIAIN



EDP No	DC	APMX	OAL	DCONMS
TX302 010	1	3	50	4
TX302 015	1.5	4	50	4
TX302 020	2	6	50	4
TX302 025	2.5	8	50	4
TX302 030	3	9	50	4
TX302 040	4	11	50	4
TX302 050	5	13	50	6
TX302 060	6	16	50	6
TX302 070	7	16	60	8
TX302 080	8	19	60	8
TX302 090	9	19	60	10
TX302 100	10	25	75	10
TX302 120	12	30	75	12
TX302 140	14	32	75	14
TX302 160	16	32	100	16
TX302 180	18	32	100	18
TX302 200	20	38	100	20

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel ~HB225	Alloy Steel HB225 ~325	Prehardened Steel HRC30~50	Cast Iron ~FCD500	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~									
		◎	◎	○						

Endmill

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

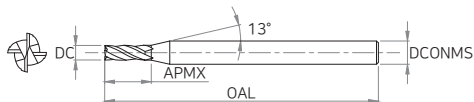
Standard

Copper
-Mate

Gra
-Mate

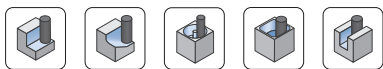
TX304

4 Flutes Square End Mill



► Tolerance

DC		Shank Dia
Ø1 ~ Ø3	-0.014 ~ -0.028	h6
Ø4 ~ Ø6	-0.02 ~ -0.038	
Ø7 ~ Ø10	-0.025 ~ -0.047	
Ø12 ~ Ø18	-0.032 ~ -0.059	
Ø20 ~	-0.04 ~ -0.073	



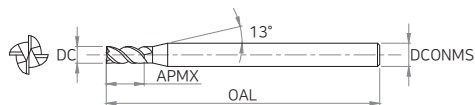
EDP No	DC	APMX	OAL	DCONMS
TX304 010	1	3	50	4
TX304 015	1.5	4	50	4
TX304 020	2	6	50	4
TX304 025	2.5	8	50	4
TX304 030	3	9	50	4
TX304 040	4	11	50	4
TX304 050	5	13	50	6
TX304 060	6	16	50	6
TX304 070	7	16	60	8
TX304 080	8	19	60	8
TX304 090	9	19	60	10
TX304 100	10	25	75	10
TX304 120	12	30	75	12
TX304 140	14	32	75	14
TX304 160	16	32	100	16
TX304 180	18	32	100	18
TX304 200	20	38	100	20

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	Steel ~HB225	HB225 ~325	Steel HRC30~50	~FCD500					
		◎	◎	○						

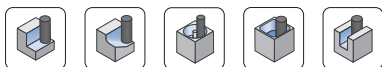
TX304H 4 Flutes 45° Helix Square End Mill



► Tolerance

DC	Shank Dia
Ø3	-0.014 ~ -0.028
Ø4 ~ Ø6	-0.02 ~ -0.038
Ø8 ~ Ø10	-0.025 ~ -0.047
Ø12 ~ Ø18	-0.032 ~ -0.059
Ø20 ~	-0.04 ~ -0.073

h6



CARBIDE

TIAIN



EDP No	DC	APMX	OAL	DCONMS
TX304H 030	3	8	50	6
TX304H 030S3	3	8	50	3
TX304H 030S4	3	8	50	4
TX304H 040	4	11	50	6
TX304H 040S4	4	11	50	4
TX304H 050	5	13	50	6
TX304H 060	6	13	50	6
TX304H 080	8	19	60	8
TX304H 100	10	22	70	10
TX304H 120	12	26	75	12
TX304H 130	13	26	80	12
TX304H 140	14	26	80	14
TX304H 160	16	32	90	16
TX304H 180	18	32	100	18
TX304H 200	20	38	100	20

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel ~HB225	Alloy Steel HB225 ~325	Prehardened Steel HRC30~50	Cast Iron ~FCD500	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~									
		◎	◎	○						

Endmill

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

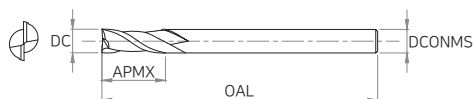
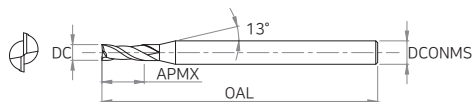
A-Wing

Standard

Copper
-Mate

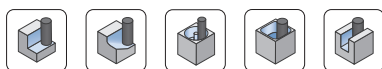
Gra
-Mate

ZE302P 2 Flutes Square End Mill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.02	h6



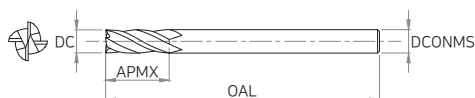
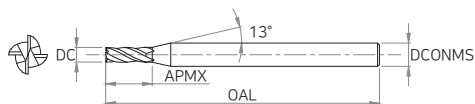
EDP No	DC	APMX	OAL	DCONMS	EDP No	DC	APMX	OAL	DCONMS
ZE302 010P	1	2.5	50	6	ZE302 085P	8.5	22	70	10
ZE302 015P	1.5	4	50	6	ZE302 090P	9	22	70	10
ZE302 020P	2	6	50	6	ZE302 095P	9.5	24	70	10
ZE302 025P	2.5	8	50	6	ZE302 100P	10	25	70	10
ZE302 030P	3	10	50	6	ZE302 105P	10.5	26	80	12
ZE302 035P	3.5	10	50	6	ZE302 110P	11	30	80	12
ZE302 040P	4	12	50	6	ZE302 115P	11.5	30	80	12
ZE302 045P	4.5	14	50	6	ZE302 120P	12	30	80	12
ZE302 050P	5	15	60	6	ZE302 130P	13	35	90	12
ZE302 055P	5.5	15	60	6	ZE302 140P	14	35	100	14
ZE302 060P	6	15	60	6	ZE302 150P	15	40	100	16
ZE302 065P	6.5	18	60	8	ZE302 160P	16	40	100	16
ZE302 070P	7	20	65	8	ZE302 180P	18	45	100	18
ZE302 075P	7.5	20	65	8	ZE302 200P	20	45	100	20
ZE302 080P	8	20	65	8					

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

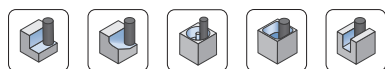
H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
		◎	◎	○						

ZE304P 4 Flutes Square End Mill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.02	h6



EDP No	DC	APMX	OAL	DCONMS	EDP No	DC	APMX	OAL	DCONMS
ZE304 010P	1	2.5	50	6	ZE304 085P	8.5	22	70	10
ZE304 015P	1.5	4	50	6	ZE304 090P	9	22	70	10
ZE304 020P	2	6	50	6	ZE304 095P	9.5	24	70	10
ZE304 025P	2.5	8	50	6	ZE304 100P	10	25	70	10
ZE304 030P	3	10	50	6	ZE304 105P	10.5	26	80	12
ZE304 035P	3.5	10	50	6	ZE304 110P	11	30	80	12
ZE304 040P	4	12	50	6	ZE304 115P	11.5	30	80	12
ZE304 045P	4.5	14	50	6	ZE304 120P	12	30	80	12
ZE304 050P	5	15	60	6	ZE304 130P	13	35	90	12
ZE304 055P	5.5	15	60	6	ZE304 140P	14	35	100	14
ZE304 060P	6	15	60	6	ZE304 150P	15	40	100	16
ZE304 065P	6.5	18	60	8	ZE304 160P	16	40	100	16
ZE304 070P	7	20	65	8	ZE304 180P	18	45	100	18
ZE304 075P	7.5	20	65	8	ZE304 200P	20	45	100	20
ZE304 080P	8	20	65	8					

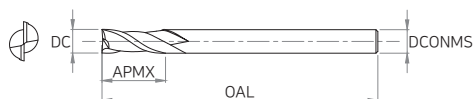
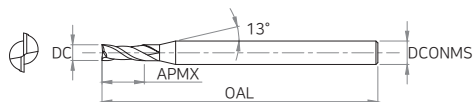
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
		◎	◎	○						

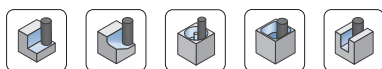
ZE322

2 Flutes Extra Long Square End Mill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.03	h6



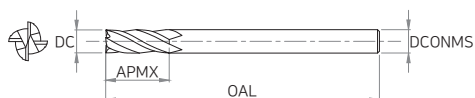
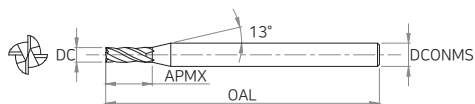
EDP No	DC	APMX	OAL	DCONMS	EDP No	DC	APMX	OAL	DCONMS
ZE322 030	3	15	60	6	ZE322 101	10	35	100	10
ZE322 031	3	20	70	6	ZE322 102	10	45	150	10
ZE322 030S	3	20	100	3	ZE322 103	10	55	180	10
ZE322 040	4	15	60	6	ZE322 120	12	30	90	12
ZE322 041	4	20	70	6	ZE322 121	12	40	110	12
ZE322 040S	4	20	100	4	ZE322 122	12	50	150	12
ZE322 050	5	20	60	6	ZE322 123	12	60	200	12
ZE322 051	5	20	80	6	ZE322 140	14	40	120	14
ZE322 052	5	25	100	6	ZE322 141	14	60	150	14
ZE322 060	6	20	80	6	ZE322 160	16	50	140	16
ZE322 061	6	30	100	6	ZE322 161	16	70	160	16
ZE322 062	6	40	150	6	ZE322 162	16	80	200	16
ZE322 080	8	30	90	8	ZE322 180	18	50	140	18
ZE322 081	8	35	100	8	ZE322 200	20	60	150	20
ZE322 082	8	40	150	8	ZE322 201	20	100	200	20
ZE322 100	10	30	90	10	ZE322 202	20	130	250	20

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

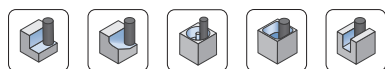
H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	Steel ~HB225	HB225 ~325	HRc30~50	~FCD500					
		◎	◎	○						

ZE324 4 Flutes Extra Long Square End Mill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.03	h6



EDP No	DC	APMX	OAL	DCONMS
ZE324 030	3	15	60	6
ZE324 031	3	20	70	6
ZE324 030S	3	20	100	3
ZE324 040	4	15	60	6
ZE324 041	4	20	70	6
ZE324 040S	4	20	100	4
ZE324 050	5	20	60	6
ZE324 051	5	20	80	6
ZE324 052	5	25	100	6
ZE324 060	6	20	80	6
ZE324 061	6	30	100	6
ZE324 062	6	40	150	6
ZE324 080	8	30	90	8
ZE324 081	8	35	100	8
ZE324 082	8	40	150	8
ZE324 100	10	30	90	10

EDP No	DC	APMX	OAL	DCONMS
ZE324 101	10	35	100	10
ZE324 102	10	45	150	10
ZE324 103	10	55	180	10
ZE324 120	12	30	90	12
ZE324 121	12	40	110	12
ZE324 122	12	50	150	12
ZE324 123	12	60	200	12
ZE324 140	14	40	120	14
ZE324 141	14	60	150	14
ZE324 160	16	50	140	16
ZE324 161	16	70	160	16
ZE324 162	16	80	200	16
ZE324 180	18	50	140	18
ZE324 200	20	60	150	20
ZE324 201	20	100	200	20
ZE324 202	20	130	250	20

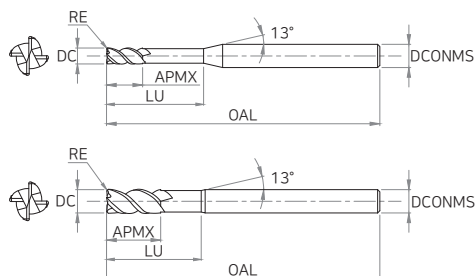
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
		◎	◎	○						

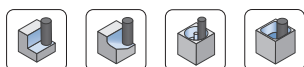
ZR304H 4 Flutes 45° Helix Radius End Mill

Endmill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.03	h6



EDP No	DC	RE	APMX	LU	OAL	DCON MS	EDP No	DC	RE	APMX	LU	OAL	DCON MS
ZR304H 0303	3	0.3	4	12	55	6	ZR304H 0610	6	1	7	20	60	6
ZR304H 0302S3	3	0.2	4	12	55	3	ZR304H 0805	8	0.5	10	25	65	8
ZR304H 0303S4	3	0.3	4	12	55	4	ZR304H 0810	8	1	10	25	65	8
ZR304H 0305	3	0.5	4	12	55	6	ZR304H 1005	10	0.5	12	30	70	10
ZR304H 0305S3	3	0.5	4	12	55	3	ZR304H 1010	10	1	12	30	70	10
ZR304H 0305S4	3	0.5	4	12	55	4	ZR304H 1015	10	1.5	12	30	70	10
ZR304H 0402S4	4	0.2	5	16	55	4	ZR304H 1020	10	2	12	30	70	10
ZR304H 0403	4	0.3	5	16	55	6	ZR304H 1205	12	0.5	15	30	80	12
ZR304H 0403S4	4	0.3	5	16	55	4	ZR304H 1210	12	1	15	30	80	12
ZR304H 0405	4	0.5	5	16	55	6	ZR304H 1215	12	1.5	15	30	80	12
ZR304H 0405S4	4	0.5	5	16	55	4	ZR304H 1220	12	2	15	30	80	12
ZR304H 0605	6	0.5	7	20	60	6							

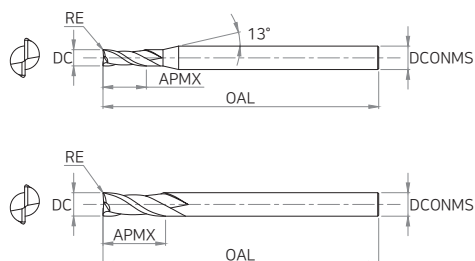
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
		◎	◎	○						

ZR322

2 Flutes Long Shank Radius End Mill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.03	h6



EDP No	DC	RE	APMX	OAL	DCON MS
ZR322 0302S4	3	0.2	8	60	4
ZR322 0302	3	0.2	8	60	6
ZR322 0303	3	0.3	8	60	6
ZR322 0305S4	3	0.5	8	60	4
ZR322 0305	3	0.5	8	60	6
ZR322 0402S4	4	0.2	11	70	4
ZR322 0402	4	0.2	11	70	6
ZR322 0403	4	0.3	11	70	6
ZR322 0405S4	4	0.5	11	70	4
ZR322 0405	4	0.5	11	70	6
ZR322 0410S4	4	1	11	70	4
ZR322 0410	4	1	11	70	6
ZR322 0502	5	0.2	13	80	6
ZR322 0503	5	0.3	13	80	6
ZR322 0505	5	0.5	13	80	6
ZR322 0510	5	1	13	80	6
ZR322 0602	6	0.2	13	90	6
ZR322 0603	6	0.3	13	90	6
ZR322 0605	6	0.5	13	90	6

EDP No	DC	RE	APMX	OAL	DCON MS
ZR322 0610	6	1	13	90	6
ZR322 0803	8	0.3	19	100	8
ZR322 0805	8	0.5	19	100	8
ZR322 0810	8	1	19	100	8
ZR322 0815	8	1.5	19	100	8
ZR322 0820	8	2	19	100	8
ZR322 1003	10	0.3	22	100	10
ZR322 1005	10	0.5	22	100	10
ZR322 1010	10	1	22	100	10
ZR322 1015	10	1.5	22	100	10
ZR322 1020	10	2	22	100	10
ZR322 1025	10	2.5	22	100	10
ZR322 1205	12	0.5	26	110	12
ZR322 1210	12	1	26	110	12
ZR322 1215	12	1.5	26	110	12
ZR322 1220	12	2	26	110	12
ZR322 1225	12	2.5	26	110	12
ZR322 1230	12	3	26	110	12

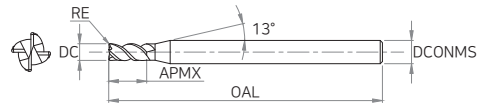
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
		◎	◎	○						

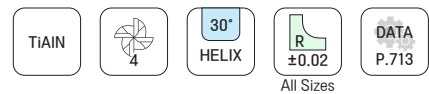
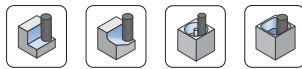
ZR324 4 Flutes Long Shank Radius End Mill

Endmill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.03	h6



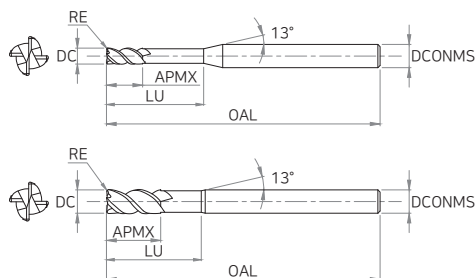
EDP No	DC	RE	APMX	OAL	DCON MS	EDP No	DC	RE	APMX	OAL	DCON MS
ZR324 0302S4	3	0.2	8	60	4	ZR324 0610	6	1	13	90	6
ZR324 0302	3	0.2	8	60	6	ZR324 0803	8	0.3	19	100	8
ZR324 0303	3	0.3	8	60	6	ZR324 0805	8	0.5	19	100	8
ZR324 0305S4	3	0.5	8	60	4	ZR324 0810	8	1	19	100	8
ZR324 0305	3	0.5	8	60	6	ZR324 0815	8	1.5	19	100	8
ZR324 0402S4	4	0.2	11	70	4	ZR324 0820	8	2	19	100	8
ZR324 0402	4	0.2	11	70	6	ZR324 1003	10	0.3	22	100	10
ZR324 0403	4	0.3	11	70	6	ZR324 1005	10	0.5	22	100	10
ZR324 0405S4	4	0.5	11	70	4	ZR324 1010	10	1	22	100	10
ZR324 0405	4	0.5	11	70	6	ZR324 1015	10	1.5	22	100	10
ZR324 0410S4	4	1	11	70	4	ZR324 1020	10	2	22	100	10
ZR324 0410	4	1	11	70	6	ZR324 1025	10	2.5	22	100	10
ZR324 0502	5	0.2	13	80	6	ZR324 1205	12	0.5	26	110	12
ZR324 0503	5	0.3	13	80	6	ZR324 1210	12	1	26	110	12
ZR324 0505	5	0.5	13	80	6	ZR324 1215	12	1.5	26	110	12
ZR324 0510	5	1	13	80	6	ZR324 1220	12	2	26	110	12
ZR324 0602	6	0.2	13	90	6	ZR324 1225	12	2.5	26	110	12
ZR324 0603	6	0.3	13	90	6	ZR324 1230	12	3	26	110	12
ZR324 0605	6	0.5	13	90	6						

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

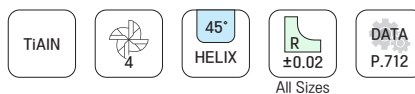
H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
		◎	◎	○						

ZR324H 4 Flutes 45° Helix Radius End Mill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.03	h6



EDP No	DC	RE	APMX	LU	OAL	DCONMS
ZR324H 0605	6	0.5	9	20	90	6
ZR324H 0610	6	1	9	20	90	6
ZR324H 0805	8	0.5	12	25	100	8
ZR324H 0810	8	1	12	25	100	8
ZR324H 1005	10	0.5	15	32	100	10
ZR324H 1010	10	1	15	32	100	10
ZR324H 1015	10	1.5	15	32	100	10
ZR324H 1020	10	2	15	32	100	10
ZR324H 1205	12	0.5	18	38	110	12
ZR324H 1210	12	1	18	38	110	12
ZR324H 1215	12	1.5	18	38	110	12
ZR324H 1220	12	2	18	38	110	12

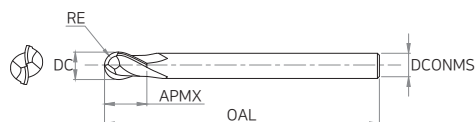
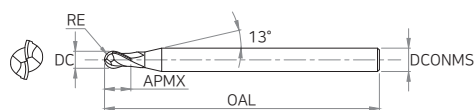
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
		◎	◎	○						

DB312 2 Flutes Ball End Mill

Endmill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.02	h6



All Sizes

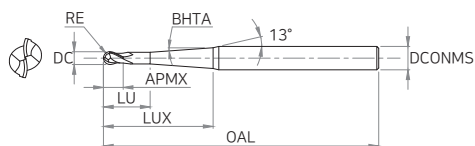
EDP No	DC	RE	APMX	OAL	DCON MS	EDP No	DC	RE	APMX	OAL	DCON MS
DB312 010S4	1	0.5	2.5	50	4	DB312 055	5.5	2.75	10	80	6
DB312 010	1	0.5	2.5	50	6	DB312 060S	6	3	12	60	6
DB312 012	1.2	0.6	3	50	6	DB312 060	6	3	12	90	6
DB312 015	1.5	0.75	4	50	6	DB312 065	6.5	3.25	12	90	8
DB312 020S4	2	1	5	50	4	DB312 070	7	3.5	14	90	8
DB312 020	2	1	5	50	6	DB312 080S	8	4	14	60	8
DB312 025	2.5	1.25	6	60	6	DB312 080	8	4	14	100	8
DB312 030S3	3	1.5	8	60	3	DB312 090	9	4.5	18	100	10
DB312 030S4	3	1.5	8	60	4	DB312 100S	10	5	18	60	10
DB312 030	3	1.5	8	60	6	DB312 100	10	5	18	100	10
DB312 035	3.5	1.75	8	70	6	DB312 120	12	6	22	110	12
DB312 040S4	4	2	8	70	4	DB312 140	14	7	26	110	14
DB312 040	4	2	8	70	6	DB312 160	16	8	30	140	16
DB312 045	4.5	2.25	8	70	6	DB312 180	18	9	34	140	18
DB312 050	5	2.5	10	80	6	DB312 200	20	10	38	160	20

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

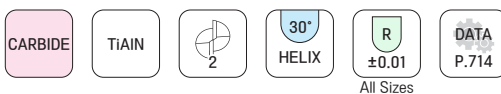
H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
		◎	◎	○						

DB342 2 Flutes Tapered Neck Ball End Mill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.02	h6



EDP No	DC	RE	APMX	LU	LUX	OAL	DCONMS	BHTA
DB342 01015	1	0.5	2	4	23	60	6	1°30'
DB342 01050	1	0.5	2	4	23	60	6	5°
DB342 01030	1	0.5	2	4	42	80	6	3°
DB342 02015	2	1	4	6	23	60	6	1°30'
DB342 02050	2	1	4	6	23	60	6	5°
DB342 02030	2	1	4	6	41	80	6	3°
DB342 03030	3	1.5	6	8	32	70	6	3°
DB342 03015	3	1.5	6	8	52	90	6	1°30'
DB342 04030	4	2	8	10	28	70	6	3°
DB342 04015	4	2	8	10	49	90	6	1°30'
DB342 05030	5	2.5	10	12	41	90	8	3°
DB342 05015	5	2.5	10	12	61	110	8	1°30'
DB342 06030	6	3	12	15	34	90	8	3°
DB342 06015	6	3	12	15	53	110	8	1°30'
DB342 08030	8	4	14	17	36	100	10	3°
DB342 08015	8	4	14	17	55	120	10	1°30'
DB342 10030	10	5	18	21	40	110	12	3°
DB342 10015	10	5	18	21	59	130	12	1°30'
DB342 12030	12	6	22	25	63	140	16	3°
DB342 12015	12	6	22	25	83	160	16	1°30'

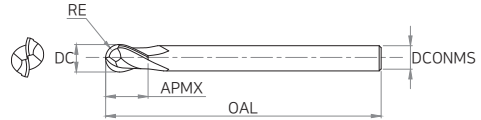
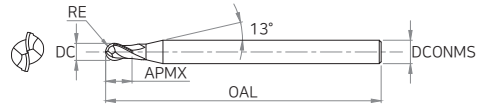
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	~325	HRc30~50	~FCD500					
		◎	◎	○						

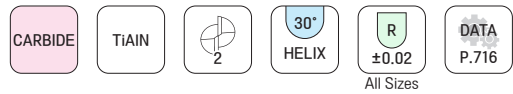
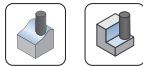
TXB202 2 Flutes Short Shank Ball End Mill

Endmill



► Tolerance

DC	Shank Dia
All Sizes	0 ~ -0.04 h6



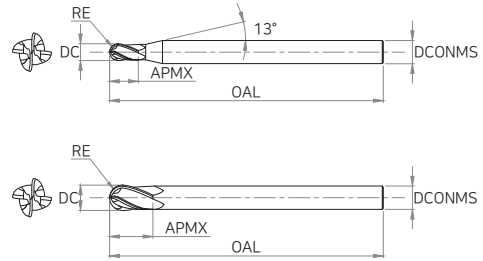
EDP No	DC	RE	APMX	OAL	DCONMS
TXB202 010	1	0.5	3	39	3
TXB202 015	1.5	0.75	5	39	3
TXB202 020	2	1	7	39	3
TXB202 025	2.5	1.25	8	39	3
TXB202 030	3	1.5	10	39	3
TXB202 040	4	2	14	51	4
TXB202 050	5	2.5	16	51	5
TXB202 060	6	3	19	64	6
TXB202 080	8	4	21	64	8
TXB202 100	10	5	25	70	10
TXB202 120	12	6	25	76	12
TXB202 160	16	8	32	89	16
TXB202 200	20	10	38	100	20

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

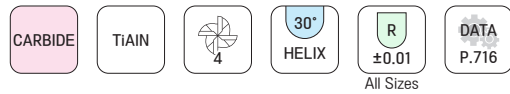
H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	Steel ~HB225	HB225 ~325	Steel HRC30~50	~FCD500					
		◎	◎	○						

TXB204 4 Flutes Short Shank Ball End Mill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.04	h6



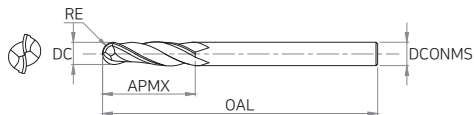
EDP No	DC	RE	APMX	OAL	DCONMS
TXB204 020	2	1	7	39	3
TXB204 030	3	1.5	10	39	3
TXB204 040	4	2	14	51	4
TXB204 050	5	2.5	16	51	5
TXB204 060	6	3	19	64	6
TXB204 080	8	4	21	64	8
TXB204 100	10	5	25	70	10
TXB204 120	12	6	25	76	12
TXB204 160	16	8	32	89	16
TXB204 200	20	10	38	100	20

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
		◎	◎	○						

TXB222 2 Flutes Long Ball End Mill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.04	h6



All Sizes

EDP No	DC	RE	APMX	OAL	DCONMS
TXB222 030	3	1.5	20	60	3
TXB222 040	4	2	20	60	4
TXB222 050	5	2.5	25	75	5
TXB222 060	6	3	30	75	6
TXB222 080	8	4	30	100	8
TXB222 100	10	5	40	100	10
TXB222 120	12	6	45	100	12
TXB222 140	14	7	45	100	14
TXB222 160	16	8	45	100	16
TXB222 180	18	9	45	100	18
TXB222 200	20	10	45	100	20

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

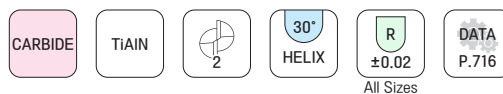
H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
		◎	◎	○						

TXB232 2 Flutes Long Shank Ball End Mill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.04	h6



EDP No	DC	RE	APMX	OAL	DCONMS
TXB232 030	3	1.5	5	75	3
TXB232 040	4	2	8	75	4
TXB232 050	5	2.5	9	75	5
TXB232 060	6	3	10	100	6
TXB232 060-75	6	3	10	75	6
TXB232 080	8	4	12	100	8
TXB232 080-75	8	4	12	75	8
TXB232 100	10	5	14	100	10
TXB232 100L	10	5	14	150	10
TXB232 120	12	6	16	100	12
TXB232 120L	12	6	16	150	12
TXB232 140	14	7	18	100	14
TXB232 160	16	8	22	150	16
TXB232 200	20	10	26	150	20

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
		◎	◎	○						

Endmill

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

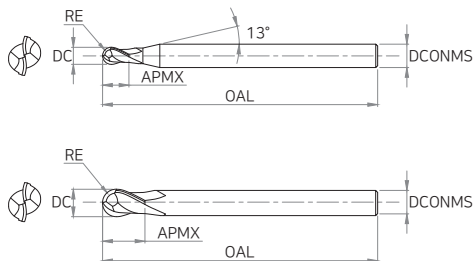
A-Wing

Standard

Copper
-Mate

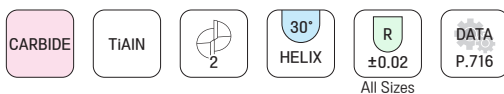
Gra
-Mate

TXB302 2 Flutes Ball End Mill



► Tolerance

DC	Shank Dia
All Sizes	0 ~ -0.04 h6



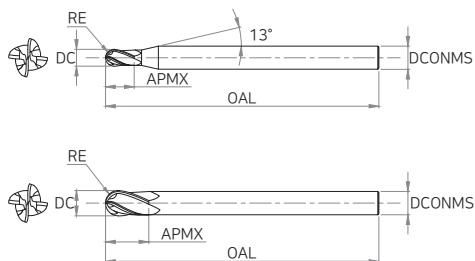
EDP No	DC	RE	APMX	OAL	DCONMS
TXB302 010	1	0.5	2	50	4
TXB302 015	1.5	0.75	3	50	4
TXB302 020	2	1	4	50	4
TXB302 025	2.5	1.25	6	50	4
TXB302 030	3	1.5	6	50	4
TXB302 040	4	2	8	50	4
TXB302 050	5	2.5	10	50	6
TXB302 060	6	3	12	50	6
TXB302 080	8	4	14	60	8
TXB302 100	10	5	18	75	10
TXB302 120	12	6	22	75	12
TXB302 140	14	7	32	75	14
TXB302 160	16	8	32	100	16
TXB302 180	18	9	32	100	18
TXB302 200	20	10	38	100	20

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	Steel ~HB225	HB225 ~325	Steel HRC30~50	~FCD500					
		◎	◎	○						

TXB304 4 Flutes Ball End Mill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.04	h6



EDP No	DC	RE	APMX	OAL	DCONMS
TXB304 010	1	0.5	2	50	4
TXB304 015	1.5	0.75	3	50	4
TXB304 020	2	1	4	50	4
TXB304 030	3	1.5	6	50	4
TXB304 040	4	2	8	50	4
TXB304 050	5	2.5	10	50	6
TXB304 060	6	3	12	50	6
TXB304 080	8	4	14	60	8
TXB304 100	10	5	18	75	10
TXB304 120	12	6	22	75	12
TXB304 140	14	7	32	75	14
TXB304 160	16	8	32	100	16
TXB304 180	18	9	32	100	18
TXB304 200	20	10	38	100	20

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
		◎	◎	○						

Endmill

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

X-Star Endmill

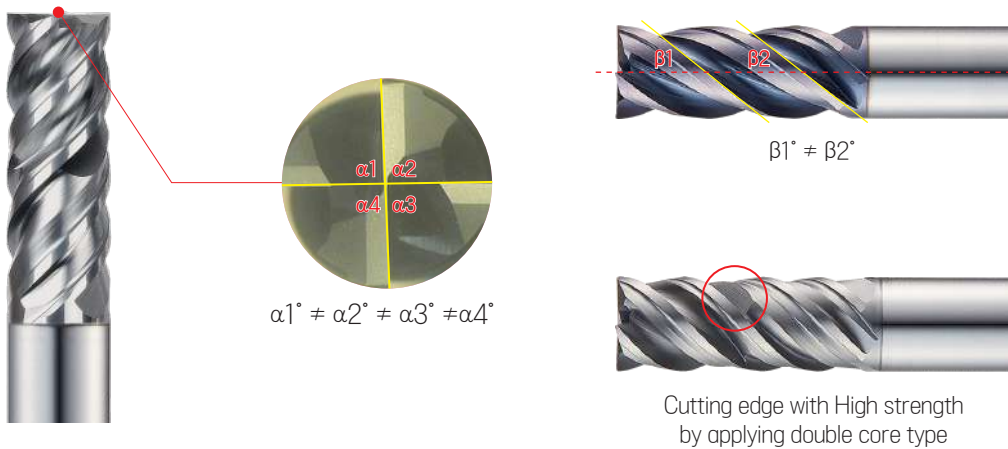
Difficult To Cut Material and Low Hardness Material HRc ~35

Characteristics

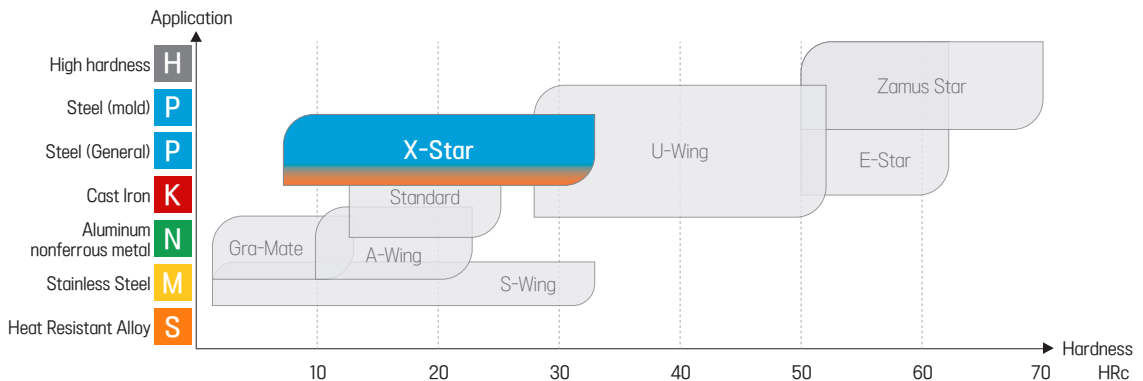
- Suitable for the difficult to cut material and low hardness material (HRc ~35) Stainless and Inconel etc.
- Various product line considered machining methods for rough and finishing for the difficult to cut materials and flat, sloped surfaces.

Features

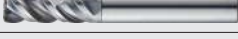
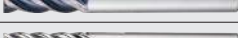
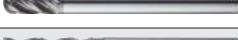
- High machining efficiency through unequal index cutting edge in all series
- Excellent chipping resistance and Minimized sudden breakage by using high toughness materials
- TiAlN, AlTiN coating for enhanced oxidation resistance and high hardness on surface
- Superb Groove design to improve chip emission according to workpiece's characteristics



Applications



Contents

Section		EDP No	Geometry	Product	Diameter(DC)		Page
Shape	Flute				Min	Max	
Square	3F	XCE503		3 Flutes Double Core Square End Mill	2	25	325
	4F	XCE504		4 Flutes Double Core Square End Mill	6	25	326
	4F	XE504		4 Flutes Variable Helix Square End Mill	1	25	327
	5F	XE505		5 Flutes Variable Helix Square End Mill	6	25	328
	4F	XE514		4 Flutes Variable Helix Neck Type Square End Mill	1	20	329
	5F	XE515		5 Flutes Variable Helix Neck Type Square End Mill	6	20	330
	4F	XE524		4 Flutes Variable Helix Long Shank Square End Mill	6	16	331
Radius	3F	XCR503		3 Flutes Double Core Radius End Mill	5	25	332
	4F	XCR504		4 Flutes Double Core Radius End Mill	6	25	333
	4F	XR504		4 Flutes Variable Helix Radius End Mill	2	25	334
	5F	XR505		5 Flutes Variable Helix Radius End Mill	6	25	335
	4F	XR514		4 Flutes Variable Helix Radius End Mill	2	20	336
Ball	4F	XXB504		4 Flutes Variable Helix Ball End Mill	4	12	337
Chamfer	3F	XCC503		3 Flutes Double Core Chamfer End Mill	2	25	338
	4F	XCC504		4 Flutes Double Core Chamfer End Mill	6	25	339

X-Star Endmill

Difficult To Cut Material and Low Hardness Material HRc ~35

EDP No. System

*If expressed as an integer, the decimal point is omitted.

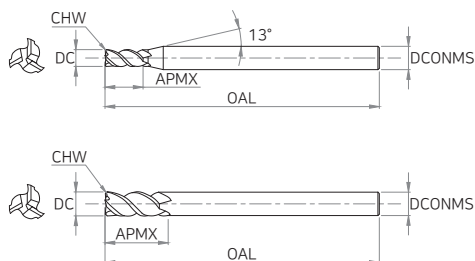


①	②	③	④	⑤	⑥	⑦
Section	Appearance	Grade	Length, Shank Type	Flutes	Cutting Dia	Corner R
X : X-Star (Unequal Pitch)	E : Square	3 : Grade	0 : Straight	3 : 3 Flutes	1	0.1
	R : Radius	5 : Grade	1 : Neck	4 : 4 Flutes	~	~
	XE : Square		2 : Long neck	5 : 5 Flutes	25.4	5
	XB : Ball					
	XR : Radius (Edge Protection)					
	CE : Square (Double Core)					
	CC : Chamfer (Double Core)					
	CR : Radius (Double Core)					

EX) 3 Flutes / Cutting Dia Ø12 / 50 Grade / Straight type Double Core Radius X-Star End Mill

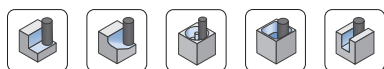
XCE503

3 Flutes Double Core Square End Mill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.02	h6



EDP No	DC	APMX	OAL	DCONMS
XCE503 020	2	6	50	6
XCE503 025	2.5	8	50	6
XCE503 030	3	10	50	6
XCE503 035	3.5	10	50	6
XCE503 040	4	12	50	6
XCE503 045	4.5	14	50	6
XCE503 050	5	15	50	6
XCE503 055	5.5	15	50	6
XCE503 060	6	15	50	6
XCE503 080	8	20	60	8
XCE503 100	10	25	70	10
XCE503 120	12	30	75	12
XCE503 160	16	40	90	16
XCE503 200	20	45	100	20
XCE503 250	25	50	120	25

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
		○	○	○					◎	

Endmill

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

XCE504

4 Flutes Double Core Square End Mill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.02	h6



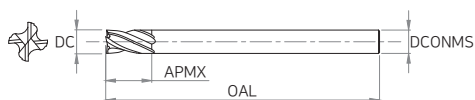
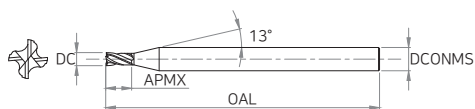
EDP No	DC	APMX	OAL	DCONMS
XCE504 060	6	15	50	6
XCE504 080	8	20	60	8
XCE504 100	10	25	70	10
XCE504 120	12	30	75	12
XCE504 160	16	40	90	16
XCE504 200	20	45	100	20
XCE504 250	25	50	120	25

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

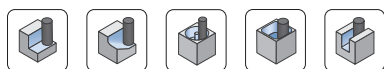
H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
		○	○	○					◎	

XE504 4 Flutes Variable Helix Square End Mill



► Tolerance

DC		Shank Dia
Ø1 ~ Ø12	0 ~ -0.02	h6
Ø13 ~ Ø25	0 ~ -0.03	



EDP No	DC	APMX	OAL	DCONMS
XE504 010	1	2.5	45	4
XE504 020	2	5	45	4
XE504 030	3	8	50	6
XE504 040	4	11	50	6
XE504 050	5	13	50	6
XE504 060	6	13	50	6
XE504 070	7	16	60	8
XE504 080	8	19	60	8
XE504 090	9	19	70	10
XE504 100	10	22	70	10
XE504 110	11	22	75	12
XE504 120	12	26	75	12
XE504 130	13	26	80	12
XE504 140	14	26	80	14
XE504 160	16	32	90	16
XE504 180	18	32	100	18
XE504 200	20	38	100	20
XE504 250	25	45	120	25

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
		○	○	○					◎	

Endmill

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

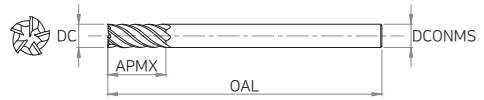
Standard

Copper
-Mate

Gra
-Mate

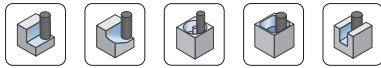
XE505

5 Flutes Variable Helix Square End Mill



► Tolerance

DC		Shank Dia
Ø6 ~ Ø8	0 ~ -0.04	h6
Ø10 ~ Ø25	0 ~ -0.05	



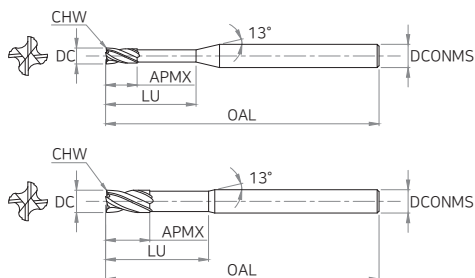
EDP No	DC	APMX	OAL	DCONMS
XE505 060	6	13	57	6
XE505 080	8	19	63	8
XE505 100	10	22	72	10
XE505 120	12	26	83	12
XE505 140	14	26	83	14
XE505 160	16	32	92	16
XE505 180	18	32	92	18
XE505 200	20	38	104	20
XE505 250	25	38	104	25

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

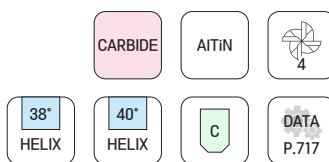
H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	~325	HRC30~50	~FCD500					
		○	○	○					◎	

XE514 4 Flutes Variable Helix Neck Type Square End Mill



► Tolerance

DC		Shank Dia
Ø1 ~ Ø12	0 ~ -0.02	h6
Ø16 ~ Ø20	0 ~ -0.03	



EDP No	DC	APMX	LU	OAL	DCONMS
XE514 010	1	2	10	45	4
XE514 020	2	3	12	45	4
XE514 030	3	4	14	50	6
XE514 040	4	5	16	50	6
XE514 050	5	6	18	50	6
XE514 060	6	7	20	50	6
XE514 080	8	9	26	60	8
XE514 100	10	11	31	70	10
XE514 120	12	13	37	75	12
XE514 160	16	17	43	90	16
XE514 200	20	21	53	100	20

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
		○	○	○					◎	

Endmill

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

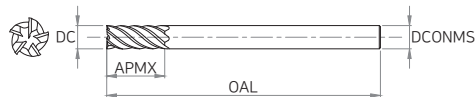
Standard

Copper
-Mate

Gra
-Mate

XE515

5 Flutes Variable Helix Neck Type Square End Mill



► Tolerance

DC		Shank Dia
Ø6 ~ Ø8	0 ~ -0.04	h6
Ø10 ~ Ø20	0 ~ -0.04	



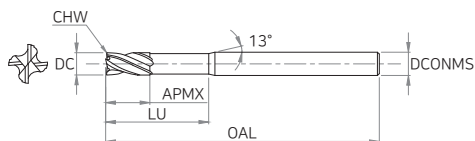
EDP No	DC	APMX	OAL	DCONMS
XE515 060	6	25	75	6
XE515 080	8	30	75	8
XE515 100	10	45	100	10
XE515 120	12	75	150	12
XE515 160	16	75	150	16
XE515 200	20	75	150	20

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

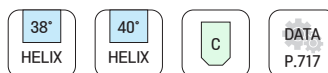
H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
		○	○	○					◎	

XE524 4 Flutes Variable Helix Long Shank Square End Mill



► Tolerance

DC		Shank Dia
Ø6 ~ Ø12	0 ~ -0.02	h6
Ø16	0 ~ -0.03	



EDP No	DC	APMX	LU	OAL	DCONMS
XE524 060	6	7	33	70	6
XE524 080	8	9	43	80	8
XE524 100	10	11	43	84	10
XE524 120	12	13	51	97	12
XE524 160	16	17	66	115	16

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	Steel HRc30~50	~FCD500					
		○	○	○					◎	

Endmill

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

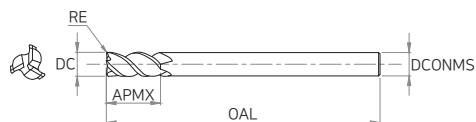
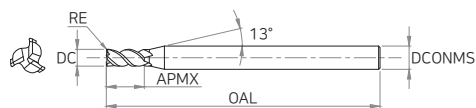
Standard

Copper
-Mate

Gra
-Mate

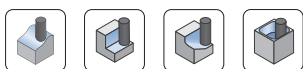
XCR503

3 Flutes Double Core Radius End Mill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.02	h6



EDP No	DC	RE	APMX	OAL	DCONMS
XCR503 0502	5	0.2	15	50	6
XCR503 0602	6	0.2	15	50	6
XCR503 0605	6	0.5	15	50	6
XCR503 0610	6	1	15	50	6
XCR503 0805	8	0.5	20	60	8
XCR503 0810	8	1	20	60	8
XCR503 1005	10	0.5	25	70	10
XCR503 1010	10	1	25	70	10
XCR503 1205	12	0.5	30	75	12
XCR503 1210	12	1	30	75	12
XCR503 1605	16	0.5	40	90	16
XCR503 1610	16	1	40	90	16
XCR503 2005	20	0.5	45	100	20
XCR503 2010	20	1	45	100	20
XCR503 2505	25	0.5	50	120	25
XCR503 2510	25	1	50	120	25

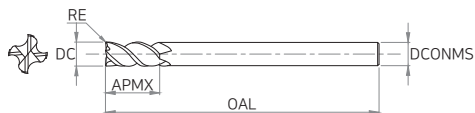
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
		○	○	○					◎	

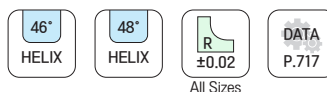
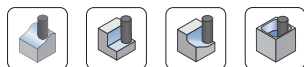
XCR504

4 Flutes Double Core Radius End Mill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.02	h6



All Sizes

EDP No	DC	RE	APMX	OAL	DCONMS
XCR504 0602	6	0.2	15	50	6
XCR504 0605	6	0.5	15	50	6
XCR504 0610	6	1	15	50	6
XCR504 0805	8	0.5	20	60	8
XCR504 0810	8	1	20	60	8
XCR504 1005	10	0.5	25	70	10
XCR504 1010	10	1	25	70	10
XCR504 1205	12	0.5	30	75	12
XCR504 1210	12	1	30	75	12
XCR504 1605	16	0.5	40	90	16
XCR504 1610	16	1	40	90	16
XCR504 2005	20	0.5	45	100	20
XCR504 2010	20	1	45	100	20
XCR504 2505	25	0.5	50	120	25
XCR504 2510	25	1	50	120	25

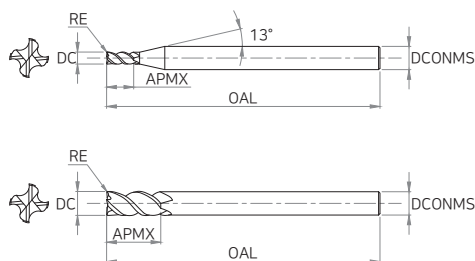
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	~325	HRc30~50	~FCD500					
		○	○	○					◎	

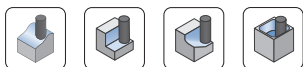
XR504

4 Flutes Variable Helix Radius End Mill



► Tolerance

DC		Shank Dia
Ø2 ~ Ø12	0 ~ -0.02	h6
Ø13 ~ Ø25	0 ~ -0.03	



All Sizes

EDP No	DC	RE	APMX	OAL	DCONMS
XR504 020	2	0.1	5	45	4
XR504 030	3	0.1	8	50	6
XR504 040	4	0.2	11	50	6
XR504 050	5	0.2	13	50	6
XR504 060	6	0.2	13	50	6
XR504 070	7	0.2	16	60	8
XR504 080	8	0.2	19	60	8
XR504 090	9	0.2	19	70	10
XR504 100	10	0.3	22	70	10
XR504 110	11	0.3	22	75	12
XR504 120	12	0.3	26	75	12
XR504 130	13	0.3	26	80	12
XR504 140	14	0.3	26	80	14
XR504 160	16	0.3	32	90	16
XR504 180	18	0.3	32	100	18
XR504 200	20	0.3	38	100	20
XR504 250	25	0.3	45	120	25

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	Steel ~HB225	HB225 ~325	Steel HRC30~50	~FCD500					
		○	○	○					◎	

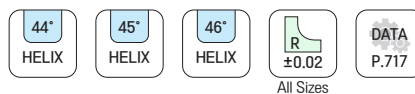
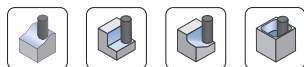
XR505

5 Flutes Variable Helix Radius End Mill



► Tolerance

DC		Shank Dia
Ø6 ~ Ø8	0 ~ -0.04	h6
Ø10 ~ Ø25	0 ~ -0.05	



EDP No	DC	RE	APMX	OAL	DCONMS
XR505 06050	6	0.5	13	57	6
XR505 08050	8	0.5	19	63	8
XR505 10050	10	0.5	22	72	10
XR505 12075	12	0.75	26	83	12
XR505 14075	14	0.75	26	83	14
XR505 14075S16	14	0.75	26	92	16
XR505 16100	16	1	32	92	16
XR505 18100	18	1	32	92	18
XR505 18100S20	18	1	32	104	20
XR505 20100	20	1	38	104	20
XR505 25100	25	1	38	104	25

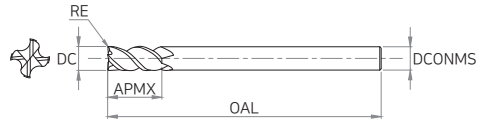
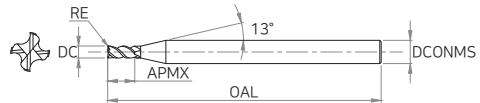
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	~325	HRc30~50	~FCD500					
		○	○	○					◎	

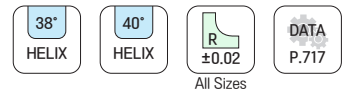
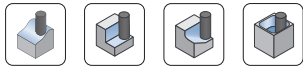
XR514

4 Flutes Variable Helix Radius End Mill



► Tolerance

DC		Shank Dia
Ø2 ~ Ø12	0 ~ -0.02	h6
Ø16 ~ Ø20	0 ~ -0.03	



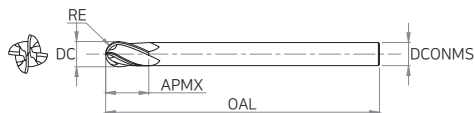
EDP No	DC	RE	APMX	OAL	DCON MS	EDP No	DC	RE	APMX	OAL	DCON MS
XR514 0201	2	0.1	5	45	4	XR514 0820	8	2	19	60	8
XR514 0202	2	0.2	5	45	4	XR514 1005	10	0.5	22	70	10
XR514 0302	3	0.2	8	50	6	XR514 1010	10	1	22	70	10
XR514 0303	3	0.3	8	50	6	XR514 1015	10	1.5	22	70	10
XR514 0305	3	0.5	8	50	6	XR514 1020	10	2	22	70	10
XR514 0403	4	0.3	10	50	6	XR514 1205	12	0.5	26	75	12
XR514 0405	4	0.5	10	50	6	XR514 1210	12	1	26	75	12
XR514 0410	4	1	10	50	6	XR514 1215	12	1.5	26	75	12
XR514 0505	5	0.5	13	50	6	XR514 1220	12	2	26	75	12
XR514 0510	5	1	13	50	6	XR514 1230	12	3	26	75	12
XR514 0605	6	0.5	13	50	6	XR514 1615	16	1.5	32	90	16
XR514 0610	6	1	13	50	6	XR514 1620	16	2	32	90	16
XR514 0615	6	1.5	13	50	6	XR514 1630	16	3	32	90	16
XR514 0805	8	0.5	19	60	8	XR514 2030	20	3	38	100	20
XR514 0810	8	1	19	60	8	XR514 2040	20	4	38	100	20
XR514 0815	8	1.5	19	60	8	XR514 2050	20	5	38	100	20

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

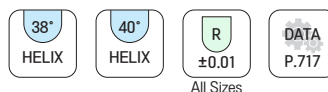
H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
		○	○	○					◎	

XXB504 4 Flutes Variable Helix Ball End Mill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.02	h6



EDP No	DC	RE	APMX	OAL	DCONMS
XXB504 040	4	2	8	70	4
XXB504 060	6	3	12	90	6
XXB504 080	8	4	15	100	8
XXB504 100	10	5	20	100	10
XXB504 120	12	6	25	110	12

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
		○	○	○					◎	

Endmill

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

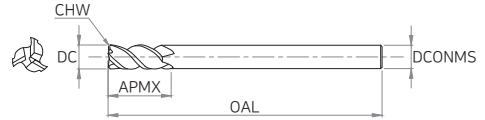
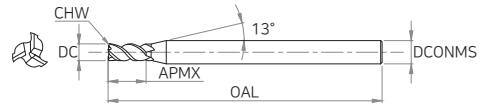
Standard

Copper
-Mate

Gra
-Mate

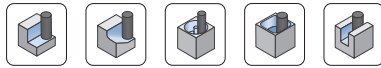
XCC503

3 Flutes Double Core Chamfer End Mill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.02	h6



EDP No	DC	CHW	APMX	OAL	DCONMS
XCC503 020	2	0.025	6	50	6
XCC503 025	2.5	0.025	8	50	6
XCC503 030	3	0.035	10	50	6
XCC503 035	3.5	0.035	10	50	6
XCC503 040	4	0.045	12	50	6
XCC503 045	4.5	0.045	14	50	6
XCC503 050	5	0.055	15	50	6
XCC503 055	5.5	0.055	15	50	6
XCC503 060	6	0.075	15	50	6
XCC503 080	8	0.1	20	60	8
XCC503 100	10	0.125	25	70	10
XCC503 120	12	0.15	30	75	12
XCC503 160	16	0.2	40	90	16
XCC503 200	20	0.25	45	100	20
XCC503 250	25	0.3	50	120	25

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
		○	○	○					◎	

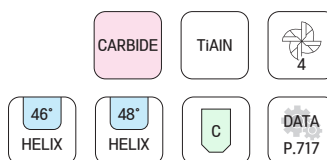
XCC504

4 Flutes Double Core Chamfer End Mill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.02	h6



EDP No	DC	CHW	APMX	OAL	DCONMS
XCC504 060	6	0.075	15	50	6
XCC504 080	8	0.1	20	60	8
XCC504 100	10	0.125	25	70	10
XCC504 120	12	0.15	30	75	12
XCC504 160	16	0.2	40	90	16
XCC504 200	20	0.3	45	100	20
XCC504 250	25	0.3	50	120	25

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
		○	○	○					◎	

S-Wing Endmill **NEW**

For Stainless Steels

Characteristics

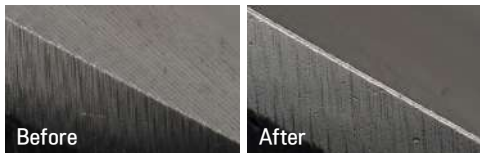
- Suitable for machining difficult-to-cut materials such as stainless steel and titanium through variable Helix
- New coatings with high oxidation resistance and surface hardness
- Advanced surface roughness with improved chip emission and deposition resistance

Features

- Stable high speed processing with minimum vibration, unequal index and optimal rake angle
- High processability and low vibration by applying unequal index in cutting edge
- Minimum vibration through optimized helix angle and R gash, enhanced chip emission with stiffness supplementation
- Reduced friction resistance and improved chip emission by applying new coatings with high surface hardness oxidation resistance
- Enhanced chipping resistance and deposition resistance with new strengthened flute

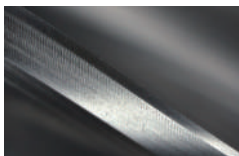
Cutting edge

- Improved initial chipping resistance for high-hardness steels
- Enhancing wear resistance and inducing stable processing
- High quality by stabilizing cutting edge



Additional finishing edge

- Improved surface roughness by enhancing the first O.D grinding roughness
- High quality of cutting edge and improved deposition resistance



Raw-material for high performance

- Chipping resistance and working stability through high performance raw-material



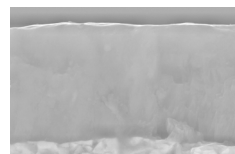
Unequal Index / R gash

- High chip emission through R gash shape
- Stability when shouldering machining



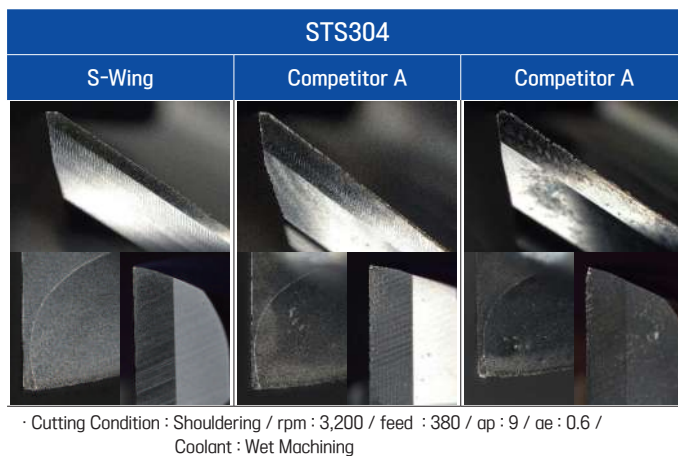
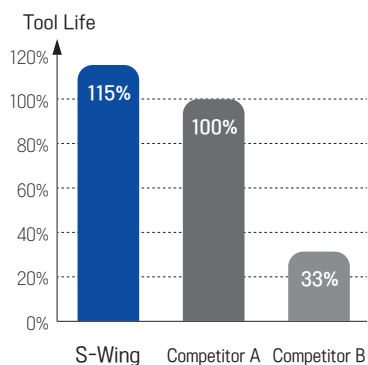
AlCrN coating

- Improved lubrication through containing Cr
- Improved heat resistance

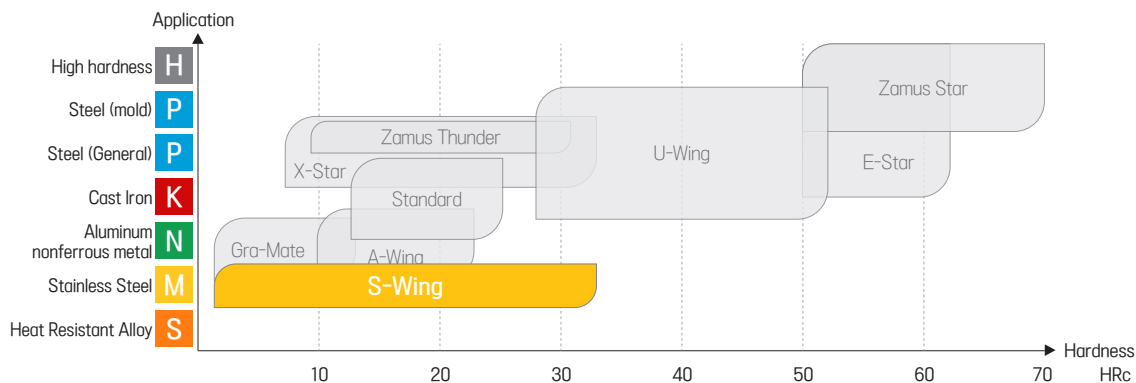


Case Study

► 4 Flutes D6.0 Square End Mill



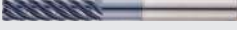
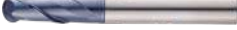
Applications



S-Wing Endmill **NEW**

For Stainless Steels

Contents

Section		EDP No	Geometry	Product	Diameter(DC)		Page
Shape	Flute				Min	Max	
Square	2F	SE502		2 Flutes Square End Mill	1	20	343
	3F	SE503		3 Flutes Square End Mill	1	20	344
	4F	SE504		4 Flutes Square End Mill	1	20	345
	6F	SE506		6 Flutes Square End Mill	6	20	347
Radius	4F	SR504		4 Flutes Radius End Mill	1	20	348
	5F	SR505		5 Flutes Chip Breaker Type Radius End Mill	6	20	350
	7F	SR507		7 Flutes Chip Breaker Type Radius End Mill	6	20	351
Ball	2F	SB502		2 Flutes Ball End Mill	1	12	352
	4F	SB504		4 Flutes Ball End Mill	3	20	353
Roughing	3~5F	SF51H		3~5 Flutes Roughing End Mill	3	20	354

EDP No. System

*If expressed as an integer, the decimal point is omitted.

S	F	5	1	4	120	03	H
①	②	③	④	⑤	⑥	⑦	⑧

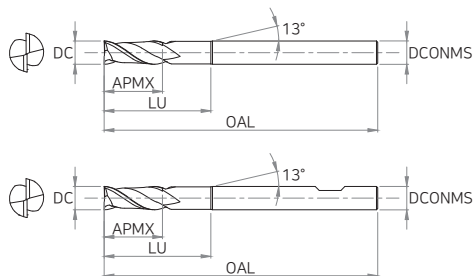
①	②	③	④	⑤	⑥	⑦	⑧	
Section	Appearance	Grade	Length, Shank Type	Flutes	Cutting Dia	Corner R	Helix	
S : STS high Performance	E : Square	5 : Grade	0 : Standard	2 : 2 Flutes	1	0.1	H : High Helix	
	R : Radius		1 : Straight, Neck	3 : 3 Flutes	~	~		
	B : Ball			4 : 4 Flutes	20	2		
	F : Roughing			5 : 5 Flutes				
				6 : 6 Flutes				
				7 : 7 Flutes				

EX) 4 Flute / Cutting Dia $\varnothing 2$ / Corner R 0.3 / Shank Dia $\varnothing 4$ / 50 Grade / Corner Radius Standard Type STS high Performance End Mill

SE502

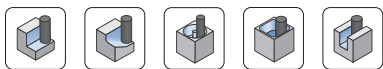
2 Flutes Square End Mill

※ The tools of DIN standard are made to order



► Tolerance

DC		Shank Dia
Ø1 ~ Ø5	0 ~ -0.015	h5
Ø6	0 ~ -0.02	
Ø8 ~ Ø20	0 ~ -0.03	



EDP No		DC	APMX	LU	OAL	DCONMS
JIS	DIN					
SE502 010	SE502 010F	1	2.5	7.5	50	6
SE502 012	SE502 012F	1.2	3	8	50	6
SE502 015	SE502 015F	1.5	4	9	50	6
SE502 020	SE502 020F	2	6	11	50	6
SE502 025	SE502 025F	2.5	7	12	50	6
SE502 030	SE502 030F	3	8	13	55	6
SE502 040	SE502 040F	4	10	15	55	6
SE502 050	SE502 050F	5	15	20	55	6
SE502 060	SE502 060F	6	15	22	60	6
SE502 080	SE502 080F	8	20	32	70	8
SE502 100	SE502 100F	10	25	33	75	10
SE502 120	SE502 120F	12	30	35	80	12
SE502 140	SE502 140F	14	35	42	90	16
SE502 160	SE502 160F	16	42	52	100	16
SE502 180	-	18	45	-	100	16
SE502 200	SE502 200F	20	48	50	100	20

► Applicable Working Material

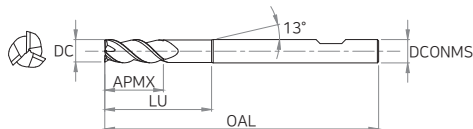
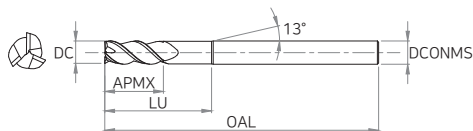
○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	~325	HRc30~50	~FCD500					
		○	○	○					◎	○

SE503

3 Flutes Square End Mill

※ The tools of DIN standard are made to order



► Tolerance

DC		Shank Dia
Ø1 ~ Ø5	0 ~ -0.015	h5
Ø6	0 ~ -0.02	
Ø8 ~ Ø20	0 ~ -0.03	



EDP No		DC	APMX	LU	OAL	DCONMS
JIS	DIN					
SE503 010	SE503 010F	1	2.5	7.5	50	6
SE503 012	SE503 012F	1.2	3	8	50	6
SE503 015	SE503 015F	1.5	4	9	50	6
SE503 020	SE503 020F	2	6	11	50	6
SE503 025	SE503 025F	2.5	7	12	50	6
SE503 030	SE503 030F	3	8	13	55	6
SE503 03010	SE503 03010F	3	10	15	60	6
SE503 040	SE503 040F	4	10	15	55	6
SE503 04012	SE503 04012F	4	12	17	60	6
SE503 050	SE503 050F	5	13	18	55	6
SE503 060	SE503 060F	6	15	22	60	6
SE503 06020	SE503 06020F	6	20	27	65	6
SE503 080	SE503 080F	8	20	32	70	8
SE503 08030	SE503 08030F	8	30	42	80	8
SE503 100	SE503 100F	10	25	33	75	10
SE503 10035	SE503 10035F	10	35	43	85	10
SE503 120	SE503 120F	12	30	35	80	12
SE503 12040	SE503 12040F	12	40	45	90	12
SE503 140	SE503 140F	14	35	42	90	16
SE503 160	SE503 160F	16	42	52	100	16
SE503 180	-	18	45	-	100	16
SE503 200	SE503 200F	20	48	50	100	20

► Applicable Working Material

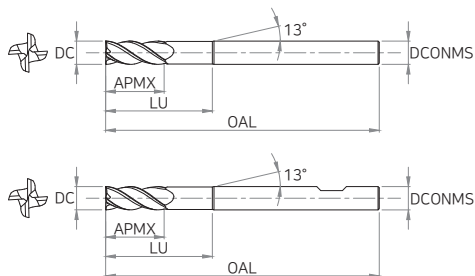
○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	Steel ~HB225	Alloy Steel HB225 ~325	Prehardened Steel HRC30~50	Cast Iron ~FCD500	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
		○	○	○					◎	○

SE504

4 Flutes Square End Mill

※ The tools of DIN standard are made to order



► Tolerance

DC		Shank Dia
Ø1 ~ Ø5.5	0 ~ -0.015	h5
Ø6 ~ Ø7	0 ~ -0.02	
Ø8 ~ Ø20	0 ~ -0.03	



EDP No		DC	APMX	LU	OAL	DCONMS
JIS	DIN					
SE504 010	SE504 010F	1	2.5	7.5	50	6
SE504 012	SE504 012F	1.2	3	8	50	6
SE504 015	SE504 015F	1.5	4	9	50	6
SE504 020	SE504 020F	2	6	11	50	6
SE504 025	SE504 025F	2.5	7	12	50	6
SE504 030	SE504 030F	3	8	13	55	6
SE504 03010	SE504 03010F	3	10	15	60	6
SE504 035	SE504 035F	3.5	10	15	55	6
SE504 040	SE504 040F	4	10	15	55	6
SE504 04012	SE504 04012F	4	12	17	60	6
SE504 045	SE504 045F	4.5	12	17	55	6
SE504 050	SE504 050F	5	15	20	55	6
SE504 055	SE504 055F	5.5	15	20	60	6
SE504 060	SE504 060F	6	15	22	60	6
SE504 06020	SE504 06020F	6	20	27	65	6
SE504 065	SE504 065F	6.5	15	22	60	8
SE504 070	SE504 070F	7	20	42	80	8
SE504 080	SE504 080F	8	20	32	70	8
SE504 08025	SE504 08025F	8	25	32	70	8
SE504 08030	SE504 08030F	8	30	42	80	8

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
		○	○	○					◎	○

Endmill

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

SE504

4 Flutes Square End Mill

※ The tools of DIN standard
are made to order

Endmill

EDP No		DC	APMX	LU	OAL	DCONMS
JIS	DIN					
SE504 085	SE504 085F	8.5	20	28	70	10
SE504 090	SE504 090F	9	25	38	80	10
SE504 100	SE504 100F	10	25	33	75	10
SE504 10035	SE504 10035F	10	35	43	85	10
SE504 120	SE504 120F	12	30	35	80	12
SE504 12040	SE504 12040F	12	40	45	90	12
SE504 140	SE504 140F	14	35	42	90	16
SE504 160	SE504 160F	16	42	52	100	16
SE504 180	-	18	45	-	100	16
SE504 200	SE504 200F	20	48	50	100	20

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

► Applicable Working Material

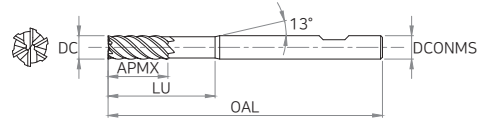
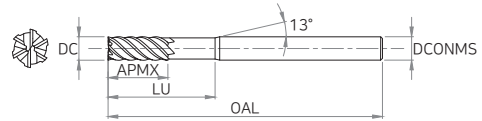
○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
		○	○	○					◎	○

SE506

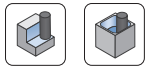
6 Flutes Square End Mill

※ The tools of DIN standard are made to order



► Tolerance

DC		Shank Dia
Ø6	0 ~ -0.02	h5
Ø8 ~ Ø20	0 ~ -0.03	



EDP No		DC	APMX	LU	OAL	DCONMS
JIS	DIN					
SE506 060	SE506 060F	6	15	22	60	6
SE506 080	SE506 080F	8	20	32	70	8
SE506 100	SE506 100F	10	25	33	75	10
SE506 120	SE506 120F	12	30	35	80	12
SE506 160	SE506 160F	16	42	52	100	16
SE506 200	SE506 200F	20	48	50	100	20

► Applicable Working Material

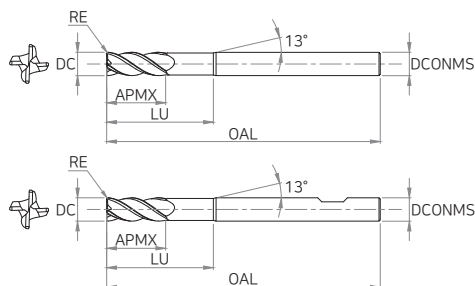
○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	~325	HRc30~50	~FCD500					
		○	○	○					◎	○

SR504

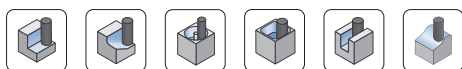
4 Flutes Radius End Mill

* The tools of DIN standard are made to order



► Tolerance

DC		Shank Dia
Ø1 ~ Ø5	0 ~ -0.015	h5
Ø6 ~ Ø7	0 ~ -0.02	
Ø8 ~ Ø20	0 ~ -0.03	



EDP No		DC	RE	APMX	LU	OAL	DCONMS
JIS	DIN						
SR504 01001	SR504 01001F	1	0.1	2.5	7.5	50	6
SR504 01002	SR504 01002F	1	0.2	2.5	7.5	50	6
SR504 01201	SR504 01201F	1.2	0.1	3	8	50	6
SR504 01501	SR504 01501F	1.5	0.1	4	9	50	6
SR504 01502	SR504 01502F	1.5	0.2	4	9	50	6
SR504 02001	SR504 02001F	2	0.1	6	11	50	6
SR504 02002	SR504 02002F	2	0.2	6	11	50	6
SR504 02502	SR504 02502F	2.5	0.2	7	12	50	6
SR504 03002	SR504 03002F	3	0.2	8	13	55	6
SR504 03003	SR504 03003F	3	0.3	8	13	55	6
SR504 03005	SR504 03005F	3	0.5	8	13	55	6
SR504 04002	SR504 04002F	4	0.2	10	15	55	6
SR504 04003	SR504 04003F	4	0.3	10	15	55	6
SR504 04005	SR504 04005F	4	0.5	10	15	55	6
SR504 05002	SR504 05002F	5	0.2	15	20	55	6
SR504 05003	SR504 05003F	5	0.3	15	20	55	6
SR504 05005	SR504 05005F	5	0.5	15	20	55	6
SR504 06003	SR504 06003F	6	0.3	15	22	60	6
SR504 06005	SR504 06005F	6	0.5	15	22	60	6
SR504 06010	SR504 06010F	6	1	15	22	60	6
SR504 07003	SR504 07003F	7	0.3	15	22	60	8

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	Steel ~HB225	Alloy Steel HB225 ~325	Prehardened Steel HRC30~50	Cast Iron ~FCD500	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
		○	○	○					◎	○

SR504

4 Flutes Radius End Mill

* The tools of DIN standard are made to order

Endmill

EDP No		DC	RE	APMX	LU	OAL	DCONMS
JIS	DIN						
SR504 08002	SR504 08002F	8	0.2	20	32	70	8
SR504 08003	SR504 08003F	8	0.3	20	32	70	8
SR504 08005	SR504 08005F	8	0.5	20	32	70	8
SR504 08010	SR504 08010F	8	1	20	32	70	8
SR504 10003	SR504 10003F	10	0.3	25	33	75	10
SR504 10005	SR504 10005F	10	0.5	25	33	75	10
SR504 10010	SR504 10010F	10	1	25	33	75	10
SR504 10015	SR504 10015F	10	1.5	25	33	75	10
SR504 10020	SR504 10020F	10	2	25	33	75	10
SR504 10030	SR504 10030F	10	3	25	33	75	10
SR504 12003	SR504 12003F	12	0.3	30	35	80	12
SR504 12005	SR504 12005F	12	0.5	30	35	80	12
SR504 12010	SR504 12010F	12	1	30	35	80	12
SR504 12015	SR504 12015F	12	1.5	30	35	80	12
SR504 12020	SR504 12020F	12	2	30	35	80	12
SR504 12030	SR504 12030F	12	3	30	35	80	12
SR504 12040	SR504 12040F	12	4	30	35	80	12
SR504 14005	SR504 14005F	14	0.5	35	42	90	16
SR504 14010	SR504 14010F	14	1	35	42	90	16
SR504 14020	SR504 14020F	14	2	35	42	90	16
SR504 14030	SR504 14030F	14	3	35	42	90	16
SR504 14040	SR504 14040F	14	4	35	42	90	16
SR504 16005	SR504 16005F	16	0.5	42	52	100	16
SR504 16010	SR504 16010F	16	1	42	52	100	16
SR504 16020	SR504 16020F	16	2	42	52	100	16
SR504 16030	SR504 16030F	16	3	42	52	100	16
SR504 16040	SR504 16040F	16	4	42	52	100	16
SR504 16050	SR504 16050F	16	5	42	52	100	16
SR504 18005	-	18	0.5	45	-	100	16
SR504 20005	SR504 20005F	20	0.5	48	50	100	20
SR504 20010	SR504 20010F	20	1	48	50	100	20
SR504 20020	SR504 20020F	20	2	48	50	100	20
SR504 20030	SR504 20030F	20	3	48	50	100	20
SR504 20040	SR504 20040F	20	4	48	50	100	20
SR504 20050	SR504 20050F	20	5	48	50	100	20

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

► Applicable Working Material

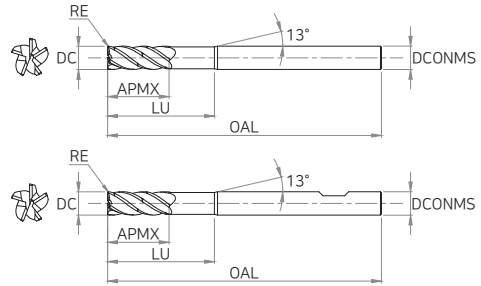
○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	~325	HRc30~50	~FCD500					
		○	○	○					◎	○

SR505

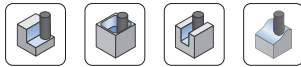
5 Flutes Chip Breaker Type
Radius End Mill

※ The tools of DIN standard
are made to order



► Tolerance

DC		Shank Dia
Ø6	0 ~ -0.02	h5
Ø8 ~ Ø20	0 ~ -0.03	



EDP No		DC	RE	APMX	LU	OAL	DCONMS
JIS	DIN						
SR505 06005	SR505 06005F	6	0.5	15	22	60	6
SR505 0602405	SR505 0602405F	6	0.5	24	32	70	6
SR505 08005	SR505 08005F	8	0.5	20	32	70	8
SR505 0803205	SR505 0803205F	8	0.5	32	52	90	8
SR505 10005	SR505 10005F	10	0.5	25	33	75	10
SR505 1004005	SR505 1004005F	10	0.5	40	58	100	10
SR505 12005	SR505 12005F	12	0.5	30	35	80	12
SR505 12010	SR505 12010F	12	1	30	35	80	12
SR505 12020	SR505 12020F	12	2	30	35	80	12
SR505 12030	SR505 12030F	12	3	30	35	80	12
SR505 1204805	SR505 1204805F	12	0.5	48	63	110	12
SR505 16005	SR505 16005F	16	0.5	42	52	100	16
SR505 16010	SR505 16010F	16	1	42	52	100	16
SR505 16020	SR505 16020F	16	2	42	52	100	16
SR505 16030	SR505 16030F	16	3	42	52	100	16
SR505 16040	SR505 16040F	16	4	42	52	100	16
SR505 1606505	SR505 1606505F	16	0.5	65	80	130	16
SR505 20005	SR505 20005F	20	0.5	48	58	110	20
SR505 2006505	SR505 2006505F	20	0.5	65	78	130	20

► Applicable Working Material

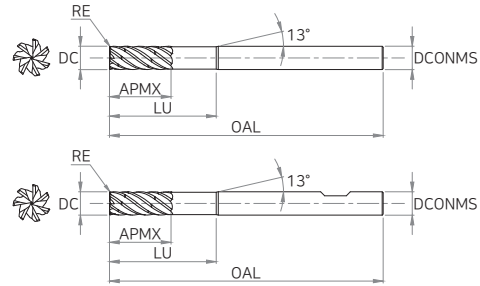
○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	~325	HRC30~50	~FC500					
		○	○	○					◎	○

SR507

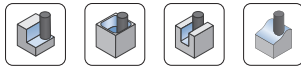
7 Flutes Chip Breaker Type
Radius End Mill

※ The tools of DIN standard
are made to order



► Tolerance

DC		Shank Dia
Ø6	0 ~ -0.02	h5
Ø8 ~ Ø20	0 ~ -0.03	



EDP No		DC	RE	APMX	LU	OAL	DCONMS
JIS	DIN						
SR507 06005	SR507 06005F	6	0.5	15	22	60	6
SR507 0602405	SR507 0602405F	6	0.5	24	32	70	6
SR507 08005	SR507 08005F	8	0.5	20	32	70	8
SR507 0803205	SR507 0803205F	8	0.5	32	52	90	8
SR507 10005	SR507 10005F	10	0.5	25	33	75	10
SR507 1004005	SR507 1004005F	10	0.5	40	58	100	10
SR507 12005	SR507 12005F	12	0.5	30	35	80	12
SR507 12010	SR507 12010F	12	1	30	35	80	12
SR507 12020	SR507 12020F	12	2	30	35	80	12
SR507 12030	SR507 12030F	12	3	30	35	80	12
SR507 12040	SR507 12040F	12	4	30	35	80	12
SR507 1204805	SR507 1204805F	12	0.5	48	63	110	12
SR507 16005	SR507 16005F	16	0.5	42	52	100	16
SR507 16010	SR507 16010F	16	1	42	52	100	16
SR507 16020	SR507 16020F	16	2	42	52	100	16
SR507 16030	SR507 16030F	16	3	42	52	100	16
SR507 16040	SR507 16040F	16	4	42	52	100	16
SR507 16050	SR507 16050F	16	5	42	52	100	16
SR507 1606505	SR507 1606505F	16	0.5	65	80	130	16
SR507 20005	SR507 20005F	20	0.5	48	58	110	20
SR507 2006505	SR507 2006505F	20	0.5	65	78	130	20

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
		○	○	○					◎	○

Endmill

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

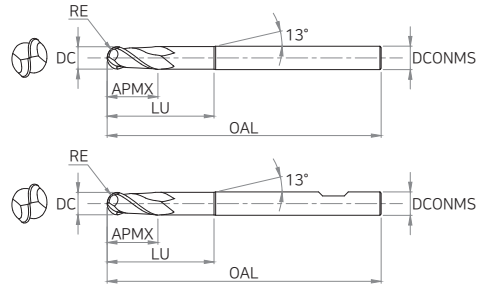
Copper
-Mate

Gra
-Mate

SB502

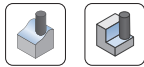
2 Flutes Ball End Mill

* The tools of DIN standard are made to order



► Tolerance

DC		Shank Dia
Ø1 ~ Ø5	0 ~ -0.015	h5
Ø6	0 ~ -0.02	
Ø8 ~ Ø20	0 ~ -0.03	



EDP No		DC	RE	APMX	LU	OAL	DCONMS
JIS	DIN						
SB502 010	SB502 010F	1	0.5	3	8	50	6
SB502 020	SB502 020F	2	1	6	11	50	6
SB502 030	SB502 030F	3	1.5	8	13	50	6
SB502 030L	SB502 030LF	3	1.5	8	13	70	6
SB502 040	SB502 040F	4	2	10	15	50	6
SB502 040L	SB502 040LF	4	2	10	15	70	6
SB502 050	SB502 050F	5	2.5	13	18	50	6
SB502 050L	SB502 050LF	5	2.5	13	18	80	6
SB502 060	SB502 060F	6	3	13	20	50	6
SB502 060L	SB502 060LF	6	3	13	52	90	6
SB502 080	SB502 080F	8	4	19	24	60	8
SB502 080L	SB502 080LF	8	4	19	62	100	8
SB502 100	SB502 100F	10	5	22	30	70	10
SB502 100L	SB502 100LF	10	5	22	58	100	10
SB502 120	SB502 120F	12	6	26	30	75	12
SB502 120L	SB502 120LF	12	6	26	63	110	12

► Applicable Working Material

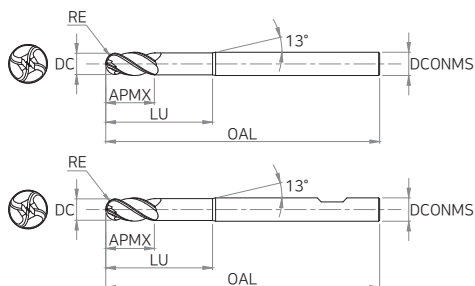
○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	Steel ~HB225	HB225 ~325	HRc30~50	~FCD500					
		○	○	○					◎	○

SB504

4 Flutes Ball End Mill

* The tools of DIN standard are made to order



► Tolerance

DC		Shank Dia
Ø3 ~ Ø5	0 ~ -0.015	h5
Ø6	0 ~ -0.02	
Ø8 ~ Ø20	0 ~ -0.03	



EDP No		DC	RE	APMX	LU	OAL	DCONMS
JIS	DIN						
SB504 030	SB504 030F	3	1.5	8	13	60	6
SB504 040	SB504 040F	4	2	8	13	70	6
SB504 050	SB504 050F	5	2.5	12	17	80	6
SB504 060	SB504 060F	6	3	12	52	90	6
SB504 080	SB504 080F	8	4	16	62	100	8
SB504 100	SB504 100F	10	5	20	58	100	10
SB504 120	SB504 120F	12	6	25	53	100	12
SB504 160	SB504 160F	16	8	30	50	100	16
SB504 200	SB504 200F	20	10	38	48	100	20

► Applicable Working Material

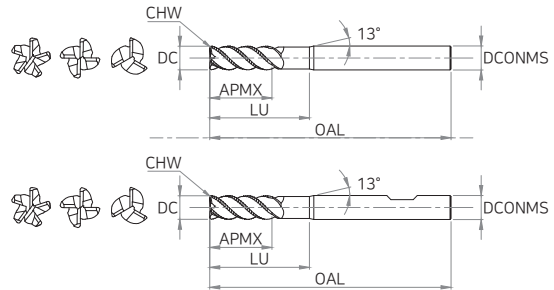
○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	Steel HRc30~50	~FCD500					
		○	○	○					◎	○

SF51H

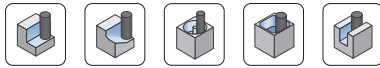
3~5 Flutes Roughing End Mill

* The tools of DIN standard are made to order



► Tolerance

DC		Shank Dia
ø3 ~ ø20	0 ~ -0.05	h5



EDP No		DC	CHW	APMX	LU	OAL	DCONMS	NOF
JIS	DIN							
SF51 303002H	SF51 303002HF	3	0.2	8	13	50	6	3
SF51 304002H	SF51 304002HF	4	0.2	10	15	50	6	3
SF51 405002H	SF51 405002HF	5	0.3	13	18	50	6	4
SF51 406002H	SF51 406002HF	6	0.3	13	22	60	6	4
SF51 406002NH	SF51 406002NHF	6	0.3	10	22	60	6	4
SF51 407002H	SF51 407002HF	7	0.4	18	32	70	8	4
SF51 408002H	SF51 408002HF	8	0.4	19	32	70	8	4
SF51 408002NH	SF51 408002NHF	8	0.4	12	32	70	8	4
SF51 409003H	SF51 409003HF	9	0.4	20	28	70	10	4
SF51 410003H	SF51 410003HF	10	0.4	22	33	75	10	4
SF51 410003NH	SF51 410003NHF	10	0.4	15	33	75	10	4
SF51 411003H	SF51 411003HF	11	0.5	25	33	80	12	4
SF51 412003H	SF51 412003HF	12	0.5	26	35	80	12	4
SF51 412003NH	SF51 412003NHF	12	0.5	20	35	80	12	4
SF51 506002H	SF51 506002HF	6	0.5	13	22	60	6	5
SF51 508002H	SF51 508002HF	8	0.5	19	27	65	8	5
SF51 510003H	SF51 510003HF	10	0.5	22	30	70	10	5
SF51 512003H	SF51 512003HF	12	0.5	26	35	80	12	5
SF51 514005H	SF51 514005HF	14	0.5	28	40	90	16	5
SF51 516005H	SF51 516005HF	16	0.5	32	50	100	16	5

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	Steel ~HB225	HB225 ~325	Steel HRC30~50	~FC500					
		○	○	○					◎	○

SF51H

3~5 Flutes Roughing End Mill

※ The tools of DIN standard are made to order

Endmill

EDP No		DC	CHW	APMX	LU	OAL	DCONMS	NOF
JIS	DIN							
SF51 51600542H	SF51 51600542HF	16	0.5	42	52	100	16	5
SF51 520005H	SF51 520005HF	20	0.5	38	48	100	20	5
SF51 52000545H	SF51 52000545HF	20	0.5	45	50	100	20	5

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
		○	○	○					◎	○

A-Wing Endmill

NEW

For Aluminum

Features

- Specialized design for cutting aluminum and aluminum alloys
- Excellent chip evacuation through Profile design
- Applicable on a wide range of machining from roughing to finishing
- Wide range of product specification

D.L.C Coating info

- Our pure carbon-based, diamond-like coating, applied with FVAS (Filtered Vacuum Arc Source) technology, delivers exceptional surface finish and release performance, significantly reducing wear and material buildup when machining non-ferrous metals like aluminum and copper

Color	Film hardness (Hv)	Friction Coefficient	Coating Thickness (pin axis, μm)	Max. Operating Temp ($^{\circ}\text{C}$)
Rainbow	4000~7000	0.15	0.1~0.7	500

* Coated products are made to order.

Cylindrical Land

- Reduced vibration and chatter
- Reduced friction, improved surface finish



Roughing Profile design

- Enhanced performance with dual profile design
- Excellent chip evacuation
- Reduced machining load



Chip Breaker Profile design

- Short chip formation
- Improved chip evacuation performance

High toughness material

- Provides chipping resistance and machining stability



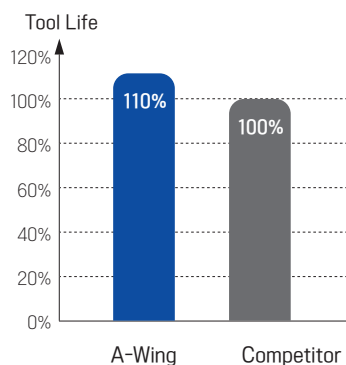
Fine Surface Finish on the Grooves

- Enhanced adhesion, reduced machining load
- Enhanced chip evacuation

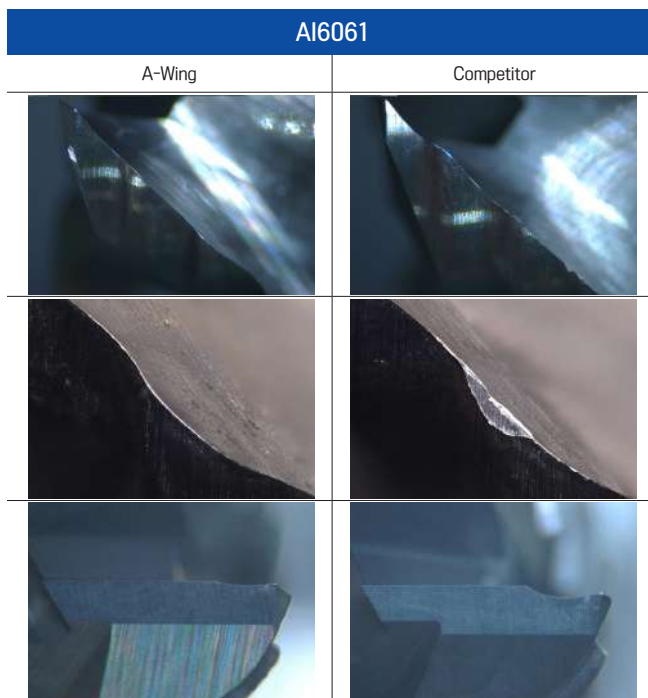


Case Study

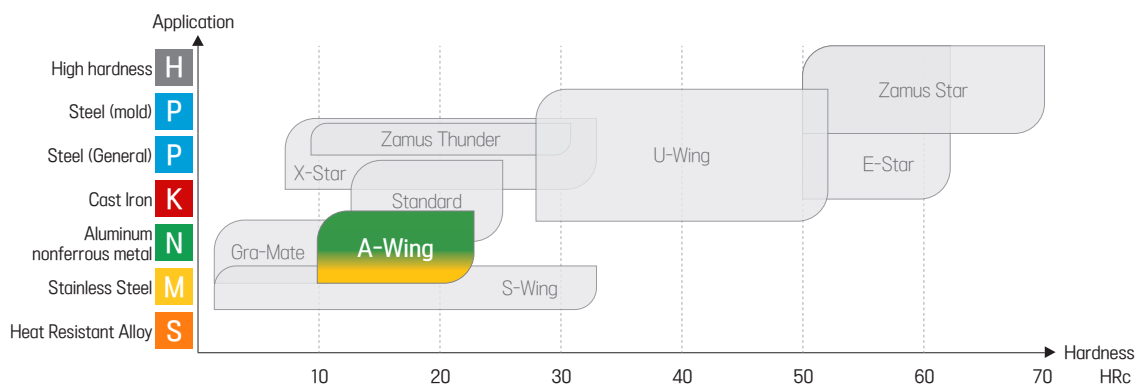
► 3F D10.0 Roughing End Mill



Cutting Condition	
Cutting Method	Shouldering
RPM	8,500
Feed	4,300
ap	10
ae	5
Coolant	Wet Machining



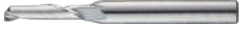
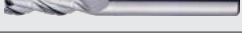
Applications



A-Wing Endmill NEW

For Aluminum

Contents

Section		EDP No	Geometry	Product	Diameter(DC)		Page
Shape	Flute				Min	Max	
Square	1F	AWE311		1 Flutes Square End Mill	1	12	359
		AWE311...C					
	2F	AWE312		2 Flutes Square End Mill	1	20	361
		AWE312...C					
	3F	AWE313		3 Flutes Square End Mill	1	20	363
		AWE313...C					
Radius	2F	AWR312		2 Flutes Radius End Mill	1	20	368
		AWR312...C					
	3F	AWR313		3 Flutes Radius End Mill	1	20	370
		AWR313...C					
Ball	2F	AWB312		2 Flutes Ball End Mill	6	20	372
		AWB312...C					
Chip Breaker (Nick)	3F	AWN513		3 Flutes Chip Breaker End Mill	3	20	373
Roughing	3F	AWF513		3 Flutes 38° Helix Roughing End Mill	4	20	374
		AWF513...C					
	3F	AWF583		3 Flutes 45° Helix Roughing End Mill	4	20	376
		AWF583...C					

EDP No. System

*If expressed as an integer, the decimal point is omitted.

AW	E	3	1	2	010	03	S4	C
①	②	③	④	⑤	⑥	⑦	⑧	⑨

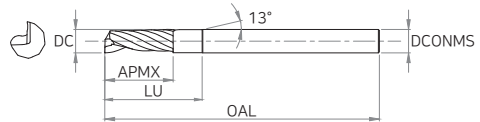
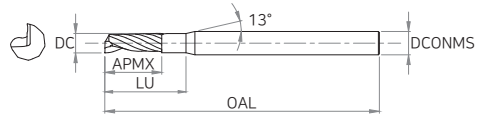
①	②	③	④	⑤	⑥		⑦		⑧	⑨
Section	Shape	Grade	Appearance	Flutes	Cutting Dia	Corner R	Length of Cut	Effective Length	Shank Dia	Coating
AW : A-WING	E : Flat	3 : Grade	1 : Neck	1 : 1 Flutes	1	0.05	2	7	4	C
	R : Radius	5 : Grade	2 : Long Shank	2 : 2 Flutes	~	~	~	~	~	
	B : Ball		8 : High Helix	3 : 3 Flutes	20	10	150	160	20	
	N : Chip breaker(Nick)									
	F : Roughing									

EX) AWE3120100354C (A-WING HRC30 2F D1 LOC3 Shank Dia.4 Flat type coated End Mill)

AWE311

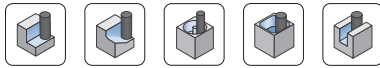
1 Flutes Square End Mill

※ Coated products are
made to order



► Tolerance

DC		Shank Dia
Ø1 ~ Ø5	0 ~ -0.02	h5
Ø6 ~ Ø12	0 ~ -0.03	



EDP No		DC	APMX	LU	OAL	DCONMS
Uncoated	Coated					
AWE311 01003	AWE311 01003C	1	3	8	45	6
AWE311 010045	AWE311 010045C	1	4.5	9.5	45	6
AWE311 01006	AWE311 01006C	1	6	11	50	6
AWE311 01203	AWE311 01203C	1.2	3	8	45	6
AWE311 01205	AWE311 01205C	1.2	5	10	45	6
AWE311 01206	AWE311 01206C	1.2	6	11	50	6
AWE311 01504	AWE311 01504C	1.5	4	9	45	6
AWE311 01506	AWE311 01506C	1.5	6	11	50	6
AWE311 01508	AWE311 01508C	1.5	8	13	50	6
AWE311 02006	AWE311 02006C	2	6	11	50	6
AWE311 02008	AWE311 02008C	2	8	13	50	6
AWE311 02010	AWE311 02010C	2	10	15	50	6
AWE311 02507	AWE311 02507C	2.5	7	12	50	6
AWE311 02508	AWE311 02508C	2.5	8	13	50	6
AWE311 02510	AWE311 02510C	2.5	10	15	50	6
AWE311 02512	AWE311 02512C	2.5	12	17	50	6
AWE311 03008	AWE311 03008C	3	8	13	50	6
AWE311 03012	AWE311 03012C	3	12	17	50	6
AWE311 03015	AWE311 03015C	3	15	20	50	6
AWE311 04010	AWE311 04010C	4	10	15	50	6

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	~325	HRc30~50	~FCD500					
						○		◎		

Endmill

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

AWE311

1 Flutes Square End Mill

* Coated products are made to order

Endmill

EDP No		DC	APMX	LU	OAL	DCONMS
Uncoated	Coated					
AWE311 04015	AWE311 04015C	4	15	20	50	6
AWE311 04020	AWE311 04020C	4	20	25	60	6
AWE311 05013	AWE311 05013C	5	13	18	60	6
AWE311 05020	AWE311 05020C	5	20	25	60	6
AWE311 05025	AWE311 05025C	5	25	30	60	6
AWE311 06015	AWE311 06015C	6	15	22	60	6
AWE311 06020	AWE311 06020C	6	20	27	60	6
AWE311 06025	AWE311 06025C	6	25	32	60	6
AWE311 08020	AWE311 08020C	8	20	27	70	8
AWE311 08025	AWE311 08025C	8	25	32	75	8
AWE311 10022	AWE311 10022C	10	22	30	75	10
AWE311 10030	AWE311 10030C	10	30	38	80	10
AWE311 12026	AWE311 12026C	12	26	36	75	12
AWE311 12035	AWE311 12035C	12	35	45	90	12

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

► Applicable Working Material

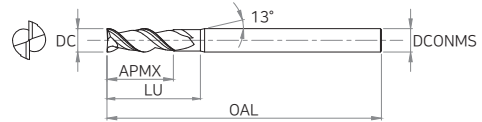
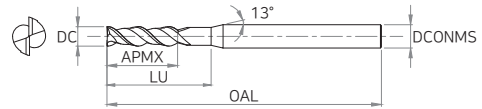
○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
						○		◎		

AWE312

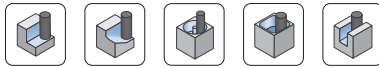
2 Flutes Square End Mill

※ Coated products are made to order



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.02	h5



EDP No		DC	APMX	LU	OAL	DCONMS
Uncoated	Coated					
AWE312 01003S4	AWE312 01003S4C	1	3	8	50	4
AWE312 01006	AWE312 01006C	1	6	11	60	6
AWE312 01204	AWE312 01204C	1.2	4	9	50	6
AWE312 01506	AWE312 01506C	1.5	6	11	50	6
AWE312 01508	AWE312 01508C	1.5	8	13	60	6
AWE312 02006S4	AWE312 02006S4C	2	6	11	50	4
AWE312 02006	AWE312 02006C	2	6	11	50	6
AWE312 02010	AWE312 02010C	2	10	15	60	6
AWE312 02508	AWE312 02508C	2.5	8	13	55	6
AWE312 02512	AWE312 02512C	2.5	12	17	55	6
AWE312 03012	AWE312 03012C	3	12	17	55	6
AWE312 03015	AWE312 03015C	3	15	20	65	6
AWE312 03514	AWE312 03514C	3.5	14	19	57	6
AWE312 04014	AWE312 04014C	4	14	19	55	6
AWE312 04016	AWE312 04016C	4	16	21	65	6
AWE312 05017	AWE312 05017C	5	17	22	55	6
AWE312 05022	AWE312 05022C	5	22	27	60	6
AWE312 06017	AWE312 06017C	6	17	24	60	6
AWE312 06022	AWE312 06022C	6	22	29	60	6
AWE312 06025	AWE312 06025C	6	25	32	70	6

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	~325	HRc30~50	~FCD500					
						○		◎		

Endmill

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

AWE312

2 Flutes Square End Mill

* Coated products are made to order

Endmill

EDP No		DC	APMX	LU	OAL	DCONMS
Uncoated	Coated					
AWE312 07022	AWE312 07022C	7	22	29	65	8
AWE312 08023	AWE312 08023C	8	23	30	70	8
AWE312 08031	AWE312 08031C	8	31	38	80	8
AWE312 09025	AWE312 09025C	9	25	32	72	10
AWE312 10028	AWE312 10028C	10	28	36	75	10
AWE312 10036	AWE312 10036C	10	36	44	90	10
AWE312 11030	AWE312 11030C	11	30	38	80	12
AWE312 12033	AWE312 12033C	12	33	43	80	12
AWE312 12041	AWE312 12041C	12	41	51	95	12
AWE312 12045	AWE312 12045C	12	45	55	100	12
AWE312 13035	AWE312 13035C	13	35	45	85	14
AWE312 14038S14	AWE312 14038S14C	14	38	58	90	14
AWE312 14038	AWE312 14038C	14	38	58	90	16
AWE312 15040	AWE312 15040C	15	40	50	90	16
AWE312 16045	AWE312 16045C	16	45	55	100	16
AWE312 16053	AWE312 16053C	16	53	63	110	16
AWE312 18049	AWE312 18049C	18	49	59	100	18
AWE312 20050	AWE312 20050C	20	50	60	110	20
AWE312 20055	AWE312 20055C	20	55	65	110	20

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

► Applicable Working Material

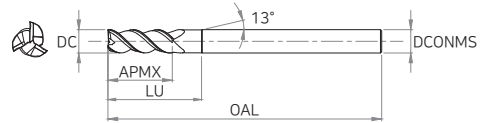
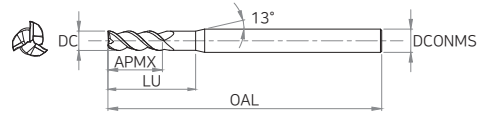
○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
						○		◎		

AWE313

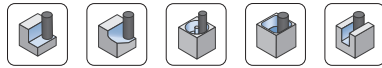
3 Flutes Square End Mill

※ Coated products are made to order



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.02	h5



EDP No		DC	APMX	LU	OAL	DCONMS
Uncoated	Coated					
AWE313 01002	AWE313 01002C	1	2	7	40	6
AWE313 01003	AWE313 01003C	1	3	8	50	6
AWE313 01004	AWE313 01004C	1	4	9	60	6
AWE313 01006	AWE313 01006C	1	6	11	60	6
AWE313 01204	AWE313 01204C	1.2	4	9	50	6
AWE313 01503	AWE313 01503C	1.5	3	8	45	6
AWE313 01504	AWE313 01504C	1.5	4	9	45	6
AWE313 01505	AWE313 01505C	1.5	5	10	50	6
AWE313 01506	AWE313 01506C	1.5	6	11	60	6
AWE313 01508	AWE313 01508C	1.5	8	13	60	6
AWE313 01510	AWE313 01510C	1.5	10	15	60	6
AWE313 02003	AWE313 02003C	2	3	8	45	6
AWE313 02006	AWE313 02006C	2	6	11	50	6
AWE313 02008	AWE313 02008C	2	8	13	60	6
AWE313 02010	AWE313 02010C	2	10	15	60	6
AWE313 02012	AWE313 02012C	2	12	17	60	6
AWE313 02504	AWE313 02504C	2.5	4	9	45	6
AWE313 02508	AWE313 02508C	2.5	8	13	50	6
AWE313 02510	AWE313 02510C	2.5	10	15	55	6
AWE313 02512	AWE313 02512C	2.5	12	17	60	6

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	~325	HRc30~50	~FCD500					
						○		◎		

Endmill

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

AWE313

3 Flutes Square End Mill

* Coated products are made to order

Endmill

EDP No		DC	APMX	LU	OAL	DCONMS
Uncoated	Coated					
AWE313 03004	AWE313 03004C	3	4	9	45	6
AWE313 03008	AWE313 03008C	3	8	13	50	6
AWE313 03012	AWE313 03012C	3	12	17	55	6
AWE313 03015	AWE313 03015C	3	15	20	65	6
AWE313 03512	AWE313 03512C	3.5	12	17	55	6
AWE313 04006	AWE313 04006C	4	6	11	45	6
AWE313 04008	AWE313 04008C	4	8	13	50	6
AWE313 04011	AWE313 04011C	4	11	16	50	6
AWE313 04014	AWE313 04014C	4	14	19	55	6
AWE313 04016	AWE313 04016C	4	16	21	65	6
AWE313 04020	AWE313 04020C	4	20	25	70	6
AWE313 04515	AWE313 04515C	4.5	15	20	55	6
AWE313 05006	AWE313 05006C	5	6	11	45	6
AWE313 05017	AWE313 05017C	5	17	22	55	6
AWE313 05022	AWE313 05022C	5	22	27	60	6
AWE313 05026	AWE313 05026C	5	26	31	70	6
AWE313 05517	AWE313 05517C	5.5	17	22	55	6
AWE313 06007	AWE313 06007C	6	7	14	50	6
AWE313 06013	AWE313 06013C	6	13	20	55	6
AWE313 06017	AWE313 06017C	6	17	24	60	6
AWE313 06022	AWE313 06022C	6	22	29	60	6
AWE313 06026	AWE313 06026C	6	26	33	70	6
AWE313 06031	AWE313 06031C	6	31	38	75	6
AWE313 07023	AWE313 07023C	7	23	30	65	8
AWE313 08012	AWE313 08012C	8	12	19	60	8
AWE313 08020	AWE313 08020C	8	20	27	60	8
AWE313 08023	AWE313 08023C	8	23	30	70	8
AWE313 08029	AWE313 08029C	8	29	36	80	8
AWE313 08031	AWE313 08031C	8	31	38	80	8
AWE313 08036	AWE313 08036C	8	36	43	85	8
AWE313 09028	AWE313 09028C	9	28	35	70	10
AWE313 10012	AWE313 10012C	10	12	20	65	10
AWE313 10015	AWE313 10015C	10	15	23	65	10
AWE313 10023	AWE313 10023C	10	23	31	65	10

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	~325	HRC30~50	~FCD500					
						○		◎		

EDP No		DC	APMX	LU	OAL	DCONMS
Uncoated	Coated					
AWE313 10028	AWE313 10028C	10	28	36	75	10
AWE313 10033	AWE313 10033C	10	33	41	90	10
AWE313 10036	AWE313 10036C	10	36	44	90	10
AWE313 10041	AWE313 10041C	10	41	49	90	10
AWE313 10046	AWE313 10046C	10	46	54	100	10
AWE313 10051	AWE313 10051C	10	51	59	100	10
AWE313 11030	AWE313 11030C	11	30	38	80	12
AWE313 12014	AWE313 12014C	12	14	24	70	12
AWE313 12027	AWE313 12027C	12	27	37	75	12
AWE313 12033	AWE313 12033C	12	33	43	80	12
AWE313 12041	AWE313 12041C	12	41	51	95	12
AWE313 12046	AWE313 12046C	12	46	56	100	12
AWE313 12051	AWE313 12051C	12	51	61	100	12
AWE313 12056	AWE313 12056C	12	56	66	110	12
AWE313 12061	AWE313 12061C	12	61	71	110	12
AWE313 13035	AWE313 13035C	13	35	45	85	14
AWE313 14038S14	AWE313 14038S14C	14	38	48	90	14
AWE313 14038	AWE313 14038C	14	38	48	90	16
AWE313 15040	AWE313 15040C	15	40	50	90	16
AWE313 16019	AWE313 16019C	16	19	29	90	16
AWE313 16033	AWE313 16033C	16	33	43	90	16
AWE313 16045	AWE313 16045C	16	45	55	100	16
AWE313 16053	AWE313 16053C	16	53	63	105	16
AWE313 16056	AWE313 16056C	16	56	66	110	16
AWE313 16066	AWE313 16066C	16	66	76	130	16
AWE313 16076	AWE313 16076C	16	76	86	150	16
AWE313 18049	AWE313 18049C	18	49	59	100	18
AWE313 20023	AWE313 20023C	20	23	33	90	20
AWE313 20039	AWE313 20039C	20	39	49	95	20
AWE313 20050	AWE313 20050C	20	50	60	105	20
AWE313 20055	AWE313 20055C	20	55	65	110	20
AWE313 20060	AWE313 20060C	20	60	70	120	20
AWE313 20065	AWE313 20065C	20	65	75	130	20
AWE313 20070	AWE313 20070C	20	70	80	130	20
AWE313 20076	AWE313 20076C	20	76	86	150	20

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

► Applicable Working Material

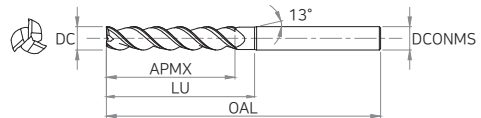
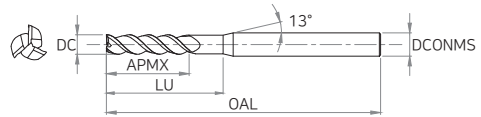
○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
						○		◎		

AWE323

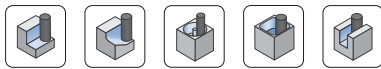
3 Flutes Square End Mill

* Coated products are made to order



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.02	h5



EDP No		DC	APMX	LU	OAL	DCONMS
Uncoated	Coated					
AWE323 01512	AWE323 01512C	1.5	12	17	60	6
AWE323 02014	AWE323 02014C	2	14	19	60	6
AWE323 02016	AWE323 02016C	2	16	21	60	6
AWE323 02515	AWE323 02515C	2.5	15	20	60	6
AWE323 03020	AWE323 03020C	3	20	25	70	6
AWE323 03025	AWE323 03025C	3	25	30	75	6
AWE323 03030	AWE323 03030C	3	30	35	80	6
AWE323 04026	AWE323 04026C	4	26	31	75	6
AWE323 04030	AWE323 04030C	4	30	35	80	6
AWE323 05031	AWE323 05031C	5	31	36	75	6
AWE323 05036	AWE323 05036C	5	36	41	80	6
AWE323 05041	AWE323 05041C	5	41	46	85	6
AWE323 05046	AWE323 05046C	5	46	51	90	6
AWE323 06036	AWE323 06036C	6	36	43	80	6
AWE323 06043	AWE323 06043C	6	43	50	90	6
AWE323 06051	AWE323 06051C	6	51	58	100	6
AWE323 08041	AWE323 08041C	8	41	48	90	8
AWE323 08046	AWE323 08046C	8	46	53	95	8
AWE323 08051	AWE323 08051C	8	51	58	100	8
AWE323 08056	AWE323 08056C	8	56	63	105	8

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	~325	HRC30~50	~FC500					
						○		◎		

AWE323

3 Flutes Square End Mill

※ Coated products are
made to order

Endmill

EDP No		DC	APMX	LU	OAL	DCONMS
Uncoated	Coated					
AWE323 08060	AWE323 08060C	8	60	67	110	8
AWE323 08066	AWE323 08066C	8	66	73	110	8
AWE323 10056	AWE323 10056C	10	56	64	110	10
AWE323 10061	AWE323 10061C	10	61	69	110	10
AWE323 10066	AWE323 10066C	10	66	74	120	10
AWE323 12066	AWE323 12066C	12	66	76	120	12
AWE323 12071	AWE323 12071C	12	71	81	120	12
AWE323 12076	AWE323 12076C	12	76	86	135	12
AWE323 12080	AWE323 12080C	12	80	90	140	12
AWE323 16080	AWE323 16080C	16	80	90	160	16
AWE323 16086	AWE323 16086C	16	86	96	160	16
AWE323 16096	AWE323 16096C	16	96	106	180	16
AWE323 160100	AWE323 160100C	16	100	110	190	16
AWE323 160106	AWE323 160106C	16	106	116	190	16
AWE323 160116	AWE323 160116C	16	116	126	200	16
AWE323 20086	AWE323 20086C	20	86	96	160	20
AWE323 20096	AWE323 20096C	20	96	106	180	20
AWE323 200106	AWE323 200106C	20	106	116	190	20
AWE323 200116	AWE323 200116C	20	116	126	200	20
AWE323 200126	AWE323 200126C	20	126	136	220	20
AWE323 200150	AWE323 200150C	20	150	160	220	20

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

► Applicable Working Material

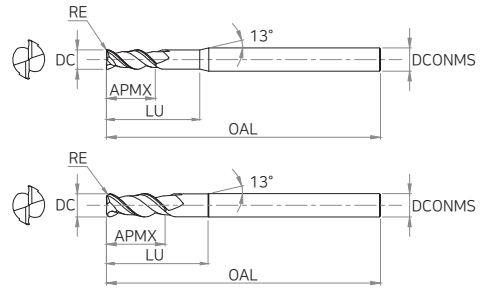
○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	~325	HRc30~50	~FCD500					
						○		◎		

AWR312

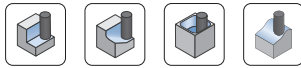
2 Flutes Radius End Mill

* Coated products are made to order



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.02	h5



All Sizes

EDP No		DC	RE	APMX	LU	OAL	DCONMS
Uncoated	Coated						
AWR312 010005	AWR312 010005C	1	0.05	3	8	45	6
AWR312 015005	AWR312 015005C	1.5	0.05	5	10	45	6
AWR312 02001	AWR312 02001C	2	0.1	6	11	45	6
AWR312 0200112	AWR312 0200112C	2	0.1	12	17	50	6
AWR312 03001	AWR312 03001C	3	0.1	10	15	50	6
AWR312 0300120	AWR312 0300120C	3	0.1	20	25	60	6
AWR312 04001	AWR312 04001C	4	0.1	12	17	50	6
AWR312 0400120	AWR312 0400120C	4	0.1	20	25	60	6
AWR312 05001	AWR312 05001C	5	0.1	15	20	55	6
AWR312 06001	AWR312 06001C	6	0.1	15	22	55	6
AWR312 06005	AWR312 06005C	6	0.5	15	22	55	6
AWR312 06010	AWR312 06010C	6	1	15	22	55	6
AWR312 06015	AWR312 06015C	6	1.5	15	22	55	6
AWR312 06020	AWR312 06020C	6	2	15	22	55	6
AWR312 07001	AWR312 07001C	7	0.1	20	27	60	8
AWR312 08001	AWR312 08001C	8	0.1	20	27	60	8
AWR312 08005	AWR312 08005C	8	0.5	20	27	60	8
AWR312 08010	AWR312 08010C	8	1	20	27	60	8
AWR312 08015	AWR312 08015C	8	1.5	20	27	60	8
AWR312 08020	AWR312 08020C	8	2	20	27	60	8

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	~325	HRC30~50	~FCD500					
						○		◎		

AWR312

2 Flutes Radius End Mill

※ Coated products are
made to order

Endmill

EDP No		DC	RE	APMX	LU	OAL	DCONMS
Uncoated	Coated						
AWR312 08030	AWR312 08030C	8	3	20	27	60	8
AWR312 09001	AWR312 09001C	9	0.1	25	32	70	10
AWR312 10002	AWR312 10002C	10	0.2	25	33	70	10
AWR312 10005	AWR312 10005C	10	0.5	25	33	70	10
AWR312 10010	AWR312 10010C	10	1	25	33	70	10
AWR312 10015	AWR312 10015C	10	1.5	25	33	70	10
AWR312 10020	AWR312 10020C	10	2	25	33	70	10
AWR312 10030	AWR312 10030C	10	3	25	33	70	10
AWR312 10040	AWR312 10040C	10	4	25	33	70	10
AWR312 11005	AWR312 11005C	11	0.5	30	38	80	12
AWR312 12005	AWR312 12005C	12	0.5	30	40	80	12
AWR312 12010	AWR312 12010C	12	1	30	40	80	12
AWR312 12020	AWR312 12020C	12	2	30	40	80	12
AWR312 12030	AWR312 12030C	12	3	30	40	80	12
AWR312 12040	AWR312 12040C	12	4	30	40	80	12
AWR312 14010S14	AWR312 14010S14C	14	1	35	45	85	14
AWR312 14020S14	AWR312 14020S14C	14	2	35	45	85	14
AWR312 14030S14	AWR312 14030S14C	14	3	35	45	85	14
AWR312 14040S14	AWR312 14040S14C	14	4	35	45	85	14
AWR312 14050S14	AWR312 14050S14C	14	5	35	45	85	14
AWR312 14010	AWR312 14010C	14	1	35	45	85	16
AWR312 14020	AWR312 14020C	14	2	35	45	85	16
AWR312 14030	AWR312 14030C	14	3	35	45	85	16
AWR312 14040	AWR312 14040C	14	4	35	45	85	16
AWR312 14050	AWR312 14050C	14	5	35	45	85	16
AWR312 16010	AWR312 16010C	16	1	40	50	90	16
AWR312 16020	AWR312 16020C	16	2	40	50	90	16
AWR312 16030	AWR312 16030C	16	3	40	50	90	16
AWR312 16040	AWR312 16040C	16	4	40	50	90	16
AWR312 16050	AWR312 16050C	16	5	40	50	90	16
AWR312 20010	AWR312 20010C	20	1	45	55	100	20
AWR312 20020	AWR312 20020C	20	2	45	55	100	20
AWR312 20030	AWR312 20030C	20	3	45	55	100	20
AWR312 20040	AWR312 20040C	20	4	45	55	100	20
AWR312 20050	AWR312 20050C	20	5	45	55	100	20

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

► Applicable Working Material

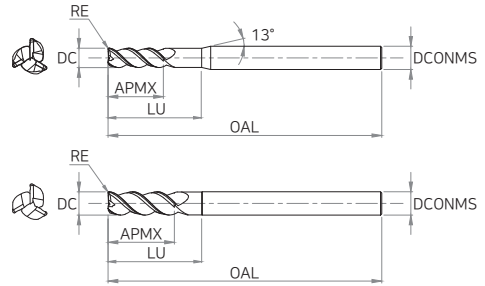
○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	~325	HRc30~50	~FCD500					
						○		◎		

AWR313

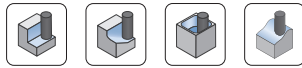
3 Flutes Radius End Mill

* Coated products are made to order



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.02	h5



All Sizes

EDP No		DC	RE	APMX	LU	OAL	DCONMS
Uncoated	Coated						
AWR313 01001	AWR313 01001C	1	0.1	3	8	50	6
AWR313 01501	AWR313 01501C	1.5	0.1	5	10	50	6
AWR313 02001	AWR313 02001C	2	0.1	6	11	50	6
AWR313 02502	AWR313 02502C	2.5	0.2	10	15	50	6
AWR313 03001	AWR313 03001C	3	0.1	12	17	60	6
AWR313 03002	AWR313 03002C	3	0.2	12	17	60	6
AWR313 04002	AWR313 04002C	4	0.2	14	19	60	6
AWR313 04005	AWR313 04005C	4	0.5	14	19	60	6
AWR313 04010	AWR313 04010C	4	1	14	19	60	6
AWR313 06003	AWR313 06003C	6	0.3	17	24	60	6
AWR313 06005	AWR313 06005C	6	0.5	17	24	60	6
AWR313 06010	AWR313 06010C	6	1	17	24	60	6
AWR313 06015	AWR313 06015C	6	1.5	17	24	60	6
AWR313 06020	AWR313 06020C	6	2	17	24	60	6
AWR313 08003	AWR313 08003C	8	0.3	20	27	60	8
AWR313 08005	AWR313 08005C	8	0.5	20	27	60	8
AWR313 08010	AWR313 08010C	8	1	20	27	60	8
AWR313 08015	AWR313 08015C	8	1.5	20	27	60	8
AWR313 08020	AWR313 08020C	8	2	20	27	60	8
AWR313 08030	AWR313 08030C	8	3	20	27	60	8

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
						○		◎		

AWR313

3 Flutes Radius End Mill

※ Coated products are
made to order

Endmill

EDP No		DC	RE	APMX	LU	OAL	DCONMS
Uncoated	Coated						
AWR313 10003	AWR313 10003C	10	0.3	25	33	70	10
AWR313 10005	AWR313 10005C	10	0.5	25	33	70	10
AWR313 10010	AWR313 10010C	10	1	25	33	70	10
AWR313 10015	AWR313 10015C	10	1.5	25	33	70	10
AWR313 10020	AWR313 10020C	10	2	25	33	70	10
AWR313 10030	AWR313 10030C	10	3	25	33	70	10
AWR313 10040	AWR313 10040C	10	4	25	33	70	10
AWR313 12005	AWR313 12005C	12	0.5	30	40	80	12
AWR313 12010	AWR313 12010C	12	1	30	40	80	12
AWR313 12020	AWR313 12020C	12	2	30	40	80	12
AWR313 12030	AWR313 12030C	12	3	30	40	80	12
AWR313 12040	AWR313 12040C	12	4	30	40	80	12
AWR313 14010S14	AWR313 14010S14C	14	1	35	45	85	14
AWR313 14020S14	AWR313 14020S14C	14	2	35	45	85	14
AWR313 14030S14	AWR313 14030S14C	14	3	35	45	85	14
AWR313 14040S14	AWR313 14040S14C	14	4	35	45	85	14
AWR313 14050S14	AWR313 14050S14C	14	5	35	45	85	14
AWR313 14005	AWR313 14005C	14	0.5	35	45	85	16
AWR313 14010	AWR313 14010C	14	1	35	45	85	16
AWR313 14020	AWR313 14020C	14	2	35	45	85	16
AWR313 14030	AWR313 14030C	14	3	35	45	85	16
AWR313 14040	AWR313 14040C	14	4	35	45	85	16
AWR313 14050	AWR313 14050C	16	5	35	45	85	16
AWR313 16005	AWR313 16005C	16	0.5	40	50	90	16
AWR313 16010	AWR313 16010C	16	1	40	50	90	16
AWR313 16020	AWR313 16020C	16	2	40	50	90	16
AWR313 16030	AWR313 16030C	16	3	40	50	90	16
AWR313 16040	AWR313 16040C	16	4	40	50	90	16
AWR313 16050	AWR313 16050C	16	5	40	50	90	16
AWR313 20005	AWR313 20005C	20	0.5	45	55	100	20
AWR313 20010	AWR313 20010C	20	1	45	55	100	20
AWR313 20020	AWR313 20020C	20	2	45	55	100	20
AWR313 20030	AWR313 20030C	20	3	45	55	100	20
AWR313 20040	AWR313 20040C	20	4	45	55	100	20
AWR313 20050	AWR313 20050C	20	5	45	55	100	20

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

► Applicable Working Material

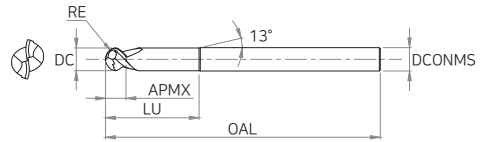
○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	~325	HRc30~50	~FCD500					
						○		◎		

AWB312

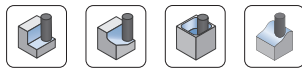
2 Flutes Ball End Mill

* Coated products are made to order



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.02	h5



All Sizes

EDP No		DC	RE	APMX	LU	OAL	DCONMS
Uncoated	Coated						
AWB312 06025	AWB312 06025C	6	3	5.5	25	55	6
AWB312 06040	AWB312 06040C	6	3	5.5	40	90	6
AWB312 08030	AWB312 08030C	8	4	7	30	65	8
AWB312 08050	AWB312 08050C	8	4	7	50	100	8
AWB312 10035	AWB312 10035C	10	5	8.5	35	75	10
AWB312 10050	AWB312 10050C	10	5	10	50	100	10
AWB312 10060	AWB312 10060C	10	5	10	60	150	10
AWB312 12040	AWB312 12040C	12	6	10.5	40	75	12
AWB312 12050	AWB312 12050C	12	6	12	50	110	12
AWB312 12060	AWB312 12060C	12	6	12	60	150	12
AWB312 16050	AWB312 16050C	16	8	14	50	90	16
AWB312 16070	AWB312 16070C	16	8	16	70	150	16
AWB312 16090	AWB312 16090C	16	8	16	90	200	16
AWB312 20050	AWB312 20050C	20	10	17	50	100	20

► Applicable Working Material

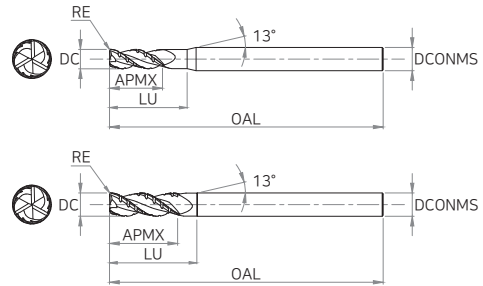
○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	~325	HRC30~50	~FCD500					
						○		◎		

AWN513

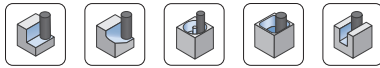
3 Flutes Chip Breaker End Mill

※ Coated products are made to order



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.02	h5



EDP No		DC	RE	APMX	LU	OAL	DCONMS
Uncoated	Coated						
AWN513 03011	AWN513 03011C	3	0.2	11	16	55	6
AWN513 04013	AWN513 04013C	4	0.2	13	18	55	6
AWN513 05017	AWN513 05017C	5	0.2	17	22	55	6
AWN513 06017	AWN513 06017C	6	0.3	17	24	60	6
AWN513 06025	AWN513 06025C	6	0.3	25	32	80	6
AWN513 08022	AWN513 08022C	8	0.3	22	29	70	8
AWN513 08030	AWN513 08030C	8	0.3	30	37	90	8
AWN513 10027	AWN513 10027C	10	0.5	27	35	75	10
AWN513 10040	AWN513 10040C	10	0.5	40	48	100	10
AWN513 12035	AWN513 12035C	12	0.5	35	45	90	12
AWN513 12050	AWN513 12050C	12	0.5	50	60	110	12
AWN513 16042	AWN513 16042C	16	0.5	42	52	100	16
AWN513 16052	AWN513 16052C	16	0.5	52	62	150	16
AWN513 20048	AWN513 20048C	20	0.5	48	58	100	20
AWN513 20055	AWN513 20055C	20	0.5	55	65	160	20

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	~325	HRc30~50	~FCD500					
						○		◎		

Endmill

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

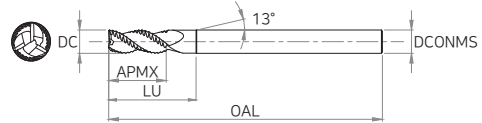
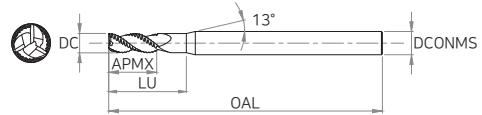
Copper
-Mate

Gra
-Mate

AWF513

3 Flutes 38° Helix Roughing End Mill

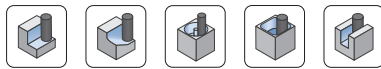
* Coated products are made to order



► Tolerance

DC	Shank Dia
Ø4 ~ Ø6	0 ~ -0.048
Ø7 ~ Ø10	0 ~ -0.058
Ø12 ~ Ø18	0 ~ -0.07
Ø20 ~	0 ~ -0.084

h5



CARBIDE



Bright



EDP No		DC	APMX	LU	OAL	DCONMS
Uncoated	Coated					
AWF513 04010	AWF513 04010C	4	10	15	55	6
AWF513 05015	AWF513 05015C	5	15	20	55	6
AWF513 06016	AWF513 06016C	6	16	23	60	6
AWF513 06025	AWF513 06025C	6	25	32	80	6
AWF513 07016	AWF513 07016C	7	16	23	63	8
AWF513 08020	AWF513 08020C	8	20	27	65	8
AWF513 08030	AWF513 08030C	8	30	37	90	8
AWF513 09019	AWF513 09019C	9	19	26	72	10
AWF513 10025	AWF513 10025C	10	25	33	75	10
AWF513 10040	AWF513 10040C	10	40	48	100	10
AWF513 12030	AWF513 12030C	12	30	40	90	12
AWF513 12050	AWF513 12050C	12	50	60	110	12
AWF513 14035S14	AWF513 14035S14C	14	35	45	100	14
AWF513 14035	AWF513 14035C	14	35	45	100	16
AWF513 16042	AWF513 16042C	16	42	52	100	16
AWF513 16052	AWF513 16052C	16	52	62	150	16
AWF513 16065	AWF513 16065C	16	65	75	150	16
AWF513 18032	AWF513 18032C	18	32	42	92	18

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	Steel ~HB225	HB225 ~325	HRc30~50	~FC500					
						○		◎		

AWF513

3 Flutes 38° Helix Roughing End Mill

※ Coated products are made to order

EDP No		DC	APMX	LU	OAL	DCONMS
Uncoated	Coated					
AWF513 20038	AWF513 20038C	20	38	48	104	20
AWF513 20055	AWF513 20055C	20	55	65	160	20

Endmill

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

► Applicable Working Material

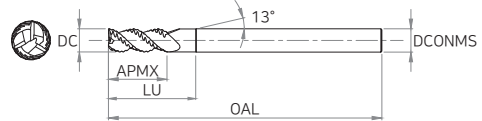
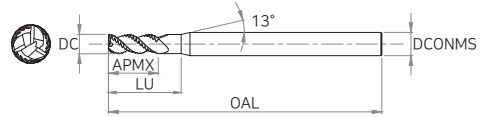
○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
						○		◎		

AWF583

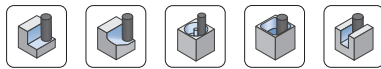
3 Flutes 45° Helix Roughing End Mill

* Coated products are made to order



► Tolerance

DC		Shank Dia
Ø4 ~ Ø6	0 ~ -0.048	h5
Ø8 ~ Ø10	0 ~ -0.058	
Ø12 ~ Ø18	0 ~ -0.07	
Ø20 ~	0 ~ -0.084	



EDP No		DC	APMX	LU	OAL	DCONMS
Uncoated	Coated					
AWF583 04006	AWF583 04006C	4	6	12	60	6
AWF583 04010	AWF583 04010C	4	10	15	60	6
AWF583 05007	AWF583 05007C	5	7	20	60	6
AWF583 05015	AWF583 05015C	5	15	20	60	6
AWF583 06008	AWF583 06008C	6	8	20	70	6
AWF583 06015	AWF583 06015C	6	15	22	60	6
AWF583 06025	AWF583 06025C	6	25	32	80	6
AWF583 08010	AWF583 08010C	8	10	26	80	8
AWF583 08020	AWF583 08020C	8	20	27	65	8
AWF583 08030	AWF583 08030C	8	30	37	90	8
AWF583 10012	AWF583 10012C	10	12	32	90	10
AWF583 10025	AWF583 10025C	10	25	33	70	10
AWF583 10040	AWF583 10040C	10	40	48	100	10
AWF583 12014	AWF583 12014C	12	14	36	100	12
AWF583 12030	AWF583 12030C	12	30	40	90	12
AWF583 12050	AWF583 12050C	12	50	60	110	12
AWF583 14035	AWF583 14035C	14	35	45	100	16
AWF583 16018	AWF583 16018C	16	18	46	120	16
AWF583 16042	AWF583 16042C	16	42	52	100	16
AWF583 16052	AWF583 16052C	16	52	62	150	16

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	Steel ~HB225	HB225 ~325	HRc30~50	~FC500					
						○		◎		

AWF583

3 Flutes 45° Helix Roughing End Mill

※ Coated products are made to order

EDP No		DC	APMX	LU	OAL	DCONMS
Uncoated	Coated					
AWF583 18045	AWF583 18045	18	45	55	110	20
AWF583 20022	AWF583 20022	20	22	52	120	20
AWF583 20048	AWF583 20048	20	48	58	110	20
AWF583 20055	AWF583 20055	20	55	65	160	20

Endmill

Zamus Star

E-Star

U-Wing

Zamus Thunder

X-Star

S-Wing

A-Wing

Standard

Copper -Mate

Gra -Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	HB225 ~HB225	HB225 ~325	HRc30~50	~FCD500					
						○		◎		

Standard End Mill

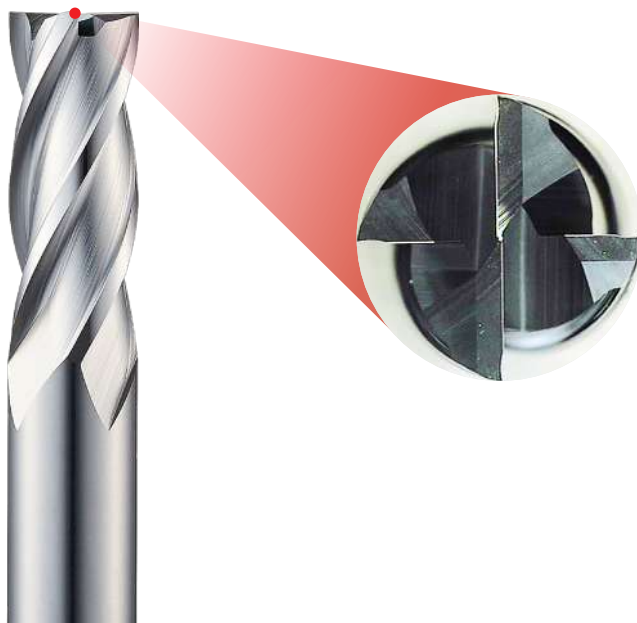
Low hardness materials under HRc 30

Characteristics

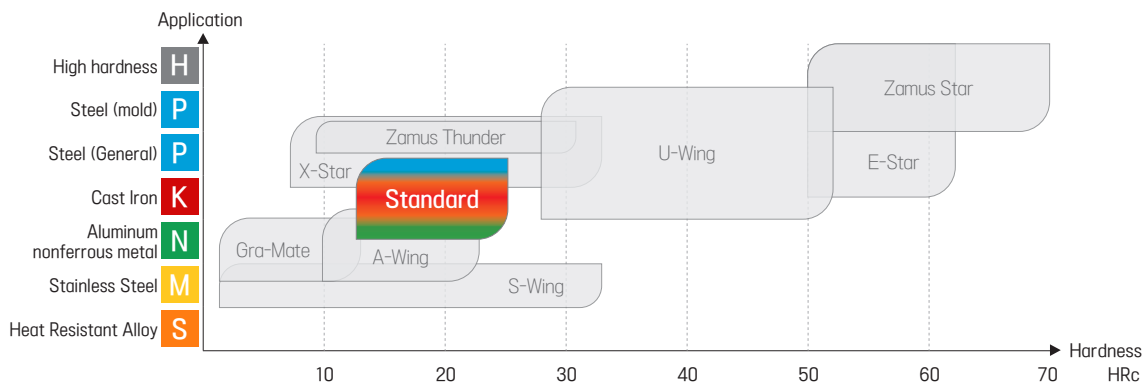
- Suitable for low hardness materials under HRc 30
- Various product line : Square, Ball, Brazing type

Features

- Improved chipping resistance by using high toughness materials
- Proper cutting edge for low hardness materials



Applications



Contents

Section		EDP No	Geometry	Product	Diameter(DC)		Page
Shape	Flute				Min	Max	
Square	2F	E302		2 Flutes Square End Mill	1	25	380
	4F	E304		4 Flutes Square End Mill	2	25	381
	2F	E322		2 Flutes Long Shank Square End Mill	3	20	382
	4F	E324		4 Flutes Long Shank Square End Mill	3	20	383
	2F	EL422		2 Flutes Long Extra Square End Mill	3	10	384
	2F	EB302-W		2 Flutes Brazed Square End Mill	14	50	385
	4F	EB304-W		4 Flutes Brazed Square End Mill	14	50	386
	2F	EB322-W		2 Flutes Brazed Long Shank Square End Mill	14	26	388
	4F	EB324-W		4 Flutes Brazed Long Shank Square End Mill	14	50	389
Ball	2F	B302		2 Flutes Ball End Mill	1	25	390
	4F	B304		4 Flutes Ball End Mill	3	25	391
	2F	BL422		2 Flutes Extra Long Ball End Mill	3	20	392
	2F	BB302-W		2 Flutes Brazed Ball End Mill	15	32	393

EDP No. System

*If expressed as an integer, the decimal point is omitted.

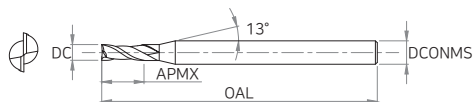
E	3	0	4	130	S16
①	②	③	④	⑤	⑥

①	②	③	④	⑤	⑥
Section	Appearance	Length, Shank Type	Flutes	Cutting Dia	Shank Dia
E : Square	3 : Standard	0 : Regular Length	2 : 2 Flutes	1	3
B : Ball	4 : Long Length	2 : Long Length	4 : 4 Flutes	~	~
BL : Long Length Ball				50	42
EB : Brazed Square					
BB : Brazed Ball					

EX) 4 Flutes / Cutting Dia ϕ 13 / Shank Dia 16 / Standard Type Square Endmill

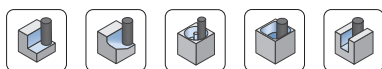
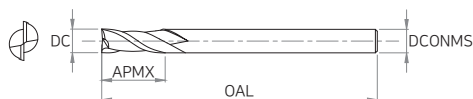
E302 2 Flutes Square End Mill

Endmill



► Tolerance

DC		Shank Dia
~ Ø3	0 ~ -0.04	h6
Ø3.5 ~ Ø6	0 ~ -0.048	
Ø6.5 ~ Ø10	0 ~ -0.058	
Ø10.5 ~ Ø18	0 ~ -0.07	
Ø20 ~	0 ~ -0.084	



EDP No	DC	APMX	OAL	DCONMS
E302 010S4	1	3	42	4
E302 010	1	3	42	6
E302 015S4	1.5	4	42	4
E302 015	1.5	4	42	6
E302 020S4	2	6	42	4
E302 020	2	6	42	6
E302 025S4	2.5	8	42	4
E302 025	2.5	8	42	6
E302 030	3	10	50	6
E302 035	3.5	10	50	6
E302 040	4	12	50	6
E302 045	4.5	14	50	6
E302 050	5	15	50	6
E302 055	5.5	15	50	6
E302 060	6	15	50	6
E302 065	6.5	18	60	8
E302 070	7	20	60	8
E302 075	7.5	20	60	8

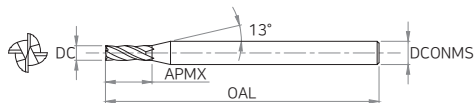
EDP No	DC	APMX	OAL	DCONMS
E302 080	8	20	60	8
E302 085	8.5	23	70	10
E302 090	9	25	70	10
E302 095	9.5	25	70	10
E302 100	10	25	70	10
E302 105	10.5	28	75	12
E302 110	11	30	75	12
E302 115	11.5	30	75	12
E302 120	12	30	75	12
E302 130	13	35	85	14
E302 130S16	13	35	90	16
E302 140	14	35	85	14
E302 140S16	14	35	90	16
E302 150	15	40	90	16
E302 160	16	40	90	16
E302 180	18	45	100	18
E302 200	20	45	100	20
E302 250	25	50	120	25

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	~325	HRC30~50	~FCD500					
		○	○							

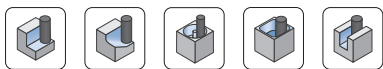
E304 4 Flutes Square End Mill



► Tolerance

DC	Shank Dia
~ Ø3	0 ~ -0.04
Ø3.5 ~ Ø6	0 ~ -0.048
Ø6.5 ~ Ø10	0 ~ -0.058
Ø10.5 ~ Ø18	0 ~ -0.07
Ø20 ~	0 ~ -0.084

h6



EDP No	DC	APMX	OAL	DCONMS
E304 020S4	2	6	42	4
E304 020	2	6	42	6
E304 025	2.5	8	42	6
E304 030	3	10	50	6
E304 035	3.5	10	50	6
E304 040	4	12	50	6
E304 045	4.5	14	50	6
E304 050	5	15	50	6
E304 055	5.5	15	50	6
E304 060	6	15	50	6
E304 065	6.5	18	60	8
E304 070	7	20	60	8
E304 075	7.5	20	60	8
E304 080	8	20	60	8
E304 085	8.5	23	70	10
E304 090	9	25	70	10

EDP No	DC	APMX	OAL	DCONMS
E304 095	9.5	25	70	10
E304 100	10	25	70	10
E304 105	10.5	28	75	12
E304 110	11	30	75	12
E304 115	11.5	30	75	12
E304 120	12	30	75	12
E304 130	13	35	85	14
E304 130S16	13	35	90	16
E304 140	14	35	85	14
E304 140S16	14	35	90	16
E304 150	15	40	90	16
E304 160	16	40	90	16
E304 180	18	45	100	18
E304 200	20	45	100	20
E304 250	25	50	120	25

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel ~HB225	Alloy Steel HB225 ~325	Prehardened Steel HRC30~50	Cast Iron ~FCD500	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~									
		○	○							

Endmill

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

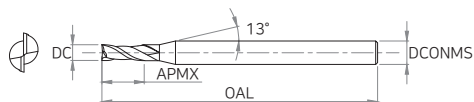
Standard

Copper
-Mate

Gra
-Mate

E322 2 Flutes Long Shank Square End Mill

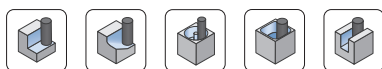
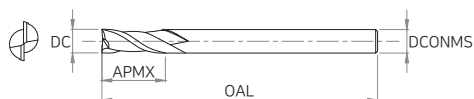
Endmill



► Tolerance

DC	Shank Dia
~ Ø3	0 ~ -0.04
Ø4 ~ Ø6	0 ~ -0.048
Ø7 ~ Ø10	0 ~ -0.058
Ø12 ~ Ø18	0 ~ -0.07
Ø20 ~	0 ~ -0.084

h6



EDP No	DC	APMX	OAL	DCONMS
E322 030	3	25	75	6
E322 040	4	25	75	6
E322 050	5	30	85	6
E322 060	6	30	85	6
E322 070	7	35	85	8
E322 080	8	35	85	8
E322 090	9	45	100	10
E322 100	10	45	100	10
E322 101	10	60	155	10
E322 120	12	55	120	12
E322 121	12	65	155	12
E322 140	14	60	120	14
E322 160	16	60	120	16
E322 161	16	75	165	16
E322 180	18	60	120	18
E322 200	20	60	120	20
E322 201	20	75	165	20

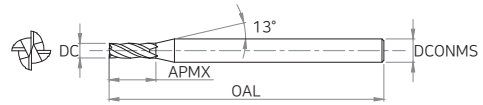
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel ~HB225	Alloy Steel HB225 ~325	Prehardened Steel HRC30~50	Cast Iron ~FCD500	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~									
		○	○							

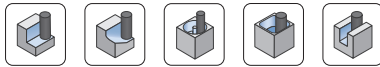
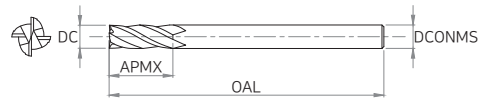
E324 4 Flutes Long Shank Square End Mill

Endmill



► Tolerance

DC		Shank Dia
~ Ø3	0 ~ -0.04	h6
Ø4 ~ Ø6	0 ~ -0.048	
Ø7 ~ Ø10	0 ~ -0.058	
Ø12 ~ Ø18	0 ~ -0.07	
Ø20 ~	0 ~ -0.084	



EDP No	DC	APMX	OAL	DCONMS
E324 030	3	25	75	6
E324 040	4	25	75	6
E324 050	5	30	85	6
E324 060	6	30	85	6
E324 070	7	35	85	8
E324 080	8	35	85	8
E324 090	9	45	100	10
E324 100	10	45	100	10
E324 101	10	60	155	10
E324 120	12	55	120	12
E324 121	12	65	155	12
E324 140	14	60	120	14
E324 160	16	60	120	16
E324 161	16	75	165	16
E324 180	18	60	120	18
E324 200	20	60	120	20
E324 201	20	75	165	20

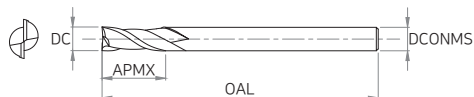
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	~325	HRc30~50	~FCD500					
		○	○							

EL422

2 Flutes Long Extra Square End Mill



► Tolerance

DC		Shank Dia
~ Ø3	0 ~ -0.04	h6
Ø4 ~ Ø6	0 ~ -0.048	
Ø8 ~ Ø10	0 ~ -0.058	



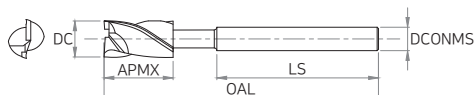
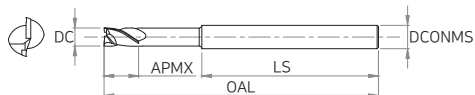
EDP No	DC	APMX	OAL	DCONMS
EL422 030	3	30	75	3
EL422 040	4	30	75	4
EL422 050	5	40	100	5
EL422 060	6	50	150	6
EL422 080	8	50	150	8
EL422 100	10	60	150	10

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

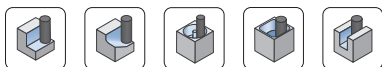
H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
		○	○							

EB302-W 2 Flutes Brazed Square End Mill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.05	h7



EDP No	DC	APMX	LS	OAL	DCON MS
EB302 140W	14	28	60	98	16
EB302 150W	15	28	60	98	16
EB302 160W	16	28	60	98	16
EB302 170W	17	32	70	115	20
EB302 180W	18	32	70	115	20
EB302 190W	19	32	70	115	20
EB302 200W	20	32	70	115	20
EB302 210W	21	32	70	115	20
EB302 220W	22	32	70	115	20
EB302 230W	23	40	85	140	25
EB302 240W	24	40	85	140	25
EB302 250W	25	40	85	140	25
EB302 260W	26	40	85	140	25

EDP No	DC	APMX	LS	OAL	DCON MS
EB302 270W	27	40	85	140	25
EB302 280W	28	40	85	140	25
EB302 290W	29	50	85	150	32
EB302 300W	30	50	85	150	32
EB302 310W	31	50	85	150	32
EB302 320W	32	50	85	150	32
EB302 350W	35	50	85	150	32
EB302 360W	36	50	85	150	32
EB302 380W	38	55	85	155	32
EB302 400W	40	55	85	155	32
EB302 420W	42	55	85	155	32
EB302 450W	45	63	85	160	32
EB302 500W	50	63	85	160	32

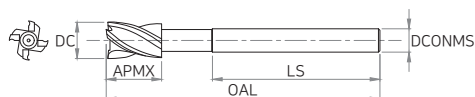
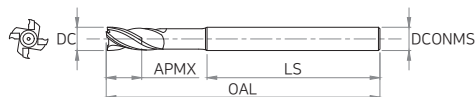
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
		○	○							

EB304-W

4 Flutes Brazed Square End Mill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.05	h6



EDP No	DC	APMX	LS	OAL	DCONMS
EB304 140W	14	28	60	98	16
EB304 150W	15	28	60	98	16
EB304 160W	16	28	60	98	16
EB304 170W	17	32	70	115	20
EB304 180W	18	32	70	115	20
EB304 190W	19	32	70	115	20
EB304 200W	20	32	70	115	20
EB304 210W	21	32	70	115	20
EB304 220W	22	32	70	115	20
EB304 230W	23	40	85	140	25
EB304 240W	24	40	85	140	25
EB304 250W	25	40	85	140	25
EB304 260W	26	40	85	140	25
EB304 270W	27	40	85	140	25
EB304 280W	28	40	85	140	25
EB304 290W	29	50	85	150	32
EB304 300W	30	50	85	150	32
EB304 310W	31	50	85	150	32
EB304 320W	32	50	85	150	32
EB304 350W	35	50	85	150	32

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
		○	○							

EB304-W

4 Flutes Brazed Square End Mill

Endmill

EDP No	DC	APMX	LS	OAL	DCONMS
EB304 360W	36	50	85	150	32
EB304 380W	38	55	85	155	32
EB304 400W	40	55	85	155	32
EB304 420W	42	55	85	155	32
EB304 450W	45	63	85	160	32
EB304 500W	50	63	85	160	32

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

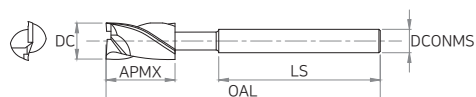
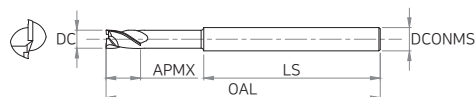
Gra
-Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

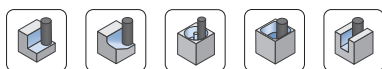
H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
		○	○							

EB322-W 2 Flutes Brazed Long Shank Square End Mill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.05	h6



EDP No	DC	APMX	LS	OAL	DCONMS
EB322 140W	14	50	60	130	16
EB322 150W	15	50	60	130	16
EB322 160W	16	50	60	130	16
EB322 180W	18	60	60	140	20
EB322 200W	20	60	60	140	20
EB322 220W	22	60	60	140	20
EB322 240W	24	70	60	150	25
EB322 250W	25	70	60	150	25
EB322 260W	26	70	60	150	25
EB322 280W	28	70	60	150	25
EB322 300W	30	80	70	180	32
EB322 320W	32	90	70	190	32
EB322 350W	35	100	70	200	32
EB322 380W	38	100	70	220	32
EB322 400W	40	100	70	220	32
EB322 450W	46	120	80	230	32

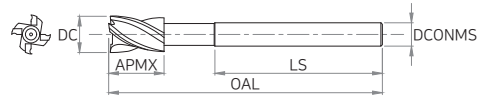
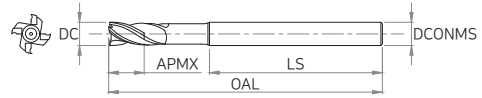
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
		○	○							

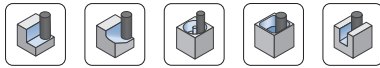
EB324-W

4 Flutes Brazed Long Shank Square End Mill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.05	h6



EDP No	DC	APMX	LS	OAL	DCONMS
EB324 140W	14	50	60	130	16
EB324 150W	15	50	60	130	16
EB324 160W	16	50	60	130	16
EB324 180W	18	60	60	140	20
EB324 200W	20	60	60	140	20
EB324 220W	22	60	60	140	20
EB324 240W	24	70	60	150	25
EB324 250W	25	70	60	150	25
EB324 260W	26	70	60	150	25
EB324 280W	28	70	60	150	25
EB324 300W	30	80	70	180	32
EB324 320W	32	90	70	190	32
EB324 350W	35	100	70	200	32
EB324 380W	38	100	70	220	32
EB324 400W	40	100	70	220	32
EB324 450W	45	120	80	230	32
EB324 500W	50	140	80	240	32

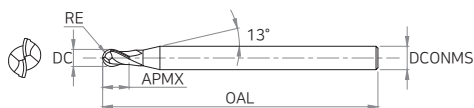
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	~325	HRc30~50	~FCD500					
		○	○							

B302 2 Flutes Ball End Mill

Endmill



► Tolerance

DC	Shank Dia
Ø1 ~ Ø3	0 ~ -0.04
Ø3.5 ~ Ø6	0 ~ -0.048
Ø6.5 ~ Ø10	0 ~ -0.058
Ø11 ~ Ø18	0 ~ -0.07
Ø20 ~	0 ~ -0.084

h6



All Sizes

EDP No	DC	RE	APMX	OAL	DCONMS	EDP No	DC	RE	APMX	OAL	DCONMS
B302 010	1	0.5	3	50	6	B302 080	8	4	20	100	8
B302 015	1.5	0.75	4	50	6	B302 090	9	4.5	25	100	10
B302 020	2	1	6	60	6	B302 100	10	5	25	100	10
B302 025	2.5	1.25	6	60	6	B302 110	11	5.5	30	110	12
B302 030	3	1.5	8	70	6	B302 120	12	6	30	110	12
B302 035	3.5	1.75	8	70	6	B302 130	13	6.5	35	120	14
B302 040	4	2	8	70	6	B302 140	14	7	35	120	14
B302 045	4.5	2.25	10	70	6	B302 150	15	7.5	40	140	16
B302 050	5	2.5	12	80	6	B302 160	16	8	40	140	16
B302 055	5.5	2.75	12	80	6	B302 180	18	9	45	150	18
B302 060	6	3	12	90	6	B302 200	20	10	45	160	20
B302 065	6.5	3.25	12	90	8	B302 250	25	12.5	50	180	25
B302 070	7	3.5	20	90	8						

Standard

Copper
-Mate

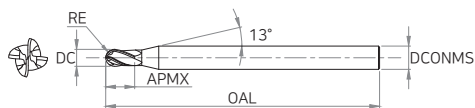
Gra
-Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

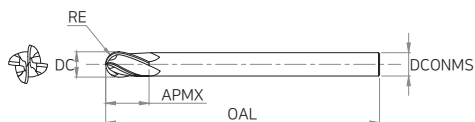
H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
		○	○							

B304 4 Flutes Ball End Mill



► Tolerance

DC		Shank Dia
~ Ø3	0 ~ -0.04	h6
Ø4 ~ Ø6	0 ~ -0.048	
Ø7 ~ Ø10	0 ~ -0.058	
Ø11 ~ Ø18	0 ~ -0.07	
Ø20 ~	0 ~ -0.084	



EDP No	DC	RE	APMX	OAL	DCONMS
B304 030	3	1.5	8	70	6
B304 040	4	2	8	70	6
B304 050	5	2.5	12	80	6
B304 060	6	3	12	90	6
B304 070	7	3.5	20	90	8
B304 080	8	4	20	100	8
B304 090	9	4.5	25	100	10
B304 100	10	5	25	100	10
B304 110	11	5.5	30	110	12
B304 120	12	6	30	110	12
B304 130	13	6.5	35	120	14
B304 140	14	7	35	120	14
B304 150	15	7.5	40	140	16
B304 160	16	8	40	140	16
B304 180	18	9	45	150	18
B304 200	20	10	45	160	20
B304 250	25	12.5	50	180	25

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	~325	HRc30~50	~FCD500					
		○	○							

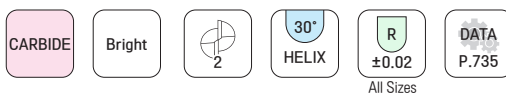
BL422

2 Flutes Extra Long Ball End Mill



► Tolerance

DC		Shank Dia
~ Ø3	0 ~ -0.04	h6
Ø4 ~ Ø6	0 ~ -0.048	
Ø8 ~ Ø10	0 ~ -0.058	
Ø12 ~ Ø18	0 ~ -0.07	
Ø20 ~	0 ~ -0.084	



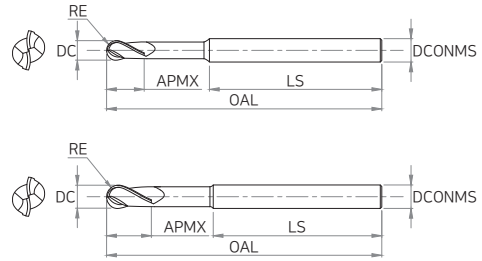
EDP No	DC	RE	APMX	OAL	DCONMS
BL422 030	3	1.5	30	75	3
BL422 040	4	2	30	75	4
BL422 050	5	2.5	40	100	5
BL422 060	6	3	50	150	6
BL422 080	8	4	50	150	8
BL422 090	9	4.5	60	150	10
BL422 100	10	5	60	150	10
BL422 120	12	6	75	150	12
BL422 140	14	7	75	150	14
BL422 160	16	8	75	150	16
BL422 180	18	9	75	150	18
BL422 200	20	10	75	150	20

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
		○	○							

BB302-W 2 Flutes Brazed Ball End Mill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.05	h7



EDP No	DC	RE	APMX	LS	OAL	DCONMS
BB302 150W	15	7.5	28	55	100	16
BB302 160W	16	8	28	55	100	16
BB302 180W	18	9	29	55	110	20
BB302 200W	20	10	29	55	110	20
BB302 220W	22	11	36	60	110	25
BB302 240W	24	12	37	60	110	25
BB302 250W	25	12.5	38	60	120	25
BB302 280W	28	14	40	65	120	32
BB302 300W	30	15	46	65	130	32
BB302 320W	32	16	47	65	140	32

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
		○	○							

Copper-Mate Endmill

Copper, Bronze and Non-ferrous materials

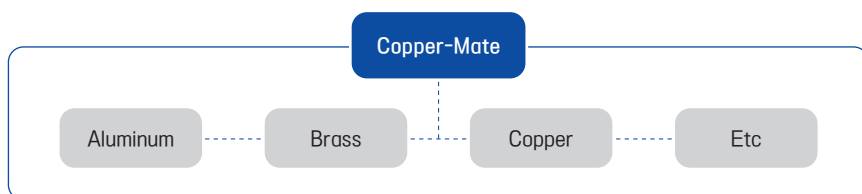
Characteristics

- Suitable for Copper, Bronze and Non-ferrous materials
- Ball, Radius type

Features

- Cutting edge considered the characteristics of non-ferrous materials
- CrN coating for enhanced oxidation resistance and corrosion resistance

Applications



Contents

Section		Geometry	Geometry	Product	Diameter(DC)		Page
Shape	Flute				Min	Max	
Radius	2F	RC502		2 Flutes Radius End Mill	2	12	395
Ball	2F	BC502		2 Flutes Ball End Mill	1	12	396

EDP No. System

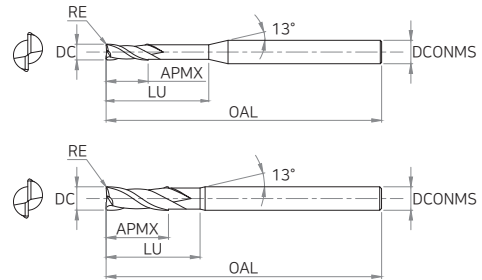
*If expressed as an integer, the decimal point is omitted.

R	C	5	0	2	020	05	09
①	②	③	④	⑤	⑥	⑦	⑧

①	②	③	④	⑤	⑥	⑦	⑧
Appearance	Shape	Grade	Length, Shank Type	Flutes	Cutting Dia	Corner R	Shank Dia
R : Radius	C : Copper	5 : Grade	0 : Neck	2 : 2 Flutes	1	0.5	3
B : Ball					~ 12	~ 1	~ 38

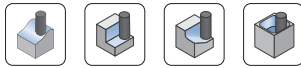
EX) 2 Flutes / Cutting Dia ϕ 2 / Corner R 0.5 / Shank Dia 9 / 50 Grade / Corner Radius Neck Type Radius End Mill

RC502 2 Flutes Radius End Mill



► Tolerance

DC		Shank Dia
Ø2 ~ Ø6	0 ~ -0.012	h5
Ø8 ~ Ø12	0 ~ -0.015	



EDP No	DC	RE	APMX	LU	OAL	DCONMS
RC502 0200509	2	0.5	3	9	55	6
RC502 0300509	3	0.5	4	9	55	6
RC502 0305016	3	0.5	4	16	55	6
RC502 0305020	3	0.5	4	20	55	6
RC502 0400512	4	0.5	5	12	55	6
RC502 0400516	4	0.5	5	16	55	6
RC502 0400520	4	0.5	5	20	55	6
RC502 0600520	6	0.5	7	20	60	6
RC502 0601020	6	1	7	20	60	6
RC502 0800525	8	0.5	9	25	60	8
RC502 0801025	8	1	9	25	60	8
RC502 1000532	10	0.5	11	32	70	10
RC502 1001032	10	1	11	32	70	10
RC502 1200538	12	0.5	12	38	80	12
RC502 1201038	12	1	12	38	80	12

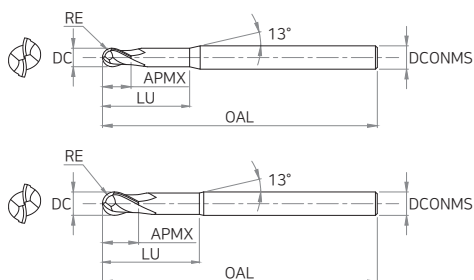
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
		○	○			○		○		

BC502 2 Flutes Ball End Mill

Endmill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.02	h6



EDP No	DC	RE	APMX	LU	OAL	DCONMS
BC502 010	1	0.5	1.5	3	50	6
BC502 015	1.5	0.75	2	4	50	6
BC502 020	2	1	2.5	5	50	6
BC502 025	2.5	1.25	3	7	50	6
BC502 030	3	1.5	4	10	60	6
BC502 040	4	2	5	10	60	6
BC502 050	5	2.5	6	12	60	6
BC502 060	6	3	7	12	60	6
BC502 061	6	3	7	12	90	6
BC502 080	8	4	9	15	70	8
BC502 081	8	4	9	16	100	8
BC502 100	10	5	11	25	75	10
BC502 101	10	5	11	25	100	10
BC502 120	12	6	12	25	80	12
BC502 121	12	6	12	25	110	12

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
		○	○			○		○		

This image shows a single sheet of white paper with horizontal blue ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Gra-Mate Endmill

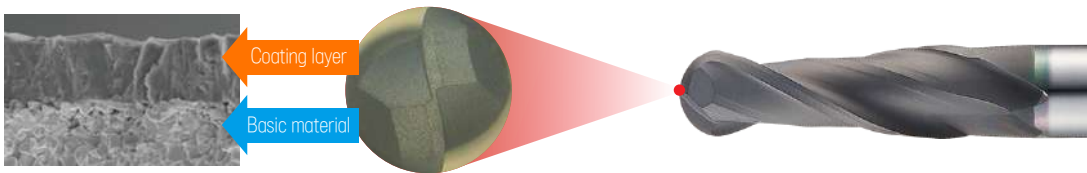
Graphite, Reinforced Plastics, Non-ferrous Materials

Characteristics

- Suitable for Graphite, Reinforced Plastics, Non-ferrous materials
- High hardness Diamond Coating for better tool life
- Maximizing and Stabilizing Coating Thickness for Improved Wear Resistance
- Various specifications for a variety of machining methods

Features

- High surface hardness and tool life with high adhesion diamond coating
- Minimize accidental damage by using dedicated materials with excellent wear resistance



Contents

Section		EDP No	Geometry	Product	Diameter(DC)		Page
Shape	Flute				Min	Max	
Square	2F	GE		2 Flutes Neck Square End Mill	0.5	12	399
	4F	WGE504		4 Flutes Square End Mill	2	20	400
Radius	2F	WGR502		2 Flutes Neck Radius End Mill	0.2	6	401
	4F	WGR504		4 Flutes Radius End Mill	3	20	403
Ball	2F	G		2 Flutes Neck Ball End Mill	0.5	12	405
	4F	WGB504		4 Flutes Ball End Mill	1	20	408

EDP No. System

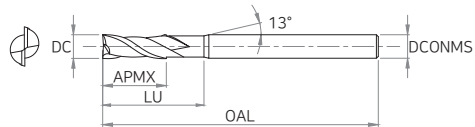
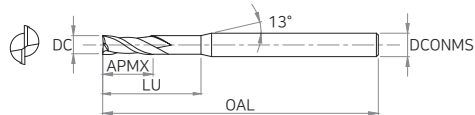
*If expressed as an integer, the decimal point is omitted.

WG	R	5	0	4	080	10	130
①	②	③	④	⑤	⑥	⑦	⑧

①	②	③	④	⑤	⑥	⑦	⑧
Section	Appearance	Grade	Length, Shank Type	Flutes	Cutting Dia	Corner R	Shank Dia
G : Graphite	E : Square	5 : Grade	0 : Straight, Neck	2 : 2 Flutes	0.2	0.05	40
WG : Winner Graphite	R : Radius			4 : 4 Flutes	~	~	~
					20	1	200

EX) 4 Flutes / Cutting Dia Ø8 / Corner R 1.0 / Shank Dia 130 / 50 Grade / Corner Radius Endmill For Graphith

GE 2 Flutes Neck Square End Mill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.03	h6



EDP No	DC	APMX	LU	OAL	DCON MS
GE 00501006	0.5	1	6	50	4
GE 00601206	0.6	1.2	6	50	4
GE 00601210	0.6	1.2	10	50	4
GE 00701506	0.7	1.5	6	50	4
GE 00802006	0.8	2	6	50	4
GE 0100308	1	3	8	60	4
GE 0100310	1	3	10	60	4
GE 0100312	1	3	12	60	4
GE 0150412	1.5	4	12	60	4
GE 0200612	2	6	12	60	4
GE 0200612S6	2	6	12	60	6
GE 0250812	2.5	8	12	60	4
GE 0301012	3	10	12	60	4
GE 0301016	3	10	16	60	4
GE 0301012S6	3	10	12	60	6
GE 0301016S6	3	10	16	60	6

EDP No	DC	APMX	LU	OAL	DCON MS
GE 04012S	4	12	-	60	6
GE 0401216	4	12	16	60	6
GE 0401220	4	12	20	60	6
GE 0501520	5	15	20	60	6
GE 06020S	6	20	-	60	6
GE 0602030	6	20	30	80	6
GE 0603050	6	30	50	150	6
GE 08025S	8	25	-	70	8
GE 0802540	8	25	40	100	8
GE 0804070	8	40	70	150	8
GE 10030S	10	30	-	80	10
GE 1003050	10	30	50	100	10
GE 1004580	10	45	80	160	10
GE 12030S	12	30	-	80	12
GE 1203050	12	30	50	110	12
GE 1205080	12	50	80	160	12

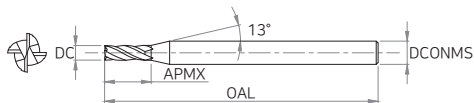
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	~325	HRc30~50	~FCD500					
							◎	○		

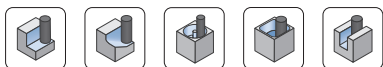
WGE504 4 Flutes Square End Mill

Endmill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.03	h6



EDP No	DC	APMX	OAL	DCONMS	EDP No	DC	APMX	OAL	DCONMS
WGE504 020	2	6	50	4	WGE504 06030	6	30	150	6
WGE504 02008	2	8	50	4	WGE504 080	8	20	70	8
WGE504 02010	2	10	50	4	WGE504 08030	8	30	110	8
WGE504 025	2.5	8	50	4	WGE504 08040	8	40	150	8
WGE504 030	3	8	50	6	WGE504 100	10	25	75	10
WGE504 03010	3	10	50	6	WGE504 10040	10	40	110	10
WGE504 03012	3	12	50	6	WGE504 10050	10	50	150	10
WGE504 03016	3	16	60	6	WGE504 120	12	30	80	12
WGE504 03020	3	20	60	6	WGE504 12050	12	50	120	12
WGE504 040	4	10	50	6	WGE504 12060	12	60	160	12
WGE504 04012	4	12	50	6	WGE504 160	16	50	110	16
WGE504 04016	4	16	60	6	WGE504 16070	16	70	160	16
WGE504 04020	4	20	60	6	WGE504 16090	16	90	160	16
WGE504 04025	4	25	60	6	WGE504 160100	16	100	200	16
WGE504 050	5	15	60	6	WGE504 200	20	70	160	20
WGE504 060	5	15	60	6	WGE504 20090	20	90	160	20
WGE504 06020	6	20	110	6	WGE504 200100	20	100	200	20

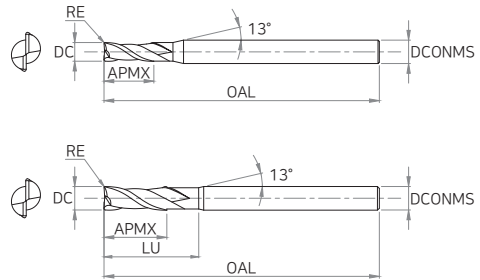
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	Steel ~HB225	HB225 ~325	HRc30~50	~FCD500					
							◎	○		

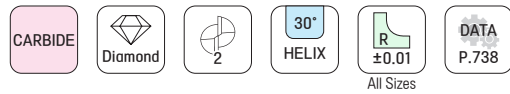
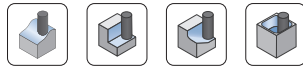
WGR502

2 Flutes Neck Radius End Mill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.02	h6



EDP No	DC	RE	APMX	LU	OAL	DCONMS
WGR502 002	0.2	-	0.3	-	40	3
WGR502 003	0.3	-	0.5	-	40	3
WGR502 004	0.4	-	0.6	-	40	3
WGR502 005025	0.5	0.05	0.7	2.5	40	3
WGR502 005040	0.5	0.05	0.7	4	40	3
WGR502 006030	0.6	0.05	0.9	3	40	3
WGR502 006050	0.6	0.05	0.9	5	40	3
WGR502 008040	0.8	0.05	1.2	4	40	3
WGR502 008070	0.8	0.05	1.2	7	40	3
WGR502 010050	1	0.1	1.5	5	40	3
WGR502 010085	1	0.1	1.5	8.5	40	3
WGR502 010120	1	0.1	1.5	12	40	3
WGR502 012060	1.2	0.1	1.8	6	50	3
WGR502 012100	1.2	0.1	1.8	10	50	3
WGR502 015075	1.5	0.15	2.2	7.5	50	3
WGR502 015120	1.5	0.15	2.2	12	50	3
WGR502 015180	1.5	0.15	2.2	18	50	3
WGR502 020100	2	0.15	2.2	10	60	3
WGR502 020160	2	0.15	2.2	16	60	3
WGR502 020250	2	0.15	2.2	25	60	3

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	~325	HRc30~50	~FCD500					
							◎	○		

WGR502

2 Flutes Neck Radius End Mill

Endmill

EDP No	DC	RE	APMX	LU	OAL	DCONMS
WGR502 030100	3	0.2	3	10	65	4
WGR502 030150	3	0.2	3	15	65	4
WGR502 030200	3	0.2	3	20	65	4
WGR502 030250	3	0.2	3	25	75	4
WGR502 030300	3	0.2	3	30	75	4
WGR502 040200	4	0.2	4	20	65	6
WGR502 040300	4	0.2	4	30	75	6
WGR502 040400	4	0.2	4	40	90	6
WGR502 050200	5	0.3	5	20	75	6
WGR502 050300	5	0.3	5	30	75	6
WGR502 050400	5	0.3	5	40	90	6
WGR502 050500	5	0.3	5	50	90	6
WGR502 060300	6	0.3	6	30	75	6
WGR502 060400	6	0.3	6	40	90	6
WGR502 060500	6	0.3	6	50	90	6
WGR502 060600	6	0.3	6	60	100	6

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

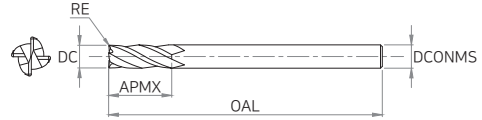
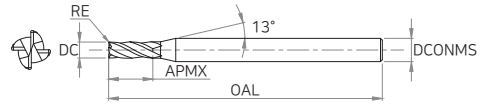
Gra
-Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

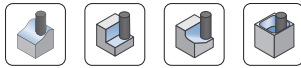
H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
							◎	○		

WGR504 4 Flutes Radius End Mill



► Tolerance

DC		Shank Dia
Ø3 ~ Ø12	0 ~ -0.02	h5
Ø16 ~ Ø20	0 ~ -0.03	



EDP No	DC	RE	APMX	OAL	DCONMS
WGR504 03002080	3	0.2	8	80	4
WGR504 03003080	3	0.3	8	80	4
WGR504 03005080	3	0.5	8	80	4
WGR504 04003100	4	0.3	10	100	4
WGR504 04005100	4	0.5	10	100	4
WGR504 04010100	4	1	10	100	4
WGR504 06003110	6	0.3	15	110	6
WGR504 06005110	6	0.5	15	110	6
WGR504 06010110	6	1	15	110	6
WGR504 08005110	8	0.5	20	110	8
WGR504 08010110	8	1	20	110	8
WGR504 08005130	8	0.5	20	130	8
WGR504 08010130	8	1	20	130	8
WGR504 10005130	10	0.5	25	130	10
WGR504 10010130	10	1	25	130	10
WGR504 10005150	10	0.5	25	150	10
WGR504 10010150	10	1	25	150	10
WGR504 12005130	12	0.5	30	130	12
WGR504 12010130	12	1	30	130	12
WGR504 12005150	12	0.5	30	150	12

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	~325	HRc30~50	~FCD500					
							◎	○		

Endmill

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

WGR504 4 Flutes Radius End Mill

Endmill

EDP No	DC	RE	APMX	OAL	DCONMS
WGR504 12010150	12	1	30	150	12
WGR504 16005200	16	0.5	32	200	16
WGR504 16010200	16	1	32	200	16
WGR504 20005200	20	0.5	40	200	20
WGR504 20010200	20	1	40	200	20

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

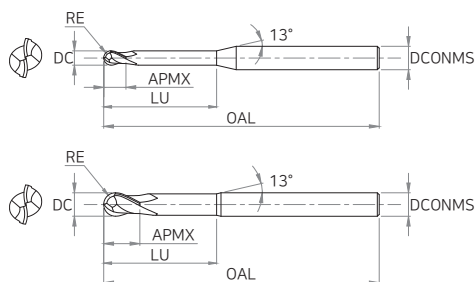
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
							◎	○		

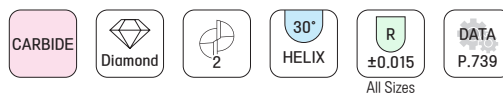


2 Flutes Neck Ball End Mill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.03	h6



EDP No	DC	RE	APMX	LU	OAL	DCONMS
G 00501003	0.5	0.25	1	3	50	4
G 00501006	0.5	0.25	1	6	50	4
G 00501010	0.5	0.25	1	10	50	4
G 00601203	0.6	0.3	1.2	3	50	4
G 00601206	0.6	0.3	1.2	6	50	4
G 00601208	0.6	0.3	1.2	8	50	4
G 00601210	0.6	0.3	1.2	10	50	4
G 00601212	0.6	0.3	1.2	12	50	4
G 0080164	0.8	0.4	1.6	4	50	4
G 0080166	0.8	0.4	1.6	6	50	4
G 0080168	0.8	0.4	1.6	8	50	4
G 0100306	1	0.5	3	6	60	4
G 0100308	1	0.5	3	8	60	4
G 0100310	1	0.5	3	10	60	4
G 0100312	1	0.5	3	12	60	4
G 0100314	1	0.5	3	14	60	4
G 0100316	1	0.5	3	16	60	4
G 0100318	1	0.5	3	18	60	4
G 0100320	1	0.5	3	20	60	4
G 0120410	1.2	0.6	4	10	70	4

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	~325	HRc30~50	~FCD500					
							◎	○		

Endmill

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate



2 Flutes Neck Ball End Mill

Endmill

	EDP No	DC	RE	APMX	LU	OAL	DCONMS
Zamus Star	G 0150510	1.5	0.75	5	10	60	4
	G 0150512	1.5	0.75	5	12	60	4
	G 0150516	1.5	0.75	5	16	60	4
	G 0150520	1.5	0.75	5	20	60	4
	G 0150525	1.5	0.75	5	25	70	4
E-Star	G 0150530	1.5	0.75	5	30	70	4
	G 0200812	2	1	8	12	60	4
	G 0200816	2	1	8	16	60	4
U-Wing	G 0200820	2	1	8	20	60	4
	G 0200825	2	1	8	25	70	4
	G 0200830	2	1	8	30	70	4
Zamus Thunder	G 0200835	2	1	8	35	80	4
	G 0200840	2	1	8	40	80	4
	G 0201020	2	1	10	20	80	4
X-Star	G 0201020L	2	1	10	20	100	4
	G 0251020	2.5	1.25	10	20	80	4
	G 0301216	3	1.5	12	16	60	6
S-Wing	G 0301220	3	1.5	12	20	70	6
	G 0301225	3	1.5	12	25	70	6
	G 0301230	3	1.5	12	30	80	6
A-Wing	G 0301235	3	1.5	12	35	80	6
	G 0301240	3	1.5	12	40	90	6
	G 0301245	3	1.5	12	45	90	6
Standard	G 0301525	3	1.5	15	25	80	4
	G 04015S	4	2	15	-	50	4
	G 04015M	4	2	15	-	80	4
Copper -Mate	G 04015L	4	2	15	-	120	4
	G 0401520	4	2	15	20	60	6
	G 0401525	4	2	15	25	70	6
Gra -Mate	G 0401530	4	2	15	30	80	6
	G 0401535	4	2	15	35	80	6
	G 0401540	4	2	15	40	90	6
	G 0401545	4	2	15	45	90	6
	G 0401550	4	2	15	50	100	6

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	HB225 ~HB225	HB225 ~325	HRC30~50	~FCD500					
							◎	○		



2 Flutes Neck Ball End Mill

Endmill

EDP No	DC	RE	APMX	LU	OAL	DCONMS
G 0402030	4	2	20	30	80	4
G 0503050	5	2.5	30	50	100	6
G 0503050L	5	2.5	30	50	150	6
G 06020S	6	3	20	-	70	6
G 06020M	6	3	20	-	100	6
G 06020L	6	3	20	-	150	6
G 0603050	6	3	30	50	100	6
G 0603050L	6	3	30		150	6
G 08025S	8	4	25	-	70	8
G 08025M	8	4	25	-	110	8
G 08025L	8	4	25	-	160	8
G 0804060	8	4	40	60	110	8
G 0804060L	8	4	40		200	8
G 10030S	10	5	30	-	80	10
G 10030M	10	5	30	-	120	10
G 10030L	10	5	30	-	170	10
G 1005070	10	5	50	70	120	10
G 1005070L	10	5	50	70	200	10
G 12035S	12	6	35	-	80	12
G 12035M	12	6	35	-	130	12
G 12035L	12	6	35	-	180	12
G 1205575	12	6	55	75	130	12
G 1205575L	12	6	55	75	200	12

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

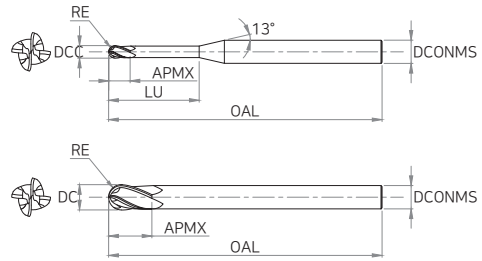
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
							◎	○		

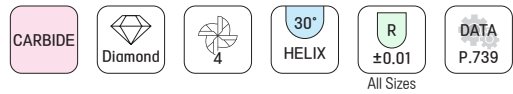
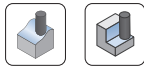
WGB504 4 Flutes Ball End Mill

Endmill



► Tolerance

DC		Shank Dia
Ø1 ~ Ø12	0 ~ -0.02	h6
Ø16 ~ Ø20	0 ~ -0.03	



EDP No	DC	RE	APMX	LU	OAL	DCONMS
WGB504 010	1	0.5	3	-	60	4
WGB504 01010	1	0.5	3	10	60	4
WGB504 01015	1	0.5	3	15	60	4
WGB504 01020	1	0.5	3	20	60	4
WGB504 01025	1	0.5	3	25	80	4
WGB504 01030	1	0.5	3	30	80	4
WGB504 015	1.5	0.75	4	-	60	4
WGB504 01510	1.5	0.75	4	10	80	4
WGB504 01515	1.5	0.75	4	15	80	4
WGB504 01520	1.5	0.75	4	20	80	4
WGB504 01525	1.5	0.75	4	25	80	4
WGB504 01530	1.5	0.75	4	30	80	4
WGB504 020	2	1	6	-	60	4
WGB504 02010	2	1	6	10	80	4
WGB504 02015	2	1	6	15	80	4
WGB504 02020	2	1	6	20	80	4
WGB504 02025	2	1	6	25	80	4
WGB504 02030	2	1	6	30	80	4
WGB504 02040	2	1	6	40	100	4
WGB504 030	3	1.5	9	-	60	4
WGB504 03015	3	1.5	9	15	100	4

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
							◎	○		

WGB504

4 Flutes Ball End Mill

Endmill

EDP No	DC	RE	APMX	LU	OAL	DCONMS
WGB504 03020	3	1.5	9	20	100	4
WGB504 03025	3	1.5	9	25	100	4
WGB504 03030	3	1.5	9	30	100	4
WGB504 03040	3	1.5	9	40	100	4
WGB504 03050	3	1.5	9	50	100	4
WGB504 040060	4	2	12	-	60	4
WGB504 040080	4	2	12	-	80	4
WGB504 040110	4	2	12	-	110	4
WGB504 040130	4	2	12	-	130	4
WGB504 040150	4	2	12	-	150	4
WGB504 050080	5	2.5	15	25	80	6
WGB504 050110	5	2.5	15	25	110	6
WGB504 060090	6	3	20	-	90	6
WGB504 060110	6	3	20	-	110	6
WGB504 060130	6	3	20	-	130	6
WGB504 060150	6	3	20	-	150	6
WGB504 060180	6	3	20	-	180	6
WGB504 080110	8	4	25	-	110	8
WGB504 080130	8	4	25	-	130	8
WGB504 080150	8	4	25	-	150	8
WGB504 080200	8	4	25	-	200	8
WGB504 100110	10	5	30	-	110	10
WGB504 100130	10	5	30	-	130	10
WGB504 100150	10	5	30	-	150	10
WGB504 100180	10	5	30	-	180	10
WGB504 100200	10	5	30	-	200	10
WGB504 120110	12	6	35	-	110	12
WGB504 120130	12	6	35	-	130	12
WGB504 120150	12	6	35	-	150	12
WGB504 120180	12	6	35	-	180	12
WGB504 120200	12	6	35	-	200	12
WGB504 160150	16	8	50	-	150	16
WGB504 160200	16	8	50	-	200	16
WGB504 200150	20	10	60	-	150	20
WGB504 200200	20	10	60	-	200	20

Zamus
Star

E-Star

U-Wing

Zamus
Thunder

X-Star

S-Wing

A-Wing

Standard

Copper
-Mate

Gra
-Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	~325	HRc30~50	~FCD500					
							◎	○		

Drill Series

Dolphin Drill NEW General Purpose & Cast Iron Drill	P. 411
Dolphin Oil Hole Drill NEW General Purpose Oil Hole Drill	P. 430
Power Max Drill High Speed Drill	P. 452
Solid Spiral Drill Non-Ferrous Drill	P. 492

Dolphin Drill **NEW**

General Purpose Drill

Characteristics

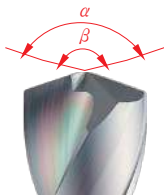
- Improved Cutting force, Stable Chip emission Reduced cutting workload, Improved working surface
- Drill for a wide range of workpieces Carbon steel, Alloy steel, Stainless etc.
- Satisfy Differing needs of the customers as 3D, 4D, 7D Standard

Features

- Improved cutting edge design reduces initial cutting forces
- Reduced cutting load through optimized thinning geometry
- Flute designed for high hardness and excellent chip evacuation
- AlCrN coating enhances wear resistance and lubricity
- Designed for a wide range of workpiece materials

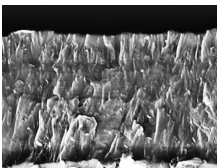
Multi Point angle

- Pointed angle reduces cutting forces
- Multi-point angle decreases drill breakage



AlCrN Base New Coating

- Enhanced chip evacuation enabled by improved flute lubricity
- Improved wear resistance and oxidation resistance through multi-layer thin coating



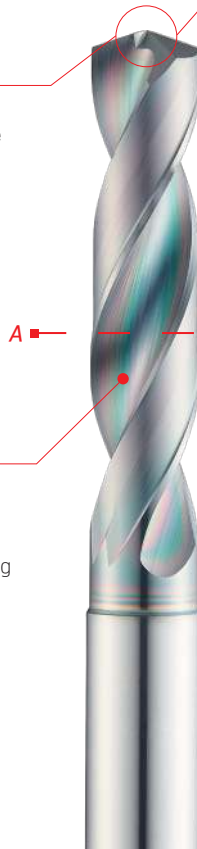
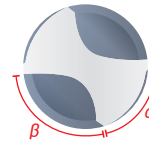
Cutting Edge

- Improved chipping resistance which decreases drill breakage
- Straight cutting edge provides lower cutting force



New Flute Design

- Designed to provide high surface hardness and excellent chip evacuation
- Smoother flute design provides excellent chip evacuation and reduces friction

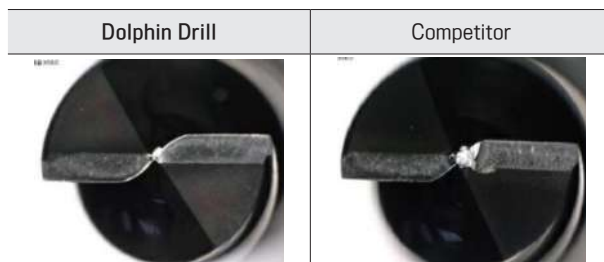
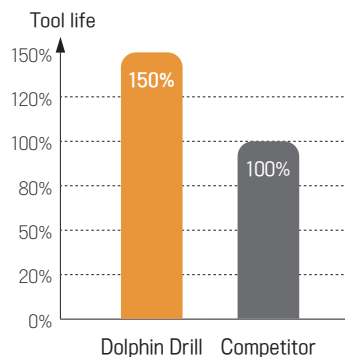


Dolphin Drill NEW

General Purpose Drill

Case Study

► Carbon Steel(SM45C)

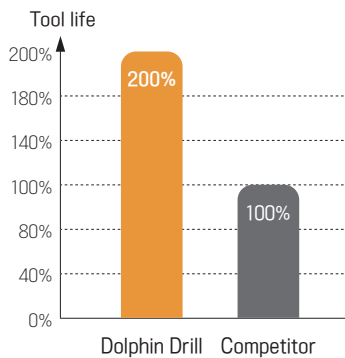


· Spec : NDPG507060 (D6.0-50/83-6)

· Cutting Condition

Vc	rpm	fn	Feed	Ap	Coolant
120	6,364	0.12	764	30	External

► Alloy Steel (SCM440)

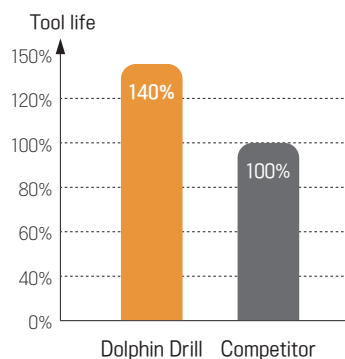


· Spec : NDPG507060 (D6.0-50/83-6)

· Cutting Condition

Vc	rpm	fn	Feed	Ap	Coolant
100	5,303	0.12	636	30	External

► Stainless Steel(SUS304)



· Spec : NDPG507060 (D6.0-50/83-6)

· Cutting Condition

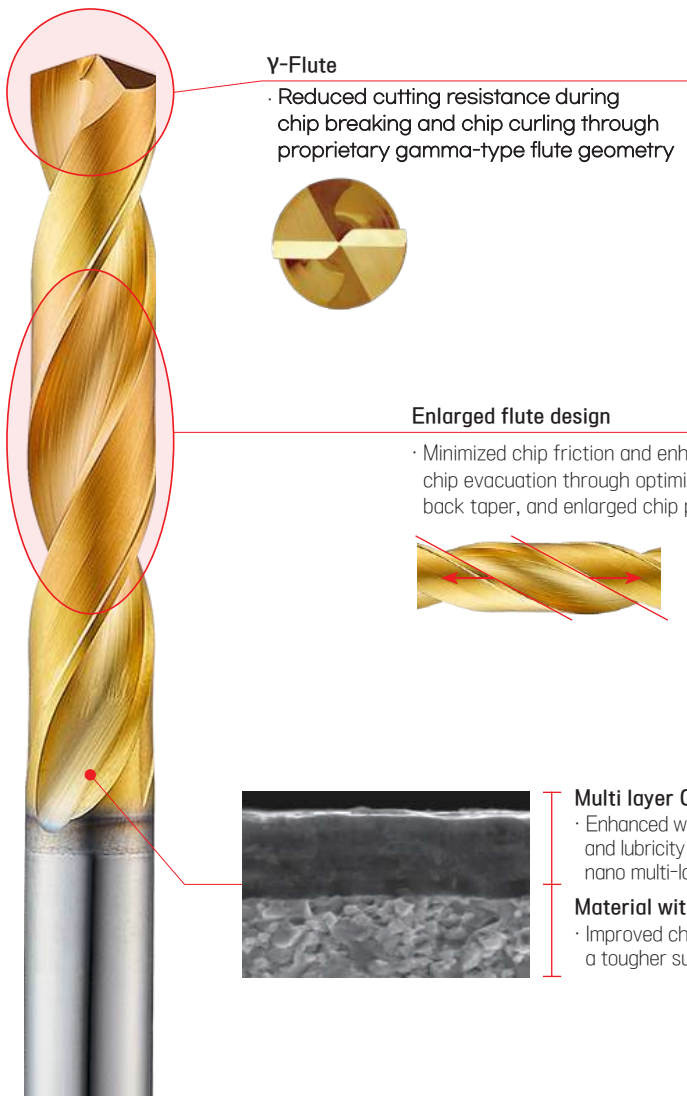
Vc	rpm	fn	Feed	Ap	Coolant
30	1,591	0.04	64	5	External

Dolphin Cast Iron Drill **NEW**

Cast Iron Drill

Features

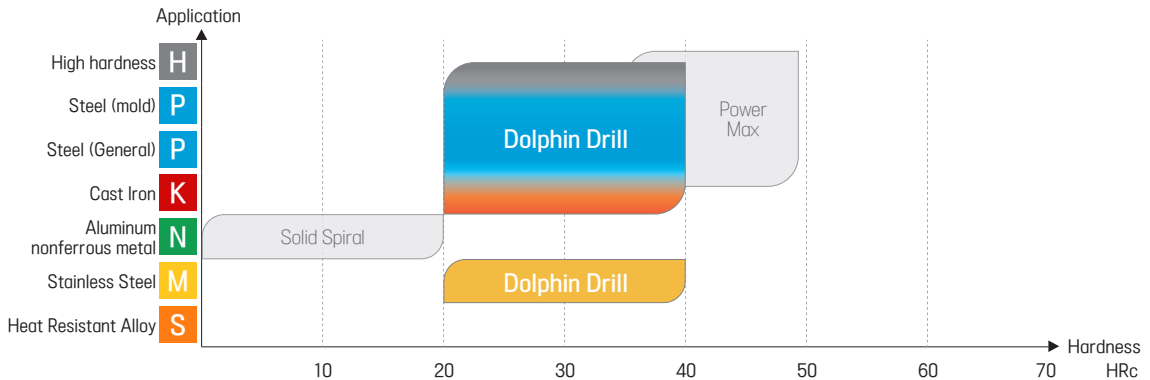
- Cost-effective drill optimized for a wide range of workpiece materials
- Increased wear resistance through optimized substrate and coating, suitable for various workpiece
 - *Excellent performance in cast iron*
- Improved chip evacuation and extended tool life through enhanced surface treatment
- Improved chip curling with newly developed gamma flute geometry
- High-precision machining without additional centering or reaming operations



Dolphin Drill & Cast Iron Drill NEW

General Purpose & Cast Iron Drill

Applications



Contents

EDP No Spec (INCH : / METRIC :)	Flutes	Geometry	Length			Coolant	Margin	Tolerance	Diameter(DC)		Page
			3D	4D	7D				Min	Max	
NDPG503	2F		○			External	Single	h7	1	13	415
NDPG504				○		External	Single	h7	1	20	418
NDPG507					○	External	Single	h7	3	20	422
NDPK504				○		External	Single	h7	1	20	426
NDPK507					○	External	Single	h7	3	20	429

EDP No. System

*If expressed as an integer, the decimal point is omitted.

NDP	G	-	5	04	100	-
①	②	③	④	⑤	⑥	⑦

①	②	③	④	⑤	⑥	⑦
Series name	Work piece	Coolant Type	Grade	Working Depth	Cutting Dia	Standard
NDP : Dolphin	G : General K (ISO K : Cast Iron)	- : Non Coolant H : Oil-Hole Coolant	5 : Grade	03 : 3D 04 : 4D 07 : 7D	030 : Ø3.0 060 : Ø6.0 103 : Ø10.3	- : JIS D : DIN



It is a new brand name for all of Widin's rotating tools representing straight and dynamic image of cylindrical rotation pattern of tools when machining

NDPG503

Dolphin General Purpose Drill



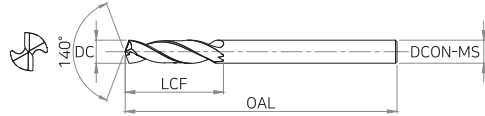
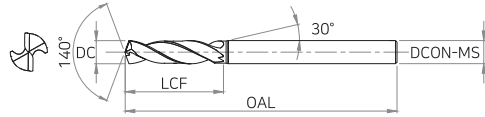
up to 1.5mm



D1.6~D1.9



over 1.9mm



► Tolerance

DC		Shank Dia
Ø1 ~ Ø3	0 ~ -0.010	h6
Ø3.1 ~ Ø6	0 ~ -0.012	
Ø6.1 ~ Ø10	0 ~ -0.015	
Ø10.1 ~ Ø13	0 ~ -0.018	



EDP No	DC	LCF	OAL	DCON MS	Applicable Tap Size Limit	
NDPG503 010	1	5	38	3	-	-
NDPG503 011	1.1	6	42	3	-	-
NDPG503 012	1.2	6	42	3	-	-
NDPG503 013	1.3	6	42	3	-	-
NDPG503 014	1.4	7	42	3	-	-
NDPG503 015	1.5	7	42	3	-	-
NDPG503 016	1.6	8	42	3	-	-
NDPG503 017	1.7	8	42	3	-	-
NDPG503 018	1.8	9	42	3	-	-
NDPG503 019	1.9	9	42	3	-	-
NDPG503 020	2	10	50	3	-	-
NDPG503 021	2.1	10	50	3	-	-
NDPG503 022	2.2	11	50	3	-	-
NDPG503 023	2.3	11	50	3	-	-
NDPG503 024	2.4	12	50	3	-	-
NDPG503 025	2.5	12	50	3	M3x0.5	WH1~4
NDPG503 026	2.6	12	50	3	M3x0.5	WH5~6
NDPG503 027	2.7	14	50	3	-	-
NDPG503 028	2.8	14	50	3	-	-
NDPG503 029	2.9	14	50	3	-	-

EDP No	DC	LCF	OAL	DCON MS	Applicable Tap Size Limit	
NDPG503 030	3	14	55	3	-	-
NDPG503 031	3.1	16	55	4	-	-
NDPG503 03175	3.175	16	55	4	-	-
NDPG503 032	3.2	16	55	4	-	-
NDPG503 03264	3.264	16	55	4	-	-
NDPG503 033	3.3	16	55	4	M4x0.7	WH1~4
NDPG503 034	3.4	16	55	4	M4x0.7	WH5~6
NDPG503 035	3.5	16	55	4	-	-
NDPG503 03572	3.572	18	55	4	-	-
NDPG503 036	3.6	18	55	4	-	-
NDPG503 037	3.7	18	55	4	-	-
NDPG503 038	3.8	20	55	4	-	-
NDPG503 039	3.9	20	55	4	-	-
NDPG503 040	4	20	55	4	-	-
NDPG503 04039	4.039	20	55	5	-	-
NDPG503 041	4.1	20	55	5	-	-
NDPG503 042	4.2	20	62	5	M5x0.8	WH1~4
NDPG503 043	4.3	22	62	5	M5x0.8	WH5~6
NDPG503 044	4.4	22	62	5	-	-
NDPG503 045	4.5	22	62	5	-	-

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
		◎	◎	○	○	○		○	○	

Drill

Dolphin Drill

Dolphin Oil-Hole Drill

Power Max

Solid Spiral

NDPG503

Dolphin General Purpose Drill

Drill

EDP No	DC	LCF	OAL	DCON MS	Applicable Tap	
					Size	Limit
NDPG503 046	4.6	22	62	5	-	-
NDPG503 047	4.7	22	62	5	-	-
NDPG503 04763	4.763	24	62	5	-	-
NDPG503 048	4.8	24	62	5	-	-
NDPG503 049	4.9	24	62	5	-	-
NDPG503 050	5	24	62	5	M6x1.0	WH1~4
NDPG503 051	5.1	24	62	6	M6x1.0	WH5~6
NDPG503 05159	5.159	28	66	6	-	-
NDPG503 052	5.2	28	66	6	-	-
NDPG503 053	5.3	28	66	6	-	-
NDPG503 054	5.4	28	66	6	-	-
NDPG503 055	5.5	28	66	6	-	-
NDPG503 05556	5.556	28	66	6	-	-
NDPG503 056	5.6	28	66	6	-	-
NDPG503 057	5.7	28	66	6	-	-
NDPG503 058	5.8	28	66	6	-	-
NDPG503 059	5.9	28	66	6	-	-
NDPG503 05953	5.953	28	66	6	-	-
NDPG503 060	6	28	66	6	-	-
NDPG503 061	6.1	30	66	7	-	-
NDPG503 062	6.2	34	74	7	-	-
NDPG503 063	6.3	34	74	7	-	-
NDPG503 0635	6.35	34	74	7	-	-
NDPG503 064	6.4	34	74	7	-	-
NDPG503 065	6.5	34	74	7	-	-
NDPG503 066	6.6	34	74	7	-	-
NDPG503 067	6.7	37	74	7	-	-
NDPG503 06747	6.747	37	74	7	-	-
NDPG503 068	6.8	37	74	7	M8x1.25	WH1~4
NDPG503 069	6.9	37	74	7	M8x1.25	WH5~6
NDPG503 070	7	37	74	7	M8x1.0	WH1~4
NDPG503 071	7.1	37	74	8	M8x1.0	WH5~6
NDPG503 07144	7.144	40	79	8	-	-
NDPG503 072	7.2	40	79	8	-	-

EDP No	DC	LCF	OAL	DCON MS	Applicable Tap	
					Size	Limit
NDPG503 073	7.3	40	79	8	-	-
NDPG503 074	7.4	40	79	8	-	-
NDPG503 075	7.5	40	79	8	-	-
NDPG503 07541	7.541	40	79	8	-	-
NDPG503 076	7.6	40	79	8	-	-
NDPG503 077	7.7	40	79	8	-	-
NDPG503 078	7.8	40	79	8	-	-
NDPG503 079	7.9	40	79	8	-	-
NDPG503 07938	7.938	40	79	8	-	-
NDPG503 080	8	40	79	8	-	-
NDPG503 081	8.1	40	79	9	-	-
NDPG503 082	8.2	43	84	9	-	-
NDPG503 083	8.3	43	84	9	-	-
NDPG503 084	8.4	43	84	9	-	-
NDPG503 085	8.5	43	84	9	M10x1.5	WH1~4
NDPG503 086	8.6	43	84	9	M10x1.5	WH5~6
NDPG503 087	8.7	43	84	9	-	-
NDPG503 08731	8.731	43	84	9	-	-
NDPG503 088	8.8	43	84	9	M10x1.25	WH1~4
NDPG503 089	8.9	43	84	9	M10x1.25	WH5~6
NDPG503 090	9	43	84	9	M10x1.0	WH1~4
NDPG503 091	9.1	43	84	10	M10x1.0	WH5~6
NDPG503 092	9.2	47	89	10	-	-
NDPG503 093	9.3	47	89	10	-	-
NDPG503 094	9.4	47	89	10	-	-
NDPG503 095	9.5	47	89	10	-	-
NDPG503 09525	9.525	47	89	10	-	-
NDPG503 096	9.6	47	89	10	-	-
NDPG503 097	9.7	47	89	10	-	-
NDPG503 098	9.8	47	89	10	-	-
NDPG503 099	9.9	47	89	10	-	-
NDPG503 100	10	47	89	10	-	-
NDPG503 101	10.1	47	89	11	-	-
NDPG503 102	10.2	51	95	11	-	-

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	~325	HRC30~50	~FCD500					
		◎	◎	○	○	○		○	○	

NDPG503

Dolphin General Purpose Drill

Drill

EDP No	DC	LCF	OAL	DCON MS	Applicable Tap	
					Size	Limit
NDPG503 103	10.3	51	95	11	M12x1.75	WH1~2
NDPG503 10319	10.319	51	95	11	M12x1.75	WH3~4
NDPG503 104	10.4	51	95	11	M12x1.75	WH5~6
NDPG503 105	10.5	51	95	11	M12x1.5	WH1~4
NDPG503 106	10.6	51	95	11	M12x1.5	WH5~6
NDPG503 107	10.7	51	95	11	-	-
NDPG503 10716	10.716	51	95	11	-	-
NDPG503 108	10.8	51	95	11	M12x1.25	WH1~4
NDPG503 109	10.9	51	95	11	M12x1.25	WH5~6
NDPG503 110	11	51	95	11	M12x1.0	WH1~4
NDPG503 111	11.1	51	95	12	M12x1.0	WH5~6
NDPG503 11113	11.113	54	102	12	-	-
NDPG503 112	11.2	54	102	12	-	-
NDPG503 113	11.3	54	102	12	-	-
NDPG503 114	11.4	54	102	12	-	-
NDPG503 115	11.5	54	102	12	-	-

EDP No	DC	LCF	OAL	DCON MS	Applicable Tap	
					Size	Limit
NDPG503 116	11.6	54	102	12	-	-
NDPG503 117	11.7	54	102	12	-	-
NDPG503 118	11.8	54	102	12	-	-
NDPG503 119	11.9	54	102	12	-	-
NDPG503 120	12	54	102	12	M14x2.0	WH1~4
NDPG503 121	12.1	54	102	13	M14x2.0	WH5~6
NDPG503 122	12.2	57	102	13	-	-
NDPG503 123	12.3	57	102	13	-	-
NDPG503 124	12.4	57	102	13	-	-
NDPG503 125	12.5	57	102	13	M14x1.5	WH1~4
NDPG503 126	12.6	57	102	13	M14x1.5	WH5~6
NDPG503 127	12.7	57	102	13	-	-
NDPG503 128	12.8	57	102	13	-	-
NDPG503 129	12.9	57	102	13	-	-
NDPG503 130	13	57	102	13	-	-

Dolphin Drill

Dolphin Oil-Hole Drill

Power Max

Solid Spiral

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	Steel HRc30~50	~FCD500					
		◎	◎	○	○	○		○	○	

NDPG504 Dolphin General Purpose Drill

Drill



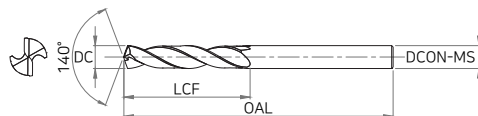
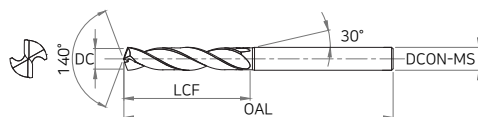
up to 1.5mm



D1.6~D1.9



over 1.9mm



► Tolerance

DC		Shank Dia
Ø1 ~ Ø3	0 ~ -0.010	h6
Ø3.1 ~ Ø6	0 ~ -0.012	
Ø6.1 ~ Ø10	0 ~ -0.015	
Ø10.1 ~ Ø18	0 ~ -0.018	
Ø18.1 ~	0 ~ -0.021	



EDP No	DC	LCF	OAL	DCON MS	Applicable Tap	
					Size	Limit
NDPG504 010	1	8	38	3	-	-
NDPG504 011	1.1	9	42	3	-	-
NDPG504 012	1.2	10	42	3	-	-
NDPG504 013	1.3	10	42	3	-	-
NDPG504 014	1.4	11	42	3	-	-
NDPG504 015	1.5	11	42	3	-	-
NDPG504 016	1.6	12	42	3	-	-
NDPG504 017	1.7	12	42	3	-	-
NDPG504 018	1.8	13	42	3	-	-
NDPG504 019	1.9	13	42	3	-	-
NDPG504 020	2	18	50	3	-	-
NDPG504 021	2.1	18	50	3	-	-
NDPG504 022	2.2	18	50	3	-	-
NDPG504 023	2.3	18	50	3	-	-
NDPG504 024	2.4	18	50	3	-	-
NDPG504 025	2.5	18	50	3	M3x0.5	WH1~4
NDPG504 026	2.6	18	50	3	M3x0.5	WH5~6
NDPG504 027	2.7	18	50	3	-	-
NDPG504 028	2.8	18	50	3	-	-
NDPG504 029	2.9	18	50	3	-	-

EDP No	DC	LCF	OAL	DCON MS	Applicable Tap	
					Size	Limit
NDPG504 030	3	20	55	3	-	-
NDPG504 031	3.1	20	55	4	-	-
NDPG504 03175	3.175	20	55	4	-	-
NDPG504 032	3.2	20	55	4	-	-
NDPG504 03264	3.264	20	55	4	-	-
NDPG504 033	3.3	20	55	4	M4x0.7	WH1~4
NDPG504 034	3.4	20	55	4	M4x0.7	WH5~6
NDPG504 035	3.5	20	55	4	-	-
NDPG504 03572	3.572	25	55	4	-	-
NDPG504 036	3.6	25	55	4	-	-
NDPG504 037	3.7	25	55	4	-	-
NDPG504 038	3.8	25	55	4	-	-
NDPG504 039	3.9	25	55	4	-	-
NDPG504 040	4	25	55	4	-	-
NDPG504 04039	4.039	25	55	5	-	-
NDPG504 041	4.1	25	55	5	-	-
NDPG504 042	4.2	33	63	5	M5x0.8	WH1~4
NDPG504 043	4.3	33	63	5	M5x0.8	WH5~6
NDPG504 044	4.4	33	63	5	-	-
NDPG504 045	4.5	33	63	5	-	-

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
		◎	◎	○	○	○		○	○	

NDPG504 Dolphin General Purpose Drill

Drill

EDP No	DC	LCF	OAL	DCON MS	Applicable Tap	
					Size	Limit
NDPG504 046	4.6	33	63	5	-	-
NDPG504 047	4.7	33	63	5	-	-
NDPG504 04763	4.763	33	63	5	-	-
NDPG504 048	4.8	33	63	5	-	-
NDPG504 049	4.9	33	63	5	-	-
NDPG504 050	5	33	63	5	M6x1.0	WH1~4
NDPG504 051	5.1	33	63	6	M6x1.0	WH5~6
NDPG504 05159	5.159	36	66	6	-	-
NDPG504 052	5.2	36	66	6	-	-
NDPG504 053	5.3	36	66	6	-	-
NDPG504 054	5.4	36	66	6	-	-
NDPG504 055	5.5	36	66	6	-	-
NDPG504 05556	5.556	36	66	6	-	-
NDPG504 056	5.6	36	66	6	-	-
NDPG504 057	5.7	36	66	6	-	-
NDPG504 058	5.8	36	66	6	-	-
NDPG504 059	5.9	36	66	6	-	-
NDPG504 05953	5.953	36	66	6	-	-
NDPG504 060	6	36	66	6	-	-
NDPG504 061	6.1	36	66	7	-	-
NDPG504 062	6.2	42	75	7	-	-
NDPG504 063	6.3	42	75	7	-	-
NDPG504 0635	6.35	42	75	7	-	-
NDPG504 064	6.4	42	75	7	-	-
NDPG504 065	6.5	42	75	7	-	-
NDPG504 066	6.6	42	75	7	-	-
NDPG504 067	6.7	42	75	7	-	-
NDPG504 06747	6.747	42	75	7	-	-
NDPG504 068	6.8	42	75	7	M8x1.25	WH1~4
NDPG504 069	6.9	42	75	7	M8x1.25	WH5~6
NDPG504 070	7	42	75	7	M8x1.0	WH1~4
NDPG504 071	7.1	42	75	8	M8x1.0	WH5~6
NDPG504 07144	7.144	46	80	8	-	-
NDPG504 072	7.2	46	80	8	-	-
NDPG504 073	7.3	46	80	8	-	-
NDPG504 074	7.4	46	80	8	-	-
NDPG504 075	7.5	46	80	8	-	-
NDPG504 07541	7.541	46	80	8	-	-
NDPG504 076	7.6	46	80	8	-	-
NDPG504 077	7.7	46	80	8	-	-
NDPG504 078	7.8	46	80	8	-	-
NDPG504 079	7.9	46	80	8	-	-
NDPG504 07938	7.938	46	80	8	-	-
NDPG504 080	8	46	80	8	-	-
NDPG504 081	8.1	46	80	9	-	-
NDPG504 082	8.2	50	85	9	-	-
NDPG504 083	8.3	50	85	9	-	-
NDPG504 084	8.4	50	85	9	-	-
NDPG504 085	8.5	50	85	9	M10x1.5	WH1~4
NDPG504 086	8.6	50	85	9	M10x1.5	WH5~6
NDPG504 087	8.7	50	85	9	-	-
NDPG504 08731	8.731	50	85	9	-	-
NDPG504 088	8.8	50	85	9	M10x1.25	WH1~4
NDPG504 089	8.9	50	85	9	M10x1.25	WH5~6
NDPG504 090	9	50	85	9	M10x1.0	WH1~4
NDPG504 091	9.1	50	85	10	M10x1.0	WH5~6
NDPG504 092	9.2	55	90	10	-	-
NDPG504 093	9.3	55	90	10	-	-
NDPG504 094	9.4	55	90	10	-	-
NDPG504 095	9.5	55	90	10	-	-
NDPG504 09525	9.525	55	90	10	-	-
NDPG504 096	9.6	55	90	10	-	-
NDPG504 097	9.7	55	90	10	-	-
NDPG504 098	9.8	55	90	10	-	-
NDPG504 099	9.9	55	90	10	-	-
NDPG504 100	10	55	90	10	-	-
NDPG504 101	10.1	55	90	11	-	-
NDPG504 102	10.2	57	95	11	-	-

Dolphin Drill

Dolphin Oil-Hole Drill

Power Max

Solid Spiral

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
		◎	◎	○	○	○		○	○	

NDPG504 Dolphin General Purpose Drill

Drill

EDP No	DC	LCF	OAL	DCON MS	Applicable Tap		EDP No	DC	LCF	OAL	DCON MS	Applicable Tap	
					Size	Limit						Size	Limit
NDPG504 103	10.3	57	95	11	M12x1.75	WH1~2	NDPG504 134	13.4	65	107	14	-	-
NDPG504 10319	10.319	57	95	11	M12x1.75	WH3~4	NDPG504 13494	13.494	65	107	14	-	-
NDPG504 104	10.4	57	95	11	M12x1.75	WH5~6	NDPG504 135	13.5	65	107	14	-	-
NDPG504 105	10.5	57	95	11	M12x1.5	WH1~4	NDPG504 136	13.6	65	107	14	-	-
NDPG504 106	10.6	57	95	11	M12x1.5	WH5~6	NDPG504 137	13.7	65	107	14	-	-
NDPG504 107	10.7	57	95	11	-	-	NDPG504 138	13.8	65	107	14	-	-
NDPG504 10716	10.716	57	95	11	-	-	NDPG504 139	13.9	65	107	14	-	-
NDPG504 108	10.8	57	95	11	M12x1.25	WH1~4	NDPG504 140	14	65	107	14	M16x2.0	WH1~4
NDPG504 109	10.9	57	95	11	M12x1.25	WH5~6	NDPG504 141	14.1	65	107	15	M16x2.0	WH5~6
NDPG504 110	11	57	95	11	M12x1.0	WH1~4	NDPG504 142	14.2	67	111	15	-	-
NDPG504 111	11.1	57	95	12	M12x1.0	WH5~6	NDPG504 143	14.3	67	111	15	-	-
NDPG504 11113	11.113	63	102	12	-	-	NDPG504 144	14.4	67	111	15	-	-
NDPG504 112	11.2	63	102	12	-	-	NDPG504 145	14.5	67	111	15	M16x1.5	WH1~4
NDPG504 113	11.3	63	102	12	-	-	NDPG504 146	14.6	67	111	15	M16x1.5	WH5~6
NDPG504 114	11.4	63	102	12	-	-	NDPG504 147	14.7	67	111	15	-	-
NDPG504 115	11.5	63	102	12	-	-	NDPG504 148	14.8	67	111	15	-	-
NDPG504 116	11.6	63	102	12	-	-	NDPG504 149	14.9	67	111	15	-	-
NDPG504 117	11.7	63	102	12	-	-	NDPG504 150	15	67	111	15	-	-
NDPG504 118	11.8	63	102	12	-	-	NDPG504 151	15.1	67	111	16	-	-
NDPG504 119	11.9	63	102	12	-	-	NDPG504 152	15.2	69	115	16	-	-
NDPG504 120	12	63	102	12	M14x2.0	WH1~4	NDPG504 153	15.3	69	115	16	-	-
NDPG504 121	12.1	63	102	13	M14x2.0	WH5~6	NDPG504 154	15.4	69	115	16	-	-
NDPG504 122	12.2	63	102	13	-	-	NDPG504 155	15.5	69	115	16	M18x2.5	WH1~4
NDPG504 123	12.3	63	102	13	-	-	NDPG504 156	15.6	69	115	16	M18x2.5	WH5~6
NDPG504 124	12.4	63	102	13	-	-	NDPG504 157	15.7	69	115	16	-	-
NDPG504 125	12.5	63	102	13	M14x1.5	WH1~4	NDPG504 158	15.8	69	115	16	-	-
NDPG504 126	12.6	63	102	13	M14x1.5	WH5~6	NDPG504 15875	15.875	69	115	16	-	-
NDPG504 127	12.7	63	102	13	-	-	NDPG504 159	15.9	69	115	16	-	-
NDPG504 128	12.8	63	102	13	-	-	NDPG504 160	16	69	115	16	-	-
NDPG504 129	12.9	63	102	13	-	-	NDPG504 161	16.1	69	115	17	-	-
NDPG504 130	13	63	102	13	-	-	NDPG504 162	16.2	71	119	17	-	-
NDPG504 131	13.1	63	102	14	-	-	NDPG504 163	16.3	71	119	17	-	-
NDPG504 132	13.2	65	107	14	-	-	NDPG504 164	16.4	71	119	17	-	-
NDPG504 133	13.3	65	107	14	-	-	NDPG504 165	16.5	71	119	17	M18x1.5	WH1~6

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
		◎	◎	○	○	○		○	○	

NDPG504

Dolphin General Purpose Drill

Drill

EDP No	DC	LCF	OAL	DCON MS	Applicable Tap	
					Size	Limit
NDPG504 165	16.5	71	119	17	M18x1.5	WH1~6
NDPG504 166	16.6	71	119	17	-	-
NDPG504 16669	16.669	71	119	17	-	-
NDPG504 167	16.7	71	119	17	-	-
NDPG504 168	16.8	71	119	17	-	-
NDPG504 169	16.9	71	119	17	-	-
NDPG504 170	17	71	119	17	-	-
NDPG504 171	17.1	71	119	18	-	-
NDPG504 172	17.2	74	123	18	-	-
NDPG504 173	17.3	74	123	18	-	-
NDPG504 174	17.4	74	123	18	-	-
NDPG504 175	17.5	74	123	18	M20x2.5	WH1~6
NDPG504 176	17.6	74	123	18	-	-
NDPG504 177	17.7	74	123	18	-	-
NDPG504 178	17.8	74	123	18	-	-
NDPG504 179	17.9	74	123	18	-	-
NDPG504 180	18	74	123	18	-	-
NDPG504 181	18.1	74	123	19	-	-
NDPG504 182	18.2	76	127	19	-	-
NDPG504 183	18.3	76	127	19	-	-
NDPG504 184	18.4	76	127	19	-	-
NDPG504 185	18.5	76	127	19	M20x1.5	WH1~6
NDPG504 186	18.6	76	127	19	-	-
NDPG504 187	18.7	76	127	19	-	-
NDPG504 188	18.8	76	127	19	-	-
NDPG504 189	18.9	76	127	19	-	-
NDPG504 190	19	76	127	19	-	-
NDPG504 191	19.1	76	127	20	-	-
NDPG504 192	19.2	80	131	20	-	-
NDPG504 193	19.3	80	131	20	-	-
NDPG504 194	19.4	80	131	20	-	-
NDPG504 195	19.5	80	131	20	M22x2.5	WH1~6
NDPG504 196	19.6	80	131	20	-	-
NDPG504 197	19.7	80	131	20	-	-
NDPG504 198	19.8	80	131	20	-	-
NDPG504 200	20	80	131	20	-	-
NDPG504 199	19.9	80	131	20	-	-
NDPG504 200	20	80	131	20	-	-

Dolphin Drill

Dolphin Oil-Hole Drill

Power Max

Solid Spiral

► Applicable Working Material

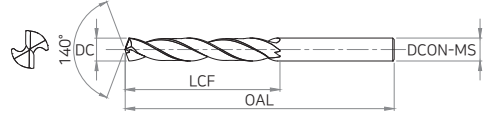
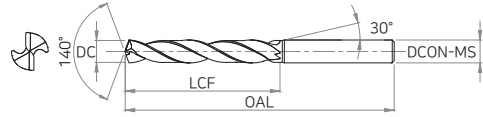
○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
		◎	◎	○	○	○		○	○	

NDPG507

Dolphin General Purpose Drill

Drill



► Tolerance

DC		Shank Dia
Ø1 ~ Ø3	0 ~ -0.010	h6
Ø3.1 ~ Ø6	0 ~ -0.012	
Ø6.1 ~ Ø10	0 ~ -0.015	
Ø10.1 ~ Ø18	0 ~ -0.018	
Ø18.1 ~	0 ~ -0.021	



EDP No	DC	LCF	OAL	DCON MS	Applicable Tap	
					Size	Limit
NDPG507 010	1	12	60	3	-	-
NDPG507 011	1.1	12	60	3	-	-
NDPG507 012	1.2	12	60	3	-	-
NDPG507 013	1.3	15	60	3	-	-
NDPG507 014	1.4	15	60	3	-	-
NDPG507 015	1.5	15	60	3	-	-
NDPG507 016	1.6	20	60	3	-	-
NDPG507 017	1.7	20	60	3	-	-
NDPG507 018	1.8	20	60	3	-	-
NDPG507 019	1.9	20	60	3	-	-
NDPG507 020	2	25	66	3	-	-
NDPG507 021	2.1	25	66	3	-	-
NDPG507 022	2.2	25	66	3	-	-
NDPG507 023	2.3	25	66	3	-	-
NDPG507 024	2.4	30	66	3	-	-
NDPG507 025	2.5	30	66	3	M3x0.5	WH1~4
NDPG507 026	2.6	30	66	3	M3x0.5	WH5~6
NDPG507 027	2.7	30	66	3	-	-
NDPG507 028	2.8	30	66	3	-	-
NDPG507 029	2.9	30	66	3	-	-

EDP No	DC	LCF	OAL	DCON MS	Applicable Tap	
					Size	Limit
NDPG507 030	3	45	80	3	-	-
NDPG507 031	3.1	45	80	4	-	-
NDPG507 03175	3.175	45	80	4	-	-
NDPG507 032	3.2	45	80	4	-	-
NDPG507 03264	3.264	45	80	4	-	-
NDPG507 033	3.3	45	80	4	M4x0.7	WH1~4
NDPG507 034	3.4	45	80	4	M4x0.7	WH5~6
NDPG507 035	3.5	45	80	4	-	-
NDPG507 03572	3.572	45	80	4	-	-
NDPG507 036	3.6	45	80	4	-	-
NDPG507 037	3.7	45	80	4	-	-
NDPG507 038	3.8	45	80	4	-	-
NDPG507 039	3.9	45	80	4	-	-
NDPG507 040	4	45	80	4	-	-
NDPG507 041	4.1	45	80	5	-	-
NDPG507 042	4.2	45	80	5	M5x0.8	WH1~4
NDPG507 043	4.3	45	80	5	M5x0.8	WH5~6
NDPG507 044	4.4	45	80	5	-	-
NDPG507 045	4.5	45	80	5	-	-
NDPG507 046	4.6	45	80	5	-	-

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
		◎	◎	○	○	○		○	○	

NDPG507

Dolphin General Purpose Drill

Drill

EDP No	DC	LCF	OAL	DCON MS	Applicable Tap	
					Size	Limit
NDPG507 047	4.7	45	80	5	-	-
NDPG507 04763	4.763	45	80	5	-	-
NDPG507 048	4.8	45	80	5	-	-
NDPG507 049	4.9	45	80	5	-	-
NDPG507 050	5	45	80	5	M6x1.0	WH1~4
NDPG507 051	5.1	45	80	6	M6x1.0	WH5~6
NDPG507 05159	5.159	50	83	6	-	-
NDPG507 052	5.2	50	83	6	-	-
NDPG507 053	5.3	50	83	6	-	-
NDPG507 054	5.4	50	83	6	-	-
NDPG507 055	5.5	50	83	6	-	-
NDPG507 05556	5.556	50	83	6	-	-
NDPG507 056	5.6	50	83	6	-	-
NDPG507 057	5.7	50	83	6	-	-
NDPG507 058	5.8	50	83	6	-	-
NDPG507 059	5.9	50	83	6	-	-
NDPG507 060	6	50	83	6	-	-
NDPG507 061	6.1	50	83	7	-	-
NDPG507 062	6.2	53	85	7	-	-
NDPG507 063	6.3	53	85	7	-	-
NDPG507 0635	6.35	53	85	7	-	-
NDPG507 064	6.4	53	85	7	-	-
NDPG507 065	6.5	53	85	7	-	-
NDPG507 066	6.6	53	85	7	-	-
NDPG507 067	6.7	53	85	7	-	-
NDPG507 06747	6.747	53	85	7	-	-
NDPG507 068	6.8	53	85	7	M8x1.25	WH1~4
NDPG507 069	6.9	53	85	7	M8x1.25	WH5~6
NDPG507 070	7	53	85	7	M8x1.0	WH1~4
NDPG507 071	7.1	53	85	8	M8x1.0	WH5~6
NDPG507 07144	7.144	58	90	8	-	-
NDPG507 072	7.2	58	90	8	-	-
NDPG507 073	7.3	58	90	8	-	-
NDPG507 074	7.4	58	90	8	-	-
NDPG507 075	7.5	58	90	8	-	-
NDPG507 076	7.6	58	90	8	-	-
NDPG507 077	7.7	58	90	8	-	-
NDPG507 078	7.8	58	90	8	-	-
NDPG507 079	7.9	58	90	8	-	-
NDPG507 07938	7.938	58	90	8	-	-
NDPG507 080	8	58	90	8	-	-
NDPG507 081	8.1	58	90	9	-	-
NDPG507 082	8.2	64	98	9	-	-
NDPG507 083	8.3	64	98	9	-	-
NDPG507 084	8.4	64	98	9	-	-
NDPG507 085	8.5	64	98	9	M10x1.5	WH1~4
NDPG507 086	8.6	64	98	9	M10x1.5	WH5~6
NDPG507 087	8.7	64	98	9	-	-
NDPG507 08731	8.731	64	98	9	-	-
NDPG507 088	8.8	64	98	9	M10x1.25	WH1~4
NDPG507 089	8.9	64	98	9	M10x1.25	WH5~6
NDPG507 090	9	64	98	9	M10x1.0	WH1~4
NDPG507 091	9.1	64	98	10	M10x1.0	WH5~6
NDPG507 092	9.2	68	105	10	-	-
NDPG507 093	9.3	68	105	10	-	-
NDPG507 094	9.4	68	105	10	-	-
NDPG507 095	9.5	68	105	10	-	-
NDPG507 09525	9.525	68	105	10	-	-
NDPG507 096	9.6	68	105	10	-	-
NDPG507 097	9.7	68	105	10	-	-
NDPG507 098	9.8	68	105	10	-	-
NDPG507 099	9.9	68	105	10	-	-
NDPG507 100	10	68	105	10	-	-
NDPG507 101	10.1	68	105	11	-	-
NDPG507 102	10.2	73	110	11	-	-
NDPG507 103	10.3	73	110	11	M12x1.75	WH1~2
NDPG507 10319	10.319	73	110	11	M12x1.75	WH3~4
NDPG507 104	10.4	73	110	11	M12x1.75	WH5~6

Dolphin Drill

Dolphin Oil-Hole Drill

Power Max

Solid Spiral

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
		◎	◎	○	○	○		○	○	

NDPG507

Dolphin General Purpose Drill

Drill

EDP No	DC	LCF	OAL	DCON MS	Applicable Tap	
					Size	Limit
NDPG507 105	10.5	73	110	11	M12x1.5	WH1~4
NDPG507 106	10.6	73	110	11	M12x1.5	WH5~6
NDPG507 107	10.7	73	110	11	-	-
NDPG507 10716	10.716	73	110	11	-	-
NDPG507 108	10.8	73	110	11	M12x1.25	WH1~4
NDPG507 109	10.9	73	110	11	M12x1.25	WH5~6
NDPG507 110	11	73	110	11	M12x1.0	WH1~4
NDPG507 111	11.1	73	110	12	M12x1.0	WH5~6
NDPG507 11113	11.113	80	120	12	-	-
NDPG507 112	11.2	80	120	12	-	-
NDPG507 113	11.3	80	120	12	-	-
NDPG507 114	11.4	80	120	12	-	-
NDPG507 115	11.5	80	120	12	-	-
NDPG507 116	11.6	80	120	12	-	-
NDPG507 117	11.7	80	120	12	-	-
NDPG507 118	11.8	80	120	12	-	-
NDPG507 119	11.9	80	120	12	-	-
NDPG507 120	12	80	120	12	M14x2.0	WH1~4
NDPG507 121	12.1	80	120	13	M14x2.0	WH5~6
NDPG507 122	12.2	90	137	13	-	-
NDPG507 123	12.3	90	137	13	-	-
NDPG507 124	12.4	90	137	13	-	-
NDPG507 125	12.5	90	137	13	M14x1.5	WH1~4
NDPG507 126	12.6	90	137	13	M14x1.5	WH5~6
NDPG507 127	12.7	90	137	13	-	-
NDPG507 128	12.8	90	137	13	-	-
NDPG507 129	12.9	90	137	13	-	-
NDPG507 130	13	90	137	13	-	-
NDPG507 131	13.1	90	137	14	-	-
NDPG507 132	13.2	96	147	14	-	-
NDPG507 133	13.3	96	147	14	-	-
NDPG507 134	13.4	96	147	14	-	-
NDPG507 13494	13.494	96	147	14	-	-
NDPG507 135	13.5	96	147	14	-	-

EDP No	DC	LCF	OAL	DCON MS	Applicable Tap	
					Size	Limit
NDPG507 136	13.6	96	147	14	-	-
NDPG507 137	13.7	96	147	14	-	-
NDPG507 138	13.8	96	147	14	-	-
NDPG507 13891	13.891	96	147	14	-	-
NDPG507 139	13.9	96	147	14	-	-
NDPG507 140	14	96	147	14	M16x2.0	WH1~4
NDPG507 141	14.1	96	147	15	M16x2.0	WH5~6
NDPG507 142	14.2	100	153	15	-	-
NDPG507 14288	14.288	100	153	15	-	-
NDPG507 143	14.3	100	153	15	-	-
NDPG507 144	14.4	100	153	15	-	-
NDPG507 145	14.5	100	153	15	M16x1.5	WH1~4
NDPG507 146	14.6	100	153	15	M16x1.5	WH5~6
NDPG507 147	14.7	100	153	15	-	-
NDPG507 148	14.8	100	153	15	-	-
NDPG507 149	14.9	100	153	15	-	-
NDPG507 150	15	100	153	15	-	-
NDPG507 151	15.1	100	153	16	-	-
NDPG507 152	15.2	112	160	16	-	-
NDPG507 153	15.3	112	160	16	-	-
NDPG507 154	15.4	112	160	16	-	-
NDPG507 155	15.5	112	160	16	M18x2.5	WH1~4
NDPG507 156	15.6	112	160	16	M18x2.5	WH5~6
NDPG507 157	15.7	112	160	16	-	-
NDPG507 158	15.8	112	160	16	-	-
NDPG507 15875	15.875	112	160	16	-	-
NDPG507 159	15.9	112	160	16	-	-
NDPG507 160	16	112	160	16	-	-
NDPG507 161	16.1	112	160	17	-	-
NDPG507 162	16.2	112	160	17	-	-
NDPG507 163	16.3	112	160	17	-	-
NDPG507 164	16.4	112	160	17	-	-
NDPG507 165	16.5	112	160	17	M18x1.5	WH1~6
NDPG507 166	16.6	112	160	17	-	-

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
		◎	◎	○	○	○		○	○	

NDPG507

Dolphin General Purpose Drill

Drill

EDP No	DC	LCF	OAL	DCON MS	Applicable Tap	
					Size	Limit
NDPG507 16669	16.669	112	160	17	-	-
NDPG507 167	16.7	112	160	17	-	-
NDPG507 168	16.8	112	160	17	-	-
NDPG507 169	16.9	112	160	17	-	-
NDPG507 170	17	112	160	17	-	-
NDPG507 171	17.1	112	160	18	-	-
NDPG507 172	17.2	112	160	18	-	-
NDPG507 173	17.3	112	160	18	-	-
NDPG507 174	17.4	112	160	18	-	-
NDPG507 17463	17.463	112	160	18	-	-
NDPG507 175	17.5	112	160	18	M20x2.5	WH1~6
NDPG507 176	17.6	112	160	18	-	-
NDPG507 177	17.7	112	160	18	-	-
NDPG507 178	17.8	112	160	18	-	-
NDPG507 179	17.9	112	160	18	-	-
NDPG507 180	18	112	160	18	-	-
NDPG507 181	18.1	112	160	18	-	-
NDPG507 182	18.2	112	160	19	-	-
NDPG507 183	18.3	112	160	19	-	-
NDPG507 184	18.4	112	160	19	-	-
NDPG507 185	18.5	112	160	19	M20x1.5	WH1~6
NDPG507 186	18.6	112	160	19	-	-
NDPG507 187	18.7	112	160	19	-	-
NDPG507 188	18.8	112	160	19	-	-
NDPG507 189	18.9	112	160	19	-	-
NDPG507 190	19	112	160	19	-	-
NDPG507 191	19.1	112	160	20	-	-
NDPG507 192	19.2	112	160	20	-	-
NDPG507 193	19.3	112	160	20	-	-
NDPG507 194	19.4	112	160	20	-	-
NDPG507 195	19.5	112	160	20	M22x2.5	WH1~6
NDPG507 196	19.6	112	160	20	-	-
NDPG507 197	19.7	112	160	20	-	-
NDPG507 198	19.8	112	160	20	-	-
NDPG507 199	19.9	112	160	20	-	-
NDPG507 200	20	112	160	20	-	-

Dolphin Drill

Dolphin Oil-Hole Drill

Power Max

Solid Spiral

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
		◎	◎	○	○	○		○	○	

NDPK504 Dolphin Cast Iron Drill

Drill



up to 1.5mm



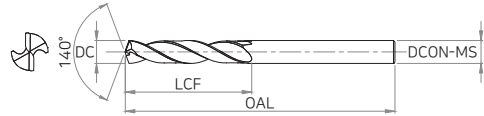
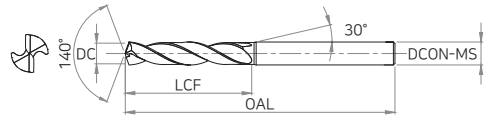
D1.6~D1.9



over 1.9mm

► Tolerance

DC		Shank Dia
~ Ø3	0 ~ -0.010	h6
Ø3.1 ~ Ø6	0 ~ -0.012	
Ø6.1 ~ Ø10	0 ~ -0.015	
Ø10.1 ~ Ø18	0 ~ -0.018	
Ø18.1 ~	0 ~ -0.021	



EDP No	DC	LCF	OAL	DCON MS	Applicable Tap	
					Size	Limit
NDPK504 010	1	8	38	3	-	-
NDPK504 011	1.1	9	42	3	-	-
NDPK504 012	1.2	10	42	3	-	-
NDPK504 013	1.3	10	42	3	-	-
NDPK504 014	1.4	11	42	3	-	-
NDPK504 015	1.5	11	42	3	-	-
NDPK504 016	1.6	12	42	3	-	-
NDPK504 017	1.7	12	42	3	-	-
NDPK504 018	1.8	13	42	3	-	-
NDPK504 019	1.9	13	42	3	-	-
NDPK504 020	2	18	50	3	-	-
NDPK504 021	2.1	18	50	3	-	-
NDPK504 022	2.2	18	50	3	-	-
NDPK504 023	2.3	18	50	3	-	-
NDPK504 024	2.4	18	50	3	-	-
NDPK504 025	2.5	18	50	3	M3x0.5	WH1~4
NDPK504 026	2.6	18	50	3	M3x0.5	WH5~6
NDPK504 027	2.7	18	50	3	-	-
NDPK504 028	2.8	18	50	3	-	-
NDPK504 029	2.9	18	50	3	-	-
NDPK504 030	3	20	55	3	-	-
NDPK504 031	3.1	20	55	4	-	-

EDP No	DC	LCF	OAL	DCON MS	Applicable Tap	
					Size	Limit
NDPK504 03175	3.175	20	55	4	-	-
NDPK504 032	3.2	20	55	4	-	-
NDPK504 03264	3.264	20	55	4	-	-
NDPK504 033	3.3	20	55	4	M4x0.7	WH1~4
NDPK504 034	3.4	20	55	4	M4x0.7	WH5~6
NDPK504 035	3.5	20	55	4	-	-
NDPK504 03572	3.572	25	55	4	-	-
NDPK504 036	3.6	25	55	4	-	-
NDPK504 037	3.7	25	55	4	-	-
NDPK504 038	3.8	25	55	4	-	-
NDPK504 039	3.9	25	55	4	-	-
NDPK504 040	4	25	55	4	-	-
NDPK504 04039	4.039	25	55	5	-	-
NDPK504 041	4.1	25	55	5	-	-
NDPK504 042	4.2	33	63	5	M5x0.8	WH1~4
NDPK504 043	4.3	33	63	5	M5x0.8	WH5~6
NDPK504 044	4.4	33	63	5	-	-
NDPK504 045	4.5	33	63	5	-	-
NDPK504 046	4.6	33	63	5	-	-
NDPK504 047	4.7	33	63	5	-	-
NDPK504 04763	4.763	33	63	5	-	-
NDPK504 048	4.8	33	63	5	-	-

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
		○	◎	○	◎					

NDPK504

Dolphin Cast Iron Drill

Drill

EDP No	DC	LCF	OAL	DCON MS	Applicable Tap	
					Size	Limit
NDPK504 049	4.9	33	63	5	-	-
NDPK504 050	5	33	63	5	M6x1.0	WH1~4
NDPK504 051	5.1	33	63	6	M6x1.0	WH5~6
NDPK504 05159	5.159	36	66	6	-	-
NDPK504 052	5.2	36	66	6	-	-
NDPK504 053	5.3	36	66	6	-	-
NDPK504 054	5.4	36	66	6	-	-
NDPK504 055	5.5	36	66	6	-	-
NDPK504 05556	5.556	36	66	6	-	-
NDPK504 056	5.6	36	66	6	-	-
NDPK504 057	5.7	36	66	6	-	-
NDPK504 058	5.8	36	66	6	-	-
NDPK504 059	5.9	36	66	6	-	-
NDPK504 05953	5.953	36	66	6	-	-
NDPK504 060	6	36	66	6	-	-
NDPK504 061	6.1	36	66	7	-	-
NDPK504 062	6.2	42	75	7	-	-
NDPK504 063	6.3	42	75	7	-	-
NDPK504 0635	6.35	42	75	7	-	-
NDPK504 064	6.4	42	75	7	-	-
NDPK504 065	6.5	42	75	7	-	-
NDPK504 066	6.6	42	75	7	-	-
NDPK504 067	6.7	42	75	7	-	-
NDPK504 06747	6.747	42	75	7	-	-
NDPK504 068	6.8	42	75	7	M8x1.25	WH1~4
NDPK504 069	6.9	42	75	7	M8x1.25	WH5~6
NDPK504 070	7	42	75	7	M8x1.0	WH1~4
NDPK504 071	7.1	42	75	8	M8x1.0	WH5~6
NDPK504 07144	7.144	46	80	8	-	-
NDPK504 072	7.2	46	80	8	-	-
NDPK504 073	7.3	46	80	8	-	-
NDPK504 074	7.4	46	80	8	-	-
NDPK504 075	7.5	46	80	8	-	-
NDPK504 07541	7.541	46	80	8	-	-
NDPK504 076	7.6	46	80	8	-	-
NDPK504 077	7.7	46	80	8	-	-
NDPK504 078	7.8	46	80	8	-	-
NDPK504 079	7.9	46	80	8	-	-
NDPK504 07938	7.938	46	80	8	-	-
NDPK504 080	8	46	80	8	-	-
NDPK504 081	8.1	46	80	9	-	-
NDPK504 082	8.2	50	85	9	-	-
NDPK504 083	8.3	50	85	9	-	-
NDPK504 084	8.4	50	85	9	-	-
NDPK504 085	8.5	50	85	9	M10x1.5	WH1~4
NDPK504 086	8.6	50	85	9	M10x1.5	WH5~6
NDPK504 087	8.7	50	85	9	-	-
NDPK504 08731	8.731	50	85	9	-	-
NDPK504 088	8.8	50	85	9	M10x1.25	WH1~4
NDPK504 089	8.9	50	85	9	M10x1.25	WH5~6
NDPK504 090	9	50	85	9	M10x1.0	WH1~4
NDPK504 091	9.1	50	85	10	M10x1.0	WH5~6
NDPK504 092	9.2	55	90	10	-	-
NDPK504 093	9.3	55	90	10	-	-
NDPK504 094	9.4	55	90	10	-	-
NDPK504 095	9.5	55	90	10	-	-
NDPK504 09525	9.525	55	90	10	-	-
NDPK504 096	9.6	55	90	10	-	-
NDPK504 097	9.7	55	90	10	-	-
NDPK504 098	9.8	55	90	10	-	-
NDPK504 099	9.9	55	90	10	-	-
NDPK504 100	10	55	90	10	-	-
NDPK504 101	10.1	55	90	11	-	-
NDPK504 102	10.2	57	95	11	-	-
NDPK504 103	10.3	57	95	11	M12x1.75	WH1~2
NDPK504 10319	10.319	57	95	11	M12x1.75	WH3~4
NDPK504 104	10.4	57	95	11	M12x1.75	WH5~6
NDPK504 105	10.5	57	95	11	M12x1.5	WH1~4
NDPK504 106	10.6	57	95	11	M12x1.5	WH5~6
NDPK504 107	10.7	57	95	11	-	-
NDPK504 10716	10.716	57	95	11	-	-
NDPK504 108	10.8	57	95	11	M12x1.25	WH1~4

Dolphin Drill

Dolphin Oil-Hole Drill

Power Max

Solid Spiral

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
		○	◎	○	◎					

NDPK504 Dolphin Cast Iron Drill

Drill

EDP No	DC	LCF	OAL	DCON MS	Applicable Tap	
					Size	Limit
NDPK504 109	10.9	57	95	11	M12x1.25	WH5~6
NDPK504 110	11	57	95	11	M12x1.0	WH1~4
NDPK504 111	11.1	57	95	12	M12x1.0	WH5~6
NDPK504 11113	11.113	63	102	12	-	-
NDPK504 112	11.2	63	102	12	-	-
NDPK504 113	11.3	63	102	12	-	-
NDPK504 114	11.4	63	102	12	-	-
NDPK504 115	11.5	63	102	12	-	-
NDPK504 116	11.6	63	102	12	-	-
NDPK504 117	11.7	63	102	12	-	-
NDPK504 118	11.8	63	102	12	-	-
NDPK504 119	11.9	63	102	12	-	-
NDPK504 120	12	63	102	12	M14x2.0	WH1~4
NDPK504 121	12.1	63	102	13	M14x2.0	WH5~6
NDPK504 122	12.2	63	102	13	-	-
NDPK504 123	12.3	63	102	13	-	-
NDPK504 124	12.4	63	102	13	-	-
NDPK504 125	12.5	63	102	13	M14x1.5	WH1~4
NDPK504 126	12.6	63	102	13	M14x1.5	WH5~6
NDPK504 127	12.7	63	102	13	-	-
NDPK504 128	12.8	63	102	13	-	-
NDPK504 129	12.9	63	102	13	-	-
NDPK504 130	13	63	102	13	-	-
NDPK504 131	13.1	63	102	14	-	-
NDPK504 132	13.2	65	107	14	-	-
NDPK504 133	13.3	65	107	14	-	-
NDPK504 134	13.4	65	107	14	-	-
NDPK504 13494	13.494	65	107	14	-	-
NDPK504 135	13.5	65	107	14	-	-
NDPK504 136	13.6	65	107	14	-	-
NDPK504 137	13.7	65	107	14	-	-
NDPK504 138	13.8	65	107	14	-	-
NDPK504 139	13.9	65	107	14	-	-
NDPK504 140	14	65	107	14	M16x2.0	WH1~4
NDPK504 141	14.1	65	107	15	M16x2.0	WH5~6
NDPK504 142	14.2	67	111	15	-	-
NDPK504 143	14.3	67	111	15	-	-
NDPK504 144	14.4	67	111	15	-	-

EDP No	DC	LCF	OAL	DCON MS	Applicable Tap	
					Size	Limit
NDPK504 145	14.5	67	111	15	M16x1.5	WH1~4
NDPK504 146	14.6	67	111	15	M16x1.5	WH5~6
NDPK504 147	14.7	67	111	15	-	-
NDPK504 148	14.8	67	111	15	-	-
NDPK504 149	14.9	67	111	15	-	-
NDPK504 150	15	67	111	15	-	-
NDPK504 151	15.1	67	111	16	-	-
NDPK504 152	15.2	69	115	16	-	-
NDPK504 153	15.3	69	115	16	-	-
NDPK504 154	15.4	69	115	16	-	-
NDPK504 155	15.5	69	115	16	M18x2.5	WH1~4
NDPK504 156	15.6	69	115	16	M18x2.5	WH5~6
NDPK504 157	15.7	69	115	16	-	-
NDPK504 158	15.8	69	115	16	-	-
NDPK504 15875	15.875	69	115	16	-	-
NDPK504 159	15.9	69	115	16	-	-
NDPK504 160	16	69	115	16	-	-
NDPK504 161	16.1	69	115	17	-	-
NDPK504 163	16.3	71	119	17	-	-
NDPK504 165	16.5	71	119	17	M18x1.5	WH1~6
NDPK504 16669	16.669	71	119	17	-	-
NDPK504 167	16.7	71	119	17	-	-
NDPK504 170	17	71	119	17	-	-
NDPK504 171	17.1	71	119	18	-	-
NDPK504 172	17.2	74	123	18	-	-
NDPK504 175	17.5	74	123	18	M20x2.5	WH1~6
NDPK504 177	17.7	74	123	18	-	-
NDPK504 178	17.8	74	123	18	-	-
NDPK504 180	18	74	123	18	-	-
NDPK504 181	18.1	74	123	19	-	-
NDPK504 182	18.2	76	127	19	-	-
NDPK504 185	18.5	76	127	19	M20x1.5	WH1~6
NDPK504 190	19	76	127	19	-	-
NDPK504 191	19.1	76	127	20	-	-
NDPK504 195	19.5	80	131	20	M22x2.5	WH1~6
NDPK504 197	19.7	80	131	20	-	-
NDPK504 200	20	80	131	20	-	-

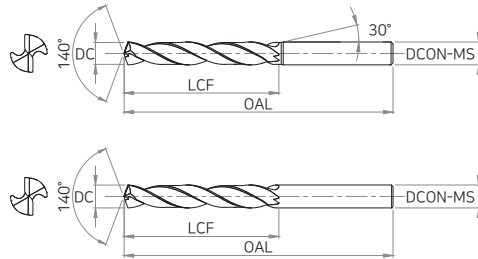
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
		○	◎	○	◎					

NDPK507

Dolphin Cast Iron Drill



► Tolerance

DC		Shank Dia
~ Ø3	0 ~ -0.010	h6
Ø3.1 ~ Ø6	0 ~ -0.012	
Ø6.1 ~ Ø10	0 ~ -0.015	
Ø10.1 ~ Ø18	0 ~ -0.018	
Ø18.1 ~	0 ~ -0.021	



EDP No	DC	LCF	OAL	DCON MS	Applicable Tap	
					Size	Limit
NDPK507 030	3	45	80	3	-	-
NDPK507 031	3.1	45	80	4	-	-
NDPK507 03175	3.175	45	80	4	-	-
NDPK507 032	3.2	45	80	4	-	-
NDPK507 03264	3.264	45	80	4	-	-
NDPK507 033	3.3	45	80	4	M4x0.7	WH1~4
NDPK507 034	3.4	45	80	4	M4x0.7	WH5~6
NDPK507 035	3.5	45	80	4	-	-
NDPK507 03572	3.572	45	80	4	-	-
NDPK507 036	3.6	45	80	4	-	-
NDPK507 037	3.7	45	80	4	-	-
NDPK507 038	3.8	45	80	4	-	-
NDPK507 039	3.9	45	80	4	-	-
NDPK507 040	4	45	80	4	-	-
NDPK507 041	4.1	45	80	5	-	-
NDPK507 042	4.2	45	80	5	M5x0.8	WH1~4
NDPK507 043	4.3	45	80	5	M5x0.8	WH5~6
NDPK507 044	4.4	45	80	5	-	-
NDPK507 045	4.5	45	80	5	-	-
NDPK507 046	4.6	45	80	5	-	-

EDP No	DC	LCF	OAL	DCON MS	Applicable Tap	
					Size	Limit
NDPK507 047	4.7	45	80	5	-	-
NDPK507 04763	4.763	45	80	5	-	-
NDPK507 048	4.8	45	80	5	-	-
NDPK507 049	4.9	45	80	5	-	-
NDPK507 050	5	45	80	5	M6x1.0	WH1~4
NDPK507 051	5.1	45	80	6	M6x1.0	WH5~6
NDPK507 05159	5.159	50	83	6	-	-
NDPK507 052	5.2	50	83	6	-	-
NDPK507 053	5.3	50	83	6	-	-
NDPK507 054	5.4	50	83	6	-	-
NDPK507 055	5.5	50	83	6	-	-
NDPK507 05556	5.556	50	83	6	-	-
NDPK507 056	5.6	50	83	6	-	-
NDPK507 057	5.7	50	83	6	-	-
NDPK507 058	5.8	50	83	6	-	-
NDPK507 059	5.9	50	83	6	-	-
NDPK507 060	6	50	83	6	-	-
NDPK507 061	6.1	50	83	7	-	-
NDPK507 062	6.2	53	85	7	-	-
NDPK507 063	6.3	53	85	7	-	-

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
		○	◎	○	◎					

NDPK507

Dolphin Cast Iron Drill

Drill

EDP No	DC	LCF	OAL	DCON MS	Applicable Tap		EDP No	DC	LCF	OAL	DCON MS	Applicable Tap	
					Size	Limit						Size	Limit
NDPK507 0635	6.35	53	85	7	-	-	NDPK507 093	9.3	68	105	10	-	-
NDPK507 064	6.4	53	85	7	-	-	NDPK507 094	9.4	68	105	10	-	-
NDPK507 065	6.5	53	85	7	-	-	NDPK507 095	9.5	68	105	10	-	-
NDPK507 066	6.6	53	85	7	-	-	NDPK507 09525	9.525	68	105	10	-	-
NDPK507 067	6.7	53	85	7	-	-	NDPK507 096	9.6	68	105	10	-	-
NDPK507 06747	6.747	53	85	7	-	-	NDPK507 097	9.7	68	105	10	-	-
NDPK507 068	6.8	53	85	7	M8x1.25	WH1~4	NDPK507 098	9.8	68	105	10	-	-
NDPK507 069	6.9	53	85	7	M8x1.25	WH5~6	NDPK507 099	9.9	68	105	10	-	-
NDPK507 070	7	53	85	7	M8x1.0	WH1~4	NDPK507 100	10	68	105	10	-	-
NDPK507 071	7.1	53	85	8	M8x1.0	WH5~6	NDPK507 101	10.1	68	105	11	-	-
NDPK507 07144	7.144	58	90	8	-	-	NDPK507 102	10.2	73	110	11	-	-
NDPK507 072	7.2	58	90	8	-	-	NDPK507 103	10.3	73	110	11	M12x1.75	WH1~2
NDPK507 073	7.3	58	90	8	-	-	NDPK507 10319	10.319	73	110	11	M12x1.75	WH3~4
NDPK507 074	7.4	58	90	8	-	-	NDPK507 104	10.4	73	110	11	M12x1.75	WH5~6
NDPK507 075	7.5	58	90	8	-	-	NDPK507 105	10.5	73	110	11	M12x1.5	WH1~4
NDPK507 076	7.6	58	90	8	-	-	NDPK507 106	10.6	73	110	11	M12x1.5	WH5~6
NDPK507 077	7.7	58	90	8	-	-	NDPK507 107	10.7	73	110	11	-	-
NDPK507 078	7.8	58	90	8	-	-	NDPK507 10716	10.716	73	110	11	-	-
NDPK507 079	7.9	58	90	8	-	-	NDPK507 108	10.8	73	110	11	M12x1.25	WH1~4
NDPK507 07938	7.938	58	90	8	-	-	NDPK507 109	10.9	73	110	11	M12x1.25	WH5~6
NDPK507 080	8	58	90	8	-	-	NDPK507 110	11	73	110	11	M12x1.0	WH1~4
NDPK507 081	8.1	58	90	9	-	-	NDPK507 111	11.1	73	110	12	M12x1.0	WH5~6
NDPK507 082	8.2	64	98	9	-	-	NDPK507 11113	11.113	80	120	12	-	-
NDPK507 083	8.3	64	98	9	-	-	NDPK507 112	11.2	80	120	12	-	-
NDPK507 084	8.4	64	98	9	-	-	NDPK507 113	11.3	80	120	12	-	-
NDPK507 085	8.5	64	98	9	M10x1.5	WH1~4	NDPK507 114	11.4	80	120	12	-	-
NDPK507 086	8.6	64	98	9	M10x1.5	WH5~6	NDPK507 115	11.5	80	120	12	-	-
NDPK507 087	8.7	64	98	9	-	-	NDPK507 116	11.6	80	120	12	-	-
NDPK507 08731	8.731	64	98	9	-	-	NDPK507 117	11.7	80	120	12	-	-
NDPK507 088	8.8	64	98	9	M10x1.25	WH1~4	NDPK507 118	11.8	80	120	12	-	-
NDPK507 089	8.9	64	98	9	M10x1.25	WH5~6	NDPK507 119	11.9	80	120	12	-	-
NDPK507 090	9	64	98	9	M10x1.0	WH1~4	NDPK507 120	12	80	120	12	M14x2.0	WH1~4
NDPK507 091	9.1	64	98	10	M10x1.0	WH5~6	NDPK507 121	12.1	80	120	13	M14x2.0	WH5~6
NDPK507 092	9.2	68	105	10	-	-	NDPK507 122	12.2	90	137	13	-	-

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
		○	◎	○	◎					

NDPK507

Dolphin Cast Iron Drill

Drill

EDP No	DC	LCF	OAL	DCON MS	Applicable Tap	
					Size	Limit
NDPK507 123	12.3	90	137	13	-	-
NDPK507 124	12.4	90	137	13	-	-
NDPK507 125	12.5	90	137	13	M14x1.5	WH1~4
NDPK507 126	12.6	90	137	13	M14x1.5	WH5~6
NDPK507 127	12.7	90	137	13	-	-
NDPK507 128	12.8	90	137	13	-	-
NDPK507 129	12.9	90	137	13	-	-
NDPK507 130	13	90	137	13	-	-
NDPK507 131	13.1	90	137	14	-	-
NDPK507 132	13.2	96	147	14	-	-
NDPK507 133	13.3	96	147	14	-	-
NDPK507 134	13.4	96	147	14	-	-
NDPK507 13494	13.494	96	147	14	-	-
NDPK507 135	13.5	96	147	14	-	-
NDPK507 136	13.6	96	147	14	-	-
NDPK507 137	13.7	96	147	14	-	-
NDPK507 138	13.8	96	147	14	-	-
NDPK507 13891	13.891	96	147	14	-	-
NDPK507 139	13.9	96	147	14	-	-
NDPK507 140	14	96	147	14	M16x2.0	WH1~4
NDPK507 141	14.1	96	147	15	M16x2.0	WH5~6
NDPK507 142	14.2	100	153	15	-	-
NDPK507 14288	14.288	100	153	15	-	-
NDPK507 143	14.3	100	153	15	-	-
NDPK507 144	14.4	100	153	15	-	-
NDPK507 145	14.5	100	153	15	M16x1.5	WH1~4
NDPK507 146	14.6	100	153	15	M16x1.5	WH5~6
NDPK507 147	14.7	100	153	15	-	-
NDPK507 148	14.8	100	153	15	-	-
NDPK507 149	14.9	100	153	15	-	-
NDPK507 150	15	100	153	15	-	-
NDPK507 151	15.1	100	153	16	-	-
NDPK507 152	15.2	112	160	16	-	-
NDPK507 153	15.3	112	160	16	-	-
NDPK507 154	15.4	112	160	16	-	-
NDPK507 155	15.5	112	160	16	M18x2.5	WH1~4
NDPK507 156	15.6	112	160	16	M18x2.5	WH5~6
NDPK507 157	15.7	112	160	16	-	-
NDPK507 158	15.8	112	160	16	-	-
NDPK507 15875	15.875	112	160	16	-	-
NDPK507 159	15.9	112	160	16	-	-
NDPK507 160	16	112	160	16	-	-
NDPK507 161	16.1	112	160	17	-	-
NDPK507 163	16.3	112	160	17	-	-
NDPK507 165	16.5	112	160	17	M18x1.5	WH1~6
NDPK507 16669	16.669	112	160	17	-	-
NDPK507 170	17	112	160	17	-	-
NDPK507 171	17.1	112	160	18	-	-
NDPK507 172	17.2	112	160	18	-	-
NDPK507 17463	17.463	112	160	18	-	-
NDPK507 175	17.5	112	160	18	M20x2.5	WH1~6
NDPK507 176	17.6	112	160	18	-	-
NDPK507 177	17.7	112	160	18	-	-
NDPK507 178	17.8	112	160	18	-	-
NDPK507 180	18	112	160	18	-	-
NDPK507 182	18.2	112	160	19	-	-
NDPK507 185	18.5	112	160	19	M20x1.5	WH1~6
NDPK507 190	19	112	160	19	-	-
NDPK507 195	19.5	112	160	20	M22x2.5	WH1~6
NDPK507 197	19.7	112	160	20	-	-
NDPK507 200	20	112	160	20	-	-

Dolphin Drill

Dolphin Oil-Hole Drill

Power Max

Solid Spiral

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

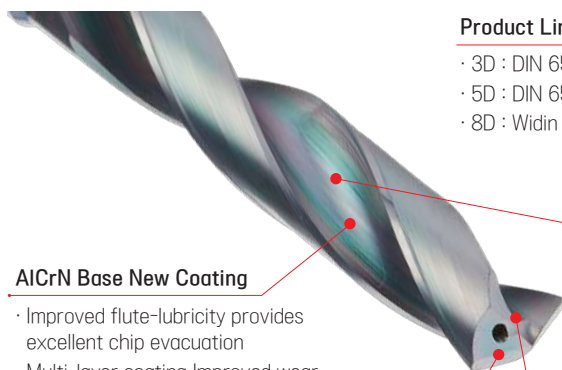
H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
		○	◎	○	◎					

Dolphin Oil-Hole Drill NEW

General Purpose Internal Coolant Drill

Characteristics

- Designed for a wide range of work materials
- New flute design provides larger volume of fluid to cool the cutting edge
- XR thinning provides excellent chip evacuation and reduced cutting forces
- Wider flutes minimizes chip packing



Product Lineup

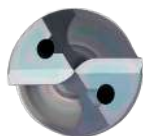
- 3D : DIN 6537, HB/HE Shank
- 5D : DIN 6537, HB/HE Shank
- 8D : Widin Standard

AlCrN Base New Coating

- Improved flute-lubricity provides excellent chip evacuation
- Multi-layer coating Improved wear and oxidation resistance

XR Thinning

- Excellent chip evacuation
- Provides improved chipping resistance and prevents drill breakage
- Streamlined thinning shape reduces cutting forces



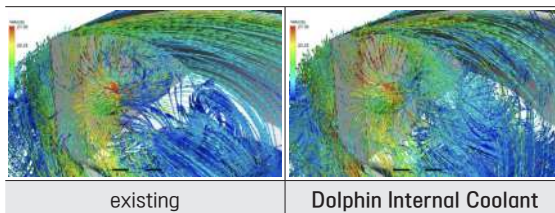
Reduced Chip Packing

- Wider flute design provides excellent chip evacuation
- Designed to reduce the friction in the flute surface for improved chip evacuation

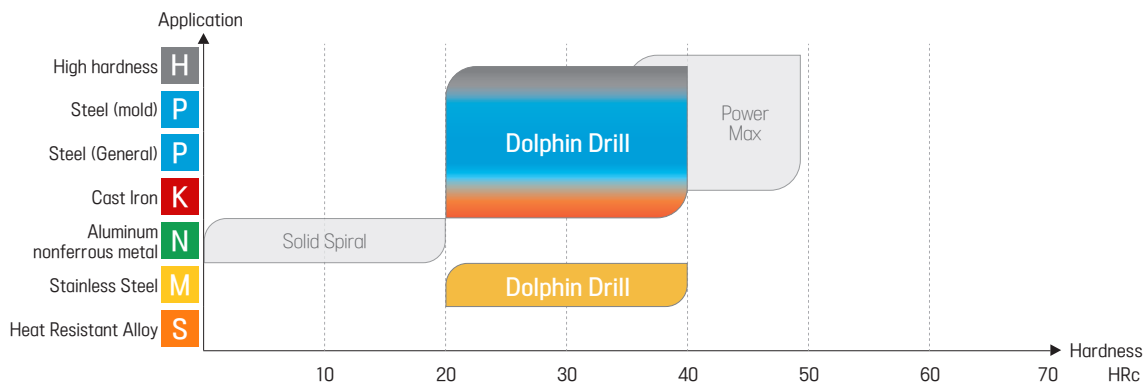
New Flute Geometry

- Lower cutting temperatures are possible due to higher volume of coolant
- Excellent chip evacuation

Improved Cooling

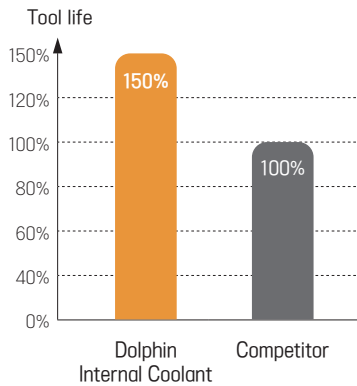


Applications



Case Study

► Carbon Steel (SM45C)

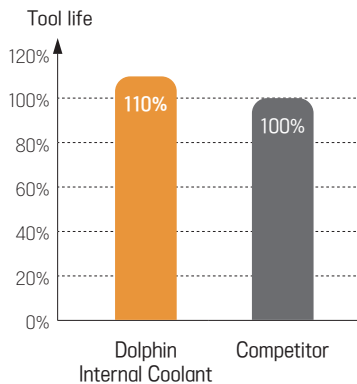


· Spec : NDPGH505060D (D6.0-44/82-6)

· Cutting Condition

Vc	rpm	fn	Feed	Ap	Coolant
100	5,300	0.24	1,272	30	Internal

► Alloy Steel (SCM440)

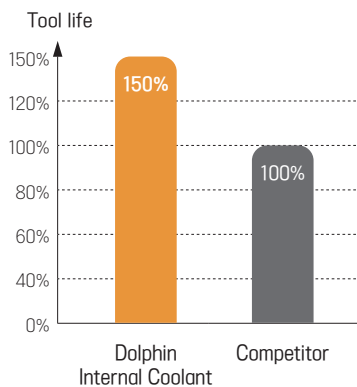


· Spec : NDPGH505060D (D6.0-44/82-6)

· Cutting Condition

Vc	rpm	fn	Feed	Ap	Coolant
80	4,250	0.20	850	30	Internal

► Stainless Steel(SUS304)



· Spec : NDPGH505060D (D6.0-44/82-6)

· Cutting Condition

Vc	rpm	fn	Feed	Ap	Coolant
60	3,175	0.14	445	19	Internal

Dolphin Oil-Hole Drill NEW

General Purpose Internal Coolant Drill

Contents

EDP No SPEC (INCH :  / METRIC : )	Flutes	Geometry	Length			Coolant	Margin	Tolerance	Diameter(DC)		Page
			3D	5D	8D				Min	Max	
NDPGH503  	2F		○			Internal	Single	m7	3	20	435
NDPGH505  				○		Internal	Single	m7	3	20	441
NDPGH508  					○	Internal	Single	m7	3	16	447

EDP No. System

*If expressed as an integer, the decimal point is omitted.

NDP	G	H	5	04	100	D
①	②	③	④	⑤	⑥	⑦

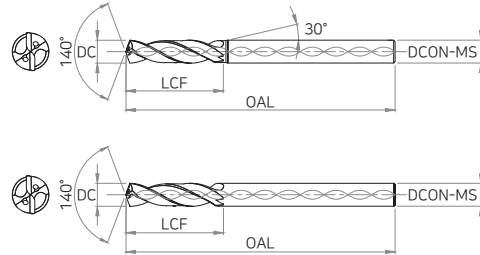
①	②	③	④	⑤	⑥	⑦
Series name	Work piece	Coolant Type	Grade	Working Depth	Cutting Dia	Standard
NDP : Dolphin	G : General K (ISO K : Cast Iron)	- : Non Coolant H : Oil-Hole Coolant	5 : Grade	03 : 3D 04 : 4D 07 : 7D	030 : Ø3.0 060 : Ø6.0 103 : Ø10.3	- : JIS D : DIN



It is a new brand name for all of Widin's rotating tools representing straight and dynamic image of cylindrical rotation pattern of tools when machining

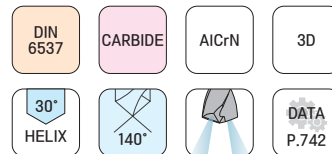
NDPGH503D

Dolphin General Purpose
Internal Coolant Drill



► Tolerance

DC		Shank Dia
~ Ø3	+0.002 ~ +0.012	h6
Ø3.1 ~ Ø6	+0.004 ~ +0.016	
Ø6.1 ~ Ø10	+0.006 ~ +0.021	
Ø10.1 ~ Ø18	+0.007 ~ +0.025	
Ø18.1 ~ Ø20	+0.008 ~ +0.029	



EDP No	DC	LCF	OAL	DCONMS	Applicable Tap	
					Size	Limit
NDPGH503 030D	3.0	20	62	6	-	-
NDPGH503 031D	3.1	20	62	6	-	-
NDPGH503 03175D	3.175	20	62	6	-	-
NDPGH503 032D	3.2	20	62	6	-	-
NDPGH503 033D	3.3	20	62	6	M4x0.7	WH1~4
NDPGH503 034D	3.4	20	62	6	M4x0.7	WH5~6
NDPGH503 035D	3.5	20	62	6	-	-
NDPGH503 03572D	3.572	20	62	6	-	-
NDPGH503 036D	3.6	20	62	6	-	-
NDPGH503 037D	3.7	20	62	6	-	-
NDPGH503 038D	3.8	24	66	6	-	-
NDPGH503 039D	3.9	24	66	6	-	-
NDPGH503 03969D	3.969	24	66	6	-	-
NDPGH503 040D	4.0	24	66	6	-	-
NDPGH503 04039D	4.039	24	66	6	-	-
NDPGH503 041D	4.1	24	66	6	-	-
NDPGH503 042D	4.2	24	66	6	M5x0.8	WH1~4
NDPGH503 043D	4.3	24	66	6	M5x0.8	WH5~6
NDPGH503 04366D	4.366	24	66	6	-	-
NDPGH503 044D	4.4	24	66	6	-	-

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
		◎	◎	○	○	○		○	◎	

Drill

Dolphin
Drill

Dolphin
Oil-Hole
Drill

Power
Max

Solid
Spiral

NDPGH503D

Dolphin General Purpose
Internal Coolant Drill

Drill

EDP No	DC	LCF	OAL	DCONMS	Applicable Tap	
					Size	Limit
NDPGH503 045D	4.5	24	66	6	-	-
NDPGH503 046D	4.6	24	66	6	-	-
NDPGH503 047D	4.7	24	66	6	-	-
NDPGH503 04763D	4.763	28	66	6	-	-
NDPGH503 048D	4.8	28	66	6	-	-
NDPGH503 049D	4.9	28	66	6	-	-
NDPGH503 050D	5.0	28	66	6	M6x1.0	WH1~4
NDPGH503 051D	5.1	28	66	6	M6x1.0	WH5~6
NDPGH503 05159D	5.159	28	66	6	-	-
NDPGH503 052D	5.2	28	66	6	-	-
NDPGH503 053D	5.3	28	66	6	-	-
NDPGH503 054D	5.4	28	66	6	-	-
NDPGH503 055D	5.5	28	66	6	-	-
NDPGH503 05556D	5.558	28	66	6	-	-
NDPGH503 056D	5.6	28	66	6	-	-
NDPGH503 057D	5.7	28	66	6	-	-
NDPGH503 058D	5.8	28	66	6	-	-
NDPGH503 059D	5.9	28	66	6	-	-
NDPGH503 05953D	5.953	28	66	6	-	-
NDPGH503 060D	6.0	28	66	6	-	-
NDPGH503 061D	6.1	34	79	8	-	-
NDPGH503 062D	6.2	34	79	8	-	-
NDPGH503 063D	6.3	34	79	8	-	-
NDPGH503 0635D	6.35	34	79	8	-	-
NDPGH503 064D	6.4	34	79	8	-	-
NDPGH503 065D	6.5	34	79	8	-	-
NDPGH503 06528D	6.528	34	79	8	-	-
NDPGH503 066D	6.6	34	79	8	-	-
NDPGH503 067D	6.7	34	79	8	-	-
NDPGH503 06747D	6.747	34	79	8	-	-
NDPGH503 068D	6.8	34	79	8	M8x1.25	WH1~4
NDPGH503 069D	6.9	34	79	8	M8x1.25	WH5~6
NDPGH503 070D	7.0	34	79	8	M8x1.0	WH1~4
NDPGH503 071D	7.1	41	79	8	M8x1.0	WH5~6

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
		◎	◎	○	○	○		○	◎	

NDPGH503D

Dolphin General Purpose
Internal Coolant Drill

Drill

EDP No	DC	LCF	OAL	DCONMS	Applicable Tap	
					Size	Limit
NDPGH503 07144D	7.144	41	79	8	-	-
NDPGH503 072D	7.2	41	79	8	-	-
NDPGH503 073D	7.3	41	79	8	-	-
NDPGH503 074D	7.4	41	79	8	-	-
NDPGH503 075D	7.5	41	79	8	-	-
NDPGH503 07541D	7.541	41	79	8	-	-
NDPGH503 076D	7.6	41	79	8	-	-
NDPGH503 077D	7.7	41	79	8	-	-
NDPGH503 078D	7.8	41	79	8	-	-
NDPGH503 079D	7.9	41	79	8	-	-
NDPGH503 07938D	7.938	41	79	8	-	-
NDPGH503 080D	8.0	41	79	8	-	-
NDPGH503 081D	8.1	47	89	10	-	-
NDPGH503 082D	8.2	47	89	10	-	-
NDPGH503 083D	8.3	47	89	10	-	-
NDPGH503 08334D	8.334	47	89	10	-	-
NDPGH503 084D	8.4	47	89	10	-	-
NDPGH503 08433D	8.433	47	89	10	-	-
NDPGH503 085D	8.5	47	89	10	M10x1.5	WH1~4
NDPGH503 086D	8.6	47	89	10	M10x1.5	WH5~6
NDPGH503 087D	8.7	47	89	10	-	-
NDPGH503 08731D	8.731	47	89	10	-	-
NDPGH503 088D	8.8	47	89	10	M10x1.25	WH1~4
NDPGH503 089D	8.9	47	89	10	M10x1.25	WH5~6
NDPGH503 090D	9.0	47	89	10	M10x1.0	WH1~4
NDPGH503 091D	9.1	47	89	10	M10x1.0	WH5~6
NDPGH503 09128D	9.128	47	89	10	-	-
NDPGH503 092D	9.2	47	89	10	-	-
NDPGH503 093D	9.3	47	89	10	-	-
NDPGH503 09347D	9.347	47	89	10	-	-
NDPGH503 094D	9.4	47	89	10	-	-
NDPGH503 095D	9.5	47	89	10	-	-
NDPGH503 09525D	9.525	47	89	10	-	-
NDPGH503 096D	9.6	47	89	10	-	-

Dolphin
Drill

Dolphin
Oil-Hole
Drill

Power
Max

Solid
Spiral

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	Steel HRc30~50	~FCD500					
		◎	◎	○	○	○		○	◎	

NDPGH503D

Dolphin General Purpose
Internal Coolant Drill

Drill

EDP No	DC	LCF	OAL	DCONMS	Applicable Tap	
					Size	Limit
NDPGH503 097D	9.7	47	89	10	-	-
NDPGH503 098D	9.8	47	89	10	-	-
NDPGH503 099D	9.9	47	89	10	-	-
NDPGH503 09922D	9.922	47	89	10	-	-
NDPGH503 100D	10.0	47	89	10	-	-
NDPGH503 101D	10.1	55	102	12	-	-
NDPGH503 102D	10.2	55	102	12	-	-
NDPGH503 103D	10.3	55	102	12	M12x1.75	WH1~2
NDPGH503 10319D	10.319	55	102	12	M12x1.75	WH3~4
NDPGH503 104D	10.4	55	102	12	M12x1.75	WH5~6
NDPGH503 105D	10.5	55	102	12	M12x1.5	WH1~4
NDPGH503 106D	10.6	55	102	12	M12x1.5	WH5~6
NDPGH503 107D	10.7	55	102	12	-	-
NDPGH503 10716D	10.716	55	102	12	-	-
NDPGH503 108D	10.8	55	102	12	M12x1.25	WH1~4
NDPGH503 109D	10.9	55	102	12	M12x1.25	WH5~6
NDPGH503 110D	11.0	55	102	12	M12x1.0	WH1~4
NDPGH503 111D	11.1	55	102	12	M12x1.0	WH5~6
NDPGH503 11113D	11.113	55	102	12	-	-
NDPGH503 112D	11.2	55	102	12	-	-
NDPGH503 113D	11.3	55	102	12	-	-
NDPGH503 114D	11.4	55	102	12	-	-
NDPGH503 115D	11.5	55	102	12	-	-
NDPGH503 11509D	11.509	55	102	12	-	-
NDPGH503 116D	11.6	55	102	12	-	-
NDPGH503 117D	11.7	55	102	12	-	-
NDPGH503 118D	11.8	55	102	12	-	-
NDPGH503 119D	11.9	55	102	12	-	-
NDPGH503 11906D	11.906	55	102	12	-	-
NDPGH503 120D	12.0	55	102	12	M14x2.0	WH1~4
NDPGH503 121D	12.1	60	107	14	M14x2.0	WH5~6
NDPGH503 122D	12.2	60	107	14	-	-
NDPGH503 123D	12.3	60	107	14	-	-
NDPGH503 12303D	12.303	60	107	14	-	-

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
		◎	◎	○	○	○		○	◎	

NDPGH503D

Dolphin General Purpose
Internal Coolant Drill

Drill

EDP No	DC	LCF	OAL	DCONMS	Applicable Tap	
					Size	Limit
NDPGH503 124D	12.4	60	107	14	-	-
NDPGH503 125D	12.5	60	107	14	M14x1.5	WH1~4
NDPGH503 126D	12.6	60	107	14	M14x1.5	WH5~6
NDPGH503 127D	12.7	60	107	14	-	-
NDPGH503 128D	12.8	60	107	14	-	-
NDPGH503 129D	12.9	60	107	14	-	-
NDPGH503 130D	13.0	60	107	14	-	-
NDPGH503 131D	13.1	60	107	14	-	-
NDPGH503 132D	13.2	60	107	14	-	-
NDPGH503 133D	13.3	60	107	14	-	-
NDPGH503 134D	13.4	60	107	14	-	-
NDPGH503 135D	13.5	60	107	14	-	-
NDPGH503 136D	13.6	60	107	14	-	-
NDPGH503 137D	13.7	60	107	14	-	-
NDPGH503 138D	13.8	60	107	14	-	-
NDPGH503 13891D	13.891	60	107	14	-	-
NDPGH503 139D	13.9	60	107	14	-	-
NDPGH503 140D	14.0	60	107	14	M16x20	WH1~4
NDPGH503 141D	14.1	65	115	16	M16x20	WH5~6
NDPGH503 142D	14.2	65	115	16	-	-
NDPGH503 14288D	14.288	65	115	16	-	-
NDPGH503 143D	14.3	65	115	16	-	-
NDPGH503 144D	14.4	65	115	16	-	-
NDPGH503 145D	14.5	65	115	16	M16x1.5	WH1~4
NDPGH503 146D	14.6	65	115	16	M16x1.5	WH5~6
NDPGH503 14684D	14.684	65	115	16	-	-
NDPGH503 147D	14.7	65	115	16	-	-
NDPGH503 148D	14.8	65	115	16	-	-
NDPGH503 149D	14.9	65	115	16	-	-
NDPGH503 150D	15.0	65	115	16	-	-
NDPGH503 15081D	15.081	65	115	16	-	-
NDPGH503 151D	15.1	65	115	16	-	-
NDPGH503 152D	15.2	65	115	16	-	-
NDPGH503 153D	15.3	65	115	16	-	-

Dolphin
Drill

Dolphin
Oil-Hole
Drill

Power
Max

Solid
Spiral

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
		◎	◎	○	○	○		○	◎	

NDPGH503D

Dolphin General Purpose
Internal Coolant Drill

Drill

EDP No	DC	LCF	OAL	DCONMS	Applicable Tap	
					Size	Limit
NDPGH503 154D	15.4	65	115	16	-	-
NDPGH503 15478D	15.478	65	115	16	-	-
NDPGH503 155D	15.5	65	115	16	M18x2.5	WH1~4
NDPGH503 156D	15.6	65	115	16	M18x2.5	WH5~6
NDPGH503 157D	15.7	65	115	16	-	-
NDPGH503 158D	15.8	65	115	16	-	-
NDPGH503 15875D	15.875	65	115	16	-	-
NDPGH503 159D	15.9	65	115	16	-	-
NDPGH503 160D	16.0	65	115	16	-	-
NDPGH503 16272D	16.272	73	123	18	-	-
NDPGH503 165D	16.5	73	123	18	M18x1.5	WH1~6
NDPGH503 16669D	16.669	73	123	18	-	-
NDPGH503 170D	17.0	73	123	18	-	-
NDPGH503 17066D	17.066	73	123	18	-	-
NDPGH503 17463D	17.463	73	123	18	-	-
NDPGH503 175D	17.5	73	123	18	M20x2.5	WH1~6
NDPGH503 17859D	17.859	73	123	18	-	-
NDPGH503 180D	18.0	73	123	18	-	-
NDPGH503 18256D	18.256	79	131	20	-	-
NDPGH503 185D	18.5	79	131	20	M20x1.5	WH1~6
NDPGH503 18654D	18.654	79	131	20	-	-
NDPGH503 190D	19.0	79	131	20	-	-
NDPGH503 1905D	19.050	79	131	20	-	-
NDPGH503 1925D	19.25	79	131	20	-	-
NDPGH503 19447D	19.447	79	131	20	-	-
NDPGH503 195D	19.5	79	131	20	M22x2.5	WH1~6
NDPGH503 19844D	19.844	79	131	20	-	-
NDPGH503 200D	20.0	79	131	20	-	-

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
		◎	◎	○	○	○		○	◎	

NDPGH505D

Dolphin General Purpose
Internal Coolant Drill

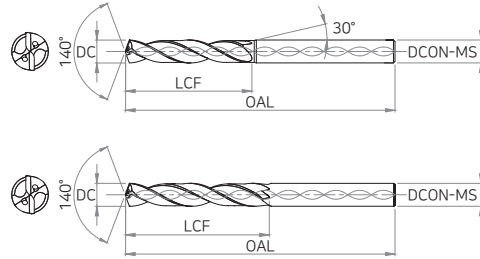
Drill

Dolphin
Drill

Dolphin
Oil-Hole
Drill

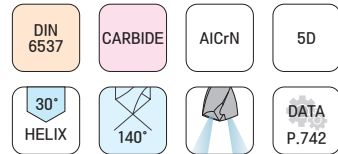
Power
Max

Solid
Spiral



► Tolerance

DC		Shank Dia
~ Ø3	+0.002 ~ +0.012	h6
Ø3.1 ~ Ø6	+0.004 ~ +0.016	
Ø6.1 ~ Ø10	+0.006 ~ +0.021	
Ø10.1 ~ Ø18	+0.007 ~ +0.025	
Ø18.1 ~ Ø20	+0.008 ~ +0.029	



EDP No	DC	LCF	OAL	DCONMS	Applicable Tap	
					Size	Limit
NDPGH505 030D	3.0	28	66	6	-	-
NDPGH505 031D	3.1	28	66	6	-	-
NDPGH505 03175D	3.175	28	66	6	-	-
NDPGH505 032D	3.2	28	66	6	-	-
NDPGH505 033D	3.3	28	66	6	M4x0.7	WH1~4
NDPGH505 034D	3.4	28	66	6	M4x0.7	WH 5~6
NDPGH505 035D	3.5	28	66	6	-	-
NDPGH505 03572D	3.572	28	66	6	-	-
NDPGH505 036D	3.6	28	66	6	-	-
NDPGH505 037D	3.7	28	66	6	-	-
NDPGH505 038D	3.8	36	74	6	-	-
NDPGH505 039D	3.9	36	74	6	-	-
NDPGH505 03969D	3.969	36	74	6	-	-
NDPGH505 040D	4.0	36	74	6	-	-
NDPGH505 04039D	4.039	36	74	6	-	-
NDPGH505 041D	4.1	36	74	6	-	-
NDPGH505 042D	4.2	36	74	6	M5x0.8	WH1~4
NDPGH505 043D	4.3	36	74	6	M5x0.8	WH5~6
NDPGH505 04366D	4.366	36	74	6	-	-
NDPGH505 044D	4.4	36	74	6	-	-

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	~325	HRc30~50	~FCD500					
		◎	◎	○	○	○		○	◎	

NDPGH505D

Dolphin General Purpose
Internal Coolant Drill

Drill

EDP No	DC	LCF	OAL	DCONMS	Applicable Tap	
					Size	Limit
NDPGH505 045D	4.5	36	74	6	-	-
NDPGH505 046D	4.6	36	74	6	-	-
NDPGH505 047D	4.7	36	74	6	-	-
NDPGH505 04763D	4.763	36	74	6	-	-
NDPGH505 048D	4.8	44	82	6	-	-
NDPGH505 049D	4.9	44	82	6	-	-
NDPGH505 050D	5.0	44	82	6	M6x1.0	WH1~4
NDPGH505 051D	5.1	44	82	6	M6x1.0	WH5~6
NDPGH505 05159D	5.159	44	82	6	-	-
NDPGH505 052D	5.2	44	82	6	-	-
NDPGH505 053D	5.3	44	82	6	-	-
NDPGH505 054D	5.4	44	82	6	-	-
NDPGH505 055D	5.5	44	82	6	-	-
NDPGH505 05556D	5.558	44	82	6	-	-
NDPGH505 056D	5.6	44	82	6	-	-
NDPGH505 057D	5.7	44	82	6	-	-
NDPGH505 058D	5.8	44	82	6	-	-
NDPGH505 059D	5.9	44	82	6	-	-
NDPGH505 05953D	5.953	44	82	6	-	-
NDPGH505 060D	6.0	44	82	6	-	-
NDPGH505 061D	6.1	53	91	8	-	-
NDPGH505 062D	6.2	53	91	8	-	-
NDPGH505 063D	6.3	53	91	8	-	-
NDPGH505 0635D	6.35	53	91	8	-	-
NDPGH505 064D	6.4	53	91	8	-	-
NDPGH505 065D	6.5	53	91	8	-	-
NDPGH505 06528D	6.528	53	91	8	-	-
NDPGH505 066D	6.6	53	91	8	-	-
NDPGH505 067D	6.7	53	91	8	-	-
NDPGH505 06747D	6.747	53	91	8	-	-
NDPGH505 068D	6.8	53	91	8	M8x1.25	WH1~4
NDPGH505 069D	6.9	53	91	8	M8x1.25	WH5~6
NDPGH505 070D	7.0	53	91	8	M8x1.0	WH1~4
NDPGH505 071D	7.1	53	91	8	M8x1.0	WH5~6

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
		◎	◎	○	○	○		○	◎	

NDPGH505D

Dolphin General Purpose
Internal Coolant Drill

Drill

EDP No	DC	LCF	OAL	DCONMS	Applicable Tap	
					Size	Limit
NDPGH505 07144D	7.144	53	91	8	-	-
NDPGH505 072D	7.2	53	91	8	-	-
NDPGH505 072D	7.2	53	91	8	-	-
NDPGH505 073D	7.3	53	91	8	-	-
NDPGH505 074D	7.4	53	91	8	-	-
NDPGH505 075D	7.5	53	91	8	-	-
NDPGH505 07541D	7.541	53	91	8	-	-
NDPGH505 076D	7.6	53	91	8	-	-
NDPGH505 077D	7.7	53	91	8	-	-
NDPGH505 078D	7.8	53	91	8	-	-
NDPGH5050 79D	7.9	53	91	8	-	-
NDPGH505 07938D	7.938	53	91	8	-	-
NDPGH505 080D	8.0	53	91	8	-	-
NDPGH505 081D	8.1	61	103	10	-	-
NDPGH505 082D	8.2	61	103	10	-	-
NDPGH505 083D	8.3	61	103	10	-	-
NDPGH505 08334D	8.334	61	103	10	-	-
NDPGH505 084D	8.4	61	103	10	-	-
NDPGH505 08433D	8.433	61	103	10	-	-
NDPGH505 085D	8.5	61	103	10	M10x1.5	WH1~4
NDPGH505 086D	8.6	61	103	10	M10x1.5	WH5~6
NDPGH505 087D	8.7	61	103	10	-	-
NDPGH505 08731D	8.731	61	103	10	-	-
NDPGH505 088D	8.8	61	103	10	M10x1.25	WH1~4
NDPGH505 089D	8.9	61	103	10	M10x1.25	WH5~6
NDPGH505 090D	9.0	61	103	10	M10x1.0	WH1~4
NDPGH505 091D	9.1	61	103	10	M10x1.0	WH5~6
NDPGH505 09128D	9.128	61	103	10	-	-
NDPGH505 092D	9.2	61	103	10	-	-
NDPGH505 093D	9.3	61	103	10	-	-
NDPGH505 09347D	9.347	61	103	10	-	-
NDPGH505 094D	9.4	61	103	10	-	-
NDPGH505 095D	9.5	61	103	10	-	-
NDPGH505 09525D	9.525	61	103	10	-	-

Dolphin
Drill

Dolphin
Oil-Hole
Drill

Power
Max

Solid
Spiral

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	Steel HRc30~50	~FCD500					
		◎	◎	○	○	○		○	◎	

NDPGH505D

Dolphin General Purpose
Internal Coolant Drill

Drill

EDP No	DC	LCF	OAL	DCONMS	Applicable Tap	
					Size	Limit
NDPGH505 096D	9.6	61	103	10	-	-
NDPGH505 097D	9.7	61	103	10	-	-
NDPGH505 098D	9.8	61	103	10	-	-
NDPGH505 099D	9.9	61	103	10	-	-
NDPGH505 098D	9.8	61	103	10	-	-
NDPGH505 099D	9.9	61	103	10	-	-
NDPGH505 09922D	9.922	61	103	10	-	-
NDPGH505 100D	10.0	61	103	10	-	-
NDPGH505 101D	10.1	71	118	12	-	-
NDPGH505 102D	10.2	71	118	12	-	-
NDPGH505 103D	10.3	71	118	12	M12x1.75	WH1~2
NDPGH505 10319D	10.319	71	118	12	M12x1.75	WH3~4
NDPGH505 104D	10.4	71	118	12	M12x1.75	WH5~6
NDPGH505 105D	10.5	71	118	12	M12x1.5	WH1~4
NDPGH505 106D	10.6	71	118	12	M12x1.5	WH5~6
NDPGH505 107D	10.7	71	118	12	-	-
NDPGH505 10716D	10.716	71	118	12	-	-
NDPGH505 108D	10.8	71	118	12	M12x1.25	WH1~4
NDPGH505 109D	10.9	71	118	12	M12x1.25	WH5~6
NDPGH505 110D	11.0	71	118	12	M12x1.0	WH1~4
NDPGH505 111D	11.1	71	118	12	M12x1.0	WH5~6
NDPGH505 11113D	11.113	71	118	12	-	-
NDPGH505 112D	11.2	71	118	12	-	-
NDPGH505 113D	11.3	71	118	12	-	-
NDPGH505 114D	11.4	71	118	12	-	-
NDPGH505 115D	11.5	71	118	12	-	-
NDPGH505 11509D	11.509	71	118	12	-	-
NDPGH505 116D	11.6	71	118	12	-	-
NDPGH505 117D	11.7	71	118	12	-	-
NDPGH505 118D	11.8	71	118	12	-	-
NDPGH505 119D	11.9	71	118	12	-	-
NDPGH505 11906D	11.906	71	118	12	-	-
NDPGH505 120D	12.0	71	118	12	M14x2.0	WH1~4
NDPGH505 121D	12.1	77	124	14	M14x2.0	WH5~6

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
		◎	◎	○	○	○		○	◎	

NDPGH505D

Dolphin General Purpose
Internal Coolant Drill

Drill

EDP No	DC	LCF	OAL	DCONMS	Applicable Tap	
					Size	Limit
NDPGH505 122D	12.2	77	124	14	-	-
NDPGH505 123D	12.3	77	124	14	-	-
NDPGH505 12303D	12.303	77	124	14	-	-
NDPGH505 124D	12.4	77	124	14	-	-
NDPGH505 125D	12.5	77	124	14	M14x1.5	WH1~4
NDPGH505 126D	12.6	77	124	14	M14x1.5	WH5~6
NDPGH505 127D	12.7	77	124	14	-	-
NDPGH505 128D	12.8	77	124	14	-	-
NDPGH505 129D	12.9	77	124	14	-	-
NDPGH505 130D	13.0	77	124	14	-	-
NDPGH505 131D	13.1	77	124	14	-	-
NDPGH505 132D	13.2	77	124	14	-	-
NDPGH505 133D	13.3	77	124	14	-	-
NDPGH505 134D	13.4	77	124	14	-	-
NDPGH505 135D	13.5	77	124	14	-	-
NDPGH505 136D	13.6	77	124	14	-	-
NDPGH505 137D	13.7	77	124	14	-	-
NDPGH505 138D	13.8	77	124	14	-	-
NDPGH505 13891D	13.891	77	124	14	-	-
NDPGH505 139D	13.9	77	124	14	-	-
NDPGH505 140D	14.0	77	124	14	M16x2.0	WH1~4
NDPGH505 141D	14.1	83	133	16	M16x2.0	WH5~6
NDPGH505 142D	14.2	83	133	16	-	-
NDPGH505 14288D	14.288	83	133	16	-	-
NDPGH505 143D	14.3	83	133	16	-	-
NDPGH505 144D	14.4	83	133	16	-	-
NDPGH505 145D	14.5	83	133	16	M16x1.5	WH1~4
NDPGH505 146D	14.6	83	133	16	M16x1.5	WH5~6
NDPGH505 14684D	14.684	83	133	16	-	-
NDPGH505 147D	14.7	83	133	16	-	-
NDPGH505 148D	14.8	83	133	16	-	-
NDPGH505 149D	14.9	83	133	16	-	-
NDPGH505 150D	15.0	83	133	16	-	-
NDPGH505 15081D	15.081	83	133	16	-	-

Dolphin
Drill

Dolphin
Oil-Hole
Drill

Power
Max

Solid
Spiral

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	Steel HRc30~50	~FCD500					
		◎	◎	○	○	○		○	◎	

NDPGH505D

Dolphin General Purpose
Internal Coolant Drill

Drill

EDP No	DC	LCF	OAL	DCONMS	Applicable Tap	
					Size	Limit
NDPGH505 151D	15.1	83	133	16	-	-
NDPGH505 152D	15.2	83	133	16	-	-
NDPGH505 153D	15.3	83	133	16	-	-
NDPGH505 154D	15.4	83	133	16	-	-
NDPGH505 15478D	15.478	83	133	16	-	-
NDPGH505 155D	15.5	83	133	16	M18x2.5	WH1~4
NDPGH505 156D	15.6	83	133	16	M18x2.5	WH5~6
NDPGH505 157D	15.7	83	133	16	-	-
NDPGH505 158D	15.8	83	133	16	-	-
NDPGH505 15875D	15.875	83	133	16	-	-
NDPGH505 159D	15.9	83	133	16	-	-
NDPGH505 160D	16.0	83	133	16	-	-
NDPGH505 16272D	16.272	93	143	18	-	-
NDPGH505 165D	16.5	93	143	18	M18x1.5	WH1~6
NDPGH505 16669D	16.669	93	143	18	-	-
NDPGH505 170D	17.0	93	143	18	-	-
NDPGH505 17066D	17.066	93	143	18	-	-
NDPGH505 17463D	17.463	93	143	18	-	-
NDPGH505 175D	17.5	93	143	18	M20x2.5	WH1~6
NDPGH505 17859D	17.859	93	143	18	-	-
NDPGH505 180D	18.0	93	143	18	-	-
NDPGH505 18256D	18.256	101	153	20	-	-
NDPGH505 185D	18.5	101	153	20	M20x1.5	WH1~6
NDPGH505 18654D	18.654	101	153	20	-	-
NDPGH505 190D	19.0	101	153	20	-	-
NDPGH505 1905D	19.050	101	153	20	-	-
NDPGH505 1925D	19.25	101	153	20	-	-
NDPGH505 19447D	19.447	101	153	20	-	-
NDPGH505 195D	19.5	101	153	20	M22x2.5	WH1~6
NDPGH505 19844D	19.844	101	153	20	-	-
NDPGH505 200D	20.0	101	153	20	-	-

► Applicable Working Material

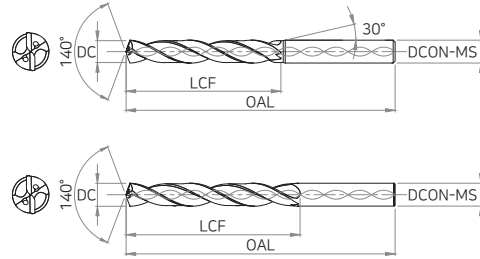
○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
		◎	◎	○	○	○		○	◎	

NDPGH508D

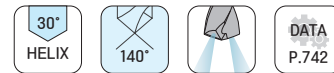
Dolphin General Purpose
Internal Coolant Drill

Drill



► Tolerance

DC		Shank Dia
~ Ø3	+0.002 ~ +0.012	h6
Ø3.1 ~ Ø6	+0.004 ~ +0.016	
Ø6.1 ~ Ø10	+0.006 ~ +0.021	
Ø10.1 ~ Ø16	+0.007 ~ +0.025	



Dolphin
Drill

Dolphin
Oil-Hole
Drill

Power
Max

Solid
Spiral

EDP No	DC	LCF	OAL	DCONMS	Applicable Tap	
					Size	Limit
NDPGH508 030D	3.0	31	74	6	-	-
NDPGH508 031D	3.1	36	81	6	-	-
NDPGH508 03175D	3.175	36	81	6	-	-
NDPGH508 032D	3.2	36	81	6	-	-
NDPGH508 033D	3.3	36	81	6	M4x0.7	WH1~4
NDPGH508 034D	3.4	36	81	6	M4x0.7	WH 5~6
NDPGH508 035D	3.5	36	81	6	-	-
NDPGH508 03572D	3.572	41	86	6	-	-
NDPGH508 036D	3.6	41	86	6	-	-
NDPGH508 037D	3.7	41	86	6	-	-
NDPGH508 038D	3.8	41	86	6	-	-
NDPGH508 039D	3.9	41	86	6	-	-
NDPGH508 03969D	3.969	41	86	6	-	-
NDPGH508 040D	4.0	41	86	6	-	-
NDPGH508 04039D	4.039	46	91	6	-	-
NDPGH508 041D	4.1	46	91	6	-	-
NDPGH508 042D	4.2	46	91	6	M5x0.8	WH1~4
NDPGH508 043D	4.3	46	91	6	M5x0.8	WH5~6
NDPGH508 04366D	4.366	46	91	6	-	-
NDPGH508 044D	4.4	46	91	6	-	-
NDPGH508 045D	4.5	46	91	6	-	-

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
		◎	◎	○	○	○		○	◎	

NDPGH508D

Dolphin General Purpose
Internal Coolant Drill

Drill

EDP No	DC	LCF	OAL	DCONMS	Applicable Tap	
					Size	Limit
NDPGH508 046D	4.6	51	96	6	-	-
NDPGH508 047D	4.7	51	96	6	-	-
NDPGH508 04763D	4.763	51	96	6	-	-
NDPGH508 048D	4.8	51	96	6	-	-
NDPGH508 049D	4.9	51	96	6	-	-
NDPGH508 050D	5.0	51	96	6	M6x1.0	WH1~4
NDPGH508 051D	5.1	57	102	6	M6x1.0	WH5~6
NDPGH508 05159D	5.159	57	102	6	-	-
NDPGH508 052D	5.2	57	102	6	-	-
NDPGH508 053D	5.3	57	102	6	-	-
NDPGH508 054D	5.4	57	102	6	-	-
NDPGH508 055D	5.5	57	102	6	-	-
NDPGH508 05556D	5.556	62	107	6	-	-
NDPGH508 056D	5.6	62	107	6	-	-
NDPGH508 057D	5.7	62	107	6	-	-
NDPGH508 058D	5.8	62	107	6	-	-
NDPGH508 059D	5.9	62	107	6	-	-
NDPGH508 05953D	5.953	62	107	6	-	-
NDPGH508 060D	6.0	62	107	6	-	-
NDPGH508 061D	6.1	71	116	8	-	-
NDPGH508 062D	6.2	71	116	8	-	-
NDPGH508 063D	6.3	71	116	8	-	-
NDPGH508 0635D	6.35	71	116	8	-	-
NDPGH508 064D	6.4	71	116	8	-	-
NDPGH508 065D	6.5	71	116	8	-	-
NDPGH508 06528D	6.528	71	116	8	-	-
NDPGH508 066D	6.6	71	116	8	-	-
NDPGH508 067D	6.7	71	116	8	-	-
NDPGH508 06747D	6.747	71	116	8	-	-
NDPGH508 068D	6.8	71	116	8	M8x1.25	WH1~4
NDPGH508 069D	6.9	71	116	8	M8x1.25	WH5~6
NDPGH508 070D	7.0	71	116	8	M8x1.0	WH1~4
NDPGH508 071D	7.1	81	126	8	M8x1.0	WH5~6
NDPGH508 07144D	7.144	81	126	8	-	-
NDPGH508 072D	7.2	81	126	8	-	-
NDPGH508 073D	7.3	81	126	8	-	-

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
		◎	◎	○	○	○		○	◎	

NDPGH508D

Dolphin General Purpose
Internal Coolant Drill

Drill

EDP No	DC	LCF	OAL	DCONMS	Applicable Tap	
					Size	Limit
NDPGH508 074D	7.4	81	126	8	-	-
NDPGH508 075D	7.5	81	126	8	-	-
NDPGH508 07541D	7.541	81	126	8	-	-
NDPGH508 076D	7.6	81	126	8	-	-
NDPGH508 077D	7.7	81	126	8	-	-
NDPGH508 078D	7.8	81	126	8	-	-
NDPGH508 079D	7.9	81	126	8	-	-
NDPGH508 07938D	7.938	81	126	8	-	-
NDPGH508 080D	8.0	81	126	8	-	-
NDPGH508 081D	8.1	92	137	10	-	-
NDPGH508 082D	8.2	92	137	10	-	-
NDPGH508 083D	8.3	92	137	10	-	-
NDPGH508 08334D	8.334	92	137	10	-	-
NDPGH508 084D	8.4	92	137	10	-	-
NDPGH508 08433D	8.433	92	137	10	-	-
NDPGH508 085D	8.5	92	137	10	M10x1.5	WH1~4
NDPGH508 086D	8.6	92	137	10	M10x1.5	WH5~6
NDPGH508 087D	8.7	92	137	10	-	-
NDPGH508 08731D	8.731	92	137	10	-	-
NDPGH508 088D	8.8	92	137	10	M10x1.25	WH1~4
NDPGH508 089D	8.9	92	137	10	M10x1.25	WH5~6
NDPGH508 090D	9.0	92	137	10	M10x1.0	WH1~4
NDPGH508 091D	9.1	102	147	10	M10x1.0	WH5~6
NDPGH508 09128D	9.128	102	147	10	-	-
NDPGH508 092D	9.2	102	147	10	-	-
NDPGH508 093D	9.3	102	147	10	-	-
NDPGH508 09347D	9.347	102	147	10	-	-
NDPGH508 094D	9.4	102	147	10	-	-
NDPGH508 095D	9.5	102	147	10	-	-
NDPGH508 09525D	9.525	102	147	10	-	-
NDPGH508 096D	9.6	102	147	10	-	-
NDPGH508 097D	9.7	102	147	10	-	-
NDPGH508 098D	9.8	102	147	10	-	-
NDPGH508 099D	9.9	102	147	10	-	-
NDPGH508 09922D	9.922	102	147	10	-	-
NDPGH508 100D	10.0	102	147	10	-	-

Dolphin
Drill

Dolphin
Oil-Hole
Drill

Power
Max

Solid
Spiral

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRc55~	~HB225	HB225 ~325	Steel HRc30~50	~FCD500					
		◎	◎	○	○	○		○	◎	

NDPGH508D

Dolphin General Purpose
Internal Coolant Drill

Drill

EDP No	DC	LCF	OAL	DCONMS	Applicable Tap	
					Size	Limit
NDPGH508 101D	10.1	113	158	12	-	-
NDPGH508 102D	10.2	113	158	12	-	-
NDPGH508 103D	10.3	113	158	12	M12x1.75	WH1~2
NDPGH508 10319D	10.319	113	158	12	M12x1.75	WH3~4
NDPGH508 104D	10.4	113	158	12	M12x1.75	WH5~6
NDPGH508 105D	10.5	113	158	12	M12x1.5	WH1~4
NDPGH508 106D	10.6	113	158	12	M12x1.5	WH5~6
NDPGH508 107D	10.7	113	158	12	-	-
NDPGH508 10716D	10.716	113	158	12	-	-
NDPGH508 108D	10.8	113	158	12	M12x1.25	WH1~4
NDPGH508 109D	10.9	113	158	12	M12x1.25	WH5~6
NDPGH508 110D	11.0	113	158	12	M12x1.0	WH1~4
NDPGH508 111D	11.1	123	168	12	M12x1.0	WH5~6
NDPGH508 11113D	11.113	123	168	12	-	-
NDPGH508 112D	11.2	123	168	12	-	-
NDPGH508 113D	11.3	123	168	12	-	-
NDPGH508 114D	11.4	123	168	12	-	-
NDPGH508 115D	11.5	123	168	12	-	-
NDPGH508 11509D	11.509	123	168	12	-	-
NDPGH508 116D	11.6	123	168	12	-	-
NDPGH508 117D	11.7	123	168	12	-	-
NDPGH508 118D	11.8	123	168	12	-	-
NDPGH508 119D	11.9	123	168	12	-	-
NDPGH508 11906D	11.906	123	168	12	-	-
NDPGH508 120D	12.0	123	168	12	M14x2.0	WH1~4
NDPGH508 121D	12.1	134	179	14	M14x2.0	WH5~6
NDPGH508 122D	12.2	134	179	14	-	-
NDPGH508 123D	12.3	134	179	14	-	-
NDPGH508 12303D	12.303	134	179	14	-	-
NDPGH508 124D	12.4	134	179	14	-	-
NDPGH508 125D	12.5	134	179	14	M14x1.5	WH1~4
NDPGH508 126D	12.6	134	179	14	M14x1.5	WH5~6
NDPGH508 127D	12.7	134	179	14	-	-
NDPGH508 128D	12.8	134	179	14	-	-
NDPGH508 129D	12.9	134	179	14	-	-
NDPGH508 130D	13.0	134	179	14	-	-

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
		◎	◎	○	○	○		○	◎	

NDPGH508D

Dolphin General Purpose
Internal Coolant Drill

Drill

EDP No	DC	LCF	OAL	DCONMS	Applicable Tap	
					Size	Limit
NDPGH508 131D	13.1	144	189	14	-	-
NDPGH508 132D	13.2	144	189	14	-	-
NDPGH508 133D	13.3	144	189	14	-	-
NDPGH508 134D	13.4	144	189	14	-	-
NDPGH508 135D	13.5	144	189	14	-	-
NDPGH508 136D	13.6	144	189	14	-	-
NDPGH508 137D	13.7	144	189	14	-	-
NDPGH508 138D	13.8	144	189	14	-	-
NDPGH508 13891D	13.891	144	189	14	-	-
NDPGH508 139D	13.9	144	189	14	-	-
NDPGH508 140D	14.0	144	189	14	M16x2.0	WH1~4
NDPGH508 141D	14.1	155	200	16	M16x2.0	WH5~6
NDPGH508 142D	14.2	155	200	16	-	-
NDPGH508 14288D	14.288	155	200	16	-	-
NDPGH508 143D	14.3	155	200	16	-	-
NDPGH508 144D	14.4	155	200	16	-	-
NDPGH508 145D	14.5	155	200	16	M16x1.5	WH1~4
NDPGH508 146D	14.6	155	200	16	M16x1.5	WH5~6
NDPGH508 14684D	14.684	155	200	16	-	-
NDPGH508 147D	14.7	155	200	16	-	-
NDPGH508 148D	14.8	155	200	16	-	-
NDPGH508 149D	14.9	155	200	16	-	-
NDPGH508 150D	15.0	155	200	16	-	-
NDPGH508 15081D	15.081	165	210	16	-	-
NDPGH508 151D	15.1	165	210	16	-	-
NDPGH508 152D	15.2	165	210	16	-	-
NDPGH508 153D	15.3	165	210	16	-	-
NDPGH508 154D	15.4	165	210	16	-	-
NDPGH508 15478D	15.478	165	210	16	-	-
NDPGH508 155D	15.5	165	210	16	M18x2.5	WH1~4
NDPGH508 156D	15.6	165	210	16	M18x2.5	WH5~6
NDPGH508 157D	15.7	165	210	16	-	-
NDPGH508 158D	15.8	165	210	16	-	-
NDPGH508 15875D	15.875	165	210	16	-	-
NDPGH508 159D	15.9	165	210	16	-	-
NDPGH508 160D	16.0	165	210	16	-	-

Dolphin
Drill

Dolphin
Oil-Hole
Drill

Power
Max

Solid
Spiral

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	Steel HRc30~50	~FCD500					
		◎	◎	○	○	○		○	◎	

Power Max Drill

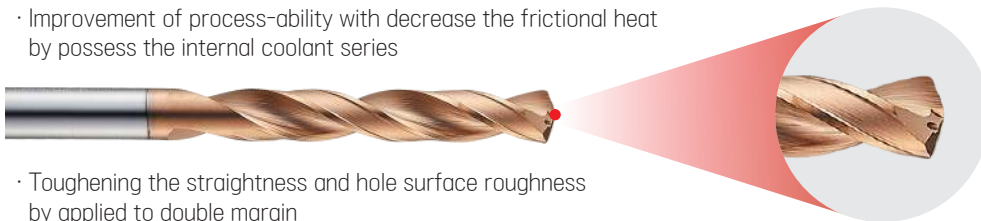
High Speed Drill

Characteristics

- Suitable to High speed work for Alloy steels, Cast iron, Stainless steels, Prehardened Steels
[Recommendation : ~HRC50]
- Extensive coverage of 3D ~ 20D Diameter

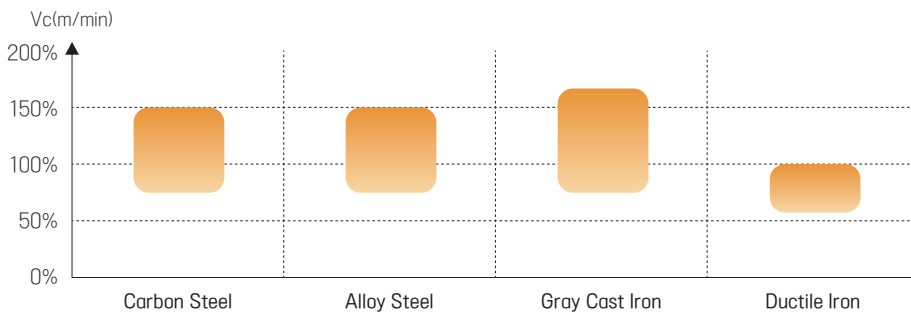
Features

- High chipping resistance with high feed by using the high toughness material
- Toughening the surface hardness with heat resistance by applying AlTiN coating
- Improvement of process-ability with decrease the frictional heat by possessing the internal coolant series

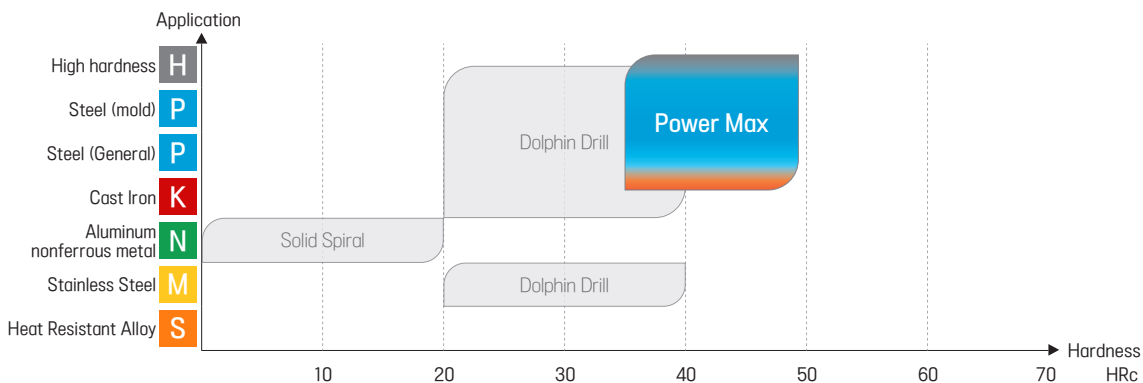


- Toughening the straightness and hole surface roughness by applying double margin
- Toughening the chip emission by applying wide chip pocket
- Improvement of processing efficiency with versatility who customer can choose between the external and internal coolant depends on the drilling depth

Vc by Application area



Applications



Contents

EDP No	Flutes	Geometry	Length					Coolant	Margin	Tolerance	Diameter(DC)		Page
Spec (INCH :  / METRIC : )			3D	5D	8D	10D	12D				Min	Max	
PF503  	2F		○					External	Single	h8	2	20	454
PF505  				○				External	Single	h8	3	20	458
SF503  			○					Internal	Single	h8	3	20	461
SF505  				○				Internal	Single	h8	3	20	464
SF508  					○			Internal	Single	h8	3	20	467
SF510  						○		Internal	Double	h8	3	13	470
SF520  							○	Internal	Double	h8	4.1	10	472
HP503  			○					External	Double	m7	3	16	474
HPI503  			○					Internal	Double	m7	3	20	476
HPI505  				○				Internal	Double	m7	3	20	479
HPI508-N  					○			Internal	Double	m7	3	20	483
P503A(F)  			○					External	Single	m7	3	20	486
P505A(F)  				○				External	Single	m7	3	20	489

EDP No. System

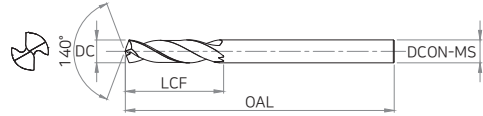
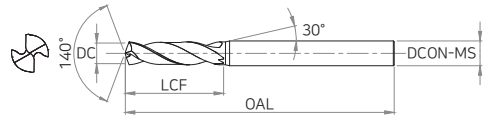
*If expressed as an integer, the decimal point is omitted.

P	I	5	05	A	040
①	②	③	④	⑤	⑥

①	②	③	④	⑤	⑥
Section	Appearance	Grade	Working Depth	Shank Type	Cutting Dia
P : Power Max	F : Facet Point	5 : Grade	03 : 3D	A : Plane	Ø3
S : Spiral Coolant	I : Internal Coolant		05 : 5D	F : DIN 6535 HE	~
HP : High Precision			08 : 8D		Ø20
			10 : 10D		
			20 : 20D		

PF503

High Speed Drill - 3D



► Tolerance

DC		Shank Dia
~ Ø3	0 ~ -0.014	h6
Ø3.1 ~ Ø6	0 ~ -0.018	
Ø6.1 ~ D10	0 ~ -0.022	
Ø10.1 ~ Ø18	0 ~ -0.027	
Ø18.1 ~	0 ~ -0.033	



EDP No	DC			LCF	OAL	DCON MS
	mm	fraction	inch			
PF503 020	2	-	.0787	14	50	3
PF503 021	2.1	-	.0827	14	50	3
PF503 022	2.2	-	.0866	14	50	3
PF503 023	2.3	-	.0906	14	50	3
PF503 024	2.4	-	.0945	14	50	3
PF503 025	2.5	-	.0984	14	50	3
PF503 026	2.6	-	.1024	14	50	3
PF503 027	2.7	-	.1063	14	50	3
PF503 028	2.8	-	.1102	14	50	3
PF503 029	2.9	-	.1142	14	50	3
PF503 030	3	-	.1181	18	60	3
PF503 031	3.1	-	.1220	20	60	4
PF503 03175	3.175	1/8	.1250	20	60	4
PF503 032	3.2	-	.1260	20	60	4
PF503 03264	3.264	-	.1285	20	60	4
PF503 033	3.3	-	.1299	20	60	4
PF503 034	3.4	-	.1339	22	60	4
PF503 035	3.5	-	.1378	22	60	4
PF503 03572	3.572	9/64	.1406	22	60	4
PF503 036	3.6	-	.1417	22	60	4
PF503 037	3.7	-	.1457	22	60	4
PF503 038	3.8	-	.1496	24	60	4
PF503 039	3.9	-	.1535	24	60	4
PF503 040	4	-	.1575	24	60	4
PF503 04039	4.039	-	.1590	24	60	4
PF503 041	4.1	-	.1614	24	60	4
PF503 042	4.2	-	.1654	26	62	5
PF503 043	4.3	-	.1693	26	62	5
PF503 044	4.4	-	.1732	26	62	5
PF503 045	4.5	-	.1772	26	62	5
PF503 046	4.6	-	.1811	26	62	5
PF503 047	4.7	-	.1850	26	62	5
PF503 04763	4.763	3/16	.1875	26	62	5
PF503 048	4.8	-	.1890	26	62	5
PF503 049	4.9	-	.1920	26	62	5
PF503 050	5	-	.1969	26	62	5
PF503 051	5.1	-	.2008	26	62	5
PF503 05159	5.159	13/64	.2031	28	66	6
PF503 052	5.2	-	.2047	28	66	6
PF503 053	5.3	-	.2087	28	66	6

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	~325	HRc30~50	~FCD500					
○	○	○	◎	◎	◎					

PF503

High Speed Drill - 3D

Drill

EDP No	DC			LCF	OAL	DCON MS	EDP No	DC			LCF	OAL	DCON MS
	mm	fraction	inch					mm	fraction	inch			
PF503 054	5.4	-	.2126	28	66	6	PF503 081	8.1	-	.3189	40	79	8
PF503 055	5.5	-	.2165	28	66	6	PF503 082	8.2	-	.3228	43	84	9
PF503 05558	5.558	7/32	.2188	30	66	6	PF503 083	8.3	-	.3268	43	84	9
PF503 056	5.6	-	.2205	30	66	6	PF503 08334	8.334	21/64	.3281	43	84	9
PF503 057	5.7	-	.2244	30	66	6	PF503 084	8.4	-	.3307	43	84	9
PF503 058	5.8	-	.2283	30	66	6	PF503 085	8.5	-	.3320	43	84	9
PF503 059	5.9	-	.2323	30	66	6	PF503 086	8.6	-	.3346	43	84	9
PF503 05953	5.953	15/64	.2344	30	66	6	PF503 087	8.7	-	.3386	43	84	9
PF503 060	6	-	.2362	30	66	6	PF503 08733	8.733	-	.3425	43	84	9
PF503 061	6.1	-	.2402	30	66	6	PF503 088	8.8	-	.3438	43	84	9
PF503 062	6.2	-	.2441	34	74	7	PF503 089	8.9	-	.3465	43	84	9
PF503 063	6.3	-	.2480	34	74	7	PF503 090	9	-	.3504	43	84	9
PF503 0635	6.35	1/4	.2500	34	74	7	PF503 091	9.1	-	.3543	43	84	9
PF503 064	6.4	-	.2520	34	74	7	PF503 09129	9.129	23/64	.3594	47	89	10
PF503 065	6.5	-	.2559	34	74	7	PF503 092	9.2	-	.3622	47	89	10
PF503 066	6.6	-	.2598	34	74	7	PF503 093	9.3	-	.3661	47	89	10
PF503 067	6.7	-	.2638	37	74	7	PF503 09347	9.347	-	.3680	47	89	10
PF503 06747	6.747	17/64	.2656	37	74	7	PF503 094	9.4	-	.3701	47	89	10
PF503 068	6.8	-	.2677	37	74	7	PF503 095	9.5	-	.3740	47	89	10
PF503 069	6.9	-	.2717	37	74	7	PF503 09525	9.525	3/8	.3750	47	89	10
PF503 070	7	-	.2756	37	74	7	PF503 096	9.6	-	.3780	47	89	10
PF503 071	7.1	-	.2795	37	74	7	PF503 097	9.7	-	.3819	47	89	10
PF503 07145	7.145	9/32	.2813	40	79	8	PF503 098	9.8	-	.3858	47	89	10
PF503 072	7.2	-	.2835	40	79	8	PF503 099	9.9	-	.3898	47	89	10
PF503 073	7.3	-	.2874	40	79	8	PF503 09921	9.921	25/64	.3906	47	89	10
PF503 074	7.4	-	.2913	40	79	8	PF503 100	10	-	.3937	47	89	10
PF503 075	7.5	-	.2953	40	79	8	PF503 101	10.1	-	.3976	47	89	10
PF503 07541	7.541	19/64	.2969	40	79	8	PF503 102	10.2	-	.4016	51	95	11
PF503 076	7.6	-	.2992	40	79	8	PF503 103	10.3	-	.4055	51	95	11
PF503 077	7.7	-	.3031	40	79	8	PF503 1032	10.32	13/32	.4063	51	95	11
PF503 078	7.8	-	.3071	40	79	8	PF503 104	10.4	-	.4094	51	95	11
PF503 079	7.9	-	.3110	40	79	8	PF503 105	10.5	-	.4134	51	95	11
PF503 07938	7.938	5/16	.3125	40	79	8	PF503 106	10.6	-	.4173	51	95	11
PF503 080	8	-	.3150	40	79	8	PF503 107	10.7	-	.4213	51	95	11

Dolphin Drill

Dolphin Oil-Hole Drill

Power Max

Solid Spiral

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○	○	○	◎	◎	◎					

PF503

High Speed Drill - 3D

Drill

EDP No	DC			LCF	OAL	DCON MS	EDP No	DC			LCF	OAL	DCON MS
	mm	fraction	inch					mm	fraction	inch			
PF503 10716	10.716	27/64	.4219	51	95	11	PF503 136	13.6	-	.5354	60	107	14
PF503 108	10.8	-	.4252	51	95	11	PF503 137	13.7	-	.5394	60	107	14
PF503 109	10.9	-	.4291	51	95	11	PF503 138	13.8	-	.5433	60	107	14
PF503 110	11	-	.4331	51	95	11	PF503 13891	13.891	35/64	.5469	60	107	14
PF503 111	11.1	-	.4370	51	95	11	PF503 139	13.9	-	.5472	60	107	14
PF503 11113	11.113	7/16	.4375	54	102	12	PF503 140	14	-	.5512	60	107	14
PF503 112	11.2	-	.4409	54	102	12	PF503 141	14.1	-	.5551	60	107	14
PF503 113	11.3	-	.4449	54	102	12	PF503 142	14.2	-	.5591	62	111	15
PF503 114	11.4	-	.4488	54	102	12	PF503 14288	14.288	9/16	.5625	62	111	15
PF503 115	11.5	-	.4528	54	102	12	PF503 143	14.3	-	.5630	62	111	15
PF503 116	11.6	-	.4531	54	102	12	PF503 144	14.4	-	.5669	62	111	15
PF503 117	11.7	-	.4567	54	102	12	PF503 145	14.5	-	.5709	62	111	15
PF503 118	11.8	-	.4606	54	102	12	PF503 146	14.6	-	.5748	62	111	15
PF503 119	11.9	15/32	.4646	54	102	12	PF503 147	14.7	-	.5787	62	111	15
PF503 11908	11.908	-	.4685	54	102	12	PF503 148	14.8	-	.5827	62	111	15
PF503 120	12	-	.4688	54	102	12	PF503 149	14.9	-	.5866	62	111	15
PF503 121	12.1	-	.4724	54	102	12	PF503 150	15	-	.5906	62	111	15
PF503 122	12.2	-	.4803	57	102	13	PF503 15081	15.081	19/32	.5937	62	111	15
PF503 123	12.3	-	.4843	57	102	13	PF503 151	15.1	-	.5945	62	111	15
PF503 12304	12.304	31/64	.4844	57	102	13	PF503 152	15.2	-	.5984	64	115	16
PF503 124	12.4	-	.4882	57	102	13	PF503 153	15.3	-	.6063	64	115	16
PF503 125	12.5	-	.4921	57	102	13	PF503 154	15.4	-	.6102	64	115	16
PF503 126	12.6	-	.4961	57	102	13	PF503 155	15.5	-	.6142	64	115	16
PF503 127	12.7	-	.5000	57	102	13	PF503 156	15.6	-	.6181	64	115	16
PF503 128	12.8	-	.5039	57	102	13	PF503 157	15.7	-	.6220	64	115	16
PF503 129	12.9	-	.5079	57	102	13	PF503 158	15.8	-	.6250	64	115	16
PF503 130	13	-	.5118	57	102	13	PF503 15875	15.875	5/8	.6299	64	115	16
PF503 13096	13.096	33/64	.5156	57	102	13	PF503 160	16	-	.6339	64	115	16
PF503 131	13.1	-	.5157	57	102	13	PF503 161	16.1	-	.6371	64	115	16
PF503 132	13.2	-	.5197	60	107	14	PF503 163	16.3	-	.6417	66	119	17
PF503 133	13.3	-	.5236	60	107	14	PF503 165	16.5	-	.6496	66	119	17
PF503 134	13.4	-	.5276	60	107	14	PF503 16667	16.667	21/32	.6562	66	119	17
PF503 13494	13.494	17/32	.5313	60	107	14	PF503 170	17	-	.6693	66	119	17
PF503 135	13.5	-	.5315	60	107	14	PF503 171	17.1	-	.6732	66	119	17

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	~325	HRC30~50	~FCD500					
○	○	○	◎	◎	◎					

PF503

High Speed Drill - 3D

Drill

EDP No	DC			LCF	OAL	DCON MS	EDP No	DC			LCF	OAL	DCON MS
	mm	fraction	inch					mm	fraction	inch			
PF503 172	17.2	-	.6772	66	123	18	PF503 182	18.2	-	.7165	70	127	19
PF503 17463	17.463	11/16	.6772	66	123	18	PF503 185	18.5	-	.7283	70	127	19
PF503 175	17.5	-	.6875	66	123	18	PF503 190	19	-	.7480	70	127	19
PF503 177	17.7	-	.6890	66	123	18	PF503 191	19.1	-	.7520	70	127	19
PF503 178	17.8	-	.6969	66	123	18	PF503 195	19.5	-	.7677	70	131	20
PF503 180	18	-	.7008	66	123	18	PF503 197	19.7	-	.7756	70	131	20
PF503 181	18.1	-	.7087	66	123	18	PF503 200	20	-	.7874	70	131	20

Dolphin Drill

Dolphin Oil-Hole Drill

Power Max

Solid Spiral

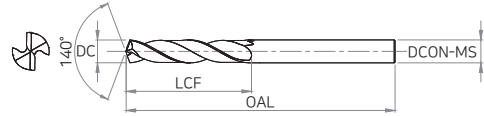
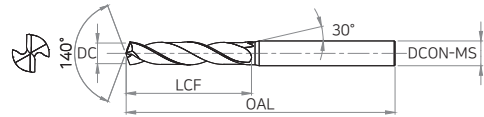
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○	○	○	◎	◎	◎					

PF505 High Speed Drill - 5D

Drill



► Tolerance

DC		Shank Dia
~ Ø3	0 ~ -0.014	h6
Ø3.1 ~ Ø6	0 ~ -0.018	
Ø6.1 ~ Ø10	0 ~ -0.022	
Ø10.1 ~ Ø18	0 ~ -0.027	
Ø18.1 ~	0 ~ -0.033	



EDP No	DC			LCF	OAL	DCON MS
	mm	fraction	inch			
PF505 030	3	-	.1181	25	60	3
PF505 031	3.1	-	.122	27	60	4
PF505 03175	3.175	1/8	.125	27	60	4
PF505 032	3.2	-	.126	27	60	4
PF505 03264	3.264	#30	.1285	27	60	4
PF505 033	3.3	-	.1299	27	60	4
PF505 034	3.4	-	.1339	30	65	4
PF505 035	3.5	-	.1378	30	65	4
PF505 03572	3.572	9/64	.1406	30	65	4
PF505 036	3.6	-	.1417	30	65	4
PF505 037	3.7	-	.1457	30	65	4
PF505 038	3.8	-	.1496	33	71	4
PF505 039	3.9	-	.1535	33	71	4
PF505 040	4	-	.1575	33	71	4
PF505 04039	4.039	#21	.1575	33	71	5
PF505 041	4.1	-	.159	33	71	5
PF505 042	4.2	-	.1614	33	71	5
PF505 043	4.3	-	.1654	36	71	5
PF505 044	4.4	-	.1693	36	71	5
PF505 045	4.5	-	.1732	36	71	5
PF505 046	4.6	-	.1772	36	71	5
PF505 047	4.7	-	.1811	36	71	5
PF505 04763	4.763	3/16	.185	39	71	5
PF505 048	4.8	-	.1875	39	71	5
PF505 049	4.9	-	.189	39	71	5
PF505 050	5	-	.192	39	71	5
PF505 051	5.1	-	.2008	39	83	6
PF505 05159	5.159	13/64	.2031	39	83	6
PF505 052	5.2	-	.2047	39	83	6
PF505 053	5.3	-	.2087	39	83	6
PF505 054	5.4	-	.2126	43	83	6
PF505 055	5.5	-	.2165	43	83	6
PF505 05558	5.558	7/32	.2188	43	83	6
PF505 056	5.6	-	.2205	43	83	6
PF505 057	5.7	-	.2244	43	83	6
PF505 058	5.8	-	.2283	43	83	6
PF505 059	5.9	-	.2323	43	83	6
PF505 05953	5.953	15/64	.2344	43	83	6
PF505 060	6	-	.2362	43	83	6
PF505 061	6.1	-	.2402	47	87	7

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	~325	HRC30~50	~FC500					
○	○	○	◎	◎	◎					

PF505

High Speed Drill - 5D

Drill

EDP No	DC			LCF	OAL	DCON MS	EDP No	DC			LCF	OAL	DCON MS
	mm	fraction	inch					mm	fraction	inch			
PF505 062	6.2	-	.2441	47	87	7	PF505 089	8.9	-	.3504	56	96	9
PF505 063	6.3	-	.248	47	87	7	PF505 090	9	-	.3543	56	96	9
PF505 065	6.35	1/4	.25	47	87	7	PF505 091	9.1	-	.3583	62	105	10
PF505 064	6.4	-	.252	47	87	7	PF505 09129	9.129	23/64	.3594	62	105	10
PF505 065	6.5	-	.2559	47	87	7	PF505 092	9.2	-	.3622	62	105	10
PF505 066	6.6	-	.2598	47	87	7	PF505 093	9.3	-	.3661	62	105	10
PF505 067	6.7	-	.2638	47	87	7	PF505 094	9.4	-	.3701	62	105	10
PF505 06747	6.747	17/64	.2656	47	87	7	PF505 095	9.5	-	.374	62	105	10
PF505 068	6.8	-	.2677	47	87	7	PF505 09525	9.525	3/8	.375	62	105	10
PF505 069	6.9	-	.2717	47	87	7	PF505 096	9.6	-	.378	62	105	10
PF505 070	7		.2756	47	87	7	PF505 097	9.7	-	.3819	62	105	10
PF505 071	7.1	-	.2795	52	92	8	PF505 098	9.8	-	.3858	62	105	10
PF505 07145	7.145	9/32	.2813	52	92	8	PF505 099	9.9	-	.3898	62	105	10
PF505 072	7.2	-	.2835	52	92	8	PF505 09921	9.921	25/64	.3906	62	105	10
PF505 073	7.3	-	.2874	52	92	8	PF505 100	10	-	.3937	62	105	10
PF505 074	7.4	-	.2913	52	92	8	PF505 101	10.1	-	.3976	68	115	11
PF505 075	7.5	-	.2953	52	92	8	PF505 102	10.2	-	.4016	68	115	11
PF505 07541	7.541	19/64	.2969	52	92	8	PF505 103	10.3	-	.4055	68	115	11
PF505 076	7.6	-	.2992	52	92	8	PF505 1032	10.32	13/32	.4063	68	115	11
PF505 077	7.7	-	.3031	52	92	8	PF505 104	10.4	-	.4094	68	115	11
PF505 078	7.8	-	.3071	52	92	8	PF505 105	10.5	-	.4134	68	115	11
PF505 079	7.9		.311	52	92	8	PF505 106	10.6	-	.4173	68	115	11
PF505 07938	7.938	5/16	.3125	52	92	8	PF505 107	10.7	-	.4213	68	115	11
PF505 080	8	-	.315	52	92	8	PF505 10716	10.716	27/64	.4219	68	115	11
PF505 081	8.1	-	.3189	56	96	9	PF505 108	10.8	-	.4252	68	115	11
PF505 082	8.2	-	.3228	56	96	9	PF505 109	10.9	-	.4291	68	115	11
PF505 083	8.3	-	.3268	56	96	9	PF505 110	11	-	.4331	68	115	11
PF505 08334	8.334	21/64	.3281	56	96	9	PF505 111	11.1	-	.437	71	121	12
PF505 084	8.4	-	.3307	56	96	9	PF505 11113	11.113	7/16	.4375	71	121	12
PF505 085	8.5	-	.3346	56	96	9	PF505 112	11.2	-	.4409	71	121	12
PF505 086	8.6	-	.3386	56	96	9	PF505 113	11.3	-	.4449	71	121	12
PF505 087	8.7	-	.3425	56	96	9	PF505 114	11.4	-	.4488	71	121	12
PF505 08733	8.733	11/32	.3438	56	96	9	PF505 115	11.5	-	.4528	71	121	12
PF505 088	8.8	-	.3465	56	96	9	PF505 116	11.6	-	.4567	71	121	12

Dolphin Drill

Dolphin Oil-Hole Drill

Power Max

Solid Spiral

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○	○	○	◎	◎	◎					

PF505

High Speed Drill - 5D

Drill

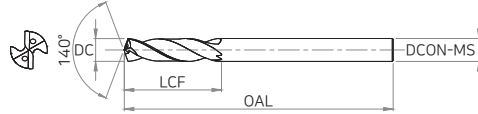
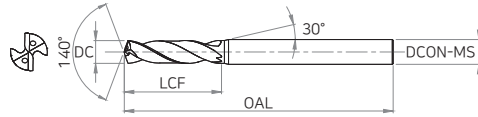
EDP No	DC			LCF	OAL	DCON MS	EDP No	DC			LCF	OAL	DCON MS
	mm	fraction	inch					mm	fraction	inch			
PF505 117	11.7	-	.4606	71	121	12	PF505 146	14.6	-	.5748	83	143	15
PF505 118	11.8	-	.4646	71	121	12	PF505 147	14.7	-	.5787	83	143	15
PF505 119	11.9	-	.4685	71	121	12	PF505 148	14.8	-	.5827	83	143	15
PF505 11908	11.908	15/32	.4688	71	121	12	PF505 149	14.9	-	.5866	83	143	15
PF505 120	12	-	.4724	71	121	12	PF505 150	15	-	.5906	83	143	15
PF505 121	12.1	-	.4764	75	125	13	PF505 15081	15.081	19/32	.5937	90	152	16
PF505 122	12.2	-	.4803	75	125	13	PF505 151	15.1	-	.5945	90	152	16
PF505 123	12.3	-	.4843	75	125	13	PF505 152	15.2	-	.5984	90	152	16
PF505 12304	12.304	31/64	.4844	75	125	13	PF505 154	15.4	-	.6063	90	152	16
PF505 124	12.4	-	.4882	75	125	13	PF505 155	15.5	-	.6102	90	152	16
PF505 125	12.5	-	.4921	75	125	13	PF505 156	15.6	-	.6142	90	152	16
PF505 126	12.6	-	.4961	75	125	13	PF505 157	15.7	-	.6181	90	152	16
PF505 127	12.7	-	.5	75	125	13	PF505 158	15.8	-	.622	90	152	16
PF505 128	12.8	-	.5039	75	125	13	PF505 15875	15.875	5/8	.625	90	152	16
PF505 129	12.9	-	.5079	75	125	13	PF505 160	16	-	.6299	90	152	16
PF505 130	13	-	.5118	75	125	13	PF505 161	16.1	-	.6339	95	155	17
PF505 13096	13.096	33/64	.5156	80	134	14	PF505 163	16.3	-	.6417	95	155	17
PF505 131	13.1	-	.5157	80	134	14	PF505 165	16.5	-	.6496	95	155	17
PF505 132	13.2	-	.5197	80	134	14	PF505 16667	16.667	21/32	.6562	95	155	17
PF505 133	13.3	-	.5236	80	134	14	PF505 170	17	-	.6693	95	155	17
PF505 134	13.4	-	.5276	80	134	14	PF505 171	17.1	-	.6732	100	157	18
PF505 13494	13.494	17/32	.5313	80	134	14	PF505 172	17.2	-	.6772	100	157	18
PF505 135	13.5	-	.5315	80	134	14	PF505 17463	17.463	11/16	.6875	100	157	18
PF505 136	13.6	-	.5354	80	134	14	PF505 175	17.5	-	.689	100	157	18
PF505 137	13.7	-	.5394	80	134	14	PF505 177	17.7	-	.6969	100	157	18
PF505 138	13.8	-	.5433	80	134	14	PF505 178	17.8	-	.7008	100	157	18
PF505 13891	13.891	35/64	.5469	80	134	14	PF505 180	18	-	.7087	100	157	18
PF505 139	13.9	-	.5472	80	134	14	PF505 181	18.1	-	.7126	105	160	19
PF505 140	14	-	.5512	80	134	14	PF505 182	18.2	-	.7165	105	160	19
PF505 141	14.1	-	.5551	83	143	15	PF505 185	18.5	-	.7283	105	160	19
PF505 142	14.2	-	.5591	83	143	15	PF505 190	19	-	.748	105	160	19
PF505 14288	14.288	-	.5625	83	143	15	PF505 191	19.1	-	.752	110	163	20
PF505 143	14.3	-	.563	83	143	15	PF505 195	19.5	-	.7677	110	163	20
PF505 144	14.4	-	.5669	83	143	15	PF505 197	19.7	-	.7756	110	163	20
PF505 145	14.5	-	.5709	83	143	15	PF505 200	20	-	.7874	110	163	20

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
○	○	○	◎	◎	◎					

SF503 High Speed Internal Coolant Drill - 3D



► Tolerance

DC		Shank Dia
~ Ø3	0 ~ -0.014	h6
Ø3.1 ~ Ø6	0 ~ -0.018	
Ø6.1 ~ Ø10	0 ~ -0.022	
Ø10.1 ~ Ø18	0 ~ -0.027	
Ø18.1 ~	0 ~ -0.033	



EDP No	DC			LCF	OAL	DCON MS	EDP No	DC			LCF	OAL	DCON MS
	mm	fraction	inch					mm	fraction	inch			
SF503 030	3	-	.1181	18	60	3	SF503 046	4.6	-	.1811	26	62	5
SF503 031	3.1	-	.1220	20	60	4	SF503 047	4.7	-	.1850	26	62	5
SF503 03175	3.175	1/8	.1250	20	60	4	SF503 04763	4.763	3/16	.1875	26	62	5
SF503 032	3.2	-	.1260	20	60	4	SF503 048	4.8	-	.1890	26	62	5
SF503 03264	3.264	-	.1285	20	60	4	SF503 049	4.9	-	.1920	26	62	5
SF503 033	3.3	-	.1299	20	60	4	SF503 050	5	-	.1969	26	62	5
SF503 034	3.4	-	.1339	22	60	4	SF503 051	5.1	-	.2008	28	66	6
SF503 035	3.5	-	.1378	22	60	4	SF503 05159	5.159	13/64	.2031	28	66	6
SF503 03572	3.572	9/64	.1406	22	60	4	SF503 052	5.2	-	.2047	28	66	6
SF503 036	3.6	-	.1417	22	60	4	SF503 053	5.3	-	.2087	28	66	6
SF503 037	3.7	-	.1457	22	60	4	SF503 054	5.4	-	.2126	28	66	6
SF503 038	3.8	-	.1496	24	60	4	SF503 055	5.5	-	.2165	28	66	6
SF503 039	3.9	-	.1535	24	60	4	SF503 05558	5.558	7/32	.2188	30	66	6
SF503 040	4	-	.1575	24	60	4	SF503 056	5.6	-	.2205	30	66	6
SF503 04039	4.039	-	.1590	24	62	5	SF503 057	5.7	-	.2244	30	66	6
SF503 041	4.1	-	.1614	24	62	5	SF503 058	5.8	-	.2283	30	66	6
SF503 042	4.2	-	.1654	26	62	5	SF503 059	5.9	-	.2323	30	66	6
SF503 043	4.3	-	.1693	26	62	5	SF503 05953	5.953	15/64	.2344	30	66	6
SF503 044	4.4	-	.1732	26	62	5	SF503 060	6	-	.2362	30	66	6
SF503 045	4.5	-	.1772	26	62	5	SF503 061	6.1	-	.2402	34	74	7

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○	○	○	◎	◎	◎					

SF503

High Speed Internal Coolant Drill - 3D

Drill

EDP No	DC			LCF	OAL	DCON MS	EDP No	DC			LCF	OAL	DCON MS
	mm	fraction	inch					mm	fraction	inch			
SF503 062	6.2	-	.2441	34	74	7	SF503 089	8.9	-	.3504	43	84	9
SF503 063	6.3	-	.2480	34	74	7	SF503 090	9	-	.3543	43	84	9
SF503 0635	6.350	1/4	.2500	34	74	7	SF503 091	9.1	-	.3583	47	89	10
SF503 064	6.4	-	.2520	34	74	7	SF503 09129	9.129	23/64	.3594	47	89	10
SF503 065	6.5	-	.2559	34	74	7	SF503 092	9.2	-	.3622	47	89	10
SF503 066	6.6	-	.2598	34	74	7	SF503 093	9.3	-	.3661	47	89	10
SF503 067	6.7	-	.2638	37	74	7	SF503 094	9.4	-	.3701	47	89	10
SF503 06747	6.747	17/64	.2656	37	74	7	SF503 095	9.5	-	.3740	47	89	10
SF503 068	6.8	-	.2677	37	74	7	SF503 09525	9.525	3/8	.3750	47	89	10
SF503 069	6.9	-	.2717	37	74	7	SF503 096	9.6	-	.3780	47	89	10
SF503 070	7	-	.2756	37	74	7	SF503 097	9.7	-	.3819	47	89	10
SF503 071	7.1	-	.2795	40	79	8	SF503 098	9.8	-	.3858	47	89	10
SF503 07145	7.145	9/32	.2813	40	79	8	SF503 099	9.9	-	.3898	47	89	10
SF503 072	7.2	-	.2835	40	79	8	SF503 09921	9.921	25/64	.3906	47	89	10
SF503 073	7.3	-	.2874	40	79	8	SF503 100	10	-	.3937	47	89	10
SF503 074	7.4	-	.2913	40	79	8	SF503 101	10.1	-	.3976	51	95	11
SF503 075	7.5	-	.2953	40	79	8	SF503 102	10.2	-	.4016	51	95	11
SF503 07541	7.541	19/64	.2969	40	79	8	SF503 103	10.3	-	.4055	51	95	11
SF503 076	7.6	-	.2992	40	79	8	SF503 1032	10.32	13/32	.4063	51	95	11
SF503 077	7.7	-	.3031	40	79	8	SF503 104	10.4	-	.4094	51	95	11
SF503 078	7.8	-	.3071	40	79	8	SF503 105	10.5	-	.4134	51	95	11
SF503 079	7.9	-	.3110	40	79	8	SF503 106	10.6	-	.4173	51	95	11
SF503 07938	7.938	5/16	.3125	40	79	8	SF503 107	10.7	-	.4213	51	95	11
SF503 080	8	-	.3150	40	79	8	SF503 10716	10.716	27/64	.4219	51	95	11
SF503 081	8.1	-	.3189	43	84	9	SF503 108	10.8	-	.4252	51	95	11
SF503 082	8.2	-	.3228	43	84	9	SF503 109	10.9	-	.4291	51	95	11
SF503 083	8.3	-	.3268	43	84	9	SF503 110	11	-	.4331	51	95	11
SF503 08334	8.334	21/64	.3281	43	84	9	SF503 111	11.1	-	.4370	54	102	12
SF503 084	8.4	-	.3307	43	84	9	SF503 11113	11.113	7/16	.4375	54	102	12
SF503 085	8.5	-	.3346	43	84	9	SF503 112	11.2	-	.4409	54	102	12
SF503 086	8.6	-	.3386	43	84	9	SF503 113	11.3	-	.4449	54	102	12
SF503 087	8.7	-	.3425	43	84	9	SF503 114	11.4	-	.4488	54	102	12
SF503 08733	8.733	11/32	.3438	43	84	9	SF503 115	11.5	-	.4528	54	102	12
SF503 088	8.8	-	.3465	43	84	9	SF503 11509	11.509	29/64	.4531	54	102	12

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	~325	HRC30~50	~FCD500					
○	○	○	◎	◎	◎					

SF503

High Speed Internal Coolant Drill - 3D

Drill

EDP No	DC			LCF	OAL	DCON MS	EDP No	DC			LCF	OAL	DCON MS
	mm	fraction	inch					mm	fraction	inch			
SF503 116	11.6	-	.4567	54	102	12	SF503 146	14.6	-	.5748	62	111	15
SF503 117	11.7	-	.4606	54	102	12	SF503 147	14.7	-	.5787	62	111	15
SF503 118	11.8	-	.4646	54	102	12	SF503 148	14.8	-	.5827	62	111	15
SF503 119	11.9	-	.4685	54	102	12	SF503 149	14.9	-	.5866	62	111	15
SF503 11908	11.908	15/32	.4688	54	102	12	SF503 150	15	-	.5906	62	111	15
SF503 120	12	-	.4724	54	102	12	SF503 15081	15.081	19/32	.5937	64	115	16
SF503 121	12.1	-	.4764	57	102	13	SF503 151	15.1	-	.5945	64	115	16
SF503 122	12.2	-	.4803	57	102	13	SF503 152	15.2	-	.5984	64	115	16
SF503 123	12.3	-	.4843	57	102	13	SF503 154	15.4	-	.6063	64	115	16
SF503 12304	12.304	31/64	.4844	57	102	13	SF503 155	15.5	-	.6102	64	115	16
SF503 124	12.4	-	.4882	57	102	13	SF503 156	15.6	-	.6142	64	115	16
SF503 125	12.5	-	.4921	57	102	13	SF503 157	15.7	-	.6181	64	115	16
SF503 126	12.6	-	.4961	57	102	13	SF503 158	15.8	-	.6220	64	115	16
SF503 127	12.7	1/2	.5000	57	102	13	SF503 15875	15.875	5/8	.6250	64	115	16
SF503 128	12.8	-	.5039	57	102	13	SF503 160	16	-	.6299	64	115	16
SF503 129	12.9	-	.5079	57	102	13	SF503 161	16.1	-	.6339	66	119	17
SF503 130	13	-	.5118	57	102	13	SF503 163	16.3	-	.6417	66	119	17
SF503 13096	13.096	33/64	.5156	60	107	14	SF503 165	16.5	-	.6496	66	119	17
SF503 131	13.1	-	.5157	60	107	14	SF503 16667	16.667	21/32	.6562	66	119	17
SF503 132	13.2	-	.5197	60	107	14	SF503 170	17	-	.6693	66	119	17
SF503 133	13.3	-	.5236	60	107	14	SF503 171	17.1	-	.6732	66	123	18
SF503 134	13.4	-	.5276	60	107	14	SF503 172	17.2	-	.6772	66	123	18
SF503 13494	13.494	17/32	.5313	60	107	14	SF503 17463	17.463	11/16	.6875	66	123	18
SF503 135	13.5	-	.5315	60	107	14	SF503 175	17.5	-	.6890	66	123	18
SF503 136	13.6	-	.5354	60	107	14	SF503 177	17.7	-	.6969	66	123	18
SF503 137	13.7	-	.5394	60	107	14	SF503 178	17.8	-	.7008	66	123	18
SF503 138	13.8	-	.5433	60	107	14	SF503 180	18	-	.7087	66	123	18
SF503 13891	13.891	35/64	.5469	60	107	14	SF503 181	18.1	-	.7126	70	127	19
SF503 139	13.9	-	.5472	60	107	14	SF503 182	18.2	-	.7165	70	127	19
SF503 140	14	-	.5512	60	107	14	SF503 185	18.5	-	.7283	70	127	19
SF503 141	14.1	-	.5551	62	111	15	SF503 190	19	-	.7480	70	127	19
SF503 142	14.2	-	.5591	62	111	15	SF503 191	19.1	-	.7520	70	131	20
SF503 14288	14.288	9/16	.5625	62	111	15	SF503 195	19.5	-	.7677	70	131	20
SF503 143	14.3	-	.5630	62	111	15	SF503 197	19.7	-	.7756	70	131	20
SF503 144	14.4	-	.5669	62	111	15	SF503 200	20	-	.7874	70	131	20
SF503 145	14.5	-	.5709	62	111	15							

Dolphin Drill

Dolphin Oil-Hole Drill

Power Max

Solid Spiral

► Applicable Working Material

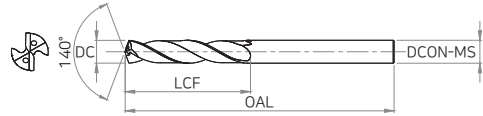
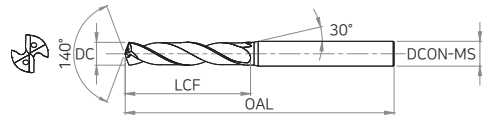
○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○	○	○	◎	◎	◎					

SF505

High Speed Internal Coolant Drill - 5D

Drill



► Tolerance

DC		Shank Dia
~ Ø3	0 ~ -0.014	h6
Ø3.1 ~ Ø6	0 ~ -0.018	
Ø6.1 ~ Ø10	0 ~ -0.022	
Ø10.1 ~ Ø18	0 ~ -0.027	
Ø18.1 ~	0 ~ -0.033	



EDP No	DC			LCF	OAL	DCON MS
	mm	fraction	inch			
SF505 030	3.0	-	.1181	27	74	3
SF505 031	3.1	-	.1220	27	74	4
SF505 03175	3.175	1/8	.1250	27	74	4
SF505 032	3.2	-	.1260	27	74	4
SF505 03264	3.264	-	.1285	27	74	4
SF505 033	3.3	-	.1299	27	74	4
SF505 034	3.4	-	.1339	30	74	4
SF505 035	3.5	-	.1378	30	74	4
SF505 03572	3.572	9/64	.1406	30	74	4
SF505 036	3.6	-	.1417	30	74	4
SF505 037	3.7	-	.1457	30	74	4
SF505 038	3.8	-	.1496	33	74	4
SF505 039	3.9	-	.1535	33	74	4
SF505 040	4	-	.1575	33	74	4
SF505 04039	4.039	-	.1590	33	80	5
SF505 041	4.1	-	.1614	33	80	5
SF505 042	4.2	-	.1654	33	80	5
SF505 043	4.3	-	.1693	36	80	5
SF505 044	4.4	-	.1732	36	80	5
SF505 045	4.5	-	.1772	36	80	5
SF505 046	4.6	-	.1811	36	80	5
SF505 047	4.7	-	.1850	36	80	5
SF505 04763	4.763	3/16	.1875	39	80	5
SF505 048	4.8	-	.1890	39	80	5
SF505 049	4.9	-	.1920	39	80	5
SF505 050	5	-	.1969	39	80	5
SF505 051	5.1	-	.2008	39	87	6
SF505 05159	5.159	13/64	.2031	39	87	6
SF505 052	5.2	-	.2047	39	87	6
SF505 053	5.3	-	.2087	39	87	6
SF505 054	5.4	-	.2126	43	87	6
SF505 055	5.5	-	.2165	43	87	6
SF505 05558	5.558	7/32	.2188	43	87	6
SF505 056	5.6	-	.2205	43	87	6
SF505 057	5.7	-	.2244	43	87	6
SF505 058	5.8	-	.2283	43	87	6
SF505 059	5.9	-	.2323	43	87	6
SF505 05953	5.953	15/64	.2344	43	87	6
SF505 060	6	-	.2362	43	87	6
SF505 061	6.1	-	.2402	47	95	7

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	~325	HRC30~50	~FCD500					
○	○	○	◎	◎	◎					

SF505

High Speed Internal Coolant Drill - 5D

Drill

EDP No	DC			LCF	OAL	DCON MS	EDP No	DC			LCF	OAL	DCON MS
	mm	fraction	inch					mm	fraction	inch			
SF505 062	6.2	-	.2441	47	95	7	SF505 089	8.9	-	.3504	56	105	9
SF505 063	6.3	-	.2480	47	95	7	SF505 090	9	-	.3543	56	105	9
SF505 0635	6.350	1/4	.2500	47	95	7	SF505 091	9.1	-	.3583	62	108	10
SF505 064	6.4	-	.2520	47	95	7	SF505 09129	9.129	23/64	.3594	62	108	10
SF505 065	6.5	-	.2559	47	95	7	SF505 092	9.2	-	.3622	62	108	10
SF505 066	6.6	-	.2598	47	95	7	SF505 093	9.3	-	.3661	62	108	10
SF505 067	6.7	-	.2638	47	95	7	SF505 094	9.4	-	.3701	62	108	10
SF505 06747	6.747	17/64	.2656	47	95	7	SF505 095	9.5	-	.3740	62	108	10
SF505 068	6.8	-	.2677	47	95	7	SF505 09525	9.525	3/8	.3750	62	108	10
SF505 069	6.9	-	.2717	47	95	7	SF505 096	9.6	-	.3780	62	108	10
SF505 070	7	-	.2756	47	95	7	SF505 097	9.7	-	.3819	62	108	10
SF505 071	7.1	-	.2795	52	103	8	SF505 098	9.8	-	.3858	62	108	10
SF505 07145	7.145	9/32	.2813	52	103	8	SF505 099	9.9	-	.3898	62	108	10
SF505 072	7.2	-	.2835	52	103	8	SF505 09921	9.921	25/64	.3906	62	108	10
SF505 073	7.3	-	.2874	52	103	8	SF505 100	10	-	.3937	62	108	10
SF505 074	7.4	-	.2913	52	103	8	SF505 101	10.1	-	.3976	68	125	11
SF505 075	7.5	-	.2953	52	103	8	SF505 102	10.2	-	.4016	68	125	11
SF505 07541	7.541	19/64	.2969	52	103	8	SF505 103	10.3	-	.4055	68	125	11
SF505 076	7.6	-	.2992	52	103	8	SF505 1032	10.32	13/32	.4063	68	125	11
SF505 077	7.7	-	.3031	52	103	8	SF505 104	10.4	-	.4094	68	125	11
SF505 078	7.8	-	.3071	52	103	8	SF505 105	10.5	-	.4134	68	125	11
SF505 079	7.9	-	.3110	52	103	8	SF505 106	10.6	-	.4173	68	125	11
SF505 07938	7.938	5/16	.3125	52	103	8	SF505 107	10.7	-	.4213	68	125	11
SF505 080	8	-	.3150	52	103	8	SF505 10716	10.716	27/64	.4219	68	125	11
SF505 081	8.1	-	.3189	56	105	9	SF505 108	10.8	-	.4252	68	125	11
SF505 082	8.2	-	.3228	56	105	9	SF505 109	10.9	-	.4291	68	125	11
SF505 083	8.3	-	.3268	56	105	9	SF505 110	11	-	.4331	68	125	11
SF505 08334	8.334	21/64	.3281	56	105	9	SF505 111	11.1	-	.4370	71	133	12
SF505 084	8.4	-	.3307	56	105	9	SF505 11113	11.113	7/16	.4375	71	133	12
SF505 085	8.5	-	.3346	56	105	9	SF505 112	11.2	-	.4409	71	133	12
SF505 086	8.6	-	.3386	56	105	9	SF505 113	11.3	-	.4449	71	133	12
SF505 087	8.7	-	.3425	56	105	9	SF505 114	11.4	-	.4488	71	133	12
SF505 08733	8.733	11/32	.3438	56	105	9	SF505 115	11.5	-	.4528	71	133	12
SF505 088	8.8	-	.3465	56	105	9	SF505 116	11.6	-	.4567	71	133	12

Dolphin Drill

Dolphin Oil-Hole Drill

Power Max

Solid Spiral

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○	○	○	◎	◎	◎					

SF505

High Speed Internal Coolant Drill - 5D

Drill

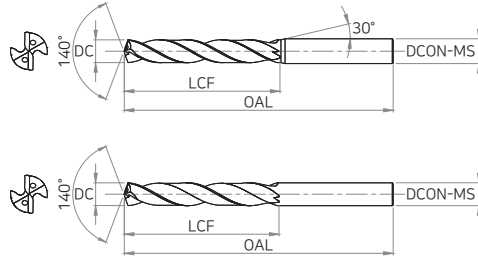
EDP No	DC			LCF	OAL	DCON MS	EDP No	DC			LCF	OAL	DCON MS
	mm	fraction	inch					mm	fraction	inch			
SF505 117	11.7	-	.4606	71	133	12	SF505 146	14.6	-	.5748	83	148	15
SF505 118	11.8	-	.4646	71	133	12	SF505 147	14.7	-	.5787	83	148	15
SF505 119	11.9	-	.4685	71	133	12	SF505 148	14.8	-	.5827	83	148	15
SF505 11908	11.908	15/32	.4688	71	133	12	SF505 149	14.9	-	.5866	83	148	15
SF505 120	12	-	.4724	71	133	12	SF505 150	15	-	.5906	83	148	15
SF505 121	12.1	-	.4764	75	137	13	SF505 15081	15.081	19/32	.5937	90	152	16
SF505 122	12.2	-	.4803	75	137	13	SF505 151	15.1	-	.5945	90	152	16
SF505 123	12.3	-	.4843	75	137	13	SF505 152	15.2	-	.5984	90	152	16
SF505 12304	12.304	31/64	.4844	75	137	13	SF505 154	15.4	-	.6063	90	152	16
SF505 124	12.4	-	.4882	75	137	13	SF505 155	15.5	-	.6102	90	152	16
SF505 125	12.5	-	.4921	75	137	13	SF505 156	15.6	-	.6142	90	152	16
SF505 126	12.6	-	.4961	75	137	13	SF505 157	15.7	-	.6181	90	152	16
SF505 127	12.7	-	.5000	75	137	13	SF505 158	15.8	-	.6220	90	152	16
SF505 128	12.8	-	.5039	75	137	13	SF505 15875	15.875	5/8	.6250	90	152	16
SF505 129	12.9	-	.5079	75	137	13	SF505 160	16	-	.6299	90	152	16
SF505 130	13	-	.5118	75	137	13	SF505 161	16.1	-	.6339	95	155	17
SF505 13096	13.096	33/64	.5156	80	142	14	SF505 163	16.3	-	.6417	95	155	17
SF505 131	13.1	-	.5157	80	142	14	SF505 165	16.5	-	.6496	95	155	17
SF505 132	13.2	-	.5197	80	142	14	SF505 16667	16.667	21/32	.6562	95	155	17
SF505 133	13.3	-	.5236	80	142	14	SF505 170	17	-	.6693	95	155	17
SF505 134	13.4	0.5276	.80	142	14	14	SF505 171	17.1	-	.6732	100	157	18
SF505 13494	13.494	-	.5313	80	142	14	SF505 172	17.2	-	.6772	100	157	18
SF505 135	13.5	17/32	.5315	80	142	14	SF505 17463	17.463	11/16	.6875	100	157	18
SF505 136	13.6	-	.5354	80	142	14	SF505 175	17.5	-	.6890	100	157	18
SF505 137	13.7	-	.5394	80	142	14	SF505 177	17.7	-	.6969	100	157	18
SF505 138	13.8	-	.5433	80	142	14	SF505 178	17.8	-	.7008	100	157	18
SF505 13891	13.891	35/64	.5469	80	142	14	SF505 180	18	-	.7087	100	157	18
SF505 139	13.9	-	.5472	80	142	14	SF505 181	18.1	-	.7126	105	160	19
SF505 140	14	-	.5512	80	142	14	SF505 182	18.2	-	.7165	105	160	19
SF505 141	14.1	-	.5551	83	148	15	SF505 185	18.5	-	.7283	105	160	19
SF505 142	14.2	-	.5591	83	148	15	SF505 190	19	-	.7480	105	160	19
SF505 14288	14.288	9/16	.5625	83	148	15	SF505 191	19.1	-	.7520	110	163	20
SF505 143	14.3	-	.5630	83	148	15	SF505 195	19.5	-	.7677	110	163	20
SF505 144	14.4	-	.5669	83	148	15	SF505 197	19.7	-	.7756	110	163	20
SF505 145	14.5	-	.5709	83	148	15	SF505 200	20	-	.7874	110	163	20

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

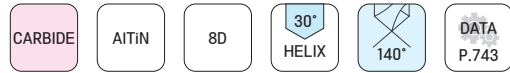
H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○	○	○	◎	◎	◎					

SF508 High Speed Internal Coolant Drill - 8D



► Tolerance

DC		Shank Dia
~ Ø3	0 ~ -0.014	h6
Ø3.1 ~ Ø6	0 ~ -0.018	
Ø6.1 ~ Ø10	0 ~ -0.022	
Ø10.1 ~ Ø18	0 ~ -0.027	



EDP No	DC			LCF	OAL	DCON MS	EDP No	DC			LCF	OAL	DCON MS
	mm	fraction	inch					mm	fraction	inch			
SF508 030	3	-	.1181	43	80	3	SF508 045	4.5	-	.1772	49	87	5
SF508 031	3.1	-	.1120	43	80	4	SF508 046	4.6	-	.1811	49	87	5
SF508 03175	3.175	1/8	.1250	43	80	4	SF508 047	4.7	-	.1850	49	87	5
SF508 032	3.2	-	.1260	43	80	4	SF508 04763	4.763	3/16	.1875	56	94	5
SF508 033	3.3	-	.1299	43	80	4	SF508 048	4.8	-	.1890	56	94	5
SF508 034	3.4	-	.1339	43	80	4	SF508 049	4.9	-	.1929	56	94	5
SF508 035	3.5	-	.1378	43	80	4	SF508 050	5	-	.1969	56	94	5
SF508 03572	3.572	-	.1406	43	80	4	SF508 051	5.1	-	.2008	56	94	6
SF508 036	3.6	-	.1417	43	80	4	SF508 05159	5.159	13/64	.2031	56	94	6
SF508 037	3.7	-	.1457	43	80	4	SF508 052	5.2	-	.2047	56	94	6
SF508 038	3.8	-	.1496	49	87	4	SF508 053	5.3	-	.2087	56	94	6
SF508 039	3.9	-	.1535	49	87	4	SF508 054	5.4	-	.2126	56	94	6
SF508 0397	3.97	9/64	.1563	49	87	4	SF508 0541	5.41	-	.2130	56	94	6
SF508 040	4	-	.1575	49	87	4	SF508 055	5.5	-	.2165	56	94	6
SF508 04039	4.039	-	.1590	49	87	5	SF508 05558	5.558	7/32	.2188	56	94	6
SF508 041	4.1	-	.1614	49	87	5	SF508 056	5.6	-	.2205	56	94	6
SF508 042	4.2	-	.1654	49	87	5	SF508 057	5.7	-	.2244	56	94	6
SF508 043	4.3	-	.1693	49	87	5	SF508 058	5.8	-	.2283	56	94	6
SF508 04366	4.366	-	.1719	49	87	5	SF508 059	5.9	-	.2323	56	94	6
SF508 044	4.4	-	.1732	49	87	5	SF508 05953	5.953	15/64	.2344	56	94	6

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○	○	○	◎	◎	◎					

SF508

High Speed Internal Coolant Drill - 8D

Drill

EDP No	DC			LCF	OAL	DCON MS	EDP No	DC			LCF	OAL	DCON MS
	mm	fraction	inch					mm	fraction	inch			
SF508 060	6	-	.2362	56	94	6	SF508 086	8.6	-	.3386	87	131	9
SF508 061	6.1	-	.2402	67	105	7	SF508 087	8.7	-	.3425	87	131	9
SF508 062	6.2	-	.2441	67	105	7	SF508 08733	8.733	11/32	.3438	87	131	9
SF508 063	6.3	-	.2480	67	105	7	SF508 088	8.8	-	.3465	87	131	9
SF508 0635	6.35	1/4	.2500	67	105	7	SF508 089	8.9	-	.3504	87	131	9
SF508 064	6.4	-	.2520	67	105	7	SF508 090	9	-	.3543	87	131	9
SF508 065	6.5	-	.2559	67	105	7	SF508 091	9.1	-	.3583	95	139	10
SF508 06528	6.528	-	.2570	67	105	7	SF508 09129	9.129	23/64	.3594	95	139	10
SF508 066	6.6	-	.2598	67	105	7	SF508 092	9.2	-	.3622	95	139	10
SF508 067	6.7	-	.2638	67	105	7	SF508 093	9.3	-	.3661	95	139	10
SF508 06747	6.747	17/64	.2656	67	105	7	SF508 094	9.4	-	.3701	95	139	10
SF508 068	6.8	-	.2677	67	105	7	SF508 095	9.5	-	.3740	95	139	10
SF508 069	6.9	-	.2717	67	105	7	SF508 09525	9.525	3/8	.3750	95	139	10
SF508 070	7	-	.2756	76	116	7	SF508 096	9.6	-	.3780	95	139	10
SF508 071	7.1	-	.2795	76	116	8	SF508 097	9.7	-	.3819	95	139	10
SF508 07145	7.145	9/32	.2813	76	116	8	SF508 098	9.8	-	.3858	95	139	10
SF508 072	7.2	-	.2835	76	116	8	SF508 099	9.9	-	.3898	95	139	10
SF508 073	7.3	-	.2874	76	116	8	SF508 09921	9.921	25/64	.3906	95	139	10
SF508 074	7.4	-	.2913	76	116	8	SF508 100	10	-	.3937	95	139	10
SF508 075	7.5	-	.2953	76	116	8	SF508 101	10.1	-	.3976	106	155	11
SF508 07541	7.541	19/64	.2969	76	116	8	SF508 102	10.2	-	.4016	106	155	11
SF508 076	7.6	-	.2992	76	116	8	SF508 103	10.3	-	.4055	106	155	11
SF508 077	7.7	-	.3031	76	116	8	SF508 1032	10.32	13/32	.4063	106	155	11
SF508 078	7.8	-	.3071	76	116	8	SF508 104	10.4	-	.4094	106	155	11
SF508 079	7.9	-	.3110	76	116	8	SF508 105	10.5	-	.4134	106	155	11
SF508 07938	7.938	5/16	.3125	76	116	8	SF508 106	10.6	-	.4173	106	155	11
SF508 080	8	-	.3150	76	116	8	SF508 107	10.7	-	.4213	106	155	11
SF508 081	8.1	-	.3189	87	131	9	SF508 10716	10.716	27/64	.4219	106	155	11
SF508 082	8.2	-	.3228	87	131	9	SF508 108	10.8	-	.4252	106	155	11
SF508 083	8.3	-	.3268	87	131	9	SF508 109	10.9	-	.4291	106	155	11
SF508 08334	8.334	21/64	.3281	87	131	9	SF508 110	11	-	.4331	106	155	11
SF508 084	8.4	-	.3307	87	131	9	SF508 111	11.1	-	.4370	114	163	12
SF508 08433	8.433	-	.3320	87	131	9	SF508 11113	11.113	7/16	.4375	114	163	12
SF508 085	8.5	-	.3346	87	131	9	SF508 112	11.2	-	.4409	114	163	12

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	~325	HRC30~50	~FCD500					
○	○	○	◎	◎	◎					

SF508

High Speed Internal Coolant Drill - 8D

Drill

EDP No	DC			LCF	OAL	DCON MS	EDP No	DC			LCF	OAL	DCON MS
	mm	fraction	inch					mm	fraction	inch			
SF508 113	11.3	-	.4449	114	163	12	SF508 137	13.7	-	.5394	133	182	14
SF508 114	11.4	-	.4488	114	163	12	SF508 140	14	-	.5512	133	182	14
SF508 115	11.5	-	.4528	114	163	12	SF508 14288	14.288	9/16	.5625	152	204	15
SF508 11509	11.509	29/64	.4531	114	163	12	SF508 143	14.3	-	.5630	152	204	15
SF508 116	11.6	-	.4567	114	163	12	SF508 144	14.4	-	.5669	152	204	15
SF508 117	11.7	-	.4606	114	163	12	SF508 145	14.5	-	.5709	152	204	15
SF508 118	11.8	-	.4646	114	163	12	SF508 14683	14.683	37/64	.5781	152	204	15
SF508 119	11.9	-	.4685	114	163	12	SF508 147	14.7	-	.5787	152	204	15
SF508 11908	11.908	15/32	.4688	114	163	12	SF508 150	15	-	.5906	152	204	15
SF508 120	12	-	.4724	114	163	12	SF508 15081	15.081	19/32	.5937	152	204	16
SF508 121	12.1	-	.4764	133	182	13	SF508 155	15.5	-	.6102	152	204	16
SF508 122	12.2	-	.4803	133	182	13	SF508 157	15.7	-	.6181	152	204	16
SF508 123	12.3	-	.4843	133	182	13	SF508 15875	15.875	5/8	.6250	152	204	16
SF508 12304	12.304	31/64	.4844	133	182	13	SF508 160	16	-	.6299	152	204	16
SF508 125	12.5	-	.4921	133	182	13	SF508 165	16.5	-	.6496	171	223	17
SF508 126	12.6	-	.4961	133	182	13	SF508 16667	16.667	21/32	.6562	171	223	17
SF508 127	12.7	1/2	.5000	133	182	13	SF508 170	17	-	.6693	171	223	17
SF508 128	12.8	-	.5039	133	182	13	SF508 17463	17.463	11/16	.6875	171	223	18
SF508 129	12.9	-	.5079	133	182	13	SF508 175	17.5	-	.6890	171	223	18
SF508 130	13	-	.5118	133	182	13	SF508 180	18	-	.7087	171	223	18
SF508 131	13.1	-	.5157	133	182	14	SF508 185	18.5	-	.7283	191	244	19
SF508 132	13.2	-	.5197	133	182	14	SF508 190	19	-	.7480	191	244	19
SF508 133	13.3	-	.5236	133	182	14	SF508 1905	19.05	3/4	.7500	191	244	20
SF508 134	13.4	-	.5276	133	182	14	SF508 19446	19.446	49/64	.7656	191	244	20
SF508 13494	13.494	17/32	.5313	133	182	14	SF508 195	19.5	-	.7677	191	244	20
SF508 135	13.5	-	.5315	133	182	14	SF508 200	20	-	.7874	191	244	20
SF508 136	13.6	-	.5354	133	182	14							

Dolphin Drill

Dolphin Oil-Hole Drill

Power Max

Solid Spiral

► Applicable Working Material

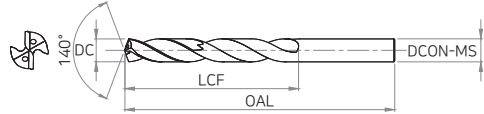
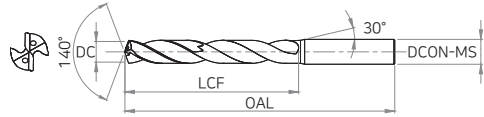
○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○	○	○	◎	◎	◎					

SF510

High Speed Internal Coolant Drill - 10D

Drill



► Tolerance

DC		Shank Dia
~ Ø3	0 ~ -0.014	h5
Ø3.1 ~ Ø6	0 ~ -0.018	
Ø6.1 ~ Ø10	0 ~ -0.022	
Ø10.1 ~ Ø13	0 ~ -0.027	



EDP No	DC	LCF	OAL	DCONMS	EDP No	DC	LCF	OAL	DCONMS
SF510 030	3	39	87	3	SF510 050	5	66	117	5
SF510 031	3.1	46	94	4	SF510 051	5.1	72	123	6
SF510 032	3.2	46	94	4	SF510 052	5.2	72	123	6
SF510 033	3.3	46	94	4	SF510 053	5.3	72	123	6
SF510 034	3.4	46	94	4	SF510 054	5.4	72	123	6
SF510 035	3.5	46	94	4	SF510 055	5.5	72	123	6
SF510 036	3.6	52	101	4	SF510 056	5.6	79	130	6
SF510 037	3.7	52	101	4	SF510 057	5.7	79	130	6
SF510 038	3.8	52	101	4	SF510 058	5.8	79	130	6
SF510 039	3.9	52	101	4	SF510 059	5.9	79	130	6
SF510 040	4	52	101	4	SF510 060	6	79	130	6
SF510 041	4.1	59	108	5	SF510 061	6.1	85	138	7
SF510 042	4.2	59	108	5	SF510 062	6.2	85	138	7
SF510 043	4.3	59	108	5	SF510 063	6.3	85	138	7
SF510 044	4.4	59	108	5	SF510 064	6.4	85	138	7
SF510 045	4.5	59	108	5	SF510 065	6.5	85	138	7
SF510 046	4.6	66	117	5	SF510 066	6.6	92	145	7
SF510 047	4.7	66	117	5	SF510 067	6.7	92	145	7
SF510 048	4.8	66	117	5	SF510 068	6.8	92	145	7
SF510 049	4.9	66	117	5	SF510 069	6.9	92	145	7

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
○	○	○	◎	◎	◎					

SF510

High Speed Internal Coolant Drill - 10D

Drill

EDP No	DC	LCF	OAL	DCONMS	EDP No	DC	LCF	OAL	DCONMS
SF510 070	7	92	145	7	SF510 101	10.1	138	193	11
SF510 071	7.1	98	153	8	SF510 102	10.2	138	193	11
SF510 072	7.2	98	153	8	SF510 103	10.3	138	193	11
SF510 073	7.3	98	153	8	SF510 104	10.4	138	193	11
SF510 074	7.4	98	153	8	SF510 105	10.5	138	193	11
SF510 075	7.5	98	153	8	SF510 106	10.6	144	205	11
SF510 076	7.6	105	160	8	SF510 107	10.7	144	205	11
SF510 077	7.7	105	160	8	SF510 108	10.8	144	205	11
SF510 078	7.8	105	160	8	SF510 109	10.9	144	205	11
SF510 079	7.9	105	160	8	SF510 110	11	144	205	11
SF510 080	8	105	160	8	SF510 111	11.1	151	212	12
SF510 081	8.1	111	166	9	SF510 112	11.2	151	212	12
SF510 082	8.2	111	166	9	SF510 113	11.3	151	212	12
SF510 083	8.3	111	166	9	SF510 114	11.4	151	212	12
SF510 084	8.4	111	166	9	SF510 115	11.5	151	212	12
SF510 085	8.5	111	166	9	SF510 116	11.6	157	218	12
SF510 086	8.6	118	173	9	SF510 117	11.7	157	218	12
SF510 087	8.7	118	173	9	SF510 118	11.8	157	218	12
SF510 088	8.8	118	173	9	SF510 119	11.9	157	218	12
SF510 089	8.9	118	173	9	SF510 120	12	157	218	12
SF510 090	9	118	173	9	SF510 121	12.1	164	225	13
SF510 091	9.1	124	179	10	SF510 122	12.2	164	225	13
SF510 092	9.2	124	179	10	SF510 123	12.3	164	225	13
SF510 093	9.3	124	179	10	SF510 124	12.4	164	225	13
SF510 094	9.4	124	179	10	SF510 125	12.5	164	225	13
SF510 095	9.5	124	179	10	SF510 126	12.6	170	236	13
SF510 096	9.6	131	186	10	SF510 127	12.7	170	236	13
SF510 097	9.7	131	186	10	SF510 128	12.8	170	236	13
SF510 098	9.8	131	186	10	SF510 129	12.9	170	236	13
SF510 099	9.9	131	186	10	SF510 130	13	170	236	13
SF510 100	10	131	186	10					

Dolphin Drill

Dolphin Oil-Hole Drill

Power Max

Solid Spiral

► Applicable Working Material

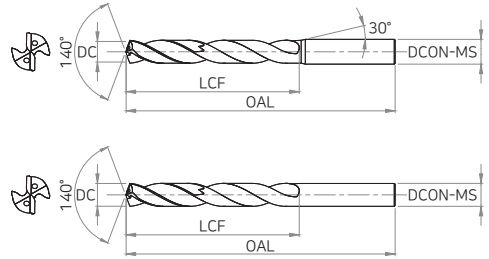
○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○	○	○	◎	◎	◎					

SF520

High Speed Internal Coolant Drill - 20D

Drill



► Tolerance

DC		Shank Dia
~ Ø6	0 ~ -0.018	h5
Ø6.1 ~ Ø10	0 ~ -0.022	



EDP No	DC	LCF	OAL	DCONMS	EDP No	DC	LCF	OAL	DCONMS
SF520 041	4.1	104	155	5	SF520 061	6.1	150	203	7
SF520 042	4.2	104	155	5	SF520 062	6.2	150	203	7
SF520 043	4.3	104	155	5	SF520 063	6.3	150	203	7
SF520 044	4.4	104	155	5	SF520 064	6.4	150	203	7
SF520 045	4.5	104	155	5	SF520 065	6.5	150	203	7
SF520 046	4.6	116	167	5	SF520 066	6.6	162	215	7
SF520 047	4.7	116	167	5	SF520 067	6.7	162	215	7
SF520 048	4.8	116	167	5	SF520 068	6.8	162	215	7
SF520 049	4.9	116	167	5	SF520 069	6.9	162	215	7
SF520 050	5	116	167	5	SF520 070	7	162	215	7
SF520 051	5.1	127	178	6	SF520 071	7.1	173	228	8
SF520 052	5.2	127	178	6	SF520 072	7.2	173	228	8
SF520 053	5.3	127	178	6	SF520 073	7.3	173	228	8
SF520 054	5.4	127	178	6	SF520 074	7.4	173	228	8
SF520 055	5.5	127	178	6	SF520 075	7.5	173	228	8
SF520 056	5.6	139	190	6	SF520 076	7.6	185	240	8
SF520 057	5.7	139	190	6	SF520 077	7.7	185	240	8
SF520 058	5.8	139	190	6	SF520 078	7.8	185	240	8
SF520 059	5.9	139	190	6	SF520 079	7.9	185	240	8
SF520 060	6	139	190	6	SF520 080	8	185	240	8

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
○	○	○	◎	◎	◎					

SF520

High Speed Internal Coolant Drill - 20D

Drill

EDP No	DC	LCF	OAL	DCONMS	EDP No	DC	LCF	OAL	DCONMS
SF520 081	8.1	196	251	9	SF520 091	9.1	219	274	10
SF520 082	8.2	196	251	9	SF520 092	9.2	219	274	10
SF520 083	8.3	196	251	9	SF520 093	9.3	219	274	10
SF520 084	8.4	196	251	9	SF520 094	9.4	219	274	10
SF520 085	8.5	196	251	9	SF520 095	9.5	219	274	10
SF520 086	8.6	208	263	9	SF520 096	9.6	231	286	10
SF520 087	8.7	208	263	9	SF520 097	9.7	231	286	10
SF520 088	8.8	208	263	9	SF520 098	9.8	231	286	10
SF520 089	8.9	208	263	9	SF520 099	9.9	231	286	10
SF520 090	9	208	263	9	SF520 100	10	231	286	10

Dolphin Drill

Dolphin Oil-Hole Drill

Power Max

Solid Spiral

► Applicable Working Material

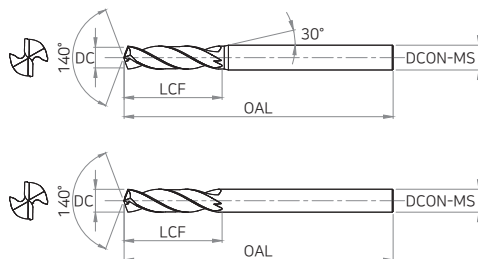
○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○	○	○	◎	◎	◎					

HP503

Double Margin Drill - DIN6537K

Drill



► Tolerance

DC		Shank Dia
Ø3	+0.002 ~ +0.012	h6
Ø3.1 ~ Ø6	+0.004 ~ +0.016	
Ø6.1 ~ Ø10	+0.006 ~ +0.021	
Ø10.1 ~ Ø16	+0.007 ~ +0.025	



EDP No	DC		LCF	OAL	DCON MS	EDP No	DC		LCF	OAL	DCON MS
	mm	inch					mm	inch			
HP503 030	3	.1181	20	62	6	HP503 052	5.2	.2047	28	66	6
HP503 031	3.1	.1220	20	62	6	HP503 053	5.3	.2087	28	66	6
HP503 032	3.2	.1260	20	62	6	HP503 054	5.4	.2126	28	66	6
HP503 033	3.3	.1299	20	62	6	HP503 055	5.5	.2165	28	66	6
HP503 034	3.4	.1339	20	62	6	HP503 056	5.6	.2205	28	66	6
HP503 035	3.5	.1378	20	62	6	HP503 057	5.7	.2244	28	66	6
HP503 036	3.6	.1417	20	62	6	HP503 058	5.8	.2283	28	66	6
HP503 037	3.7	.1457	20	62	6	HP503 059	5.9	.2322	28	66	6
HP503 038	3.8	.1496	24	66	6	HP503 060	6	.2362	28	66	6
HP503 039	3.9	.1535	24	66	6	HP503 061	6.1	.2402	34	79	8
HP503 040	4	.1575	24	66	6	HP503 062	6.2	.2441	34	79	8
HP503 041	4.1	.1614	24	66	6	HP503 063	6.3	.2480	34	79	8
HP503 042	4.2	.1654	24	66	6	HP503 064	6.4	.2520	34	79	8
HP503 043	4.3	.1693	24	66	6	HP503 065	6.5	.2559	34	79	8
HP503 044	4.4	.1732	24	66	6	HP503 066	6.6	.2598	34	79	8
HP503 045	4.5	.1772	24	66	6	HP503 067	6.7	.2638	34	79	8
HP503 046	4.6	.1811	24	66	6	HP503 068	6.8	.2677	34	79	8
HP503 047	4.7	.1850	24	66	6	HP503 069	6.9	.2717	34	79	8
HP503 048	4.8	.1890	28	66	6	HP503 070	7	.2756	34	79	8
HP503 049	4.9	.1929	28	66	6	HP503 071	7.1	.2795	41	79	8
HP503 050	5	.1969	28	66	6	HP503 072	7.2	.2835	41	79	8
HP503 051	5.1	.2008	28	66	6	HP503 073	7.3	.2874	41	79	8

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
○	○	○	◎	◎	◎					

HP503

Double Margin Drill - DIN6537K

Drill

EDP No	DC		LCF	OAL	DCON MS	EDP No	DC		LCF	OAL	DCON MS
	mm	inch					mm	inch			
HP503 074	7.4	.2913	41	79	8	HP503 110	11	.4331	55	102	12
HP503 075	7.5	.2953	41	79	8	HP503 111	11.1	.4370	55	102	12
HP503 076	7.6	.2992	41	79	8	HP503 112	11.2	.4409	55	102	12
HP503 077	7.7	.3031	41	79	8	HP503 113	11.3	.4449	55	102	12
HP503 078	7.8	.3071	41	79	8	HP503 114	11.4	.4488	55	102	12
HP503 079	7.9	.3110	41	79	8	HP503 115	11.5	.4528	55	102	12
HP503 080	8	.3150	41	79	8	HP503 116	11.6	.4567	55	102	12
HP503 081	8.1	.3189	47	89	10	HP503 117	11.7	.4606	55	102	12
HP503 082	8.2	.3228	47	89	10	HP503 118	11.8	.4646	55	102	12
HP503 083	8.3	.3268	47	89	10	HP503 119	11.9	.4685	55	102	12
HP503 084	8.4	.3307	47	89	10	HP503 120	12	.4724	55	102	12
HP503 085	8.5	.3346	47	89	10	HP503 121	12.1	.4764	60	107	14
HP503 086	8.6	.3386	47	89	10	HP503 122	12.2	.4803	60	107	14
HP503 087	8.7	.3425	47	89	10	HP503 123	12.3	.4843	60	107	14
HP503 088	8.8	.3465	47	89	10	HP503 124	12.4	.4882	60	107	14
HP503 089	8.9	.3504	47	89	10	HP503 125	12.5	.4921	60	107	14
HP503 090	9	.3543	47	89	10	HP503 126	12.6	.4961	60	107	14
HP503 091	9.1	.3583	47	89	10	HP503 127	12.7	.5000	60	107	14
HP503 092	9.2	.3622	47	89	10	HP503 128	12.8	.5039	60	107	14
HP503 093	9.3	.3661	47	89	10	HP503 129	12.9	.5079	60	107	14
HP503 094	9.4	.3701	47	89	10	HP503 130	13	.5118	60	107	14
HP503 095	9.5	.3740	47	89	10	HP503 131	13.1	.5157	60	107	14
HP503 096	9.6	.3780	47	89	10	HP503 132	13.2	.5157	60	107	14
HP503 097	9.7	.3819	47	89	10	HP503 133	13.3	.5236	60	107	14
HP503 098	9.8	.3858	47	89	10	HP503 135	13.5	.5315	60	107	14
HP503 099	9.9	.3898	47	89	10	HP503 137	13.7	.5394	60	107	14
HP503 100	10	.3937	47	89	10	HP503 140	14	.5512	60	107	14
HP503 101	10.1	.3976	55	102	12	HP503 142	14.2	.5591	65	115	16
HP503 102	10.2	.4016	55	102	12	HP503 143	14.3	.5630	65	115	16
HP503 103	10.3	.4055	55	102	12	HP503 145	14.5	.5709	65	115	16
HP503 104	10.4	.4094	55	102	12	HP503 146	14.6	.5787	65	115	16
HP503 105	10.5	.4134	55	102	12	HP503 148	14.8	.5827	65	115	16
HP503 106	10.6	.4173	55	102	12	HP503 150	15	.5906	65	115	16
HP503 107	10.7	.4213	55	102	12	HP503 155	15.5	.6102	65	115	16
HP503 108	10.8	.4252	55	102	12	HP503 157	15.7	.6181	65	115	16
HP503 109	10.9	.4291	55	102	12	HP503 160	16	.6299	65	115	16

Dolphin Drill

Dolphin Oil-Hole Drill

Power Max

Solid Spiral

► Applicable Working Material

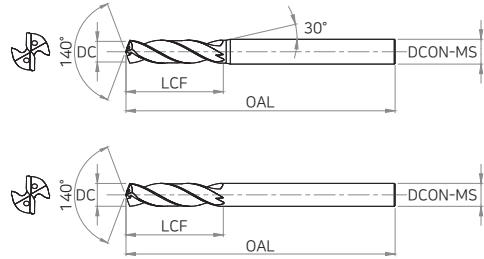
○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○	○	○	◎	◎	◎					

HPI503

Double Margin Internal Coolant Drill - DIN6537K

Drill



► Tolerance

DC		Shank Dia
Ø3	+0.002 ~ +0.012	h6
Ø3.1 ~ Ø6	+0.004 ~ +0.016	
Ø6.1 ~ Ø10	+0.006 ~ +0.021	
Ø10.1 ~ Ø18	+0.007 ~ +0.025	
Ø18.1 ~ Ø20	+0.008 ~ +0.029	

DIN
6537K

CARBIDE

AlTiN

3D

30°
HELIX

140°

DATA
P.743

EDP No	DC			LCF	OAL	DCON MS
	mm	fraction	inch			
HPI503 030	3	-	.1181	20	62	6
HPI503 031	3.1	-	.112	20	62	6
HPI503 03175	3.175	1/8	.125	20	62	6
HPI503 032	3.2	-	.126	20	62	6
HPI503 03264	3.264	-	.1285	20	62	6
HPI503 033	3.3	-	.1299	20	62	6
HPI503 034	3.4	-	.1339	20	62	6
HPI503 035	3.5	-	.1378	20	62	6
HPI503 03572	3.572	9/64	.1406	20	62	6
HPI503 036	3.6	-	.1417	20	62	6
HPI503 037	3.7	-	.1457	20	62	6
HPI503 038	3.8	-	.1496	24	66	6
HPI503 039	3.9	-	.1535	24	66	6
HPI503 0397	3.97	5/32	.1563	24	66	6
HPI503 040	4	-	.1575	24	66	6
HPI503 04039	4.039	-	.159	24	66	6
HPI503 041	4.1	-	.1614	24	66	6
HPI503 042	4.2	-	.1654	24	66	6
HPI503 043	4.3	-	.1693	24	66	6
HPI503 04366	4.366	-	.1719	24	66	6
HPI503 044	4.4	-	.1732	24	66	6
HPI503 045	4.5	-	.1772	24	66	6
HPI503 046	4.6	-	.1811	24	66	6
HPI503 047	4.7	-	.185	24	66	6
HPI503 04763	4.763	3/16	.1875	28	66	6
HPI503 048	4.8	-	.189	28	66	6
HPI503 049	4.9	-	.1929	28	66	6
HPI503 050	5	-	.1969	28	66	6
HPI503 051	5.1	-	.2008	28	66	6
HPI503 05159	5.159	13/64	.2031	28	66	6
HPI503 052	5.2	-	.2047	28	66	6
HPI503 053	5.3	-	.2087	28	66	6
HPI503 054	5.4	-	.2126	28	66	6
HPI503 055	5.5	-	.2165	28	66	6
HPI503 05558	5.558	7/32	.2188	28	66	6
HPI503 056	5.6	-	.2205	28	66	6
HPI503 057	5.7	-	.2244	28	66	6
HPI503 058	5.8	-	.2283	28	66	6
HPI503 059	5.9	-	.2323	28	66	6
HPI503 05953	5.953	15/64	.2344	28	66	6

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
○	○	○	◎	◎	◎					

HPI503

Double Margin Internal Coolnat Drill - DIN6537K

Drill

EDP No	DC			LCF	OAL	DCON MS	EDP No	DC			LCF	OAL	DCON MS
	mm	fraction	inch					mm	fraction	inch			
HPI503 060	6	-	.2362	28	66	6	HPI503 087	8.7	-	.3425	47	89	10
HPI503 061	6.1	-	.2402	34	79	8	HPI503 08733	8.733	11/32	.3438	47	89	10
HPI503 062	6.2	-	.2441	34	79	8	HPI503 088	8.8	-	.3465	47	89	10
HPI503 063	6.3	-	.248	34	79	8	HPI503 089	8.9	-	.6504	47	89	10
HPI503 0635	6.35	1/4	.25	34	79	8	HPI503 090	9	-	.3543	47	89	10
HPI503 064	6.4	-	.252	34	79	8	HPI503 091	9.1	-	.3583	47	89	10
HPI503 065	6.5	-	.2559	34	79	8	HPI503 09129	9.129	23/64	.3594	47	89	10
HPI503 066	6.6	-	.2598	34	79	8	HPI503 092	9.2	-	.3622	47	89	10
HPI503 067	6.7	-	.2638	34	79	8	HPI503 093	9.3	-	.3661	47	89	10
HPI503 06747	6.747	17/64	.2656	34	79	8	HPI503 094	9.4	-	.368	47	89	10
HPI503 068	6.8	-	.2677	34	79	8	HPI503 095	9.5	-	.374	47	89	10
HPI503 069	6.9	-	.2717	34	79	8	HPI503 09525	9.525	3/8	.375	47	89	10
HPI503 070	7	-	.2756	34	79	8	HPI503 096	9.6	-	.378	47	89	10
HPI503 071	7.1	-	.2795	41	79	8	HPI503 097	9.7	-	.3819	47	89	10
HPI503 07145	7.145	9/32	.2813	41	79	8	HPI503 098	9.8	-	.3858	47	89	10
HPI503 072	7.2	-	.2835	41	79	8	HPI503 099	9.9	-	.3898	47	89	10
HPI503 073	7.3	-	.2874	41	79	8	HPI503 09921	9.9921	25/64	.3906	47	89	10
HPI503 074	7.4	-	.2913	41	79	8	HPI503 100	10	-	.3937	47	89	10
HPI503 075	7.5	-	.2953	41	79	8	HPI503 101	10.1	-	.3976	55	105	12
HPI503 07541	7.541	19/64	.2969	41	79	8	HPI503 102	10.2	-	.4016	55	105	12
HPI503 076	7.6	-	.2992	41	79	8	HPI503 103	10.3	-	.4055	55	105	12
HPI503 077	7.7	-	.3031	41	79	8	HPI503 1032	10.32	13/32	.4063	55	105	12
HPI503 078	7.8	-	.3071	41	79	8	HPI503 104	10.4	-	.4094	55	105	12
HPI503 079	7.9	-	.311	41	79	8	HPI503 105	10.5	-	.4134	55	105	12
HPI503 07938	7.938	5/16	.3125	41	79	8	HPI503 106	10.6	-	.4173	55	105	12
HPI503 080	8	-	.315	41	79	8	HPI503 107	10.7	-	.4213	55	105	12
HPI503 081	8.1	-	.3189	47	89	10	HPI503 10716	10.716	27/64	.4219	55	105	12
HPI503 082	8.2	-	.3228	47	89	10	HPI503 108	10.8	-	.4252	55	105	12
HPI503 083	8.3	-	.3268	47	89	10	HPI503 109	10.9	-	.4291	55	105	12
HPI503 08334	8.334	21/64	.3281	47	89	10	HPI503 110	11	-	.4331	55	105	12
HPI503 0834	8.34	-	.3283	47	89	10	HPI503 111	11.1	-	.437	55	105	12
HPI503 084	8.4	-	.3307	47	89	10	HPI503 11113	11.113	7/16	.4375	55	105	12
HPI503 085	8.5	-	.3346	47	89	10	HPI503 112	11.2	-	.4409	55	105	12
HPI503 086	8.6	-	.3386	47	89	10	HPI503 113	11.3	-	.4449	55	105	12

Dolphin Drill

Dolphin Oil-Hole Drill

Power Max

Solid Spiral

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○	○	○	◎	◎	◎					

HPI503

Double Margin Internal Coolnat Drill - DIN6537K

Drill

EDP No	DC			LCF	OAL	DCON MS	EDP No	DC			LCF	OAL	DCON MS
	mm	fraction	inch					mm	fraction	inch			
HPI503 114	11.4	-	.4488	55	105	12	HPI503 142	14.2	-	.5591	65	115	16
HPI503 115	11.5	-	.4528	55	105	12	HPI503 14288	14.288	9/16	.5625	65	115	16
HPI503 11509	11.509	29/64	.4531	55	105	12	HPI503 145	14.5	-	.5709	65	115	16
HPI503 116	11.6	-	.4567	55	105	12	HPI503 146	14.6	-	.5746	65	115	16
HPI503 117	11.7	-	.4606	55	105	12	HPI503 147	14.7	-	.5787	65	115	16
HPI503 118	11.8	-	.4646	55	105	12	HPI503 150	15	-	.5906	65	115	16
HPI503 119	11.9	-	.4685	55	105	12	HPI503 15081	15.081	19/32	.5937	65	115	16
HPI503 11908	11.908	15/32	.4688	55	105	12	HPI503 155	15.5	-	.6102	65	115	16
HPI503 120	12	-	.4724	55	105	12	HPI503 157	15.7	-	.6181	65	115	16
HPI503 121	12.1	-	.4764	60	107	14	HPI503 158	15.8	-	.622	65	115	16
HPI503 122	12.2	-	.4803	60	107	14	HPI503 15875	15.875	5/8	.625	65	115	16
HPI503 123	12.3	-	.4843	60	107	14	HPI503 160	16	-	.6299	65	115	16
HPI503 12304	12.304	31/64	.4844	60	107	14	HPI503 162	16.2	-	.6378	73	123	18
HPI503 124	12.4	-	.4882	60	107	14	HPI503 163	16.3	-	.6417	73	123	18
HPI503 125	12.5	-	.4921	60	107	14	HPI503 165	16.5	-	.6496	73	123	18
HPI503 126	12.6	-	.4961	60	107	14	HPI503 167	16.7	-	.6575	73	123	18
HPI503 127	12.7	1/2	.5	60	107	14	HPI503 168	16.8	-	.6614	73	123	18
HPI503 128	12.8	-	.5039	60	107	14	HPI503 170	17	-	.6693	73	123	18
HPI503 129	12.9	-	.5079	60	107	14	HPI503 171	17.1	-	.6732	73	123	18
HPI503 130	13	-	.5118	60	107	14	HPI503 17463	17.463	11/16	.6875	73	123	18
HPI503 132	13.2	-	.5197	60	107	14	HPI503 175	17.5	-	.689	73	123	18
HPI503 133	13.3	-	.5236	60	107	14	HPI503 180	18	-	.7087	73	123	18
HPI503 13494	13.494	17/32	.5313	60	107	14	HPI503 185	18.5	-	.7883	79	131	20
HPI503 135	13.5	-	.5315	60	107	14	HPI503 190	19	-	.748	79	131	20
HPI503 137	13.7	-	.5394	60	107	14	HPI503 1905	19.05	3/4	.75	79	131	20
HPI503 13891	13.891	35/64	.5469	60	107	14	HPI503 197	19.7	-	.7756	79	131	20
HPI503 140	14	-	.5512	60	107	14	HPI503 200	20	-	.7874	79	131	20
HPI503 141	14.1	-	.5551	65	115	16							

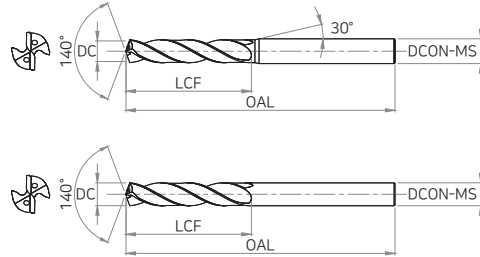
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○	○	○	◎	◎	◎					

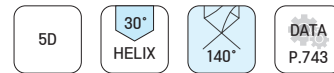
HPI505

Double Margin Internal Coolant Drill - DIN6537L



► Tolerance

DC		Shank Dia
Ø3	+0.002 ~ +0.012	h6
Ø3.1 ~ Ø6	+0.004 ~ +0.016	
Ø6.1 ~ Ø10	+0.006 ~ +0.021	
Ø10.1 ~ Ø18	+0.007 ~ +0.025	
Ø18.1 ~ Ø20	+0.008 ~ +0.029	



EDP No	DC			LCF	OAL	DCON MS	EDP No	DC			LCF	OAL	DCON MS
	mm	fraction	inch					mm	fraction	inch			
HPI505 030	3	-	.1181	30	66	6	HPI505 044	4.4	-	.1732	36	74	6
HPI505 031	3.1	-	.1120	30	66	6	HPI505 045	4.5	-	.1772	36	74	6
HPI505 03175	3.175	-	.1250	30	66	6	HPI505 0458	4.58	-	.1803	36	74	6
HPI505 032	3.2	-	.1260	30	66	6	HPI505 046	4.6	-	.1811	36	74	6
HPI505 03264	3.264	1/8	.1285	30	66	6	HPI505 04623	4.623	-	.1820	36	74	6
HPI505 033	3.3	-	.1299	30	66	6	HPI505 047	4.7	-	.1850	36	74	6
HPI505 034	3.4	-	.1339	30	66	6	HPI505 04763	4.763	3/16	.1875	44	82	6
HPI505 035	3.5	-	.1378	30	66	6	HPI505 048	4.8	-	.1890	44	82	6
HPI505 03572	3.572	9/64	.1406	30	66	6	HPI505 049	4.9	-	.1929	44	82	6
HPI505 036	3.6	-	.1417	30	66	6	HPI505 050	5	-	.1969	44	82	6
HPI505 037	3.7	-	.1457	30	66	6	HPI505 051	5.1	-	.2008	44	82	6
HPI505 038	3.8	-	.1496	36	74	6	HPI505 05159	5.159	13/64	.2031	44	82	6
HPI505 039	3.9	-	.1535	36	74	6	HPI505 052	5.2	-	.2047	44	82	6
HPI505 0397	3.97	5/32	.1563	36	74	6	HPI505 053	5.3	-	.2087	44	82	6
HPI505 040	4	-	.1575	36	74	6	HPI505 054	5.4	-	.2126	44	82	6
HPI505 04039	4.039	-	.1590	36	74	6	HPI505 0541	5.41	-	.2130	44	82	6
HPI505 041	4.1	-	.1614	36	74	6	HPI505 055	5.5	-	.2165	44	82	6
HPI505 042	4.2	-	.1654	36	74	6	HPI505 05558	5.558	7/32	.2188	44	82	6
HPI505 043	4.3	-	.1693	36	74	6	HPI505 056	5.6	-	.2205	44	82	6
HPI505 04366	4.366	-	.1719	36	74	6	HPI505 057	5.7	-	.2244	44	82	6

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○	○	○	◎	◎	◎					

HPI505

Double Margin Internal Coolant Drill - DIN6537L

Drill

EDP No	DC			LCF	OAL	DCON MS	EDP No	DC			LCF	OAL	DCON MS
	mm	fraction	inch					mm	fraction	inch			
HPI505 058	5.8	-	.2283	44	82	6	HPI505 08334	8.334	21/64	.3281	61	103	10
HPI505 059	5.9	-	.2323	44	82	6	HPI505 084	8.4	-	.3307	61	103	10
HPI505 05953	5.953	15/64	.2344	44	82	6	HPI505 08433	8.433	-	.3320	61	103	10
HPI505 060	6	-	.2362	44	82	6	HPI505 085	8.5	-	.3346	61	103	10
HPI505 061	6.1	-	.2402	53	91	8	HPI505 086	8.6	-	.3386	61	103	10
HPI505 062	6.2	-	.2441	53	91	8	HPI505 087	8.7	-	.3425	61	103	10
HPI505 063	6.3	-	.2480	53	91	8	HPI505 08733	8.733	11/32	.3438	61	103	10
HPI505 0635	6.35	1/4	.2500	53	91	8	HPI505 088	8.8	-	.3465	61	103	10
HPI505 064	6.4	-	.2520	53	91	8	HPI505 089	8.9	-	.3504	61	103	10
HPI505 065	6.5	-	.2559	53	91	8	HPI505 090	9	-	.3543	61	103	10
HPI505 06528	6.528	-	.2570	53	91	8	HPI505 091	9.1	-	.3583	61	103	10
HPI505 066	6.6	-	.2598	53	91	8	HPI505 09129	9.129	23/64	.3594	61	103	10
HPI505 067	6.7	-	.2638	53	91	8	HPI505 092	9.2	-	.3622	61	103	10
HPI505 06747	6.747	17/64	.2656	53	91	8	HPI505 093	9.3	-	.3661	61	103	10
HPI505 068	6.8	-	.2677	53	91	8	HPI505 09347	9.347	-	.3680	61	103	10
HPI505 069	6.9	-	.2717	53	91	8	HPI505 094	9.4	-	.3701	61	103	10
HPI505 06909	6.909	-	.2720	53	91	8	HPI505 095	9.5	-	.3740	61	103	10
HPI505 070	7	-	.2756	53	91	8	HPI505 09525	9.525	3/8	.3750	61	103	10
HPI505 071	7.1	-	.2795	53	91	8	HPI505 096	9.6	-	.3780	61	103	10
HPI505 07145	7.145	9/32	.2813	53	91	8	HPI505 097	9.7	-	.3819	61	103	10
HPI505 072	7.2	-	.2835	53	91	8	HPI505 09703	9.703	-	.3820	61	103	10
HPI505 073	7.3	-	.2874	53	91	8	HPI505 09746	9.746	-	.3837	61	103	10
HPI505 074	7.4	-	.2913	53	91	8	HPI505 098	9.8	-	.3858	61	103	10
HPI505 075	7.5	-	.2953	53	91	8	HPI505 099	9.9	-	.3898	61	103	10
HPI505 07541	7.541	19/64	.2969	53	91	8	HPI505 09921	9.921	25/64	.3906	61	103	10
HPI505 076	7.6	-	.2992	53	91	8	HPI505 100	10	-	.3937	61	103	10
HPI505 077	7.7	-	.3031	53	91	8	HPI505 101	10.1	-	.3976	71	118	12
HPI505 078	7.8	-	.3071	53	91	8	HPI505 102	10.2	-	.4016	71	118	12
HPI505 079	7.9	-	.3110	53	91	8	HPI505 103	10.3	-	.4055	71	118	12
HPI505 07938	7.938	5/16	.3125	53	91	8	HPI505 1032	10.32	13/32	.4063	71	118	12
HPI505 080	8	-	.3150	53	91	8	HPI505 104	10.4	-	.4074	71	118	12
HPI505 081	8.1	-	.3189	61	103	10	HPI505 105	10.5	-	.4134	71	118	12
HPI505 082	8.2	-	.3228	61	103	10	HPI505 106	10.6	-	.4173	71	118	12
HPI505 083	8.3	-	.3268	61	103	10	HPI505 107	10.7	-	.4213	71	118	12

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	Steel ~HB225	HB225 ~325	Steel HRC30~50	~FCD500					
○	○	○	◎	◎	◎					

HPI505

Double Margin Internal Coolnat Drill - DIN6537L

Drill

EDP No	DC			LCF	OAL	DCON MS	EDP No	DC			LCF	OAL	DCON MS
	mm	fraction	inch					mm	fraction	inch			
HPI505 10716	10.716	27/64	.4219	71	118	12	HPI505 13494	13.494	17/32	.5313	77	124	14
HPI505 108	10.8	-	.4252	71	118	12	HPI505 135	13.5	-	.5315	77	124	14
HPI505 109	10.9	-	.4291	71	118	12	HPI505 137	13.7	-	.5394	77	124	14
HPI505 110	11	-	.4331	71	118	12	HPI505 138	13.8	-	.5433	77	124	14
HPI505 111	11.1	-	.4370	71	118	12	HPI505 13891	13.981	35/64	.5504	77	124	14
HPI505 11113	11.113	7/16	.4375	71	118	12	HPI505 140	14	-	.5512	77	124	14
HPI505 112	11.2	-	.4409	71	118	12	HPI505 141	14.1	-	.5551	83	133	16
HPI505 113	11.3	-	.4449	71	118	12	HPI505 142	14.2	-	.5591	83	133	16
HPI505 114	11.4	-	.4488	71	118	12	HPI505 14288	14.288	9/16	.5625	83	133	16
HPI505 115	11.5	-	.4528	71	118	12	HPI505 145	14.5	-	.5709	83	133	16
HPI505 11509	11.509	29/64	.4531	71	118	12	HPI505 146	14.6	-	.5748	83	133	16
HPI505 116	11.6	-	.4567	71	118	12	HPI505 147	14.7	-	.5787	83	133	16
HPI505 117	11.7	-	.4606	71	118	12	HPI505 148	14.8	-	.5827	83	133	16
HPI505 118	11.8	-	.4646	71	118	12	HPI505 149	14.9	-	.5866	83	133	16
HPI505 119	11.9	-	.4685	71	118	12	HPI505 150	15	-	.5906	83	133	16
HPI505 11908	11.908	15/32	.4688	71	118	12	HPI505 15081	15.081	19/32	.5937	83	133	16
HPI505 120	12	-	.4724	71	118	12	HPI505 151	15.1	-	.5945	83	133	16
HPI505 121	12.1	-	.4764	77	124	14	HPI505 152	15.2	-	.5984	83	133	16
HPI505 122	12.2	-	.4803	77	124	14	HPI505 155	15.5	-	.6102	83	133	16
HPI505 123	12.3	-	.4843	77	124	14	HPI505 156	15.6	-	.6142	83	133	16
HPI505 12304	12.304	31/64	.4844	77	124	14	HPI505 157	15.7	-	.6181	83	133	16
HPI505 124	12.4	-	.4882	77	124	14	HPI505 158	15.8	-	.622	83	133	16
HPI505 125	12.5	-	.4921	77	124	14	HPI505 15875	15.875	5/8	.625	83	133	16
HPI505 126	12.6	-	.4961	77	124	14	HPI505 159	15.9	-	.626	83	133	16
HPI505 127	12.7	1/2	.5	77	124	14	HPI505 160	16	-	.6299	83	133	16
HPI505 128	12.8	-	.5039	77	124	14	HPI505 16078	16.078	-	.633	93	143	18
HPI505 129	12.9	-	.5079	77	124	14	HPI505 162	16.2	-	.6378	93	143	18
HPI505 12903	12.903	-	.508	77	124	14	HPI505 164	16.4	-	.6457	93	143	18
HPI505 130	13	-	.5118	77	124	14	HPI505 165	16.5	-	.6496	93	143	18
HPI505 13096	13.096	33/64	.5156	77	124	14	HPI505 166	16.6	-	.6535	93	143	18
HPI505 131	13.1	-	.5157	77	124	14	HPI505 16667	16.667	21/32	.6562	93	143	18
HPI505 132	13.2	-	.5197	77	124	14	HPI505 167	16.7	-	.6575	93	143	18
HPI505 133	13.3	-	.5236	77	124	14	HPI505 170	17	-	.6693	93	143	18
HPI505 134	13.4	-	.5276	77	124	14	HPI505 171	17.1	-	.6732	93	143	18

Dolphin Drill

Dolphin Oil-Hole Drill

Power Max

Solid Spiral

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○	○	○	◎	◎	◎					

HPI505

Double Margin Internal Coolant Drill - DIN6537L

Drill

EDP No	DC			LCF	OAL	DCON MS	EDP No	DC			LCF	OAL	DCON MS
	mm	fraction	inch					mm	fraction	inch			
HPI505 172	17.2	-	.6772	93	143	18	HPI505 188	18.8	-	.7402	101	153	20
HPI505 173	17.3	-	.6811	93	143	18	HPI505 189	18.9	-	.7441	101	153	20
HPI505 17463	17.463	11/16	.6875	93	143	18	HPI505 190	19	-	.748	101	153	20
HPI505 175	17.5	-	.689	93	143	18	HPI505 1905	19.05	3/4	.75	101	153	20
HPI505 176	17.6	-	.6929	93	143	18	HPI505 192	19.2	-	.7559	101	153	20
HPI505 177	17.7	-	.6969	93	143	18	HPI505 19253	19.253	-	.758	101	153	20
HPI505 178	17.8	-	.7008	93	143	18	HPI505 19446	19.446	49/64	.7656	101	153	20
HPI505 179	17.9	-	.7047	93	143	18	HPI505 195	19.5	-	.7677	101	153	20
HPI505 180	18	-	.7087	93	143	18	HPI505 197	19.7	-	.7756	101	153	20
HPI505 184	18.4	-	.7244	101	153	20	HPI505 19844	19.844	25/32	.7813	101	153	20
HPI505 185	18.5	-	.7283	101	153	20	HPI505 200	20	-	.7874	101	153	20
HPI505 186	18.6	-	.7323	101	153	20							

Dolphin Drill

Dolphin Oil-Hole Drill

Power Max

Solid Spiral

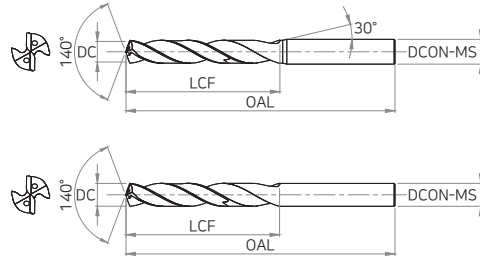
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
○	○	○	◎	◎	◎					

HPI508-N

Double Margin Internal Coolant Drill - 8D



► Tolerance

DC		Shank Dia
Ø3	+0.002 ~ +0.012	h6
Ø3.1 ~ Ø6	+0.004 ~ +0.016	
Ø6.1 ~ Ø10	+0.006 ~ +0.021	
Ø10.1 ~ Ø18	+0.007 ~ +0.025	
Ø18.1 ~ Ø20	+0.008 ~ +0.029	



EDP No	DC			LCF	OAL	DCON MS	EDP No	DC			LCF	OAL	DCON MS
	mm	fraction	inch					mm	fraction	inch			
HPI508 030N	3	-	.1181	43	80	6	HPI508 044N	4.4	-	.1732	49	87	6
HPI508 031N	3.1	-	.122	43	80	6	HPI508 045N	4.5	-	.1772	49	87	6
HPI508 03175N	3.175	1/8	.125	43	80	6	HPI508 046N	4.6	-	.1811	49	87	6
HPI508 032N	3.2	-	.126	43	80	6	HPI508 047N	4.7	-	.185	49	87	6
HPI508 03264N	3.264	-	.1285	43	80	6	HPI508 04763N	4.763	3/16	.1875	56	94	6
HPI508 033N	3.3	-	.1299	43	80	6	HPI508 048N	4.8	-	.189	56	94	6
HPI508 034N	3.4	-	.1339	43	80	6	HPI508 049N	4.9	-	.1929	56	94	6
HPI508 035N	3.5	-	.1378	43	80	6	HPI508 050N	5	-	.1969	56	94	6
HPI508 03572N	3.572	9/64	.1406	43	80	6	HPI508 051N	5.1	-	.2008	56	94	6
HPI508 036N	3.6	-	.1417	43	80	6	HPI508 05159N	5.159	13/64	.2031	56	94	6
HPI508 037N	3.7	-	.1457	43	80	6	HPI508 052N	5.2	-	.2047	56	94	6
HPI508 038N	3.8	-	.1496	49	87	6	HPI508 053N	5.3	-	.2087	56	94	6
HPI508 039N	3.9	-	.1535	49	87	6	HPI508 054N	5.4	-	.2126	56	94	6
HPI508 0397N	3.97	5/32	.1563	49	87	6	HPI508 055N	5.5	-	.2165	56	94	6
HPI508 040N	4	-	.1575	49	87	6	HPI508 05558N	5.558	7/32	.2188	56	94	6
HPI508 04039N	4.039	-	.159	49	87	6	HPI508 056N	5.6	-	.2205	56	94	6
HPI508 041N	4.1	-	.1614	49	87	6	HPI508 057N	5.7	-	.2244	56	94	6
HPI508 042N	4.2	-	.1654	49	87	6	HPI508 058N	5.8	-	.2283	56	94	6
HPI508 043N	4.3	-	.1693	49	87	6	HPI508 059N	5.9	-	.2323	56	94	6
HPI508 04366N	4.366	-	.1719	49	87	6	HPI508 05953N	5.953	15/64	.2344	56	94	6

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○	○	○	◎	◎	◎					

HPI508-N

Double Margin Internal Coolnat Drill - 8D

Drill

EDP No	DC			LCF	OAL	DCON MS	EDP No	DC			LCF	OAL	DCON MS
	mm	fraction	inch					mm	fraction	inch			
HPI508 060N	6	-	.2362	65	94	6	HPI508 08733N	8.733	11/32	.3438	87	131	10
HPI508 061N	6.1	-	.2402	67	105	8	HPI508 088N	8.8	-	.3465	87	131	10
HPI508 062N	6.2	-	.2441	67	105	8	HPI508 089N	8.9	-	.3504	87	131	10
HPI508 063N	6.3	-	.248	67	105	8	HPI508 090N	9	-	.3543	87	131	10
HPI508 0635N	6.35	1/4	.2500	67	105	8	HPI508 091N	9.1	-	.3583	95	139	10
HPI508 064N	6.4	-	.252	67	105	8	HPI508 09129N	9.129	23/64	.3594	95	139	10
HPI508 065N	6.5	-	.2559	67	105	8	HPI508 092N	9.2	-	.3622	95	139	10
HPI508 066N	6.6	-	.2598	67	105	8	HPI508 093N	9.3	-	.3661	95	139	10
HPI508 067N	6.7	-	.2638	67	105	8	HPI508 094N	9.4	-	.3701	95	139	10
HPI508 06747N	6.747	17/64	.2656	67	105	8	HPI508 095N	9.5	-	.374	95	139	10
HPI508 068N	6.8	-	.2677	67	105	8	HPI508 09525N	9.525	3/8	.375	95	139	10
HPI508 069N	6.9	-	.2717	67	105	8	HPI508 096N	9.6	-	.378	95	139	10
HPI508 070N	7	-	.2756	76	116	8	HPI508 097N	9.7	-	.3819	95	139	10
HPI508 071N	7.1	-	.2795	76	116	8	HPI508 098N	9.8	-	.3858	95	139	10
HPI508 07145N	7.145	9/32	.2813	76	116	8	HPI508 099N	9.9	-	.3898	95	139	10
HPI508 072N	7.2	-	.2835	76	116	8	HPI508 09921N	9.921	25/64	.3906	95	139	10
HPI508 073N	7.3	-	.2874	76	116	8	HPI508 100N	10	-	.3937	95	139	10
HPI508 074N	7.4	-	.2913	76	116	8	HPI508 101N	10.1	-	.3976	106	155	12
HPI508 075N	7.5	-	.2953	76	116	8	HPI508 102N	10.2	-	.4016	106	155	12
HPI508 07541N	7.541	19/64	.2969	76	116	8	HPI508 103N	10.3	-	.4055	106	155	12
HPI508 076N	7.6	-	.2992	76	116	8	HPI508 1032N	10.32	13/32	.4063	106	155	12
HPI508 077N	7.7	-	.3031	76	116	8	HPI508 104N	10.4	-	.4094	106	155	12
HPI508 078N	7.8	-	.3071	76	116	8	HPI508 105N	10.5	-	.4134	106	155	12
HPI508 079N	7.9	-	.311	76	116	8	HPI508 107N	10.7	-	.4213	106	155	12
HPI508 07938N	7.938	5/16	.3125	76	116	8	HPI508 10716N	10.716	27/64	.4219	106	155	12
HPI508 080N	8	-	.315	76	116	8	HPI508 108N	10.8	-	.4252	106	155	12
HPI508 081N	8.1	-	.3189	87	131	10	HPI508 109N	10.9	-	.4291	106	155	12
HPI508 082N	8.2	-	.3228	87	131	10	HPI508 110N	11	-	.4331	106	155	12
HPI508 083N	8.3	-	.3268	87	131	10	HPI508 111N	11.1	-	.437	114	163	12
HPI508 08334N	8.334	21/64	.3281	87	131	10	HPI508 11113N	11.113	7/16	.4375	114	163	12
HPI508 084N	8.4	-	.3307	87	131	10	HPI508 112N	11.2	-	.4409	114	163	12
HPI508 085N	8.5	-	.3346	87	131	10	HPI508 113N	11.3	-	.4449	114	163	12
HPI508 086N	8.6	-	.3386	87	131	10	HPI508 114N	11.4	-	.4488	114	163	12
HPI508 087N	8.7	-	.3425	87	131	10	HPI508 115N	11.5	-	.4528	114	163	12

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	Steel ~HB225	HB225 ~325	HRc30~50	~FCD500					
○	○	○	◎	◎	◎					

HPI508-N

Double Margin Internal Coolnat Drill - 8D

Drill

EDP No	DC			LCF	OAL	DCON MS	EDP No	DC			LCF	OAL	DCON MS
	mm	fraction	inch					mm	fraction	inch			
HPI508 11509N	11.509	29/64	.4531	114	163	12	HPI508 152N	15.2	-	.5984	152	204	16
HPI508 116N	11.6	-	.4567	114	163	12	HPI508 153N	15.3	-	.6024	152	204	16
HPI508 117N	11.7	-	.4606	114	163	12	HPI508 155N	15.5	-	.6102	152	204	16
HPI508 118N	11.8	-	.4646	114	163	12	HPI508 158N	15.8	-	.622	152	204	16
HPI508 119N	11.9	-	.4685	114	163	12	HPI508 15875N	15.875	5/8	.625	152	204	16
HPI508 11908N	11.908	15/32	.4688	114	163	12	HPI508 160N	16	-	.6299	152	204	16
HPI508 120N	12	-	.4724	114	163	12	HPI508 16078N	16.078	-	.633	171	223	18
HPI508 12304N	12.304	31/64	.4844	133	182	14	HPI508 162N	16.2	-	.6378	171	223	18
HPI508 125N	12.5	-	.4921	133	182	14	HPI508 165N	16.5	-	.6496	171	223	18
HPI508 127N	12.7	1/2	.5	133	182	14	HPI508 170N	17	-	.6693	171	223	18
HPI508 128N	12.8	-	.5039	133	182	14	HPI508 17463N	17.463	11/16	.6875	171	223	18
HPI508 130N	13	-	.5118	133	182	14	HPI508 175N	17.5	-	.689	171	223	18
HPI508 13494N	13.494	-	.5313	133	182	14	HPI508 180N	18	-	.7087	171	223	18
HPI508 135N	13.5	-	.5315	133	182	14	HPI508 185N	18.5	-	.7283	191	244	20
HPI508 140N	14	-	.5512	133	182	14	HPI508 190N	19	-	.748	191	244	20
HPI508 14288N	14.288	9/16	.5625	152	204	16	HPI508 1905N	19.05	3/4	.75	191	244	20
HPI508 145N	14.5	-	.5709	152	204	16	HPI508 19253N	19.253	-	.758	191	244	20
HPI508 150N	15	-	.5906	152	204	16	HPI508 198N	19.8	-	.7795	191	244	20
HPI508 151N	15.1	-	.5945	152	204	16	HPI508 200N	20	-	.7874	191	244	20

Dolphin Drill

Dolphin Oil-Hole Drill

Power Max

Solid Spiral

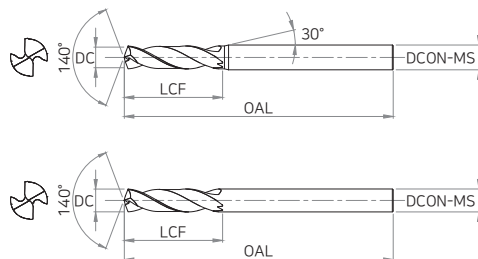
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○	○	○	◎	◎	◎					

P503A(F) High Speed Drill - DIN6537K

Drill



► Tolerance

DC		Shank Dia
~ Ø3	+0.002 ~ +0.012	h6
Ø3.1 ~ Ø6	+0.004 ~ +0.016	
Ø6.1 ~ Ø10	+0.006 ~ +0.021	
Ø10.1 ~ Ø18	+0.007 ~ +0.025	
Ø18.1 ~ Ø20	+0.008 ~ +0.029	

Series	Standard	Shank Shape
P503A~	STRAIGHT	
P503F~	6535HE (FLAT 2°)	



EDP No	EDP No Weldon shank	DC	LCF	OAL	DCON MS	EDP No	EDP No Weldon shank	DC	LCF	OAL	DCON MS
P503A 030	P503F 030	3	20	62	6	P503A 050	P503F 050	5	28	66	6
P503A 031	P503F 031	3.1	20	62	6	P503A 051	P503F 051	5.1	28	66	6
P503A 032	P503F 032	3.2	20	62	6	P503A 052	P503F 052	5.2	28	66	6
P503A 033	P503F 033	3.3	20	62	6	P503A 053	P503F 053	5.3	28	66	6
P503A 034	P503F 034	3.4	20	62	6	P503A 054	P503F 054	5.4	28	66	6
P503A 035	P503F 035	3.5	20	62	6	P503A 055	P503F 055	5.5	28	66	6
P503A 036	P503F 036	3.6	20	62	6	P503A 056	P503F 056	5.6	28	66	6
P503A 037	P503F 037	3.7	20	62	6	P503A 057	P503F 057	5.7	28	66	6
P503A 038	P503F 038	3.8	24	66	6	P503A 058	P503F 058	5.8	28	66	6
P503A 039	P503F 039	3.9	24	66	6	P503A 059	P503F 059	5.9	28	66	6
P503A 040	P503F 040	4	24	66	6	P503A 060	P503F 060	6	28	66	6
P503A 041	P503F 041	4.1	24	66	6	P503A 061	P503F 061	6.1	34	79	8
P503A 042	P503F 042	4.2	24	66	6	P503A 062	P503F 062	6.2	34	79	8
P503A 043	P503F 043	4.3	24	66	6	P503A 063	P503F 063	6.3	34	79	8
P503A 044	P503F 044	4.4	24	66	6	P503A 064	P503F 064	6.4	34	79	8
P503A 045	P503F 045	4.5	24	66	6	P503A 065	P503F 065	6.5	34	79	8
P503A 046	P503F 046	4.6	24	66	6	P503A 066	P503F 066	6.6	34	79	8
P503A 047	P503F 047	4.7	24	66	6	P503A 067	P503F 067	6.7	34	79	8
P503A 048	P503F 048	4.8	28	66	6	P503A 068	P503F 068	6.8	34	79	8
P503A 049	P503F 049	4.9	28	66	6	P503A 069	P503F 069	6.9	34	79	8

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
○	○	○	◎	◎	◎					

P503A(F)

High Speed Drill - DIN6537K

Drill

EDP No	EDP No Weldon shank	DC	LCF	OAL	DCON MS	EDP No	EDP No Weldon shank	DC	LCF	OAL	DCON MS
P503A 070	P503F 070	7	34	79	8	P503A 104	P503F 104	10.4	55	102	12
P503A 071	P503F 071	7.1	41	79	8	P503A 105	P503F 105	10.5	55	102	12
P503A 072	P503F 072	7.2	41	79	8	P503A 106	P503F 106	10.6	55	102	12
P503A 073	P503F 073	7.3	41	79	8	P503A 107	P503F 107	10.7	55	102	12
P503A 074	P503F 074	7.4	41	79	8	P503A 108	P503F 108	10.8	55	102	12
P503A 075	P503F 075	7.5	41	79	8	P503A 109	P503F 109	10.9	55	102	12
P503A 076	P503F 076	7.6	41	79	8	P503A 110	P503F 110	11	55	102	12
P503A 077	P503F 077	7.7	41	79	8	P503A 111	P503F 111	11.1	55	102	12
P503A 078	P503F 078	7.8	41	79	8	P503A 112	P503F 112	11.2	55	102	12
P503A 079	P503F 079	7.9	41	79	8	P503A 113	P503F 113	11.3	55	102	12
P503A 080	P503F 080	8	41	79	8	P503A 114	P503F 114	11.4	55	102	12
P503A 081	P503F 081	8.1	47	89	10	P503A 115	P503F 115	11.5	55	102	12
P503A 082	P503F 082	8.2	47	89	10	P503A 116	P503F 116	11.6	55	102	12
P503A 083	P503F 083	8.3	47	89	10	P503A 117	P503F 117	11.7	55	102	12
P503A 084	P503F 084	8.4	47	89	10	P503A 118	P503F 118	11.8	55	102	12
P503A 085	P503F 085	8.5	47	89	10	P503A 119	P503F 119	11.9	55	102	12
P503A 086	P503F 086	8.6	47	89	10	P503A 120	P503F 120	12	55	102	12
P503A 087	P503F 087	8.7	47	89	10	P503A 121	P503F 121	12.1	60	107	14
P503A 088	P503F 088	8.8	47	89	10	P503A 122	P503F 122	12.2	60	107	14
P503A 089	P503F 089	8.9	47	89	10	P503A 123	P503F 123	12.3	60	107	14
P503A 090	P503F 090	9	47	89	10	P503A 124	P503F 124	12.4	60	107	14
P503A 091	P503F 091	9.1	47	89	10	P503A 125	P503F 125	12.5	60	107	14
P503A 092	P503F 092	9.2	47	89	10	P503A 126	P503F 126	12.6	60	107	14
P503A 093	P503F 093	9.3	47	89	10	P503A 127	P503F 127	12.7	60	107	14
P503A 094	P503F 094	9.4	47	89	10	P503A 128	P503F 128	12.8	60	107	14
P503A 095	P503F 095	9.5	47	89	10	P503A 129	P503F 129	12.9	60	107	14
P503A 096	P503F 096	9.6	47	89	10	P503A 130	P503F 130	13	60	107	14
P503A 097	P503F 097	9.7	47	89	10	P503A 131	P503F 131	13.1	60	107	14
P503A 098	P503F 098	9.8	47	89	10	P503A 132	P503F 132	13.2	60	107	14
P503A 099	P503F 099	9.9	47	89	10	P503A 133	P503F 133	13.3	60	107	14
P503A 100	P503F 100	10	47	89	10	P503A 134	P503F 134	13.4	60	107	14
P503A 101	P503F 101	10.1	55	102	12	P503A 135	P503F 135	13.5	60	107	14
P503A 102	P503F 102	10.2	55	102	12	P503A 136	P503F 136	13.6	60	107	14
P503A 103	P503F 103	10.3	55	102	12	P503A 137	P503F 137	13.7	60	107	14

Dolphin
Drill

Dolphin
Oil-Hole
Drill

Power
Max

Solid
Spiral

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○	○	○	◎	◎	◎					

P503A(F) High Speed Drill - DIN6537K

Drill

EDP No	EDP No Weldon shank	DC	LCF	OAL	DCON MS	EDP No	EDP No Weldon shank	DC	LCF	OAL	DCON MS
P503A 138	P503F 138	13.8	60	107	14	P503A 159	P503F 159	15.9	65	115	16
P503A 139	P503F 139	13.9	60	107	14	P503A 160	P503F 160	16	65	115	16
P503A 140	P503F 140	14	60	107	14	P503A 161	P503F 161	16.1	73	123	18
P503A 141	P503F 141	14.1	65	115	16	P503A 163	P503F 163	16.3	73	123	18
P503A 142	P503F 142	14.2	65	115	16	P503A 165	P503F 165	16.5	73	123	18
P503A 143	P503F 143	14.3	65	115	16	P503A 170	P503F 170	17	73	123	18
P503A 144	P503F 144	14.4	65	115	16	P503A 171	P503F 171	17.1	73	123	18
P503A 145	P503F 145	14.5	65	115	16	P503A 172	P503F 172	17.2	73	123	18
P503A 146	P503F 146	14.6	65	115	16	P503A 175	P503F 175	17.5	73	123	18
P503A 147	P503F 147	14.7	65	115	16	P503A 177	P503F 177	17.7	73	123	18
P503A 148	P503F 148	14.8	65	115	16	P503A 178	P503F 178	17.8	73	123	18
P503A 149	P503F 149	14.9	65	115	16	P503A 180	P503F 180	18	73	123	18
P503A 150	P503F 150	15	65	115	16	P503A 181	P503F 181	18.1	79	131	20
P503A 151	P503F 151	15.1	65	115	16	P503A 182	P503F 182	18.2	79	131	20
P503A 152	P503F 152	15.2	65	115	16	P503A 185	P503F 185	18.5	79	131	20
P503A 153	P503F 153	15.3	65	115	16	P503A 190	P503F 190	19	79	131	20
P503A 154	P503F 154	15.4	65	115	16	P503A 191	P503F 191	19.1	79	131	20
P503A 155	P503F 155	15.5	65	115	16	P503A 195	P503F 195	19.5	79	131	20
P503A 156	P503F 156	15.6	65	115	16	P503A 197	P503F 197	19.7	79	131	20
P503A 157	P503F 157	15.7	65	115	16	P503A 200	P503F 200	20	79	131	20
P503A 158	P503F 158	15.8	65	115	16						

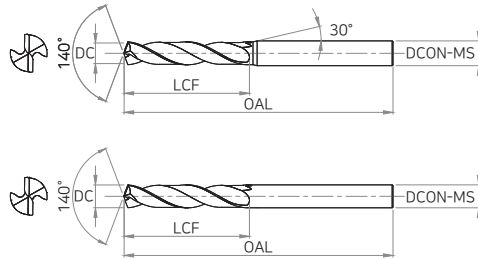
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○	○	○	◎	◎	◎					

P505A(F)

High Speed Drill - DIN6537L



► Tolerance

DC		Shank Dia
~ Ø3	+0.002 ~ +0.012	h6
Ø3.1 ~ Ø6	+0.004 ~ +0.016	
Ø6.1 ~ Ø10	+0.006 ~ +0.021	
Ø10.1 ~ Ø18	+0.007 ~ +0.025	
Ø18.1 ~ Ø20	+0.008 ~ +0.029	

Series	Standard	Shank Shape
P505A~	STRAIGHT	
P505F~	6535HE (FLAT 2°)	



EDP No	EDP No Weldon shank	DC	LCF	OAL	DCON MS	EDP No	EDP No Weldon shank	DC	LCF	OAL	DCON MS
P505A 030	P505F 030	3	28	66	6	P505A 050	P505F 050	5	44	82	6
P505A 031	P505F 031	3.1	28	66	6	P505A 051	P505F 051	5.1	44	82	6
P505A 032	P505F 032	3.2	28	66	6	P505A 052	P505F 052	5.2	44	82	6
P505A 033	P505F 033	3.3	28	66	6	P505A 053	P505F 053	5.3	44	82	6
P505A 034	P505F 034	3.4	28	66	6	P505A 054	P505F 054	5.4	44	82	6
P505A 035	P505F 035	3.5	28	66	6	P505A 055	P505F 055	5.5	44	82	6
P505A 036	P505F 036	3.6	28	66	6	P505A 056	P505F 056	5.6	44	82	6
P505A 037	P505F 037	3.7	28	66	6	P505A 057	P505F 057	5.7	44	82	6
P505A 038	P505F 038	3.8	36	74	6	P505A 058	P505F 058	5.8	44	82	6
P505A 039	P505F 039	3.9	36	74	6	P505A 059	P505F 059	5.9	44	82	6
P505A 040	P505F 040	4	36	74	6	P505A 060	P505F 060	6	44	82	6
P505A 041	P505F 041	4.1	36	74	6	P505A 061	P505F 061	6.1	53	91	8
P505A 042	P505F 042	4.2	36	74	6	P505A 062	P505F 062	6.2	53	91	8
P505A 043	P505F 043	4.3	36	74	6	P505A 063	P505F 063	6.3	53	91	8
P505A 044	P505F 044	4.4	36	74	6	P505A 064	P505F 064	6.4	53	91	8
P505A 045	P505F 045	4.5	36	74	6	P505A 065	P505F 065	6.5	53	91	8
P505A 046	P505F 046	4.6	36	74	6	P505A 066	P505F 066	6.6	53	91	8
P505A 047	P505F 047	4.7	36	74	6	P505A 067	P505F 067	6.7	53	91	8
P505A 048	P505F 048	4.8	44	82	6	P505A 068	P505F 068	6.8	53	91	8
P505A 049	P505F 049	4.9	44	82	6	P505A 069	P505F 069	6.9	53	91	8

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
○	○	○	◎	◎	◎					

Drill

Dolphin Drill

Dolphin Oil-Hole Drill

Power Max

Solid Spiral

P505A(F) High Speed Drill - DIN6537L

Drill

EDP No	EDP No Weldon shank	DC	LCF	OAL	DCON MS	EDP No	EDP No Weldon shank	DC	LCF	OAL	DCON MS
P505A 070	P505F 070	7	53	91	8	P505A 104	P505F 104	10.4	71	118	12
P505A 071	P505F 071	7.1	53	91	8	P505A 105	P505F 105	10.5	71	118	12
P505A 072	P505F 072	7.2	53	91	8	P505A 106	P505F 106	10.6	71	118	12
P505A 073	P505F 073	7.3	53	91	8	P505A 107	P505F 107	10.7	71	118	12
P505A 074	P505F 074	7.4	53	91	8	P505A 108	P505F 108	10.8	71	118	12
P505A 075	P505F 075	7.5	53	91	8	P505A 109	P505F 109	10.9	71	118	12
P505A 076	P505F 076	7.6	53	91	8	P505A 110	P505F 110	11	71	118	12
P505A 077	P505F 077	7.7	53	91	8	P505A 111	P505F 111	11.1	71	118	12
P505A 078	P505F 078	7.8	53	91	8	P505A 112	P505F 112	11.2	71	118	12
P505A 079	P505F 079	7.9	53	91	8	P505A 113	P505F 113	11.3	71	118	12
P505A 080	P505F 080	8	53	91	8	P505A 114	P505F 114	11.4	71	118	12
P505A 081	P505F 081	8.1	61	103	10	P505A 115	P505F 115	11.5	71	118	12
P505A 082	P505F 082	8.2	61	103	10	P505A 116	P505F 116	11.6	71	118	12
P505A 083	P505F 083	8.3	61	103	10	P505A 117	P505F 117	11.7	71	118	12
P505A 084	P505F 084	8.4	61	103	10	P505A 118	P505F 118	11.8	71	118	12
P505A 085	P505F 085	8.5	61	103	10	P505A 119	P505F 119	11.9	71	118	12
P505A 086	P505F 086	8.6	61	103	10	P505A 120	P505F 120	12	71	118	12
P505A 087	P505F 087	8.7	61	103	10	P505A 121	P505F 121	12.1	77	124	14
P505A 088	P505F 088	8.8	61	103	10	P505A 122	P505F 122	12.2	77	124	14
P505A 089	P505F 089	8.9	61	103	10	P505A 123	P505F 123	12.3	77	124	14
P505A 090	P505F 090	9	61	103	10	P505A 124	P505F 124	12.4	77	124	14
P505A 091	P505F 091	9.1	61	103	10	P505A 125	P505F 125	12.5	77	124	14
P505A 092	P505F 092	9.2	61	103	10	P505A 126	P505F 126	12.6	77	124	14
P505A 093	P505F 093	9.3	61	103	10	P505A 127	P505F 127	12.7	77	124	14
P505A 094	P505F 094	9.4	61	103	10	P505A 128	P505F 128	12.8	77	124	14
P505A 095	P505F 095	9.5	61	103	10	P505A 129	P505F 129	12.9	77	124	14
P505A 096	P505F 096	9.6	61	103	10	P505A 130	P505F 130	13	77	124	14
P505A 097	P505F 097	9.7	61	103	10	P505A 131	P505F 131	13.1	77	124	14
P505A 098	P505F 098	9.8	61	103	10	P505A 132	P505F 132	13.2	77	124	14
P505A 099	P505F 099	9.9	61	103	10	P505A 133	P505F 133	13.3	77	124	14
P505A 100	P505F 100	10	61	103	10	P505A 134	P505F 134	13.4	77	124	14
P505A 101	P505F 101	10.1	71	118	12	P505A 135	P505F 135	13.5	77	124	14
P505A 102	P505F 102	10.2	71	118	12	P505A 136	P505F 136	13.6	77	124	14
P505A 103	P505F 103	10.3	71	118	12	P505A 137	P505F 137	13.7	77	124	14

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
○	○	○	◎	◎	◎					

P505A(F) High Speed Drill - DIN6537L

Drill

EDP No	EDP No Weldon shank	DC	LCF	OAL	DCON MS	EDP No	EDP No Weldon shank	DC	LCF	OAL	DCON MS
P505A 138	P505F 138	13.8	77	124	14	P505A 170	P505F 170	17	93	143	18
P505A 139	P505F 139	13.9	77	124	14	P505A 171	P505F 171	17.1	93	143	18
P505A 140	P505F 140	14	77	124	14	P505A 172	P505F 172	17.2	93	143	18
P505A 141	P505F 141	14.1	83	133	16	P505A 173	P505F 173	17.3	93	143	18
P505A 142	P505F 142	14.2	83	133	16	P505A 174	P505F 174	17.4	93	143	18
P505A 143	P505F 143	14.3	83	133	16	P505A 175	P505F 175	17.5	93	143	18
P505A 144	P505F 144	14.4	83	133	16	P505A 176	P505F 176	17.6	93	143	18
P505A 145	P505F 145	14.5	83	133	16	P505A 177	P505F 177	17.7	93	143	18
P505A 146	P505F 146	14.6	83	133	16	P505A 178	P505F 178	17.8	93	143	18
P505A 147	P505F 147	14.7	83	133	16	P505A 179	P505F 179	17.9	93	143	18
P505A 148	P505F 148	14.8	83	133	16	P505A 180	P505F 180	18	93	143	18
P505A 149	P505F 149	14.9	83	133	16	P505A 181	P505F 181	18.1	101	153	20
P505A 150	P505F 150	15	83	133	16	P505A 182	P505F 182	18.2	101	153	20
P505A 151	P505F 151	15.1	83	133	16	P505A 183	P505F 183	18.3	101	153	20
P505A 152	P505F 152	15.2	83	133	16	P505A 184	P505F 184	18.4	101	153	20
P505A 153	P505F 153	15.3	83	133	16	P505A 185	P505F 185	18.5	101	153	20
P505A 154	P505F 154	15.4	83	133	16	P505A 186	P505F 186	18.6	101	153	20
P505A 155	P505F 155	15.5	83	133	16	P505A 187	P505F 187	18.7	101	153	20
P505A 156	P505F 156	15.6	83	133	16	P505A 188	P505F 188	18.8	101	153	20
P505A 157	P505F 157	15.7	83	133	16	P505A 189	P505F 189	18.9	101	153	20
P505A 158	P505F 158	15.8	83	133	16	P505A 190	P505F 190	19	101	153	20
P505A 159	P505F 159	15.9	83	133	16	P505A 191	P505F 191	19.1	101	153	20
P505A 160	P505F 160	16	83	133	16	P505A 192	P505F 192	19.2	101	153	20
P505A 161	P505F 161	16.1	93	143	18	P505A 193	P505F 193	19.3	101	153	20
P505A 162	P505F 162	16.2	93	143	18	P505A 194	P505F 194	19.4	101	153	20
P505A 163	P505F 163	16.3	93	143	18	P505A 195	P505F 195	19.5	101	153	20
P505A 164	P505F 164	16.4	93	143	18	P505A 196	P505F 196	19.6	101	153	20
P505A 165	P505F 165	16.5	93	143	18	P505A 197	P505F 197	19.7	101	153	20
P505A 166	P505F 166	16.6	93	143	18	P505A 198	P505F 198	19.8	101	153	20
P505A 167	P505F 167	16.7	93	143	18	P505A 199	P505F 199	19.9	101	153	20
P505A 168	P505F 168	16.8	93	143	18	P505A 200	P505F 200	20	101	153	20
P505A 169	P505F 169	16.9	93	143	18						

Dolphin
Drill

Dolphin
Oil-Hole
Drill

Power
Max

Solid
Spiral

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	HB225 ~HB225	HB225 ~325	HRc30~50	~FCD500					
○	○	○	◎	◎	◎					

Solid Spiral Drill

Non-Ferrous Drill

Characteristics

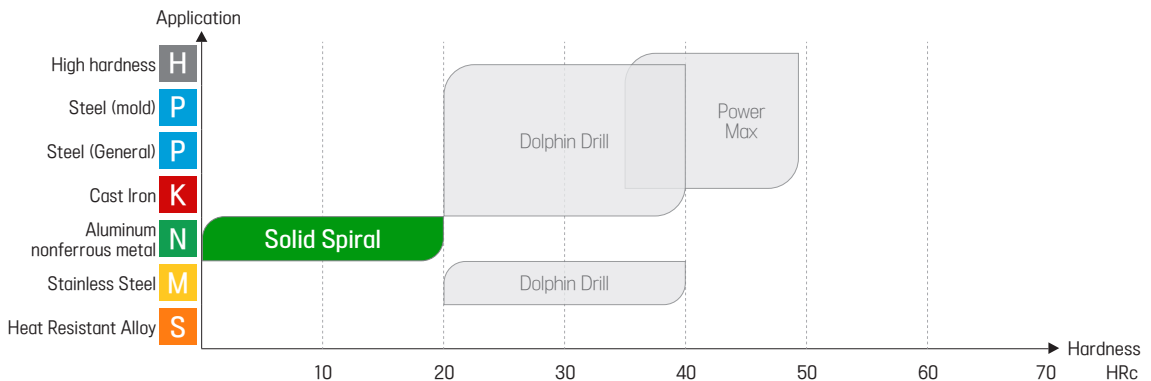
- Suitable to work for Copper, Aluminum, Alloy steels, Non-ferrous steels
- Reasonable price and extensive coverage

Features

- High chipping resistance by applied to the high toughness material
- Improvement of Flute hardness and excellent chip mission by applied to TiN, DLC coating
- Improve to customer variety of choice by applied to equal to Diameter with Shank Diameter



Applications



Contents

EDP No Spec (INCH :  / METRIC : )	Flutes	Geometry	Length			Margin	Tolerance	Diameter(DC)		Page
			3D	5D	8D			Min	Max	
SSD 	2F		○			Single	h8	1	13	494
SSDL 					○	Single	h8	1	10	497
SSTD 			○			Single	h8	0.5	13	499
SSTD L 					○	Single	h8	1	10	502
APF505  	3F			○		Single	0 ~ -0.012	3	16	504

EDP No. System

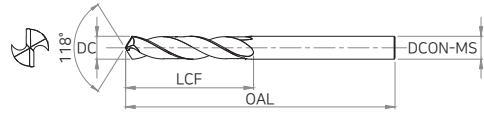
*If expressed as an integer, the decimal point is omitted.

SS	D	L	051
①	②	③	④

① Section	② Appearance	③ Working Depth	④ Cutting Dia
SS : Solid Spiral	D : Drill	L : Long	∅0.5
AP : Aluminium Power	TD : TiN Coated Drill	505 : 5D	~
	F : Facet Point		∅16

SSD Non-Ferrous Drill - Regular

Drill



► Tolerance

DC		Shank Dia
~ Ø3	0 ~ -0.014	h6
Ø3.1 ~ Ø6	0 ~ -0.018	
Ø6.1 ~ Ø10	0 ~ -0.022	
Ø10.1 ~ Ø13	0 ~ -0.027	



EDP No	DC	LCF	OAL	DCONMS	EDP No	DC	LCF	OAL	DCONMS
SSD 010	1	10	38	1	SSD 020	2	16	45	2
SSD 0105	1.05	10	38	1.05	SSD 0205	2.05	16	45	2.05
SSD 011	1.1	10	38	1.1	SSD 021	2.1	16	45	2.1
SSD 0115	1.15	10	38	1.15	SSD 0215	2.15	16	45	2.15
SSD 012	1.2	10	38	1.2	SSD 022	2.2	16	45	2.2
SSD 0125	1.25	10	38	1.25	SSD 0225	2.25	16	45	2.25
SSD 013	1.3	10	38	1.3	SSD 023	2.3	16	45	2.3
SSD 0135	1.35	10	38	1.35	SSD 0235	2.35	16	45	2.35
SSD 014	1.4	10	38	1.4	SSD 024	2.4	18	50	2.4
SSD 0145	1.45	10	38	1.45	SSD 0245	2.45	18	50	2.45
SSD 015	1.5	13	38	1.5	SSD 025	2.5	20	50	2.5
SSD 0155	1.55	13	38	1.55	SSD 0255	2.55	20	50	2.55
SSD 016	1.6	13	38	1.6	SSD 026	2.6	20	50	2.6
SSD 0165	1.65	13	38	1.65	SSD 0265	2.65	20	50	2.65
SSD 017	1.7	13	38	1.7	SSD 027	2.7	22	50	2.7
SSD 0175	1.75	13	38	1.75	SSD 0275	2.75	22	50	2.75
SSD 018	1.8	13	38	1.8	SSD 028	2.8	22	50	2.8
SSD 0185	1.85	13	38	1.85	SSD 0285	2.85	22	50	2.85
SSD 019	1.9	13	38	1.9	SSD 029	2.9	22	50	2.9
SSD 0195	1.95	13	38	1.95	SSD 0295	2.95	22	50	2.95

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
		○				○		◎		

SSD Non-Ferrous Drill - Regular

Drill

EDP No	DC	LCF	OAL	DCONMS	EDP No	DC	LCF	OAL	DCONMS
SSD 030	3	22	50	3	SSD 064	6.4	38	75	6.4
SSD 031	3.1	25	50	3.1	SSD 065	6.5	38	75	6.5
SSD 032	3.2	25	50	3.2	SSD 066	6.6	45	80	6.6
SSD 033	3.3	25	50	3.3	SSD 067	6.7	45	80	6.7
SSD 034	3.4	25	50	3.4	SSD 068	6.8	45	80	6.8
SSD 035	3.5	25	50	3.5	SSD 069	6.9	45	80	6.9
SSD 036	3.6	28	55	3.6	SSD 070	7	45	80	7
SSD 037	3.7	28	55	3.7	SSD 071	7.1	45	80	7.1
SSD 038	3.8	28	55	3.8	SSD 072	7.2	45	80	7.2
SSD 039	3.9	28	55	3.9	SSD 073	7.3	45	80	7.3
SSD 040	4	28	55	4	SSD 074	7.4	45	80	7.4
SSD 041	4.1	30	60	4.1	SSD 075	7.5	45	80	7.5
SSD 042	4.2	30	60	4.2	SSD 076	7.6	50	85	7.6
SSD 043	4.3	30	60	4.3	SSD 077	7.7	50	85	7.7
SSD 044	4.4	30	60	4.4	SSD 078	7.8	50	85	7.8
SSD 045	4.5	30	60	4.5	SSD 079	7.9	50	85	7.9
SSD 046	4.6	33	65	4.6	SSD 080	8	50	85	8
SSD 047	4.7	33	65	4.7	SSD 081	8.1	50	85	8.1
SSD 048	4.8	35	65	4.8	SSD 082	8.2	50	85	8.2
SSD 049	4.9	35	65	4.9	SSD 083	8.3	50	85	8.3
SSD 050	5	35	65	5	SSD 084	8.4	50	85	8.4
SSD 051	5.1	35	65	5.1	SSD 085	8.5	50	85	8.5
SSD 052	5.2	35	65	5.2	SSD 086	8.6	50	95	8.6
SSD 053	5.3	35	65	5.3	SSD 087	8.7	50	95	8.7
SSD 054	5.4	35	65	5.4	SSD 088	8.8	50	95	8.8
SSD 055	5.5	35	65	5.5	SSD 089	8.9	50	95	8.9
SSD 056	5.6	38	75	5.6	SSD 090	9	50	95	9
SSD 057	5.7	38	75	5.7	SSD 091	9.1	50	95	9.1
SSD 058	5.8	38	75	5.8	SSD 092	9.2	50	95	9.2
SSD 059	5.9	38	75	5.9	SSD 093	9.3	50	95	9.3
SSD 060	6	38	75	6	SSD 094	9.4	50	95	9.4
SSD 061	6.1	38	75	6.1	SSD 095	9.5	50	95	9.5
SSD 062	6.2	38	75	6.2	SSD 096	9.6	50	95	9.6
SSD 063	6.3	38	75	6.3	SSD 097	9.7	50	95	9.7

Dolphin Drill

Dolphin Oil-Hole Drill

Power Max

Solid Spiral

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	~325	HRc30~50	~FCD500					
		○				○		◎		

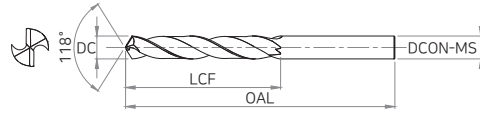
EDP No	DC	LCF	OAL	DCONMS	EDP No	DC	LCF	OAL	DCONMS
SSD 098	9.8	50	95	9.8	SSD 115	11.5	65	120	11.5
SSD 099	9.9	55	100	9.9	SSD 116	11.6	65	120	11.6
SSD 100	10	55	100	10	SSD 117	11.7	65	120	11.7
SSD 101	10.1	55	115	10.1	SSD 118	11.8	65	120	11.8
SSD 102	10.2	55	115	10.2	SSD 119	11.9	65	120	11.9
SSD 103	10.3	55	115	10.3	SSD 120	12	65	120	12
SSD 104	10.4	55	115	10.4	SSD 121	12.1	70	125	12.1
SSD 105	10.5	55	115	10.5	SSD 122	12.2	70	125	12.2
SSD 106	10.6	60	115	10.6	SSD 123	12.3	70	125	12.3
SSD 107	10.7	60	115	10.7	SSD 124	12.4	70	125	12.4
SSD 108	10.8	60	115	10.8	SSD 125	12.5	70	125	12.5
SSD 109	10.9	60	115	10.9	SSD 126	12.6	70	125	12.6
SSD 110	11	60	115	11	SSD 127	12.7	70	125	12.7
SSD 111	11.1	65	120	11.1	SSD 128	12.8	70	125	12.8
SSD 112	11.2	65	120	11.2	SSD 129	12.9	70	125	12.9
SSD 113	11.3	65	120	11.3	SSD 130	13	75	130	13
SSD 114	11.4	65	120	11.4					

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
		○				○		◎		

SSDL Non-Ferrous Drill - Long



► Tolerance

DC		Shank Dia
~ Ø3	0 ~ -0.014	h6
Ø3.1 ~ Ø6	0 ~ -0.018	
Ø6.1 ~ Ø10	0 ~ -0.022	



EDP No	DC	LCF	OAL	DCONMS	EDP No	DC	LCF	OAL	DCONMS
SSDL 010	1	25	65	1	SSDL 030	3	42	73	3
SSDL 011	1.1	25	65	1.1	SSDL 031	3.1	42	73	3.1
SSDL 012	1.2	25	65	1.2	SSDL 032	3.2	42	73	3.2
SSDL 013	1.3	25	65	1.3	SSDL 033	3.3	42	73	3.3
SSDL 014	1.4	25	65	1.4	SSDL 034	3.4	42	73	3.4
SSDL 015	1.5	25	65	1.5	SSDL 035	3.5	42	73	3.5
SSDL 016	1.6	25	65	1.6	SSDL 036	3.6	45	80	3.6
SSDL 017	1.7	25	65	1.7	SSDL 037	3.7	45	80	3.7
SSDL 018	1.8	25	65	1.8	SSDL 038	3.8	48	80	3.8
SSDL 019	1.9	25	65	1.9	SSDL 039	3.9	50	80	3.9
SSDL 020	2	30	65	2	SSDL 040	4	54	85	4
SSDL 021	2.1	30	65	2.1	SSDL 041	4.1	54	85	4.1
SSDL 022	2.2	30	65	2.2	SSDL 042	4.2	54	85	4.2
SSDL 023	2.3	30	65	2.3	SSDL 043	4.3	54	85	4.3
SSDL 024	2.4	30	65	2.4	SSDL 044	4.4	54	85	4.4
SSDL 025	2.5	35	70	2.5	SSDL 045	4.5	54	85	4.5
SSDL 026	2.6	35	70	2.6	SSDL 046	4.6	59	90	4.6
SSDL 027	2.7	35	70	2.7	SSDL 047	4.7	59	90	4.7
SSDL 028	2.8	35	70	2.8	SSDL 048	4.8	59	90	4.8
SSDL 029	2.9	35	70	2.9	SSDL 049	4.9	59	90	4.9

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
		○				○		◎		

Drill

Dolphin Drill

Dolphin Oil-Hole Drill

Power Max

Solid Spiral

SSDL Non-Ferrous Drill - Long

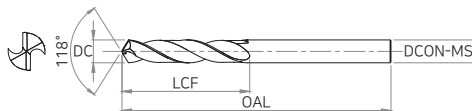
Drill

EDP No	DC	LCF	OAL	DCONMS	EDP No	DC	LCF	OAL	DCONMS
SSDL 050	5	59	90	5	SSDL 076	7.6	80	115	7.6
SSDL 051	5.1	63	95	5.1	SSDL 077	7.7	80	115	7.7
SSDL 052	5.2	63	95	5.2	SSDL 078	7.8	80	115	7.8
SSDL 053	5.3	63	95	5.3	SSDL 079	7.9	80	115	7.9
SSDL 054	5.4	63	95	5.4	SSDL 080	8	80	115	8
SSDL 055	5.5	63	95	5.5	SSDL 081	8.1	85	125	8.1
SSDL 056	5.6	66	100	5.6	SSDL 082	8.2	85	125	8.2
SSDL 057	5.7	66	100	5.7	SSDL 083	8.3	85	125	8.3
SSDL 058	5.8	66	100	5.8	SSDL 084	8.4	85	125	8.4
SSDL 059	5.9	66	100	5.9	SSDL 085	8.5	85	125	8.5
SSDL 060	6	66	100	6	SSDL 086	8.6	85	125	8.6
SSDL 061	6.1	70	105	6.1	SSDL 087	8.7	85	125	8.7
SSDL 062	6.2	70	105	6.2	SSDL 088	8.8	85	125	8.8
SSDL 063	6.3	70	105	6.3	SSDL 089	8.9	85	125	8.9
SSDL 064	6.4	70	105	6.4	SSDL 090	9	85	125	9
SSDL 065	6.5	70	105	6.5	SSDL 091	9.1	88	130	9.1
SSDL 066	6.6	73	105	6.6	SSDL 092	9.2	88	130	9.2
SSDL 067	6.7	73	105	6.7	SSDL 093	9.3	88	130	9.3
SSDL 068	6.8	73	105	6.8	SSDL 094	9.4	88	130	9.4
SSDL 069	6.9	73	105	6.9	SSDL 095	9.5	88	130	9.5
SSDL 070	7	73	105	7	SSDL 096	9.6	90	130	9.6
SSDL 071	7.1	76	110	7.1	SSDL 097	9.7	90	130	9.7
SSDL 072	7.2	76	110	7.2	SSDL 098	9.8	90	130	9.8
SSDL 073	7.3	76	110	7.3	SSDL 099	9.9	90	130	9.9
SSDL 074	7.4	76	110	7.4	SSDL 100	10	90	130	10
SSDL 075	7.5	76	110	7.5					

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
		○				○		◎		



► Tolerance

DC		Shank Dia
~ Ø3	0 ~ -0.014	h6
Ø3.1 ~ Ø6	0 ~ -0.018	
Ø6.1 ~ Ø10	0 ~ -0.022	
Ø10.1 ~ Ø13	0 ~ -0.027	



EDP No	DC	LCF	OAL	DCONMS	EDP No	DC	LCF	OAL	DCONMS
SSTD 005	0.5	6	22	0.5	SSTD 020	2	16	45	2
SSTD 0055	0.55	7	24	0.55	SSTD 021	2.1	16	45	2.1
SSTD 006	0.6	7	24	0.6	SSTD 022	2.2	16	45	2.2
SSTD 0065	0.65	8	26	0.65	SSTD 023	2.3	16	45	2.3
SSTD 007	0.7	9	28	0.7	SSTD 024	2.4	18	50	2.4
SSTD 0075	0.75	9	28	0.75	SSTD 025	2.5	20	50	2.5
SSTD 008	0.8	10	30	0.8	SSTD 026	2.6	20	50	2.6
SSTD 0085	0.85	10	30	0.85	SSTD 027	2.7	22	50	2.7
SSTD 009	0.9	11	32	0.9	SSTD 028	2.8	22	50	2.8
SSTD 0095	0.95	11	32	0.95	SSTD 029	2.9	22	50	2.9
SSTD 010	1	10	38	1	SSTD 030	3	22	50	3
SSTD 011	1.1	10	38	1.1	SSTD 031	3.1	25	50	3.1
SSTD 012	1.2	10	38	1.2	SSTD 032	3.2	25	50	3.2
SSTD 013	1.3	10	38	1.3	SSTD 033	3.3	25	50	3.3
SSTD 014	1.4	10	38	1.4	SSTD 034	3.4	25	50	3.4
SSTD 015	1.5	13	38	1.5	SSTD 035	3.5	25	50	3.5
SSTD 016	1.6	13	38	1.6	SSTD 036	3.6	28	55	3.6
SSTD 017	1.7	13	38	1.7	SSTD 037	3.7	28	55	3.7
SSTD 018	1.8	13	38	1.8	SSTD 038	3.8	28	55	3.8
SSTD 019	1.9	13	38	1.9	SSTD 039	3.9	28	55	3.9

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	~325	HRc30~50	~FCD500					
		○				○		◎		

EDP No	DC	LCF	OAL	DCONMS	EDP No	DC	LCF	OAL	DCONMS
SSTD 040	4	28	55	4	SSTD 074	7.4	45	80	7.4
SSTD 041	4.1	30	60	4.1	SSTD 075	7.5	45	80	7.5
SSTD 042	4.2	30	60	4.2	SSTD 076	7.6	50	85	7.6
SSTD 043	4.3	30	60	4.3	SSTD 077	7.7	50	85	7.7
SSTD 044	4.4	30	60	4.4	SSTD 078	7.8	50	85	7.8
SSTD 045	4.5	30	60	4.5	SSTD 079	7.9	50	85	7.9
SSTD 046	4.6	33	65	4.6	SSTD 080	8	50	85	8
SSTD 047	4.7	33	65	4.7	SSTD 081	8.1	50	85	8.1
SSTD 048	4.8	35	65	4.8	SSTD 082	8.2	50	85	8.2
SSTD 049	4.9	35	65	4.9	SSTD 083	8.3	50	85	8.3
SSTD 050	5	35	65	5	SSTD 084	8.4	50	85	8.4
SSTD 051	5.1	35	65	5.1	SSTD 085	8.5	50	85	8.5
SSTD 052	5.2	35	65	5.2	SSTD 086	8.6	50	95	8.6
SSTD 053	5.3	35	65	5.3	SSTD 087	8.7	50	95	8.7
SSTD 054	5.4	35	65	5.4	SSTD 088	8.8	50	95	8.8
SSTD 055	5.5	35	65	5.5	SSTD 089	8.9	50	95	8.9
SSTD 056	5.6	38	75	5.6	SSTD 090	9	50	95	9
SSTD 057	5.7	38	75	5.7	SSTD 091	9.1	50	95	9.1
SSTD 058	5.8	38	75	5.8	SSTD 092	9.2	50	95	9.2
SSTD 059	5.9	38	75	5.9	SSTD 093	9.3	50	95	9.3
SSTD 060	6	38	75	6	SSTD 094	9.4	50	95	9.4
SSTD 061	6.1	38	75	6.1	SSTD 095	9.5	50	95	9.5
SSTD 062	6.2	38	75	6.2	SSTD 096	9.6	50	95	9.6
SSTD 063	6.3	38	75	6.3	SSTD 097	9.7	50	95	9.7
SSTD 064	6.4	38	75	6.4	SSTD 098	9.8	50	95	9.8
SSTD 065	6.5	38	75	6.5	SSTD 099	9.9	55	100	9.9
SSTD 066	6.6	45	80	6.6	SSTD 100	10	55	100	10
SSTD 067	6.7	45	80	6.7	SSTD 101	10.1	55	115	10.1
SSTD 068	6.8	45	80	6.8	SSTD 102	10.2	55	115	10.2
SSTD 069	6.9	45	80	6.9	SSTD 103	10.3	55	115	10.3
SSTD 070	7	45	80	7	SSTD 104	10.4	55	115	10.4
SSTD 071	7.1	45	80	7.1	SSTD 105	10.5	55	115	10.5
SSTD 072	7.2	45	80	7.2	SSTD 106	10.6	60	115	10.6
SSTD 073	7.3	45	80	7.3	SSTD 107	10.7	60	115	10.7

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	Steel ~HB225	HB225 ~325	Steel HRC30~50	~FCD500					
		○				○		◎		

EDP No	DC	LCF	OAL	DCONMS	EDP No	DC	LCF	OAL	DCONMS
SSTD 108	10.8	60	115	10.8	SSTD 118	11.8	65	120	11.8
SSTD 109	10.9	60	115	10.9	SSTD 119	11.9	65	120	11.9
SSTD 110	11	60	115	11	SSTD 120	12	65	120	12
SSTD 111	11.1	65	120	11.1	SSTD 124	12.4	70	125	12.4
SSTD 112	11.2	65	120	11.2	SSTD 125	12.5	70	125	12.5
SSTD 113	11.3	65	120	11.3	SSTD 130	13	75	130	13
SSTD 115	11.5	65	120	11.5					

Dolphin
Drill

Dolphin
Oil-Hole
Drill

Power
Max

Solid
Spiral

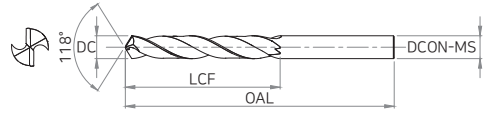
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
		○				○		◎		

SSTDL Non-Ferrous TiN Coated Drill - Long

Drill



► Tolerance

DC		Shank Dia
~ Ø3	0 ~ -0.014	h6
Ø3.1 ~ Ø6	0 ~ -0.018	
Ø6.1 ~ Ø10	0 ~ -0.022	



EDP No	DC	LCF	OAL	DCONMS	EDP No	DC	LCF	OAL	DCONMS
SSTDL 010	1	25	65	1	SSTDL 030	3	42	73	3
SSTDL 011	1.1	25	65	1.1	SSTDL 031	3.1	42	73	3.1
SSTDL 012	1.2	25	65	1.2	SSTDL 032	3.2	42	73	3.2
SSTDL 013	1.3	25	65	1.3	SSTDL 033	3.3	42	73	3.3
SSTDL 014	1.4	25	65	1.4	SSTDL 034	3.4	42	73	3.4
SSTDL 015	1.5	25	65	1.5	SSTDL 035	3.5	42	73	3.5
SSTDL 016	1.6	25	65	1.6	SSTDL 036	3.6	45	80	3.6
SSTDL 017	1.7	25	65	1.7	SSTDL 037	3.7	45	80	3.7
SSTDL 018	1.8	25	65	1.8	SSTDL 038	3.8	48	80	3.8
SSTDL 019	1.9	25	65	1.9	SSTDL 039	3.9	50	80	3.9
SSTDL 020	2	30	65	2	SSTDL 040	4	54	85	4
SSTDL 021	2.1	30	65	2.1	SSTDL 041	4.1	54	85	4.1
SSTDL 022	2.2	30	65	2.2	SSTDL 042	4.2	54	85	4.2
SSTDL 023	2.3	30	65	2.3	SSTDL 043	4.3	54	85	4.3
SSTDL 024	2.4	30	65	2.4	SSTDL 044	4.4	54	85	4.4
SSTDL 025	2.5	35	70	2.5	SSTDL 045	4.5	54	85	4.5
SSTDL 026	2.6	35	70	2.6	SSTDL 046	4.6	59	90	4.6
SSTDL 027	2.7	35	70	2.7	SSTDL 047	4.7	59	90	4.7
SSTDL 028	2.8	35	70	2.8	SSTDL 048	4.8	59	90	4.8
SSTDL 029	2.9	35	70	2.9	SSTDL 049	4.9	59	90	4.9

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
		○				○		◎		

SSTDL Non-Ferrous TiN Coated Drill - Long

Drill

EDP No	DC	LCF	OAL	DCONMS	EDP No	DC	LCF	OAL	DCONMS
SSTDL 050	5	59	90	5	SSTDL 076	7.6	80	115	7.6
SSTDL 051	5.1	63	95	5.1	SSTDL 077	7.7	80	115	7.7
SSTDL 052	5.2	63	95	5.2	SSTDL 078	7.8	80	115	7.8
SSTDL 053	5.3	63	95	5.3	SSTDL 079	7.9	80	115	7.9
SSTDL 054	5.4	63	95	5.4	SSTDL 080	8	80	115	8
SSTDL 055	5.5	63	95	5.5	SSTDL 081	8.1	85	125	8.1
SSTDL 056	5.6	66	100	5.6	SSTDL 082	8.2	85	125	8.2
SSTDL 057	5.7	66	100	5.7	SSTDL 083	8.3	85	125	8.3
SSTDL 058	5.8	66	100	5.8	SSTDL 084	8.4	85	125	8.4
SSTDL 059	5.9	66	100	5.9	SSTDL 085	8.5	85	125	8.5
SSTDL 060	6	66	100	6	SSTDL 086	8.6	85	125	8.6
SSTDL 061	6.1	70	105	6.1	SSTDL 087	8.7	85	125	8.7
SSTDL 062	6.2	70	105	6.2	SSTDL 088	8.8	85	125	8.8
SSTDL 063	6.3	70	105	6.3	SSTDL 089	8.9	85	125	8.9
SSTDL 064	6.4	70	105	6.4	SSTDL 090	9	85	125	9
SSTDL 065	6.5	70	105	6.5	SSTDL 091	9.1	88	130	9.1
SSTDL 066	6.6	73	105	6.6	SSTDL 092	9.2	88	130	9.2
SSTDL 067	6.7	73	105	6.7	SSTDL 093	9.3	88	130	9.3
SSTDL 068	6.8	73	105	6.8	SSTDL 094	9.4	88	130	9.4
SSTDL 069	6.9	73	105	6.9	SSTDL 095	9.5	88	130	9.5
SSTDL 070	7	73	105	7	SSTDL 096	9.6	90	130	9.6
SSTDL 071	7.1	76	110	7.1	SSTDL 097	9.7	90	130	9.7
SSTDL 072	7.2	76	110	7.2	SSTDL 098	9.8	90	130	9.8
SSTDL 073	7.3	76	110	7.3	SSTDL 099	9.9	90	130	9.9
SSTDL 074	7.4	76	110	7.4	SSTDL 100	10	90	130	10
SSTDL 075	7.5	76	110	7.5					

Dolphin Drill

Dolphin Oil-Hole Drill

Power Max

Solid Spiral

► Applicable Working Material

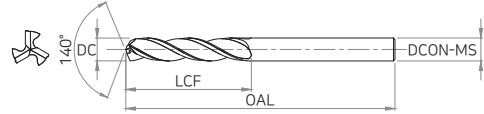
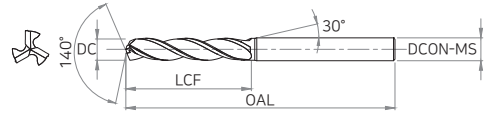
○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
		○				○		◎		

APF505

3F Aluminum Drill - 5D

Drill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.012	h6



EDP No	DC	LCF	OAL	DCONMS	EDP No	DC	LCF	OAL	DCONMS
APF505 030	3	20	60	3	APF505 055	5.5	35	75	6
APF505 03175	3.175	21.4	60.3	4	APF505 05556	5.556	34.9	76.2	6
APF505 03263	3.263	21.5	60.3	4	APF505 05613	5.613	34.9	76.2	6
APF505 035	3.5	22	63	4	APF505 05791	5.791	34.9	76.2	6
APF505 03572	3.572	23.8	63.5	4	APF505 05953	5.953	38.1	82.6	6
APF505 03967	3.967	23.8	63.5	4	APF505 060	6	38	82	6
APF505 040	4	24	65	4	APF505 06045	6.045	41.3	82.6	7
APF505 045	4.5	24	65	5	APF505 06146	6.146	41.3	82.6	7
APF505 04762	4.762	31.75	69.9	5	APF505 06248	6.248	41.3	82.6	7
APF505 04800	4.8	31.8	69.9	5	APF505 06350	6.35	41.3	82.6	7
APF505 04851	4.851	31.8	69.9	5	APF505 065	6.5	38	82	7
APF505 04914	4.914	31.75	69.9	5	APF505 06527	6.527	42.9	82.6	7
APF505 050	5	32	75	5	APF505 06629	6.629	42.9	88.9	7
APF505 05054	5.054	33.4	76.2	6	APF505 06746	6.746	42.9	88.9	7
APF505 05105	5.105	33.4	76.2	6	APF505 06756	6.756	42.9	88.9	7
APF505 05158	5.158	33.4	76.2	6	APF505 06908	6.908	42.9	88.9	7
APF505 05181	5.181	34.9	76.2	6	APF505 070	7	43	88	7
APF505 05219	5.219	34.9	76.2	6	APF505 07035	7.035	42.9	88.9	8
APF505 05308	5.308	34.9	76.2	6	APF505 07142	7.142	44.5	88.9	8
APF505 05410	5.41	34.9	76.2	6	APF505 07366	7.366	44.5	88.9	8

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	Steel ~HB225	HB225 ~325	HRc30~50	~FCD500					
		○				○		◎		

APF505

3F Aluminum Drill - 5D

Drill

EDP No	DC	LCF	OAL	DCONMS	EDP No	DC	LCF	OAL	DCONMS
APF505 075	7.5	44	95	8	APF505 10317	10.317	65.1	114.3	11
APF505 07541	7.541	47.6	95.3	8	APF505 105	10.5	67	114	11
APF505 07670	7.67	47.6	95.3	8	APF505 10716	10.716	68.3	114.3	11
APF505 07937	7.937	47.6	95.3	8	APF505 110	11	68	114	11
APF505 080	8	48	95	8	APF505 11112	11.112	71.4	120.7	12
APF505 08026	8.026	47.6	95.3	9	APF505 115	11.5	70	120	12
APF505 08204	8.204	53.2	95.3	9	APF505 11508	11.508	73	120.7	12
APF505 08333	8.333	53.2	101.6	9	APF505 11907	11.907	73	120.7	12
APF505 08432	8.432	53.2	101.6	9	APF505 120	12	73	120	12
APF505 085	8.5	53	100	9	APF505 12303	12.303	76.2	134.9	13
APF505 08610	8.61	53.2	101.6	9	APF505 125	12.5	75	135	13
APF505 08732	8.732	55.6	101.6	9	APF505 127	12.7	77.8	136.5	13
APF505 08839	8.839	55.6	101.6	9	APF505 130	13	78	136	13
APF505 090	9	55	100	9	APF505 13096	13.096	79.4	136.5	14
APF505 09093	9.093	57.9	108	10	APF505 13492	13.492	84.1	144.5	14
APF505 09128	9.128	57.9	108	10	APF505 13891	13.891	85.7	147.6	14
APF505 09347	9.347	57.9	108	10	APF505 140	14	86	148	14
APF505 095	9.5	58	108	10	APF505 14287	14.287	88.9	150.8	15
APF505 09525	9.525	60.3	108	10	APF505 14683	14.683	88.9	152.4	15
APF505 09575	9.575	60.3	108	10	APF505 150	15	90	152	15
APF505 09804	9.804	60.3	114.3	10	APF505 15082	15.082	90.5	152.4	16
APF505 09921	9.921	60.3	114.3	10	APF505 15478	15.478	93.7	157.2	16
APF505 100	10	60	114	10	APF505 15875	15.875	95.3	160.3	16
APF505 10083	10.083	63.5	114.3	11	APF505 160	16	95	160	16
APF505 10261	10.261	65.1	114.3	11					

Dolphin Drill

Dolphin Oil-Hole Drill

Power Max

Solid Spiral

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
		○				○		◎		

Tap Series

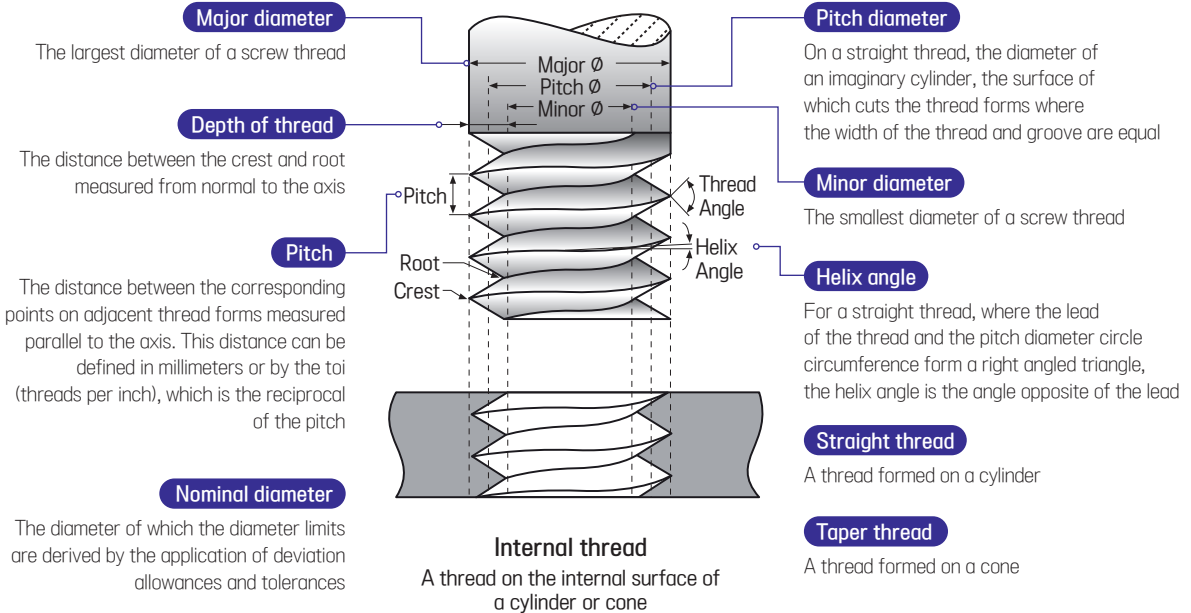
DIN Tap-Star NEW	P. 510
JIS Tap-Star NEW	P. 544

Thread Machining Technology Guide

Terminology

External Thread

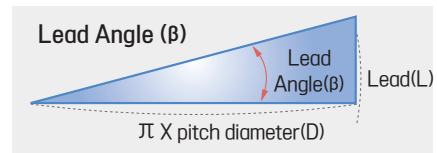
Threads formed on the outer surface of a cylindrical workpiece.



A thread in which the thread helix advances to the left along the axis.



A thread in which the thread helix advances to the right along the axis. Right-hand threads are commonly used, except in special applications.



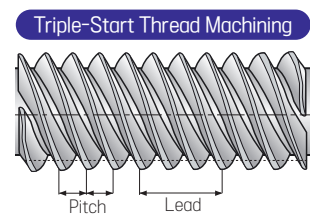
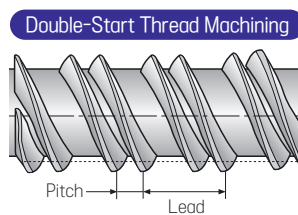
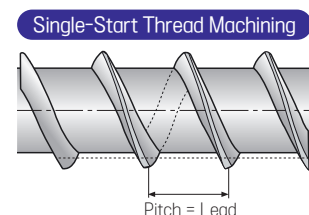
The axial distance a thread advances during one complete revolution around the axis.

$$\text{Lead} = \text{Pitch} \times \text{Number of Starts}$$

The lead angle(β) is calculated using the lead (L) and the circumference at the pitch diameter ($\pi \times D$).

Multi-Start Thread Machining

- A multi-start thread is a thread that has two or more thread starts, visible as multiple helices when viewed in a plane perpendicular to the axis.
- The lead of a multi-start thread is calculated as: $\text{Lead} = \text{Pitch} \times \text{Number of Starts}$



Tap-Star Series NEW

High-Performance Threading Tap-Star Series

Product Description

- High-toughness HSSE substrate for enhanced chipping resistance
- Optimized geometry designed for machining a wide range of workpiece materials



Ring Marking Guide

Yellow Ring

Coating	Applicable workpiece materials
Bright	(N)



Black Ring

Coating	Applicable workpiece materials
TiAlN	(P(K))



Blue Ring

Coating	Applicable workpiece materials
Nitride	(M(H))



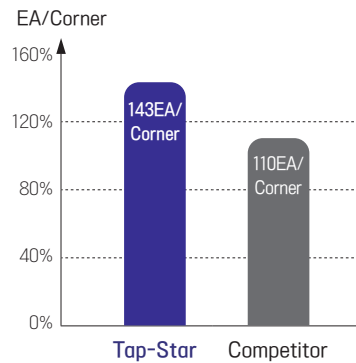
Green Ring

Coating	Applicable workpiece materials
TiAlN	(K)



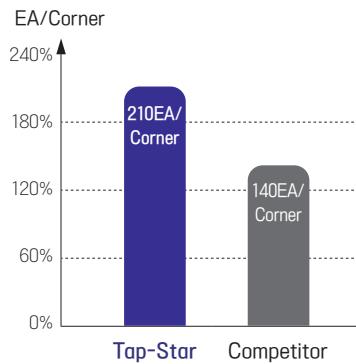
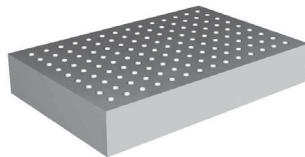
Case Study

Alloy Steel (SNCM439)	
Application	Cutting Tool
Cutting condition	Cutting Dia($\varnothing$) = 3.5, vc(m/min) = 5, ap(mm) = 13, Internal Coolant(wet)
Test tool	SVDAM0407050 (M4x0.7)



Up to 30% tool life improvement compared to competitors' products

Pre-hardened Steel (KP4M)	
Application	Plates
Cutting condition	Cutting Dia($\varnothing$) = 8.5, vc(m/min) = 8, ap(mm) = 15, Internal Coolant(wet)
Test tool	SVQAM1015025 (M10x1.5)



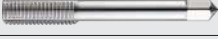
Up to 50% tool life improvement compared to competitors' products

Tap-Star Series NEW

High-Performance Threading Tap-Star Series

Contents

Series	Type	EDP No	Geometry	Coated		Diameter(mm)		Page
				Coated	Uncoated	Min	Max	
DIN / HSSE	Spiral	SVQAM		TiAlN		M2	M24	512
		SVQNM		Nitride		M2	M24	514
		SVQHM		Homo		M2	M24	516
		SVQOM			Bright	M2	M24	518
	Point	SVDAM		TiAlN		M2	M24	520
		SVDNM		Nitride		M2	M24	522
		SVDHM		Homo		M2	M24	524
		SVDOM			Bright	M2	M24	526
	Straight	SVGAM		TiAlN		M3	M24	528
	Roll	SVMOM			Bright	M3	M12	530
		SVMTM		TiN		M3	M12	532
		SVMCM		TiCN		M3	M12	534
DIN / Carbide	Spiral	SWQOM			Bright	M3	M12	536
		SWQCM		TiCN		M3	M12	537
	Straight	SWGOM			Bright	M3	M12	538
		SWGCM		TiCN		M3	M12	540
	Roll	SWMOM			Bright	M3	M12	542
		SWMCM		TiCN		M3	M12	544
JIS / HSSE	Spiral	SVPAM		TiAlN		M2	M24	546
		SVPNM		Nitride		M2	M24	548
		SVPHM		Homo		M2	M24	550
		SVPOM			Bright	M2	M24	552
	Point	SVNAM		TiAlN		M2	M24	554
		SVNNM		Nitride		M2	M24	556
		SVNHM		Homo		M2	M24	558
		SVNOM			Bright	M2	M24	560
	Straight	SVSAM		TiAlN		M3	M24	562

Series	Type	EDP No	Geometry	Coated		Diameter(mm)		Page
				Coated	Uncoated	Min	Max	
JIS / HSSE	Roll	SVROM			Bright	M3	M12	564
		SVRTM		TiN		M3	M12	566
		SVRCM		TiCN		M3	M12	568
JIS / Carbide	Spiral	SWPOM			Bright	M3	M12	570
		SWPCM		TiCN		M3	M12	571
	Straight	SWSOM			Bright	M3	M12	572
		SWSCM		TiCN		M3	M12	574
	Roll	SWROM			Bright	M3	M12	576
		SWRCM		TiCN		M3	M12	578

EDP No. System

*If expressed as an integer, the decimal point is omitted.

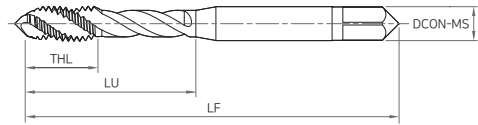
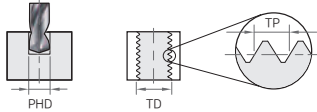
S	V	Q	A	M	06	100	25	(S)
①	②	③	④	⑤	⑥	⑦	⑧	⑨

①	②	③	④	⑤	⑥	⑦	⑧	⑨
Series	Substrate	Description	Surface Treatment	Thread	Size	Pitch	Chamfer Length	Oil Groove
Tap-Star	H : HSSE	Q(DIN) : Spiral	O : Bright	M : Meter Thread	06 : M6	050 : 0.5	15 : 1.5P	S : 1 Groove
	P : PM-HSSE	D(DIN) : Point	A : TiAlN		12 : M12	100 : 1.0	20 : 2.0P	M : 4 Groove
	W : CARBIDE	G(DIN) : Straight	H : HOMO			150 : 1.5	25 : 2.5P	
		M(DIN) : Roll	N : Nitride				40 : 4.0P	
		PUIS) : Spiral	T : TiN				50 : 5.0P	
		NUIS) : Point	C : TiCN					
		SUIS) : Straight						
		RUIS) : Roll						

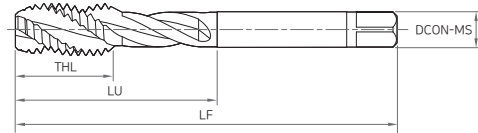
SVQAM

DIN HSSE Spiral Tap

Tap



M6/MF6 OR UNDER



M8/MF8 OVER



EDP No	TDZ	TP	LU	CZC -MS	DCON -MS	TD	LF	THL	NOF	TCL	PHD	TCTR
SVQAM 0204025	M2	0.4	12.5	2.8 x 2.1	2.8	2	45	8	3	2.5P	1.6	6H
SVQAM 025045025	M2.5	0.45	15	2.8 x 2.1	2.8	3	50	9	3	2.5P	2.1	6H
SVQAM 0305025	M3	0.5	17	3.5 x 2.7	3.5	3	56	6	3	2.5P	2.5	6H
SVQAM 0407025	M4	0.7	20.5	4.5 x 3.4	4.5	4	63	7.5	3	2.5P	3.3	6H
SVQAM 0508025	M5	0.8	25	6 x 4.9	6	5	70	9	3	2.5P	4.2	6H
SVQAM 0610025	M6	1	29	6 x 4.9	6	6	80	11	3	2.5P	5	6H
SVQAM 0812525	M8	1.25	34	8 x 6.2	8	8	90	13	3	2.5P	6.8	6H
SVQAM 1015025	M10	1.5	38	10 x 8	10	10	100	16	3	2.5P	8.5	6H
SVQAM 1217525	M12	1.75	40	9 x 7	9	12	110	18	3	2.5P	10.2	6H
SVQAM 1420025	M14	2	45	11 x 9	11	14	110	20	3	2.5P	12	6H
SVQAM 1620025	M16	2	52	12 x 9	12	16	110	20	3	2.5P	14	6H
SVQAM 1825025	M18	2.5	55	14 x 11	14	18	125	22	4	2.5P	15.5	6H
SVQAM 2025025	M20	2.5	58	16 x 12	16	20	140	25	4	2.5P	17.5	6H
SVQAM 2225025	M22	2.5	63	18 x 14.5	18	22	140	25	4	2.5P	19.5	6H
SVQAM 2430025	M24	3	66	18 x 14.5	18	24	160	28	4	2.5P	21	6H
SVQAM 0405025	MF4	0.5	20.5	2.8 x 2.1	2.8	4	63	28	3	2.5P	3.5	6H
SVQAM 0505025	MF5	0.5	24	3.5 x 2.7	3.5	5	70	8	3	2.5P	4.5	6H
SVQAM 0507525	MF5	0.75	24	3.5 x 2.7	3.5	5	70	8	3	2.5P	4.8	6H
SVQAM 0605025	MF6	0.5	26	4.5 x 3.4	4.5	6	80	8	3	2.5P	5.5	6H
SVQAM 0607525	MF6	0.75	26	4.5 x 3.4	4.5	6	80	8	3	2.5P	5.3	6H

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

P										K		N										M	S	
Carbon Steel			Alloy Steel	Hardened Steel			Tool Steel	Cast Steel	Cast Iron	High Strength Steel	Unalloyed Copper	Brass	Brass Casting	Bronze	Aluminum	Aluminum Alloy Casting	Magnesium Alloy Casting	Zinc Alloy Casting	Thermo-Setting Plastic	Thermo-Plastic	Stainless Steels	Titanium Alloys		
-SM25C	SM25C-SM45C	SM45C-	SCM	25-45 HRC	45-55 HRC	50-60 HRC	STD	SC	GC	GCD	Cu	Bs	BsC	CAC	Axx	AC, ALDC	MC	ZDC	Bakelite phenol epoxy	Nylon vinyl chloride	STS	Ti	Ni	
◎	◎	◎	◎	○				◎	○	○						◎								

SVQAM

DIN HSSE Spiral Tap

Tap

EDP No	TDZ	TP	LU	CZC-MS	DCON-MS	TD	LF	THL	NOF	TCL	PHD	TCTR
SVQAM 0807525	MF8	0.75	34	6 x 4.9	6	8	80	10	3	2.5P	7.3	6H
SVQAM 0810025	MF8	1	34	6 x 4.9	6	8	90	10	3	2.5P	7	6H
SVQAM 1007525	MF10	0.75	38	7 x 5.5	7	10	90	14	3	2.5P	9.3	6H
SVQAM 1010025	MF10	1	38	7 x 5.5	7	10	90	14	3	2.5P	9	6H
SVQAM 1012525	MF10	1.25	38	7 x 5.5	7	10	100	14	3	2.5P	8.8	6H
SVQAM 1210025	MF12	1	48	9 x 7	9	12	100	14	3	2.5P	11	6H
SVQAM 1212525	MF12	1.25	48	9 x 7	9	12	100	14	3	2.5P	10.8	6H
SVQAM 1215025	MF12	1.5	48	9 x 7	9	12	100	14	3	2.5P	10.5	6H
SVQAM 1410025	MF14	1	48	11 x 9	11	14	100	18	3	2.5P	13	6H
SVQAM 1412525	MF14	1.25	48	11 x 9	11	14	100	18	3	2.5P	12.8	6H
SVQAM 1415025	MF14	1.5	48	11 x 9	11	14	100	18	3	2.5P	12.5	6H
SVQAM 1610025	MF16	1	52	12 x 9	12	16	100	18	4	2.5P	15	6H
SVQAM 1612525	MF16	1.25	52	12 x 9	12	16	100	18	4	2.5P	14.8	6H
SVQAM 1615025	MF16	1.5	52	12 x 9	12	16	100	18	3	2.5P	14.5	6H
SVQAM 1815025	MF18	1.5	55	14 x 11	14	18	110	18	4	2.5P	16.5	6H
SVQAM 1820025	MF18	2	55	14 x 11	14	18	125	22	4	2.5P	16	6H
SVQAM 2015025	MF20	1.5	58	16 x 12	16	20	125	25	4	2.5P	18.5	6H
SVQAM 2020025	MF20	2	58	16 x 12	16	20	140	25	4	2.5P	18	6H
SVQAM 2215025	MF22	1.5	63	18 x 14.5	18	22	125	25	4	2.5P	20.5	6H
SVQAM 2415025	MF24	1.5	66	18 x 14.5	18	24	140	25	4	2.5P	22.5	6H
SVQAM 2420025	MF24	2	66	18 x 14.5	18	24	140	25	4	2.5P	22	6H

DIN
TAP-
STAR

JIS
TAP-
STAR

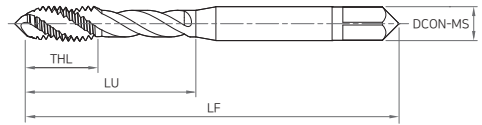
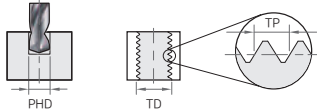
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

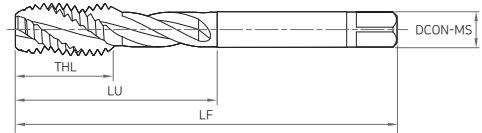
P										K		N										M		S	
Carbon Steel			Alloy Steel	Hardened Steel			Tool Steel	Cast Steel	Cast Iron	High Strength Steel	Unalloyed Copper	Brass	Brass Casting	Bronze	Aluminum	Aluminum, Alloy Casting	Magnesium, Alloy Casting	Zinc, Alloy Casting	Thermo, Setting Plastic	Thermo, Plastic	Stainless Steels	Titanium Alloys			
~SM25C	SM25C ~SM45C	SM45C~	SCM	25~45 HRC	45~55 HRC	50~60 HRC	STD	SC	GC	GCD	Cu	Bs	BsC	CAC	Axx	AC, ALDC	MC	ZDC	Bakelite phenol epoxy	Nylon vinyl chloride	STS	Ti	Ni		
◎	◎	◎	◎	○				◎	○	○						◎									

SVQNM DIN HSSE Spiral Tap

Tap



M6/MF6 OR UNDER



M8/MF8 OVER



EDP No	TDZ	TP	LU	CZC-MS	DCON-MS	TD	LF	THL	NOF	TCL	PHD	TCTR
SVQNM 0204025	M2	0.4	12.5	2.8 x 2.1	2.8	2	45	8	3	2.5P	1.6	6H
SVQNM 025045025	M2.5	0.45	15	2.8 x 2.1	2.8	3	50	9	3	2.5P	2.1	6H
SVQNM 0305025	M3	0.5	17	3.5 x 2.7	3.5	3	56	6	3	2.5P	2.5	6H
SVQNM 0407025	M4	0.7	20.5	4.5 x 3.4	4.5	4	63	7.5	3	2.5P	3.3	6H
SVQNM 0508025	M5	0.8	25	6 x 4.9	6	5	70	9	3	2.5P	4.2	6H
SVQNM 0610025	M6	1	29	6 x 4.9	6	6	80	11	3	2.5P	5	6H
SVQNM 0812525	M8	1.25	34	8 x 6.2	8	8	90	13	3	2.5P	6.8	6H
SVQNM 1015025	M10	1.5	38	10 x 8	10	10	100	16	3	2.5P	8.5	6H
SVQNM 1217525	M12	1.75	40	9 x 7	9	12	110	18	3	2.5P	10.2	6H
SVQNM 1420025	M14	2	45	11 x 9	11	14	110	20	3	2.5P	12	6H
SVQNM 1620025	M16	2	52	12 x 9	12	16	110	20	3	2.5P	14	6H
SVQNM 1825025	M18	2.5	55	14 x 11	14	18	125	22	4	2.5P	15.5	6H
SVQNM 2025025	M20	2.5	58	16 x 12	16	20	140	25	4	2.5P	17.5	6H
SVQNM 2225025	M22	2.5	63	18 x 14.5	18	22	140	25	4	2.5P	19.5	6H
SVQNM 2430025	M24	3	66	18 x 14.5	18	24	160	28	4	2.5P	21	6H
SVQNM 0405025	MF4	0.5	20.5	4.5 x 3.4	4.5	4	63	7.5	3	2.5P	3.5	6H
SVQNM 0505025	MF5	0.5	25	6 x 4.9	6	5	70	8	3	2.5P	4.5	6H
SVQNM 0607525	MF6	0.75	30	6 x 4.9	6	6	80	8	3	2.5P	5.3	6H
SVQNM 0807525	MF8	0.75	30	8 x 6.2	8	8	80	10	3	2.5P	7.3	6H
SVQNM 0810025	MF8	1	34	6 x 4.9	6	8	90	10	3	2.5P	7	6H

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

P									K		N										M	S	
Carbon Steel			Alloy Steel	Hardened Steel			Tool Steel	Cast Steel	Cast Iron	High Strength Steel	Unalloyed Copper	Brass	Brass Casting	Bronze	Aluminum	Aluminum Alloy Casting	Magnesium Alloy Casting	Zinc Alloy Casting	Thermo-Setting Plastic	Thermo-Plastic	Stainless Steels	Titanium Alloys	
-SM25C	SM25C -SM45C	SM45C-	SCM	25-45 HRC	45-55 HRC	50-60 HRC	STD	SC	GC	GCD	Cu	Bs	BsC	CAC	Axx	AC, ALDC	MC	ZDC	Bakelite phenol epoxy	Nylon vinyl chloride	STS	Ti	Ni
○	○	○	○	○			○	○	○	◎									○		◎	○	○

SVQNM

DIN HSSE Spiral Tap

Tap

DIN
TAP-
STAR

JIS
TAP-
STAR

EDP No	TDZ	TP	LU	CZC -MS	DCON -MS	TD	LF	THL	NOF	TCL	PHD	TCTR
SVQNM 1007525	MF10	0.75	39	10 x 8	10	10	90	14	3	2.5P	9.3	6H
SVQNM 1010025	MF10	1	38	7 x 5.5	7	10	90	14	3	2.5P	9	6H
SVQNM 1012525	MF10	1.25	38	7 x 5.5	7	10	100	14	3	2.5P	8.8	6H
SVQNM 1210025	MF12	1	48	9 x 7	9	12	100	14	3	2.5P	11	6H
SVQNM 1212525	MF12	1.25	48	9 x 7	9	12	100	14	3	2.5P	10.8	6H
SVQNM 1215025	MF12	1.5	48	9 x 7	9	12	100	14	3	2.5P	10.5	6H
SVQNM 1410025	MF14	1	48	11 x 9	11	14	100	18	3	2.5P	13	6H
SVQNM 1415025	MF14	1.5	48	11 x 9	11	14	100	18	3	2.5P	12.5	6H
SVQNM 1610025	MF16	1	52	12 x 9	12	16	100	18	4	2.5P	15	6H
SVQNM 1615025	MF16	1.5	52	12 x 9	12	16	100	18	3	2.5P	14.5	6H
SVQNM 1815025	MF18	1.5	55	14 x 11	14	18	110	18	4	2.5P	16.5	6H
SVQNM 1820025	MF18	2	55	14 x 11	14	18	125	22	4	2.5P	16	6H
SVQNM 2015025	MF20	1.5	58	16 x 12	16	20	125	25	4	2.5P	18.5	6H
SVQNM 2215025	MF22	1.5	63	18 x 14.5	18	22	125	25	4	2.5P	20.5	6H
SVQNM 2415025	MF24	1.5	66	18 x 14.5	18	24	140	25	4	2.5P	22.5	6H
SVQNM 2420025	MF24	2	66	18 x 14.5	18	24	140	25	4	2.5P	22	6H

► Applicable Working Material

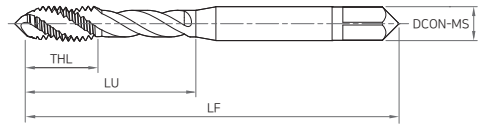
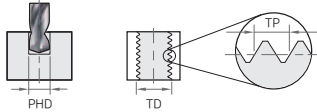
○ : GOOD ◎ : EXCELLENT

P										K		N										M		S	
Carbon Steel			Alloy Steel	Hardened Steel			Tool Steel	Cast Steel	Cast Iron	High Strength Steel	Unalloyed Copper	Brass	Brass Casting	Bronze	Aluminum	Aluminum Alloy Casting	Magnesium Alloy Casting	Zinc Alloy Casting	Thermo Setting Plastic	Thermo Plastic	Stainless Steels	Titanium Alloys			
~SM25C	SM25C~SM45C	SM45C~	SCM	25-45 HRC	45-55 HRC	50-60 HRC	STD	SC	GC	GCD	Cu	Bs	BsC	CAC	Axx	AC, ALDC	MC	ZDC	Bakelite phenol epoxy	Nylon vinyl chloride	STS	Ti	Ni		
○	○	○	○	○			○	○	○	◎						○			○		◎	○	○		

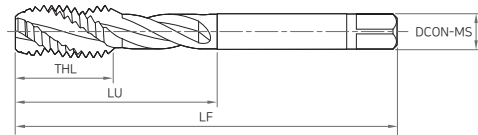
SVQHM

DIN HSSE Spiral Tap

Tap



M6/MF6 OR UNDER



M8/MF8 OVER

DIN
371-374
376

HSSE

HOMO

35°
HELIX

40°
HELIX

EDP No	TDZ	TP	LU	CZC -MS	DCON -MS	TD	LF	THL	NOF	TCL	PHD	TCTR
SVQHM 0204025	M2	0.4	12.5	2.8 x 2.1	2.8	2	45	8	3	2.5P	1.6	6H
SVQHM 025045025	M2.5	0.45	15	2.8 x 2.1	2.8	3	50	9	3	2.5P	2.1	6H
SVQHM 0305025	M3	0.5	17	3.5 x 2.7	3.5	3	56	6	3	2.5P	2.5	6H
SVQHM 0407025	M4	0.7	20.5	4.5 x 3.4	4.5	4	63	7.5	3	2.5P	3.3	6H
SVQHM 0508025	M5	0.8	25	6 x 4.9	6	5	70	9	3	2.5P	4.2	6H
SVQHM 0610025	M6	1	29	6 x 4.9	6	6	80	11	3	2.5P	5	6H
SVQHM 0812525	M8	1.25	34	8 x 6.2	8	8	90	13	3	2.5P	6.8	6H
SVQHM 1015025	M10	1.5	38	10 x 8	10	10	100	16	3	2.5P	8.5	6H
SVQHM 1217525	M12	1.75	40	9 x 7	9	12	110	18	3	2.5P	10.2	6H
SVQHM 1420025	M14	2	45	11 x 9	11	14	110	20	3	2.5P	12	6H
SVQHM 1620025	M16	2	52	12 x 9	12	16	110	20	3	2.5P	14	6H
SVQHM 1825025	M18	2.5	55	14 x 11	14	18	125	22	4	2.5P	15.5	6H
SVQHM 2025025	M20	2.5	58	16 x 12	16	20	140	25	4	2.5P	17.5	6H
SVQHM 2225025	M22	2.5	63	18 x 14.5	18	22	140	25	4	2.5P	19.5	6H
SVQHM 2430025	M24	3	66	18 x 14.5	18	24	160	28	4	2.5P	21	6H
SVQHM 0405025	MF4	0.5	20.5	4.5 x 3.4	4.5	4	63	7.5	3	2.5P	3.5	6H
SVQHM 0505025	MF5	0.5	25	6 x 4.9	6	5	70	8	3	2.5P	4.5	6H
SVQHM 0607525	MF6	0.75	30	6 x 4.9	6	6	80	8	3	2.5P	5.3	6H
SVQHM 0807525	MF8	0.75	30	8 x 6.2	8	8	80	10	3	2.5P	7.3	6H
SVQHM 0810025	MF8	1	34	6 x 4.9	6	8	90	10	3	2.5P	7	6H

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

P										K		N										M	S	
Carbon Steel			Alloy Steel	Hardened Steel			Tool Steel	Cast Steel	Cast Iron	High Strength Steel	Unalloyed Copper	Brass	Brass Casting	Bronze	Aluminum	Aluminum Alloy Casting	Magnesium Alloy Casting	Zinc Alloy Casting	Thermo, Setting Plastic	Thermo, Plastic	Stainless Steels	Titanium Alloys		
~SM25C	SM25C~SM45C	SM45C~	SCM	25~45 HRC	45~55 HRC	50~60 HRC	STD	SC	GC	GCD	Cu	Bs	BsC	CAC	Axx	AC, ALDC	MC	ZDC	Bakelite phenol epoxy	Nylon vinyl chloride	STS	Ti	Ni	
◎	◎	◎	◎	○				◎	○	○						◎								

SVQHM

DIN HSSE Spiral Tap

Tap

DIN
TAP-
STAR

JIS
TAP-
STAR

EDP No	TDZ	TP	LU	CZC -MS	DCON -MS	TD	LF	THL	NOF	TCL	PHD	TCTR
SVQHM 1007525	MF10	0.75	39	10 x 8	10	10	90	14	3	2.5P	9.3	6H
SVQHM 1010025	MF10	1	38	7 x 5.5	7	10	90	14	3	2.5P	9	6H
SVQHM 1012525	MF10	1.25	38	7 x 5.5	7	10	100	14	3	2.5P	8.8	6H
SVQHM 1210025	MF12	1	48	9 x 7	9	12	100	14	3	2.5P	11	6H
SVQHM 1212525	MF12	1.25	48	9 x 7	9	12	100	14	3	2.5P	10.8	6H
SVQHM 1215025	MF12	1.5	48	9 x 7	9	12	100	14	3	2.5P	10.5	6H
SVQHM 1410025	MF14	1	48	11 x 9	11	14	100	18	3	2.5P	13	6H
SVQHM 1415025	MF14	1.5	48	11 x 9	11	14	100	18	3	2.5P	12.5	6H
SVQHM 1610025	MF16	1	52	12 x 9	12	16	100	18	4	2.5P	15	6H
SVQHM 1615025	MF16	1.5	52	12 x 9	12	16	100	18	3	2.5P	14.5	6H
SVQHM 1815025	MF18	1.5	55	14 x 11	14	18	110	18	4	2.5P	16.5	6H
SVQHM 1820025	MF18	2	55	14 x 11	14	18	125	22	4	2.5P	16	6H
SVQHM 2015025	MF20	1.5	58	16 x 12	16	20	125	25	4	2.5P	18.5	6H
SVQHM 2215025	MF22	1.5	63	18 x 14.5	18	22	125	25	4	2.5P	20.5	6H
SVQHM 2415025	MF24	1.5	66	18 x 14.5	18	24	140	25	4	2.5P	22.5	6H
SVQHM 2420025	MF24	2	66	18 x 14.5	18	24	140	25	4	2.5P	22	6H

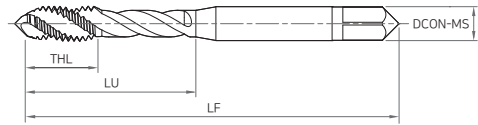
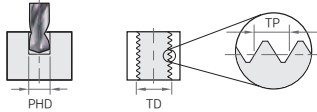
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

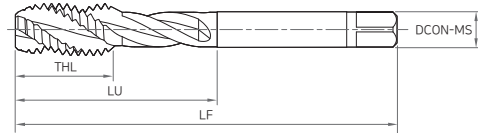
P										K		N										M		S	
Carbon Steel			Alloy Steel	Hardened Steel			Tool Steel	Cast Steel	Cast Iron	High Strength Steel	Unalloyed Copper	Brass	Brass Casting	Bronze	Aluminum	Aluminum Alloy Casting	Magnesium Alloy Casting	Zinc Alloy Casting	Thermo Setting Plastic	Thermo Plastic	Stainless Steels	Titanium Alloys			
~SM25C	SM25C~SM45C	SM45C~	SCM	25~45 HRC	45~55 HRC	50~60 HRC	STD	SC	GC	GCD	Cu	Bs	BsC	CAC	Axx	AC, ALDC	MC	ZDC	Bakelite phenol epoxy	Nylon vinyl chloride	STS	Ti	Ni		
◎	◎	◎	◎	○				◎	○	○						◎									

SVQOM DIN HSSE Spiral Tap

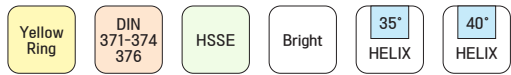
Tap



M6/MF6 OR UNDER



M8/MF8 OVER



EDP No	TDZ	TP	LU	CZC -MS	DCON -MS	TD	LF	THL	NOF	TCL	PHD	TCTR
SVQOM 0204025	M2	0.4	12.5	2.8 x 2.1	2.8	2	45	8	2	2.5P	1.6	6H
SVQOM 025045025	M2.5	0.45	15	2.8 x 2.1	2.8	3	50	9	2	2.5P	2.1	6H
SVQOM 0305025	M3	0.5	17	3.5 x 2.7	3.5	3	56	6	3	2.5P	2.5	6H
SVQOM 0407025	M4	0.7	20.5	4.5 x 3.4	4.5	4	63	7.5	3	2.5P	3.3	6H
SVQOM 0508025	M5	0.8	25	6 x 4.9	6	5	70	9	3	2.5P	4.2	6H
SVQOM 0610025	M6	1	29	6 x 4.9	6	6	80	11	3	2.5P	5	6H
SVQOM 0812525	M8	1.25	34	8 x 6.2	8	8	90	13	3	2.5P	6.8	6H
SVQOM 1015025	M10	1.5	38	10 x 8	10	10	100	16	3	2.5P	8.5	6H
SVQOM 1217525	M12	1.75	40	9 x 7	9	12	110	18	3	2.5P	10.2	6H
SVQOM 1420025	M14	2	45	11 x 9	11	14	110	20	3	2.5P	12	6H
SVQOM 1620025	M16	2	52	12 x 9	12	16	110	20	3	2.5P	14	6H
SVQOM 1825025	M18	2.5	55	14 x 11	14	18	125	22	4	2.5P	15.5	6H
SVQOM 2025025	M20	2.5	58	16 x 12	16	20	140	25	4	2.5P	17.5	6H
SVQOM 2225025	M22	2.5	63	18 x 14.5	18	22	140	25	4	2.5P	19.5	6H
SVQOM 2430025	M24	3	66	18 x 14.5	18	24	160	28	4	2.5P	21	6H
SVQOM 0405025	MF4	0.5	20.5	4.5 x 3.4	4.5	4	63	7.5	2	2.5P	3.5	6H
SVQOM 0505025	MF5	0.5	25	6 x 4.9	6	5	70	8	2	2.5P	4.5	6H
SVQOM 0607525	MF6	0.75	30	6 x 4.9	6	6	80	8	2	2.5P	5.3	6H
SVQOM 0807525	MF8	0.75	30	8 x 6.2	8	8	80	10	2	2.5P	7.3	6H
SVQOM 0810025	MF8	1	34	6 x 4.9	6	8	90	10	3	2.5P	7	6H

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

P										K		N										M		S	
Carbon Steel			Alloy Steel	Hardened Steel			Tool Steel	Cast Steel	Cast Iron	High Strength Steel	Unalloyed Copper	Brass	Brass Casting	Bronze	Aluminum	Aluminum Alloy Casting	Magnesium Alloy Casting	Zinc Alloy Casting	Thermo-Setting Plastic	Thermo-Plastic	Stainless Steels	Titanium Alloys			
-SM25C	SM25C -SM45C	SM45C-	SCM	25-45 HRC	45-55 HRC	50-60 HRC	STD	SC	GC	GCD	Cu	Bs	BsC	CAC	Axx	AC, ALDC	MC	ZDC	Bakelite phenol epoxy	Nylon vinyl chloride	STS	Ti	Ni		
											◎	◎	◎	◎	◎	◎	○	○	◎						

SVQOM

DIN HSSE Spiral Tap

Tap

DIN
TAP-
STAR

JIS
TAP-
STAR

EDP No	TDZ	TP	LU	CZC -MS	DCON -MS	TD	LF	THL	NOF	TCL	PHD	TCTR
SVQOM 1007525	MF10	0.75	38	10 x 8	10	10	90	14	2	2.5P	9.3	6H
SVQOM 1010025	MF10	1	38	7 x 5.5	7	10	90	14	3	2.5P	9	6H
SVQOM 1012525	MF10	1.25	38	7 x 5.5	7	10	100	14	3	2.5P	8.8	6H
SVQOM 1210025	MF12	1	48	9 x 7	9	12	100	14	3	2.5P	11	6H
SVQOM 1212525	MF12	1.25	48	9 x 7	9	12	100	14	3	2.5P	10.8	6H
SVQOM 1215025	MF12	1.5	48	9 x 7	9	12	100	14	3	2.5P	10.5	6H
SVQOM 1410025	MF14	1	48	11 x 9	11	14	100	18	3	2.5P	13	6H
SVQOM 1415025	MF14	1.5	48	11 x 9	11	14	100	18	3	2.5P	12.5	6H
SVQOM 1610025	MF16	1	52	12 x 9	12	16	100	18	3	2.5P	15	6H
SVQOM 1615025	MF16	1.5	52	12 x 9	12	16	100	18	3	2.5P	14.5	6H
SVQOM 1815025	MF18	1.5	55	14 x 11	14	18	110	18	4	2.5P	16.5	6H
SVQOM 1820025	MF18	2	55	14 x 11	14	18	125	22	4	2.5P	16	6H
SVQOM 2015025	MF20	1.5	58	16 x 12	16	20	125	25	4	2.5P	18.5	6H
SVQOM 2215025	MF22	1.5	63	18 x 14.5	18	22	125	25	4	2.5P	20.5	6H
SVQOM 2415025	MF24	1.5	66	18 x 14.5	18	24	140	25	4	2.5P	22.5	6H
SVQOM 2420025	MF24	2	66	18 x 14.5	18	24	140	25	4	2.5P	22	6H

► Applicable Working Material

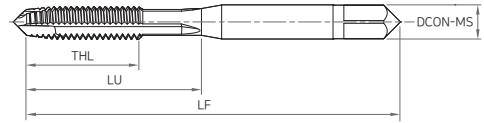
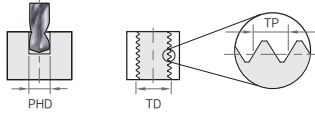
○ : GOOD ◎ : EXCELLENT

P										K		N										M		S	
Carbon Steel			Alloy Steel	Hardened Steel			Tool Steel	Cast Steel	Cast Iron	High Strength Steel	Unalloyed Copper	Brass	Brass Casting	Bronze	Aluminum	Aluminum Alloy Casting	Magnesium Alloy Casting	Zinc Alloy Casting	Thermo Setting Plastic	Thermo Plastic	Stainless Steels	Titanium Alloys			
~SM25C	SM25C~SM45C	SM45C~	SCM	25~45 HRC	45~55 HRC	50~60 HRC	STD	SC	GC	GCD	Cu	Bs	BsC	CAC	Axx	AC, ALDC	MC	ZDC	Bakelite phenol epoxy	Nylon vinyl chloride	STS	Ti	Ni		
											◎	◎	◎	◎	◎	◎	○	○	◎						

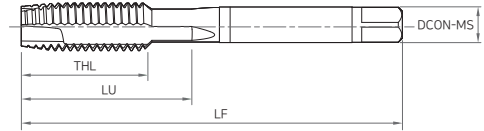
SVDAM

DIN HSSE Point Tap

Tap



M10/MF10 OR UNDER



M12/MF12 OVER

Black
Ring

DIN
371-374
376

HSSE

TIAIN

EDP No	TDZ	TP	LU	CZC -MS	DCON -MS	TD	LF	THL	NOF	TCL	PHD	TCTR
SVDAM 0204050	M2	0.4	12.5	2.8 x 2.1	2.8	2	45	8	3	5.0P	1.6	6H
SVDAM 022045050	M2.2	0.45	15	2.8 x 2.1	2.8	2	45	9	3	5.0P	1.8	6H
SVDAM 025045050	M2.5	0.45	15	2.8 x 2.1	2.8	3	50	9	3	5.0P	2.1	6H
SVDAM 0305050	M3	0.5	18	3.5 x 2.7	3.5	3	56	11	3	5.0P	2.5	6H
SVDAM 03506050	M3.5	0.6	20	4 x 3	4	4	56	13	3	5.0P	2.9	6H
SVDAM 0407050	M4	0.7	21	4.5 x 3.4	4.5	4	63	13	3	5.0P	3.3	6H
SVDAM 0508050	M5	0.8	25	6 x 4.9	6	5	70	16	3	5.0P	4.2	6H
SVDAM 0610050	M6	1	30	6 x 4.9	6	6	80	19	3	5.0P	5	6H
SVDAM 0812550	M8	1.25	35	8 x 6.2	8	8	90	22	3	5.0P	6.8	6H
SVDAM 1015050	M10	1.5	39	10 x 8	10	10	100	24	3	5.0P	8.5	6H
SVDAM 1217550	M12	1.75	40	9 x 7	9	12	110	29	3	5.0P	10.2	6H
SVDAM 1420050	M14	2	45	11 x 9	11	14	110	30	3	5.0P	12	6H
SVDAM 1620050	M16	2	52	12 x 9	12	16	110	32	3	5.0P	14	6H
SVDAM 1825050	M18	2.5	55	14 x 11	14	18	125	34	3	5.0P	15.5	6H
SVDAM 2025050	M20	2.5	58	16 x 12	16	20	140	34	3	5.0P	17.5	6H
SVDAM 2225050	M22	2.5	63	18 x 14.5	18	22	140	34	3	5.0P	19.5	6H
SVDAM 2430050	M24	3	66	18 x 14.5	18	24	160	38	3	5.0P	21	6H
SVDAM 0405050	MF4	0.5	18	2.8 x 2.1	2.8	4	63	10	3	5.0P	3.5	6H
SVDAM 0505050	MF5	0.5	25	3.5 x 2.7	3.5	5	70	12	3	5.0P	4.5	6H
SVDAM 0507550	MF5	0.75	25	3.5 x 2.7	3.5	5	70	12	3	5.0P	4.8	6H

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

P							K		N											M	S		
Carbon Steel			Alloy Steel	Hardened Steel			Tool Steel	Cast Steel	Cast Iron	High Strength Steel	Unalloyed Copper	Brass	Brass Casting	Bronze	Aluminum	Aluminum Alloy Casting	Magnesium Alloy Casting	Zinc Alloy Casting	Thermo-Setting Plastic	Thermo-Plastic	Stainless Steels	Titanium Alloys	
-SM25C	SM25C-SM45C	SM45C-	SCM	25-45 HRC	45-55 HRC	50-60 HRC	STD	SC	GC	GCD	Cu	Bs	BsC	CAC	Axx	AC, ALDC	MC	ZDC	Bakelite phenol epoxy	Nylon vinyl chloride	STS	Ti	Ni
◎	◎	◎	◎	○				◎	○	○						◎							

SVDAM

DIN HSSE Point Tap

Tap

DIN
TAP-
STAR

JIS
TAP-
STAR

EDP No	TDZ	TP	LU	CZC -MS	DCON -MS	TD	LF	THL	NOF	TCL	PHD	TCTR
SVDAM 0605050	MF6	0.5	25	4.5 x 3.4	4.5	6	80	14	3	5.0P	5.5	6H
SVDAM 0607550	MF6	0.75	25	4.5 x 3.4	4.5	6	80	14	3	5.0P	5.3	6H
SVDAM 0807550	MF8	0.75	35	6 x 4.9	6	8	80	19	3	5.0P	7.3	6H
SVDAM 0810050	MF8	1	35	6 x 4.9	6	8	90	22	3	5.0P	7	6H
SVDAM 1007550	MF10	0.75	39	7 x 5.5	7	10	90	20	3	5.0P	9.3	6H
SVDAM 1010050	MF10	1	39	7 x 5.5	7	10	90	20	3	5.0P	9	6H
SVDAM 1012550	MF10	1.25	39	7 x 5.5	7	10	100	24	3	5.0P	8.8	6H
SVDAM 1210050	MF12	1	48	9 x 7	9	12	100	22	3	5.0P	11	6H
SVDAM 1212550	MF12	1.25	48	9 x 7	9	12	100	22	3	5.0P	10.8	6H
SVDAM 1215050	MF12	1.5	48	9 x 7	9	12	100	22	3	5.0P	10.5	6H
SVDAM 1410050	MF14	1	48	11 x 9	11	14	100	22	3	5.0P	13	6H
SVDAM 1412550	MF14	1.25	48	11 x 9	11	14	100	22	3	5.0P	12.8	6H
SVDAM 1415050	MF14	1.5	48	11 x 9	11	14	100	22	3	5.0P	12.5	6H
SVDAM 1610050	MF16	1	52	12 x 9	12	16	100	22	3	5.0P	15	6H
SVDAM 1612550	MF16	1.25	52	12 x 9	12	16	100	22	3	5.0P	14.8	6H
SVDAM 1615050	MF16	1.5	52	12 x 9	12	16	100	22	3	5.0P	14.5	6H
SVDAM 1815050	MF18	1.5	55	14 x 11	14	18	110	25	3	5.0P	16.5	6H
SVDAM 1820050	MF18	2	55	14 x 11	14	18	125	34	4	5.0P	16	6H
SVDAM 2015050	MF20	1.5	58	16 x 12	16	20	125	25	3	5.0P	18.5	6H
SVDAM 2020050	MF20	2	58	16 x 12	16	20	140	34	4	5.0P	18	6H
SVDAM 2215050	MF22	1.5	63	18 x 14.5	18	22	125	25	3	5.0P	20.5	6H
SVDAM 2415050	MF24	1.5	66	18 x 14.5	18	24	140	28	3	5.0P	22.5	6H
SVDAM 2420050	MF24	2	66	18 x 14.5	18	24	140	28	3	5.0P	22	6H

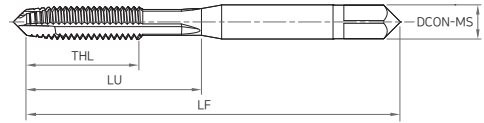
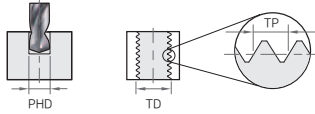
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

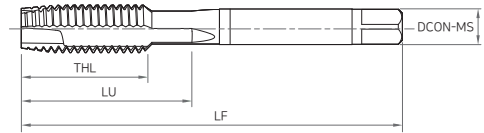
P										K		N										M		S	
Carbon Steel			Alloy Steel	Hardened Steel			Tool Steel	Cast Steel	Cast Iron	High Strength Steel	Unalloyed Copper	Brass	Brass Casting	Bronze	Aluminum	Aluminum Alloy Casting	Magnesium Alloy Casting	Zinc Alloy Casting	Thermo Setting Plastic	Thermo Plastic	Stainless Steels	Titanium Alloys			
~SM25C	SM25C ~SM45C	SM45C	SCM	25~45 HRC	45~55 HRC	50~60 HRC	STD	SC	GC	GCD	Cu	Bs	BsC	CAC	Axx	AC, ALDC	MC	ZDC	Bakelite phenol epoxy	Nylon vinyl chloride	STS	Ti	Ni		
◎	◎	◎	◎	○				◎	○	○						◎									

SVDNM DIN HSSE Point Tap

Tap



M10/MF10 OR UNDER



M12/MF12 OVER



EDP No	TDZ	TP	LU	CZC-MS	DCON-MS	TD	LF	THL	NOF	TCL	PHD	TCTR
SVDNM 0204050	M2	0.4	12.5	2.8 x 2.1	2.8	2	45	8	3	5.0P	1.6	6H
SVDNM 025045050	M2.5	0.45	15	2.8 x 2.1	2.8	3	50	9	3	5.0P	2.1	6H
SVDNM 0305050	M3	0.5	18	3.5 x 2.7	3.5	3	56	11	3	5.0P	2.5	6H
SVDNM 0407050	M4	0.7	21	4.5 x 3.4	4.5	4	63	13	3	5.0P	3.3	6H
SVDNM 0508050	M5	0.8	25	6 x 4.9	6	5	70	16	3	5.0P	4.2	6H
SVDNM 0610050	M6	1	30	6 x 4.9	6	6	80	19	3	5.0P	5	6H
SVDNM 0812550	M8	1.25	35	8 x 6.2	8	8	90	22	3	5.0P	6.8	6H
SVDNM 1015050	M10	1.5	39	10 x 8	10	10	100	24	3	5.0P	8.5	6H
SVDNM 1217550	M12	1.75	40	9 x 7	9	12	110	29	3	5.0P	10.2	6H
SVDNM 1420050	M14	2	45	11 x 9	11	14	110	30	3	5.0P	12	6H
SVDNM 1620050	M16	2	52	12 x 9	12	16	110	32	3	5.0P	14	6H
SVDNM 1825050	M18	2.5	55	14 x 11	14	18	125	34	3	5.0P	15.5	6H
SVDNM 2025050	M20	2.5	58	16 x 12	16	20	140	34	3	5.0P	17.5	6H
SVDNM 2225050	M22	2.5	63	18 x 14.5	18	22	140	34	3	5.0P	19.5	6H
SVDNM 2430050	M24	3	66	18 x 14.5	18	24	160	38	3	5.0P	21	6H
SVDNM 0405050	MF4	0.5	21	4.5 x 3.4	4.5	4	63	10	3	5.0P	3.5	6H
SVDNM 0505050	MF5	0.5	25	6 x 4.9	6	5	70	12	3	5.0P	4.5	6H
SVDNM 0607550	MF6	0.75	30	6 x 4.9	6	6	80	14	3	5.0P	5.3	6H
SVDNM 0807550	MF8	0.75	30	8 x 6.2	8	8	80	19	3	5.0P	7.3	6H
SVDNM 0810050	MF8	0	35	6 x 4.9	6	8	90	22	3	5.0P	7	6H

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

P										K				N										M	S
Carbon Steel			Alloy Steel			Hardened Steel			Tool Steel	Cast Steel	Cast Iron	High Strength Steel	Unalloyed Copper	Brass	Brass Casting	Bronze	Aluminum	Aluminum Alloy Casting	Magnesium Alloy Casting	Zinc Alloy Casting	Thermo-Setting Plastic	Thermo-Plastic	Stainless Steels	Titanium Alloys	
-SM25C	SM25C-SM45C	SM45C-	SCM	25-45 HRC	45-55 HRC	50-60 HRC	STD	SC	GC	GCD	Cu	Bs	BsC	CAC	Axx	AC, ALDC	MC	ZDC	Bakelite phenol epoxy	Nylon vinyl chloride	STS	Ti	Ni		
○	○	○	○	○			○	○	○	◎							○			○		◎	○	○	

SVDNM

DIN HSSE Point Tap

Tap

EDP No	TDZ	TP	LU	CZC -MS	DCON -MS	TD	LF	THL	NOF	TCL	PHD	TCTR
SVDNM 1007550	MF10	0.75	39	10 x 8	10	10	90	20	3	5.0P	9.3	6H
SVDNM 1010050	MF10	1	39	10 x 8	10	10	90	20	3	5.0P	9	6H
SVDNM 1012550	MF10	1.25	39	7 x 5.5	7	10	100	24	3	5.0P	8.8	6H
SVDNM 1210050	MF12	1	48	9 x 7	9	12	100	22	3	5.0P	11	6H
SVDNM 1212550	MF12	1.25	48	9 x 7	9	12	100	22	3	5.0P	10.8	6H
SVDNM 1215050	MF12	1.5	48	9 x 7	9	12	100	22	3	5.0P	10.5	6H
SVDNM 1410050	MF14	1	48	11 x 9	11	14	100	22	3	5.0P	13	6H
SVDNM 1415050	MF14	1.5	48	11 x 9	11	14	100	22	3	5.0P	12.5	6H
SVDNM 1615050	MF16	1	52	12 x 9	12	16	100	22	3	5.0P	15	6H
SVDNM 1615050	MF16	1.5	52	12 x 9	12	16	100	22	3	5.0P	14.5	6H
SVDNM 1815050	MF18	1.5	55	14 x 11	14	18	110	25	3	5.0P	16.5	6H
SVDNM 1820050	MF18	2	55	14 x 11	14	18	125	34	4	5.0P	16	6H
SVDNM 2015050	MF20	1.5	58	16 x 12	16	20	125	25	3	5.0P	18.5	6H
SVDNM 2215050	MF22	1.5	63	18 x 14.5	18	22	125	25	3	5.0P	20.5	6H
SVDNM 2415050	MF24	1.5	66	18 x 14.5	18	24	140	28	3	5.0P	22.5	6H
SVDNM 2420050	MF24	2	66	18 x 14.5	18	24	140	28	3	5.0P	22	6H

DIN
TAP-
STAR

JIS
TAP-
STAR

► Applicable Working Material

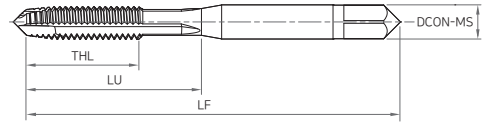
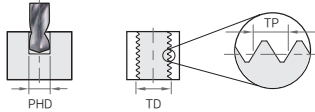
○ : GOOD ◎ : EXCELLENT

P										K		N										M		S	
Carbon Steel			Alloy Steel	Hardened Steel			Tool Steel	Cast Steel	Cast Iron	High Strength Steel	Unalloyed Copper	Brass	Brass Casting	Bronze	Aluminum	Aluminum Alloy Casting	Magnesium Alloy Casting	Zinc Alloy Casting	Thermo. Setting Plastic	Thermo. Plastic	Stainless Steels	Titanium Alloys			
~SM25C	SM25C~SM45C	SM45C~	SCM	25~45 HRC	45~55 HRC	50~60 HRC	STD	SC	GC	GCD	Cu	Bs	BsC	CAC	Axx	AC, ALDC	MC	ZDC	Bakelite phenol epoxy	Nylon vinyl chloride	STS	Ti	Ni		
○	○	○	○	○			○	○	○	◎						○			○		◎	○	○		

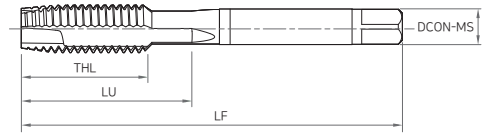
SVDHM

DIN HSSE Point Tap

Tap



M10/MF10 OR UNDER



M12/MF12 OVER

DIN
371-374
376

HSSE

HOMO

EDP No	TDZ	TP	LU	CZC -MS	DCON -MS	TD	LF	THL	NOF	TCL	PHD	TCTR
SVDHM 0204050	M2	0.4	12.5	2.8 x 2.1	2.8	2	45	8	3	5.0P	1.6	6H
SVDHM 025045050	M2.5	0.45	15	2.8 x 2.1	2.8	3	50	9	3	5.0P	2.1	6H
SVDHM 0305050	M3	0.5	18	3.5 x 2.7	3.5	3	56	11	3	5.0P	2.5	6H
SVDHM 0407050	M4	0.7	21	4.5 x 3.4	4.5	4	63	13	3	5.0P	3.3	6H
SVDHM 0508050	M5	0.8	25	6 x 4.9	6	5	70	16	3	5.0P	4.2	6H
SVDHM 0610050	M6	1	30	6 x 4.9	6	6	80	19	3	5.0P	5	6H
SVDHM 0812550	M8	1.25	35	8 x 6.2	8	8	90	22	3	5.0P	6.8	6H
SVDHM 1015050	M10	1.5	39	10 x 8	10	10	100	24	3	5.0P	8.5	6H
SVDHM 1217550	M12	1.75	40	9 x 7	9	12	110	29	3	5.0P	10.2	6H
SVDHM 1420050	M14	2	45	11 x 9	11	14	110	30	3	5.0P	12	6H
SVDHM 1620050	M16	2	52	12 x 9	12	16	110	32	3	5.0P	14	6H
SVDHM 1825050	M18	2.5	55	14 x 11	14	18	125	34	3	5.0P	15.5	6H
SVDHM 2025050	M20	2.5	58	16 x 12	16	20	140	34	3	5.0P	17.5	6H
SVDHM 2225050	M22	2.5	63	18 x 14.5	18	22	140	34	3	5.0P	19.5	6H
SVDHM 2430050	M24	3	66	18 x 14.5	18	24	160	38	3	5.0P	21	6H
SVDHM 0405050	MF4	0.5	21	4.5 x 3.4	4.5	4	63	10	3	5.0P	3.5	6H
SVDHM 0505050	MF5	0.5	25	6 x 4.9	6	5	70	12	3	5.0P	4.5	6H
SVDHM 0607550	MF6	0.75	30	6 x 4.9	6	6	80	14	3	5.0P	5.3	6H
SVDHM 0807550	MF8	0.75	30	8 x 6.2	8	8	80	19	3	5.0P	7.3	6H
SVDHM 0810050	MF8	1	35	6 x 4.9	6	8	90	22	3	5.0P	7	6H

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

P										K		N										M		S	
Carbon Steel			Alloy Steel	Hardened Steel			Tool Steel	Cast Steel	Cast Iron	High Strength Steel	Unalloyed Copper	Brass	Brass Casting	Bronze	Aluminum	Aluminum Alloy Casting	Magnesium Alloy Casting	Zinc Alloy Casting	Thermo-Setting Plastic	Thermo-Plastic	Stainless Steels	Titanium Alloys			
-SM25C	SM25C-SM45C	SM45C-	SCM	25-45 HRC	45-55 HRC	50-60 HRC	STD	SC	GC	GCD	Cu	Bs	BsC	CAC	Axx	AC, ALDC	MC	ZDC	Bakelite phenol epoxy	Nylon vinyl chloride	STS	Ti	Ni		
◎	◎	◎	◎	○				◎	○	○						◎									

SVDHM

DIN HSSE Point Tap

Tap

EDP No	TDZ	TP	LU	CZC -MS	DCON -MS	TD	LF	THL	NOF	TCL	PHD	TCTR
SVDHM 1007550	MF10	0.75	39	10 x 8	10	10	90	20	3	5.0P	9.3	6H
SVDHM 1010050	MF10	1	39	10 x 8	10	10	90	20	3	5.0P	9	6H
SVDHM 1012550	MF10	1.25	39	7 x 5.5	7	10	100	24	3	5.0P	8.8	6H
SVDHM 1210050	MF12	1	48	9 x 7	9	12	100	22	3	5.0P	11	6H
SVDHM 1212550	MF12	1.25	48	9 x 7	9	12	100	22	3	5.0P	10.8	6H
SVDHM 1215050	MF12	1.5	48	9 x 7	9	12	100	22	3	5.0P	10.5	6H
SVDHM 1410050	MF14	1	48	11 x 9	11	14	100	22	3	5.0P	13	6H
SVDHM 1415050	MF14	1.5	48	11 x 9	11	14	100	22	3	5.0P	12.5	6H
SVDHM 1610050	MF16	1	52	12 x 9	12	16	100	22	3	5.0P	15	6H
SVDHM 1615050	MF16	1.5	52	12 x 9	12	16	100	22	3	5.0P	14.5	6H
SVDHM 1815050	MF18	1.5	55	14 x 11	14	18	110	25	3	5.0P	16.5	6H
SVDHM 1820050	MF18	2	55	14 x 11	14	18	125	34	4	5.0P	16	6H
SVDHM 2015050	MF20	1.5	58	16 x 12	16	20	125	25	3	5.0P	18.5	6H
SVDHM 2215050	MF22	1.5	63	18 x 14.5	18	22	125	25	3	5.0P	20.5	6H
SVDHM 2415050	MF24	1.5	66	18 x 14.5	18	24	140	28	3	5.0P	22.5	6H
SVDHM 2420050	MF24	2	66	18 x 14.5	18	24	140	28	3	5.0P	22	6H

DIN
TAP-
STAR

JIS
TAP-
STAR

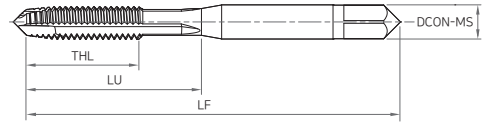
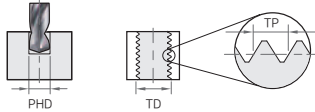
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

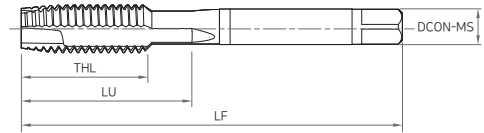
P										K		N										M	S	
Carbon Steel			Alloy Steel	Hardened Steel			Tool Steel	Cast Steel	Cast Iron	High Strength Steel	Unalloyed Copper	Brass	Brass Casting	Bronze	Aluminum	Aluminum, Alloy Casting	Magnesium, Alloy Casting	Zinc, Alloy Casting	Thermo, Setting Plastic	Thermo, Plastic	Stainless Steels	Titanium Alloys		
~SM25C	SM25C~SM45C	SM45C~	SCM	25~45 HRC	45~55 HRC	50~60 HRC	STD	SC	GC	GCD	Cu	Bs	BsC	CAC	Axx	AC, ALDC	MC	ZDC	Bakelite phenol epoxy	Nylon vinyl chloride	STS	Ti	Ni	
◎	◎	◎	◎	○				◎	○	○						◎								

SVDOM DIN HSSE Point Tap

Tap



M10/MF10 OR UNDER



M12/MF12 OVER



EDP No	TDZ	TP	LU	CZC -MS	DCON -MS	TD	LF	THL	NOF	TCL	PHD	TCTR
SVDOM 0204050	M2	0.4	12.5	2.8 x 2.1	2.8	2	45	8	2	5.0P	1.6	6H
SVDOM 025045050	M2.5	0.45	15	2.8 x 2.1	2.8	3	50	9	2	5.0P	2.1	6H
SVDOM 0305050	M3	0.5	18	3.5 x 2.7	3.5	3	56	11	3	5.0P	2.5	6H
SVDOM 0407050	M4	0.7	21	4.5 x 3.4	4.5	4	63	13	3	5.0P	3.3	6H
SVDOM 0508050	M5	0.8	25	6 x 4.9	6	5	70	16	3	5.0P	4.2	6H
SVDOM 0610050	M6	1	30	6 x 4.9	6	6	80	19	3	5.0P	5	6H
SVDOM 0812550	M8	1.25	35	8 x 6.2	8	8	90	22	3	5.0P	6.8	6H
SVDOM 1015050	M10	1.5	39	10 x 8	10	10	100	24	3	5.0P	8.5	6H
SVDOM 1217550	M12	1.75	40	9 x 7	9	12	110	29	3	5.0P	10.2	6H
SVDOM 1420050	M14	2	45	11 x 9	11	14	110	30	3	5.0P	12	6H
SVDOM 1620050	M16	2	52	12 x 9	12	16	110	32	3	5.0P	14	6H
SVDOM 1825050	M18	2.5	55	14 x 11	14	18	125	34	3	5.0P	15.5	6H
SVDOM 2025050	M20	2.5	58	16 x 12	16	20	140	34	3	5.0P	17.5	6H
SVDOM 2225050	M22	2.5	63	18 x 14.5	18	22	140	34	3	5.0P	19.5	6H
SVDOM 2430050	M24	3	66	18 x 14.5	18	24	160	38	3	5.0P	21	6H
SVDOM 0405050	MF4	0.5	21	4.5 x 3.4	4.5	4	63	10	2	5.0P	3.5	6H
SVDOM 0505050	MF5	0.5	25	6 x 4.9	6	5	70	12	2	5.0P	4.5	6H
SVDOM 0607550	MF6	0.75	30	6 x 4.9	6	6	80	14	2	5.0P	5.3	6H
SVDOM 0807550	MF8	0.75	30	8 x 6.2	8	8	80	19	2	5.0P	7.3	6H
SVDOM 0810050	MF8	1	35	6 x 4.9	6	8	90	22	3	5.0P	7	6H

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

P										K		N										M	S	
Carbon Steel			Alloy Steel	Hardened Steel			Tool Steel	Cast Steel	Cast Iron	High Strength Steel	Unalloyed Copper	Brass	Brass Casting	Bronze	Aluminum	Aluminum Alloy Casting	Magnesium Alloy Casting	Zinc Alloy Casting	Thermo-Setting Plastic	Thermo-Plastic	Stainless Steels	Titanium Alloys		
-SM25C	SM25C -SM45C	SM45C-	SCM	25-45 HRC	45-55 HRC	50-60 HRC	STD	SC	GC	GCD	Cu	Bs	BsC	CAC	Axx	AC, ALDC	MC	ZDC	Bakelite phenol epoxy	Nylon vinyl chloride	STS	Ti	Ni	
											◎	◎	◎	◎	◎	◎	○	○	◎					

SVDOM

DIN HSSE Point Tap

Tap

DIN
TAP-
STAR

JIS
TAP-
STAR

EDP No	TDZ	TP	LU	CZC -MS	DCON -MS	TD	LF	THL	NOF	TCL	PHD	TCTR
SVDOM 1007550	MF10	0.75	39	10 x 8	10	10	90	20	2	5.0P	9.3	6H
SVDOM 1010050	MF10	1	39	10 x 8	10	10	90	20	2	5.0P	9	6H
SVDOM 1012550	MF10	1.25	39	7 x 5.5	7	10	100	24	3	5.0P	8.8	6H
SVDOM 1210050	MF12	1	48	9 x 7	9	12	100	22	3	5.0P	11	6H
SVDOM 1212550	MF12	1.25	48	9 x 7	9	12	100	22	3	5.0P	10.8	6H
SVDOM 1215050	MF12	1.5	48	9 x 7	9	12	100	22	3	5.0P	10.5	6H
SVDOM 1410050	MF14	1	48	11 x 9	11	14	100	22	3	5.0P	13	6H
SVDOM 1415050	MF14	1.5	48	11 x 9	11	14	100	22	3	5.0P	12.5	6H
SVDOM 1610050	MF16	1	52	12 x 9	12	16	100	22	3	5.0P	15	6H
SVDOM 1615050	MF16	1.5	52	12 x 9	12	16	100	22	3	5.0P	14.5	6H
SVDOM 1815050	MF18	1.5	55	14 x 11	14	18	110	25	3	5.0P	16.5	6H
SVDOM 1820050	MF18	2	55	14 x 11	14	18	125	34	3	5.0P	16	6H
SVDOM 2015050	MF20	1.5	58	16 x 12	16	20	125	25	3	5.0P	18.5	6H
SVDOM 2215050	MF22	1.5	63	18 x 14.5	18	22	125	25	3	5.0P	20.5	6H
SVDOM 2415050	MF24	1.5	66	18 x 14.5	18	24	140	28	3	5.0P	22.5	6H
SVDOM 2420050	MF24	2	66	18 x 14.5	18	24	140	28	3	5.0P	22	6H

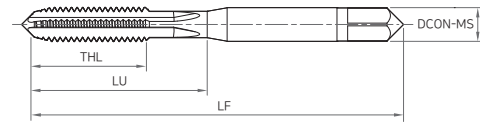
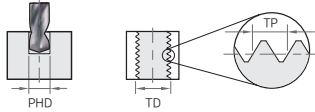
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

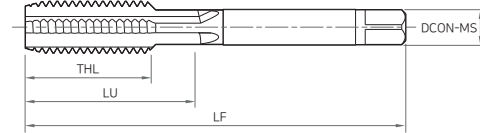
P										K		N										M		S	
Carbon Steel			Alloy Steel	Hardened Steel			Tool Steel	Cast Steel	Cast Iron	High Strength Steel	Unalloyed Copper	Brass	Brass Casting	Bronze	Aluminum	Aluminum Alloy Casting	Magnesium Alloy Casting	Zinc Alloy Casting	Thermo Setting Plastic	Thermo Plastic	Stainless Steels	Titanium Alloys			
~SM25C	SM25C~SM45C	SM45C~	SCM	25~45 HRC	45~55 HRC	50~60 HRC	STD	SC	GC	GCD	Cu	Bs	BsC	CAC	Axx	AC, ALDC	MC	ZDC	Bakelite phenol epoxy	Nylon vinyl chloride	STS	Ti	Ni		
											◎	◎	◎	◎	◎	◎	○	○	◎						

SVGAM DIN HSSE Straight Tap

Tap



M10/MF10 OR UNDER



M12/MF12 OVER



EDP No	TDZ	TP	LU	CZC -MS	DCON -MS	TD	LF	THL	NOF	TCL	PHD	TCTR
SVGAM 0305015	M3	0.5	18	3.5 x 2.7	3.5	3	56	11	3	1.5P	2.5	6H
SVGAM 0407015	M4	0.7	21	4.5 x 3.4	4.5	4	63	13	3	1.5P	3.3	6H
SVGAM 0508015	M5	0.8	25	6 x 4.9	6	5	70	16	3	1.5P	4.2	6H
SVGAM 0610015	M6	1	30	6 x 4.9	6	6	80	19	3	1.5P	5	6H
SVGAM 0812515	M8	1.25	35	8 x 6.2	8	8	90	22	4	1.5P	6.8	6H
SVGAM 1015015	M10	1.5	39	10 x 8	10	10	100	24	4	1.5P	8.5	6H
SVGAM 1217515	M12	1.75	40	9 x 7	9	12	110	29	4	1.5P	10.2	6H
SVGAM 1420015	M14	2	45	11 x 9	11	14	110	30	4	1.5P	12	6H
SVGAM 1620015	M16	2	52	12 x 9	12	16	110	32	4	1.5P	14	6H
SVGAM 1825015	M18	2.5	55	14 x 11	14	18	125	34	4	1.5P	15.5	6H
SVGAM 2025015	M20	2.5	58	16 x 12	16	20	140	34	4	1.5P	17.5	6H
SVGAM 2225015	M22	2.5	63	18 x 14.5	18	22	140	34	4	1.5P	19.5	6H
SVGAM 2430015	M24	3	66	18 x 14.5	18	24	160	38	4	1.5P	21	6H
SVGAM 0810015	MF8	1	35	6 x 4.9	6	8	90	22	4	1.5P	7	6H
SVGAM 1010015	MF10	1	39	7 x 5.5	7	10	90	20	4	1.5P	9	6H
SVGAM 1012515	MF10	1.25	39	7 x 5.5	7	10	100	24	4	1.5P	8.8	6H
SVGAM 1210015	MF12	1	48	9 x 7	9	12	100	22	4	1.5P	11	6H
SVGAM 1212515	MF12	1.25	48	9 x 7	9	12	100	22	4	1.5P	10.8	6H
SVGAM 1215015	MF12	1.5	48	9 x 7	9	12	100	22	4	1.5P	10.5	6H
SVGAM 1415015	MF14	1.5	48	11 x 9	11	14	100	22	4	1.5P	12.5	6H

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

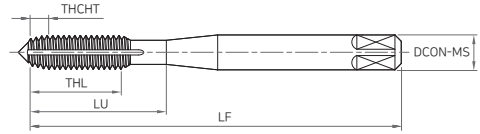
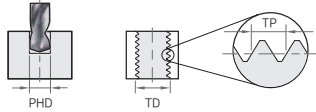
P									K		N										M	S	
Carbon Steel			Alloy Steel	Hardened Steel			Tool Steel	Cast Steel	Cast Iron	High Strength Steel	Unalloyed Copper	Brass	Brass Casting	Bronze	Aluminum	Aluminum Alloy Casting	Magnesium Alloy Casting	Zinc Alloy Casting	Thermo-Setting Plastic	Thermo-Plastic	Stainless Steels	Titanium Alloys	
-SM25C	SM25C-SM45C	SM45C-	SCM	25-45 HRC	45-55 HRC	50-60 HRC	STD	SC	GC	GCD	Cu	Bs	BsC	CAC	Axx	AC, ALDC	MC	ZDC	Bakelite phenol epoxy	Nylon vinyl chloride	STS	Ti	Ni
				○					◎														

EDP No	TDZ	TP	LU	CZC -MS	DCON -MS	TD	LF	THL	NOF	TCL	PHD	TCTR
SVGAM 1615015	MF16	1.5	52	12 x 9	12	16	100	22	4	1.5P	14.5	6H
SVGAM 1815015	MF18	1.5	55	14 x 11	14	18	110	25	4	1.5P	16.5	6H
SVGAM 2015015	MF20	1.5	58	16 x 12	16	20	125	25	4	1.5P	18.5	6H
SVGAM 2215015	MF22	1.5	63	18 x 14.5	18	22	125	25	4	1.5P	20.5	6H
SVGAM 2415015	MF24	1.5	66	18 x 14.5	18	24	140	28	4	1.5P	22.5	6H
SVGAM 2420015	MF24	2	66	18 x 14.5	18	24	140	28	4	1.5P	22	6H
SVGAM 0305050	M3	0.5	18	3.5 x 2.7	3.5	3	56	11	3	5.0P	2.5	6H
SVGAM 0407050	M4	0.7	21	4.5 x 3.4	4.5	4	63	13	3	5.0P	3.3	6H
SVGAM 0508050	M5	0.8	25	6 x 4.9	6	5	70	16	3	5.0P	4.2	6H
SVGAM 0610050	M6	1	30	6 x 4.9	6	6	80	19	3	5.0P	5	6H
SVGAM 0812550	M8	1.25	35	8 x 6.2	8	8	90	22	4	5.0P	6.8	6H
SVGAM 1015050	M10	1.5	39	10 x 8	10	10	100	24	4	5.0P	8.5	6H
SVGAM 1217550	M12	1.75	40	9 x 7	9	12	110	29	4	5.0P	10.2	6H
SVGAM 1420050	M14	2	45	11 x 9	11	14	110	30	4	5.0P	12	6H
SVGAM 1620050	M16	2	52	12 x 9	12	16	110	32	4	5.0P	14	6H
SVGAM 1825050	M18	2.5	55	14 x 11	14	18	125	34	4	5.0P	15.5	6H
SVGAM 2025050	M20	2.5	58	16 x 12	16	20	140	34	4	5.0P	17.5	6H
SVGAM 2225050	M22	2.5	63	18 x 14.5	18	22	140	34	4	5.0P	19.5	6H
SVGAM 2430050	M24	3	66	18 x 14.5	18	24	160	38	4	5.0P	21	6H
SVGAM 0810050	MF8	1	35	6 x 4.9	6	8	90	22	4	5.0P	7	6H
SVGAM 1010050	MF10	1	39	7 x 5.5	7	10	90	20	4	5.0P	9	6H
SVGAM 1012550	MF10	1.25	39	7 x 5.5	7	10	100	24	4	5.0P	8.8	6H
SVGAM 1210050	MF12	1	48	9 x 7	9	12	100	22	4	5.0P	11	6H
SVGAM 1212550	MF12	1.25	48	9 x 7	9	12	100	22	4	5.0P	10.8	6H
SVGAM 1215050	MF12	1.5	48	9 x 7	9	12	100	22	4	5.0P	10.5	6H
SVGAM 1415050	MF14	1.5	48	11 x 9	11	14	100	22	4	5.0P	12.5	6H
SVGAM 1615050	MF16	1.5	52	12 x 9	12	16	100	22	4	5.0P	14.5	6H
SVGAM 1815050	MF18	1.5	55	14 x 11	14	18	110	25	4	5.0P	16.5	6H
SVGAM 2015050	MF20	1.5	58	16 x 12	16	20	125	25	4	5.0P	18.5	6H
SVGAM 2215050	MF22	1.5	63	18 x 14.5	18	22	125	25	4	5.0P	20.5	6H
SVGAM 2415050	MF24	1.5	66	18 x 14.5	18	24	140	28	4	5.0P	22.5	6H
SVGAM 2420050	MF24	2	66	18 x 14.5	18	24	140	28	4	5.0P	22	6H

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

P									K		N											M	S	
Carbon Steel			Alloy Steel	Hardened Steel			Tool Steel	Cast Steel	Cast Iron	High Strength Steel	Unalloyed Copper	Brass	Brass Casting	Bronze	Aluminum	Aluminum, Alloy Casting	Magnesium, Alloy Casting	Zinc, Alloy Casting	Thermo, Setting Plastic	Thermo, Plastic	Stainless Steels	Titanium Alloys		
~SM25C	SM25C ~SM45C	SM45C~	SCM	25~45 HRC	45~55 HRC	50~60 HRC	STD	SC	GC	GCD	Cu	Bs	BsC	CAC	Axx	AC, ALDC	MC	ZDC	Bakelite phenol epoxy	Nylon vinyl chloride	STS	Ti	Ni	
					○				◎															



M6 OR UNDER



M8 OVER

※ 2.0P Tap is removed external center as bottoming type

DIN
371-374
376

HSSE

Bright

EDP No	TDZ	TP	LU	CZC-MS	DCON-MS	TD	LF	THL	NOF	TCL	PHD	TCTR	THCHT
SVMOM 0305020S	M3	0.5	18	3.5 x 2.7	3.5	3	56	11	S	2.0P	2.79	6HX	C
SVMOM 0407020S	M4	0.7	21	4.5 x 3.4	4.5	4	63	13	S	2.0P	3.68	6HX	C
SVMOM 0508020S	M5	0.8	25	6 x 4.9	6	5	70	15	S	2.0P	4.65	6HX	C
SVMOM 0610020S	M6	1	30	6 x 4.9	6	6	80	17	S	2.0P	5.53	6HX	C
SVMOM 0810020S	M8	1	34	6 x 4.9	6	8	90	17	S	2.0P	7.53	6HX	C
SVMOM 0812520S	M8	1.25	40	8 x 6.2	8	8	90	20	S	2.0P	7.38	6HX	C
SVMOM 1010020S	M10	1	39	7 x 5.5	7	10	90	18	S	2.0P	9.53	6HX	C
SVMOM 1012520S	M10	1.25	44	7 x 5.5	7	10	100	22	S	2.0P	9.38	6HX	C
SVMOM 1015020S	M10	1.5	44	10 x 8	10	10	100	22	S	2.0P	9.23	6HX	C
SVMOM 1210020S	M12	1	36	9 x 7	9	12	100	18	S	2.0P	11.53	6HX	C
SVMOM 1212520S	M12	1.25	44	9 x 7	9	12	100	22	S	2.0P	11.38	6HX	C
SVMOM 1215020S	M12	1.5	44	9 x 7	9	12	100	22	S	2.0P	11.24	6HX	C
SVMOM 1217520S	M12	1.75	48	9 x 7	9	12	110	24	S	2.0P	11.11	6HX	C
SVMOM 0305020M	M3	0.5	18	3.5 x 2.7	3.5	3	56	11	M	2.0P	2.79	6HX	C
SVMOM 0407020M	M4	0.7	21	4.5 x 3.4	4.5	4	63	13	M	2.0P	3.68	6HX	C
SVMOM 0508020M	M5	0.8	25	6 x 4.9	6	5	70	15	M	2.0P	4.65	6HX	C
SVMOM 0610020M	M6	1	30	6 x 4.9	6	6	80	17	M	2.0P	5.53	6HX	C
SVMOM 0810020M	M8	1	34	6 x 4.9	6	8	90	17	M	2.0P	7.53	6HX	C
SVMOM 0812520M	M8	1.25	40	8 x 6.2	8	8	90	20	M	2.0P	7.38	6HX	C
SVMOM 1010020M	M10	1	39	7 x 5.5	7	10	90	18	M	2.0P	9.53	6HX	C

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

P								K		N										M	S		
Carbon Steel			Alloy Steel	Hardened Steel			Tool Steel	Cast Steel	Cast Iron	High Strength Steel	Unalloyed Copper	Brass	Brass Casting	Bronze	Aluminum	Aluminum Alloy Casting	Magnesium Alloy Casting	Zinc Alloy Casting	Thermo-Setting Plastic	Thermo-Plastic	Stainless Steels	Titanium Alloys	
-SM25C	SM25C -SM45C	SM45C-	SCM	25-45 HRC	45-55 HRC	50-60 HRC	STD	SC	GC	GCD	Cu	Bs	BsC	CAC	Axx	AC, ALDC	MC	ZDC	Bakelite phenol epoxy	Nylon vinyl chloride	STS	Ti	Ni
○	○										○	○	○	○	○	◎		○					

SVMOM

DIN HSSE Roll Tap

Tap

DIN
TAP-
STAR

JIS
TAP-
STAR

EDP No	TDZ	TP	LU	CZC -MS	DCON -MS	TD	LF	THL	NOF	TCL	PHD	TCTR	THCHT
SVMOM 1012520M	M10	1.25	44	7 x 5.5	7	10	100	22	M	2.0P	9.38	6HX	C
SVMOM 1015020M	M10	1.5	44	10 x 8	10	10	100	22	M	2.0P	9.23	6HX	C
SVMOM 1210020M	M12	1	36	9 x 7	9	12	100	18	M	2.0P	11.53	6HX	C
SVMOM 1212520M	M12	1.25	44	9 x 7	9	12	100	22	M	2.0P	11.38	6HX	C
SVMOM 1215020M	M12	1.5	44	9 x 7	9	12	100	22	M	2.0P	11.24	6HX	C
SVMOM 1217520M	M12	1.75	48	9 x 7	9	12	110	24	M	2.0P	11.11	6HX	C
SVMOM 0305040M	M3	0.5	18	3.5 x 2.7	3.5	3	56	11	M	4.0P	2.79	6HX	B
SVMOM 0407040M	M4	0.7	21	4.5 x 3.4	4.5	4	63	13	M	4.0P	3.68	6HX	B
SVMOM 0508040M	M5	0.8	25	6 x 4.9	6	5	70	15	M	4.0P	4.65	6HX	B
SVMOM 0610040M	M6	1	30	6 x 4.9	6	6	80	17	M	4.0P	5.53	6HX	B
SVMOM 0810040M	M8	1	34	6 x 4.9	6	8	90	17	M	4.0P	7.53	6HX	B
SVMOM 0812540M	M8	1.25	40	8 x 6.2	8	8	90	20	M	4.0P	7.38	6HX	B
SVMOM 1010040M	M10	1	39	7 x 5.5	7	10	90	18	M	4.0P	9.53	6HX	B
SVMOM 1012540M	M10	1.25	44	7 x 5.5	7	10	100	22	M	4.0P	9.38	6HX	B
SVMOM 1015040M	M10	1.5	44	10 x 8	10	10	100	22	M	4.0P	9.23	6HX	B
SVMOM 1210040M	M12	1	36	9 x 7	9	12	100	18	M	4.0P	11.53	6HX	B
SVMOM 1212540M	M12	1.25	44	9 x 7	9	12	100	22	M	4.0P	11.38	6HX	B
SVMOM 1215040M	M12	1.5	44	9 x 7	9	12	100	22	M	4.0P	11.24	6HX	B
SVMOM 1217540M	M12	1.75	48	9 x 7	9	12	110	24	M	4.0P	11.11	6HX	B

* Chamfer Lead : C - 2~3Thread, B - 4~5Thread, E - 1.5~2Thread

* Oil groove S : 1 Oil groove, Oil groove M : 4 Oil groove

► Applicable Working Material

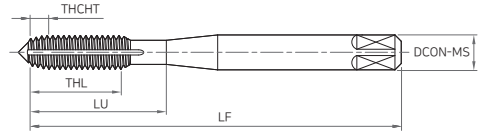
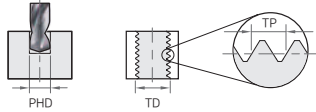
○ : GOOD ◎ : EXCELLENT

P										K		N										M		S	
Carbon Steel			Alloy Steel	Hardened Steel			Tool Steel	Cast Steel	Cast Iron	High Strength Steel	Unalloyed Copper	Brass	Brass Casting	Bronze	Aluminum	Aluminum Alloy Casting	Magnesium Alloy Casting	Zinc Alloy Casting	Thermo, Setting Plastic	Thermo, Plastic	Stainless Steels	Titanium Alloys			
~SM25C	SM25C~SM45C	SM45C~	SCM	25~45 HRC	45~55 HRC	50~60 HRC	STD	SC	GC	GCD	Cu	Bs	BsC	CAC	Axx	AC, ALDC	MC	ZDC	Bakelite phenol epoxy	Nylon vinyl chloride	STS	Ti	Ni		
○	○										○	○	○	○	○	◎		○							

SVMTM

DIN HSSE Roll Tap

Tap



M6 OR UNDER



M8 OVER

※ 2.0P Tap is removed external center as bottoming type

DIN
371-374
376

HSSE

TiN

EDP No	TDZ	TP	LU	CZC-MS	DCON-MS	TD	LF	THL	NOF	TCL	PHD	TCTR	THCHT
SVMTM 0305020S	M3	0.5	18	3.5 x 2.7	3.5	3	56	11	S	2.0P	2.79	6HX	C
SVMTM 0407020S	M4	0.7	21	4.5 x 3.4	4.5	4	63	13	S	2.0P	3.68	6HX	C
SVMTM 0508020S	M5	0.8	25	6 x 4.9	6	5	70	15	S	2.0P	4.65	6HX	C
SVMTM 0610020S	M6	1	30	6 x 4.9	6	6	80	17	S	2.0P	5.53	6HX	C
SVMTM 0810020S	M8	1	34	6 x 4.9	6	8	90	17	S	2.0P	7.53	6HX	C
SVMTM 0812520S	M8	1.25	40	8 x 6.2	8	8	90	20	S	2.0P	7.38	6HX	C
SVMTM 1010020S	M10	1	39	7 x 5.5	7	10	90	18	S	2.0P	9.53	6HX	C
SVMTM 1012520S	M10	1.25	44	9 x 5.5	9	10	100	22	S	2.0P	9.38	6HX	C
SVMTM 1015020S	M10	1.5	44	10 x 8	10	10	100	22	S	2.0P	9.23	6HX	C
SVMTM 1210020S	M12	1	36	9 x 7	9	12	100	18	S	2.0P	11.53	6HX	C
SVMTM 1212520S	M12	1.25	44	9 x 7	9	12	100	22	S	2.0P	11.38	6HX	C
SVMTM 1215020S	M12	1.5	44	9 x 7	9	12	100	22	S	2.0P	11.24	6HX	C
SVMTM 1217520S	M12	1.75	48	9 x 7	9	12	110	24	S	2.0P	11.11	6HX	C
SVMTM 0305020M	M3	0.5	18	3.5 x 2.7	3.5	3	56	11	M	2.0P	2.79	6HX	C
SVMTM 0407020M	M4	0.7	21	4.5 x 3.4	4.5	4	63	13	M	2.0P	3.68	6HX	C
SVMTM 0508020M	M5	0.8	25	6 x 4.9	6	5	70	15	M	2.0P	4.65	6HX	C
SVMTM 0610020M	M6	1	30	6 x 4.9	6	6	80	17	M	2.0P	5.53	6HX	C
SVMTM 0810020M	M8	1	34	6 x 4.9	6	8	90	17	M	2.0P	7.53	6HX	C
SVMTM 0812520M	M8	1.25	40	8 x 6.2	8	8	90	20	M	2.0P	7.38	6HX	C
SVMTM 1010020M	M10	1	39	7 x 5.5	7	10	90	18	M	2.0P	9.53	6HX	C

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

P									K		N											M	S	
Carbon Steel			Alloy Steel	Hardened Steel			Tool Steel	Cast Steel	Cast Iron	High Strength Steel	Unalloyed Copper	Brass	Brass Casting	Bronze	Aluminum	Aluminum Alloy Casting	Magnesium Alloy Casting	Zinc Alloy Casting	Thermo-Setting Plastic	Thermo-Plastic	Stainless Steels	Titanium Alloys		
-SM25C	SM25C-SM45C	SM45C-	SCM	25-45 HRC	45-55 HRC	50-60 HRC	STD	SC	GC	GCD	Cu	Bs	BsC	CAC	Axx	AC, ALDC	MC	ZDC	Bakelite phenol epoxy	Nylon vinyl chloride	STS	Ti	Ni	
○	○										○	○	○	○	○	◎		○						

SVMTM

DIN HSSE Roll Tap

Tap

DIN
TAP-
STAR

JIS
TAP-
STAR

EDP No	TDZ	TP	LU	CZC -MS	DCON -MS	TD	LF	THL	NOF	TCL	PHD	TCTR	THCHT
SVMTM 1012520M	M10	1.25	44	7 x 5.5	7	10	100	22	M	2.0P	9.38	6HX	C
SVMTM 1015020M	M10	1.5	44	10 x 8	10	10	100	22	M	2.0P	9.23	6HX	C
SVMTM 1210020M	M12	1	36	9 x 7	9	12	100	18	M	2.0P	11.53	6HX	C
SVMTM 1212520M	M12	1.25	44	9 x 7	9	12	100	22	M	2.0P	11.38	6HX	C
SVMTM 1215020M	M12	1.5	44	9 x 7	9	12	100	22	M	2.0P	11.24	6HX	C
SVMTM 1217520M	M12	1.75	48	9 x 7	9	12	110	24	M	2.0P	11.11	6HX	C
SVMTM 0305040M	M3	0.5	18	3.5 x 2.7	3.5	3	56	11	M	4.0P	2.79	6HX	B
SVMTM 0407040M	M4	0.7	21	4.5 x 3.4	4.5	4	63	13	M	4.0P	3.68	6HX	B
SVMTM 0508040M	M5	0.8	25	6 x 4.9	6	5	70	15	M	4.0P	4.65	6HX	B
SVMTM 0610040M	M6	1	30	6 x 4.9	6	6	80	17	M	4.0P	5.53	6HX	B
SVMTM 0810040M	M8	1	34	6 x 4.9	6	8	90	17	M	4.0P	7.53	6HX	B
SVMTM 0812540M	M8	1.25	40	8 x 6.2	8	8	90	20	M	4.0P	7.38	6HX	B
SVMTM 1010040M	M10	1	39	7 x 5.5	7	10	90	18	M	4.0P	9.53	6HX	B
SVMTM 1012540M	M10	1.25	44	7 x 5.5	7	10	100	22	M	4.0P	9.38	6HX	B
SVMTM 1015040M	M10	1.5	44	10 x 8	10	10	100	22	M	4.0P	9.23	6HX	B
SVMTM 1210040M	M12	1	36	9 x 7	9	12	100	18	M	4.0P	11.53	6HX	B
SVMTM 1212540M	M12	1.25	44	9 x 7	9	12	100	22	M	4.0P	11.38	6HX	B
SVMTM 1215040M	M12	1.5	44	9 x 7	9	12	100	22	M	4.0P	11.24	6HX	B
SVMTM 1217540M	M12	1.75	48	9 x 7	9	12	110	24	M	4.0P	11.11	6HX	B

* Chamfer Lead : C - 2~3Thread, B - 4~5Thread, E - 1.5~2Thread

* Oil groove S : 1 Oil groove, Oil groove M : 4 Oil groove

► Applicable Working Material

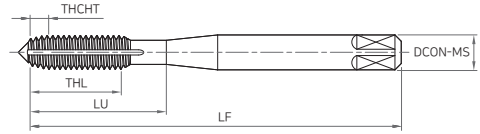
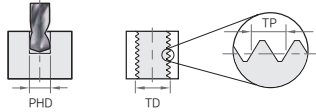
○ : GOOD ◎ : EXCELLENT

P										K		N										M	S	
Carbon Steel			Alloy Steel	Hardened Steel			Tool Steel	Cast Steel	Cast Iron	High Strength Steel	Unalloyed Copper	Brass	Brass Casting	Bronze	Aluminum	Aluminum Alloy Casting	Magnesium Alloy Casting	Zinc Alloy Casting	Thermo Setting Plastic	Thermo Plastic	Stainless Steels	Titanium Alloys		
~SM25C	SM25C~SM45C	SM45C~	SCM	25~45 HRC	45~55 HRC	50~60 HRC	STD	SC	GC	GCD	Cu	Bs	BsC	CAC	Axx	AC, ALDC	MC	ZDC	Bakelite phenol epoxy	Nylon vinyl chloride	STS	Ti	Ni	
○	○										○	○	○	○	○	◎		○						

SVMCM

DIN HSSE Roll Tap

Tap



M6 OR UNDER



M8 OVER

※ 2.0P Tap is removed external center as bottoming type

DIN
371-374
376

HSSE

TiCN

EDP No	TDZ	TP	LU	CZC-MS	DCON-MS	TD	LF	THL	NOF	TCL	PHD	TCTR	THCHT
SVMCM 0305020S	M3	0.5	18	3.5 x 2.7	3.5	3	56	11	S	2.0P	2.79	6HX	C
SVMCM 0407020S	M4	0.7	21	4.5 x 3.4	4.5	4	63	13	S	2.0P	3.68	6HX	C
SVMCM 0508020S	M5	0.8	25	6 x 4.9	6	5	70	15	S	2.0P	4.65	6HX	C
SVMCM 0610020S	M6	1	30	6 x 4.9	6	6	80	17	S	2.0P	5.53	6HX	C
SVMCM 0810020S	M8	1	34	6 x 4.9	6	8	90	17	S	2.0P	7.53	6HX	C
SVMCM 0812520S	M8	1.25	40	8 x 6.2	8	8	90	20	S	2.0P	7.38	6HX	C
SVMCM 1010020S	M10	1	39	7 x 5.5	7	10	90	18	S	2.0P	9.53	6HX	C
SVMCM 1012520S	M10	1.25	44	7 x 5.5	7	10	100	22	S	2.0P	9.38	6HX	C
SVMCM 1015020S	M10	1.5	44	10 x 8	10	10	100	22	S	2.0P	9.23	6HX	C
SVMCM 1210020S	M12	1	36	9 x 7	9	12	100	18	S	2.0P	11.53	6HX	C
SVMCM 1212520S	M12	1.25	44	9 x 7	9	12	100	22	S	2.0P	11.38	6HX	C
SVMCM 1215020S	M12	1.5	44	9 x 7	9	12	100	22	S	2.0P	11.24	6HX	C
SVMCM 1217520S	M12	1.75	48	9 x 7	9	12	110	24	S	2.0P	11.11	6HX	C
SVMCM 0305020M	M3	0.5	18	3.5 x 2.7	3.5	3	56	11	M	2.0P	2.79	6HX	C
SVMCM 0407020M	M4	0.7	21	4.5 x 3.4	4.5	4	63	13	M	2.0P	3.68	6HX	C
SVMCM 0508020M	M5	0.8	25	6 x 4.9	6	5	70	15	M	2.0P	4.65	6HX	C
SVMCM 0610020M	M6	1	30	6 x 4.9	6	6	80	17	M	2.0P	5.53	6HX	C
SVMCM 0810020M	M8	1	34	6 x 4.9	6	8	90	17	M	2.0P	7.53	6HX	C
SVMCM 0812520M	M8	1.25	40	8 x 6.2	8	8	90	20	M	2.0P	7.38	6HX	C
SVMCM 1010020M	M10	1	39	7 x 5.5	7	10	90	18	M	2.0P	9.53	6HX	C

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

P								K		N										M	S		
Carbon Steel			Alloy Steel	Hardened Steel			Tool Steel	Cast Steel	Cast Iron	High Strength Steel	Unalloyed Copper	Brass	Brass Casting	Bronze	Aluminum	Aluminum Alloy Casting	Magnesium Alloy Casting	Zinc Alloy Casting	Thermo-Setting Plastic	Thermo-Plastic	Stainless Steels	Titanium Alloys	
-SM25C	SM25C -SM45C	SM45C-	SCM	25-45 HRC	45-55 HRC	50-60 HRC	STD	SC	GC	GCD	Cu	Bs	BsC	CAC	Axx	AC, ALDC	MC	ZDC	Bakelite phenol epoxy	Nylon vinyl chloride	STS	Ti	Ni
○	○										○	○	○	○	○	◎		○					

SVMCM

DIN HSSE Roll Tap

Tap

EDP No	TDZ	TP	LU	CZC -MS	DCON -MS	TD	LF	THL	NOF	TCL	PHD	TCTR	THCHT
SVMCM 1012520M	M10	1.25	44	7 x 5.5	7	10	100	22	M	2.0P	9.38	6HX	C
SVMCM 1015020M	M10	1.5	44	10 x 8	10	10	100	22	M	2.0P	9.23	6HX	C
SVMCM 1210020M	M12	1	36	9 x 7	9	12	100	18	M	2.0P	11.53	6HX	C
SVMCM 1212520M	M12	1.25	44	9 x 7	9	12	100	22	M	2.0P	11.38	6HX	C
SVMCM 1215020M	M12	1.5	44	9 x 7	9	12	100	22	M	2.0P	11.24	6HX	C
SVMCM 1217520M	M12	1.75	48	9 x 7	9	12	110	24	M	2.0P	11.11	6HX	C
SVMCM 0305040M	M3	0.5	18	3.5 x 2.7	3.5	3	56	11	M	4.0P	2.79	6HX	B
SVMCM 0407040M	M4	0.7	21	4.5 x 3.4	4.5	4	63	13	M	4.0P	3.68	6HX	B
SVMCM 0508040M	M5	0.8	25	6 x 4.9	6	5	70	15	M	4.0P	4.65	6HX	B
SVMCM 0610040M	M6	1	30	6 x 4.9	6	6	80	17	M	4.0P	5.53	6HX	B
SVMCM 0810040M	M8	1	34	6 x 4.9	6	8	90	17	M	4.0P	7.53	6HX	B
SVMCM 0812540M	M8	1.25	40	8 x 6.2	8	8	90	20	M	4.0P	7.38	6HX	B
SVMCM 1010040M	M10	1	39	7 x 5.5	7	10	90	18	M	4.0P	9.53	6HX	B
SVMCM 1012540M	M10	1.25	44	7 x 5.5	7	10	100	22	M	4.0P	9.38	6HX	B
SVMCM 1015040M	M10	1.5	44	10 x 8	10	10	100	22	M	4.0P	9.23	6HX	B
SVMCM 1210040M	M12	1	36	9 x 7	9	12	100	18	M	4.0P	11.53	6HX	B
SVMCM 1212540M	M12	1.25	44	9 x 7	9	12	100	22	M	4.0P	11.38	6HX	B
SVMCM 1215040M	M12	1.5	44	9 x 7	9	12	100	22	M	4.0P	11.24	6HX	B
SVMCM 1217540M	M12	1.75	48	9 x 7	9	12	110	24	M	4.0P	11.11	6HX	B

* Chamfer Lead : C - 2~3Thread, B - 4~5Thread, E - 1.5~2Thread

* Oil groove S : 1 Oil groove, Oil groove M : 4 Oil groove

DIN
TAP-
STAR

JIS
TAP-
STAR

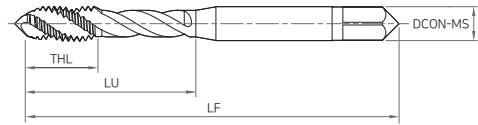
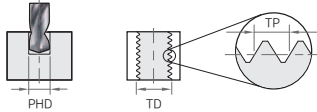
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

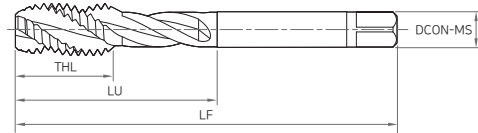
P										K		N										M	S	
Carbon Steel			Alloy Steel	Hardened Steel			Tool Steel	Cast Steel	Cast Iron	High Strength Steel	Unalloyed Copper	Brass	Brass Casting	Bronze	Aluminum	Aluminum Alloy Casting	Magnesium Alloy Casting	Zinc Alloy Casting	Thermo Setting Plastic	Thermo Plastic	Stainless Steels	Titanium Alloys		
~SM25C	SM25C~SM45C	SM45C~	SCM	25~45 HRC	45~55 HRC	50~60 HRC	STD	SC	GC	GCD	Cu	Bs	BsC	CAC	Axx	AC, ALDC	MC	ZDC	Bakelite phenol epoxy	Nylon vinyl chloride	STS	Ti	Ni	
○	○										○	○	○	○	○	◎		○						

SWQOM DIN Carbide Spiral Tap

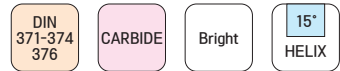
Tap



M6 OR UNDER



M8 OVER



EDP No	TDZ	TP	LU	CZC -MS	DCON -MS	TD	LF	THL	NOF	TCL	PHD	TCTR
SWQOM 0305025	M3	0.5	18	3.5 x 2.7	3.5	3	56	11	3	2.5P	2.5	6H
SWQOM 0407025	M4	0.7	21	4.5 x 3.4	4.5	4	63	13	3	2.5P	3.3	6H
SWQOM 0508025	M5	0.8	25	6 x 4.9	6	5	70	15	3	2.5P	4.2	6H
SWQOM 0610025	M6	1	30	6 x 4.9	6	6	80	17	3	2.5P	5	6H
SWQOM 0810025	M8	1	34	6 x 4.9	6	8	90	17	3	2.5P	7	6H
SWQOM 0812525	M8	1.25	40	8 x 6.2	8	8	90	20	3	2.5P	6.8	6H
SWQOM 1010025	M10	1	39	7 x 5.5	7	10	100	18	3	2.5P	9	6H
SWQOM 1012525	M10	1.25	44	7 x 5.5	7	10	100	22	3	2.5P	8.8	6H
SWQOM 1015025	M10	1.5	44	10 x 8	10	10	100	22	3	2.5P	8.5	6H
SWQOM 1210025	M12	1	44	9 x 7	9	12	100	22	3	2.5P	11	6H
SWQOM 1212525	M12	1.25	44	9 x 7	9	12	100	22	3	2.5P	10.8	6H
SWQOM 1215025	M12	1.5	44	9 x 7	9	12	100	22	3	2.5P	10.5	6H
SWQOM 1217525	M12	1.75	48	9 x 7	9	12	110	24	3	2.5P	10.2	6H

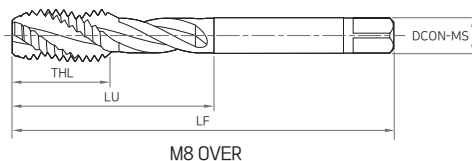
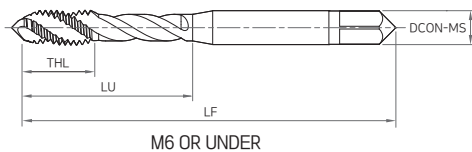
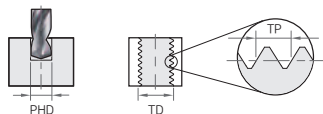
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

P							K		N											M	S		
Carbon Steel			Alloy Steel	Hardened Steel			Tool Steel	Cast Steel	Cast Iron	High Strength Steel	Unalloyed Copper	Brass	Brass Casting	Bronze	Aluminum	Aluminum Alloy Casting	Magnesium Alloy Casting	Zinc Alloy Casting	Thermo-Setting Plastic	Thermo-Plastic	Stainless Steels	Titanium Alloys	
~SM25C	SM25C~SM45C	SM45C~	SCM	25~45 HRC	45~55 HRC	50~60 HRC	STD	SC	GC	GCD	Cu	Bs	BsC	CAC	Axx	AC, ALDC	MC	ZDC	Bakelite phenol epoxy	Nylon vinyl chloride	STS	Ti	Ni
◎	◎	◎	◎	○				◎	○	○					◎	◎							

SWQCM DIN Carbide Spiral Tap

Tap



DIN
TAP-
STAR

JIS
TAP-
STAR

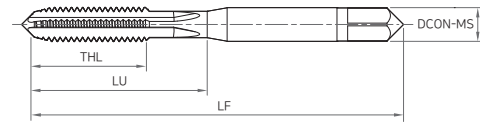
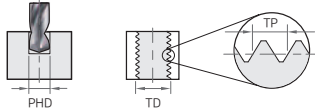


EDP No	TDZ	TP	LU	CZC-MS	DCON-MS	TD	LF	THL	NOF	TCL	PHD	TCTR
SWQCM 0305025	M3	0.5	18	3.5 x 2.7	3.5	3	56	11	3	2.5P	2.5	6H
SWQCM 0407025	M4	0.7	21	4.5 x 3.4	4.5	4	63	13	3	2.5P	3.3	6H
SWQCM 0508025	M5	0.8	25	6 x 4.9	6	5	70	15	3	2.5P	4.2	6H
SWQCM 0610025	M6	1	30	6 x 4.9	6	6	80	17	3	2.5P	5	6H
SWQCM 0810025	M8	1	34	6 x 4.9	6	8	90	17	3	2.5P	7	6H
SWQCM 0812525	M8	1.25	40	8 x 6.2	8	8	90	20	3	2.5P	6.8	6H
SWQCM 1010025	M10	1	39	7 x 5.5	7	10	100	18	3	2.5P	9	6H
SWQCM 1012525	M10	1.25	44	7 x 5.5	7	10	100	22	3	2.5P	8.8	6H
SWQCM 1015025	M10	1.5	44	10 x 8	10	10	100	22	3	2.5P	8.5	6H
SWQCM 1210025	M12	1	44	9 x 7	9	12	100	18	3	2.5P	11	6H
SWQCM 1212525	M12	1.25	44	9 x 7	9	12	100	22	3	2.5P	10.8	6H
SWQCM 1215025	M12	1.5	44	9 x 7	9	12	100	22	3	2.5P	10.5	6H
SWQCM 1217525	M12	1.75	48	9 x 7	9	12	110	24	3	2.5P	10.2	6H

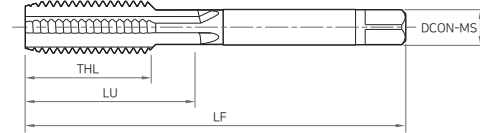
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

P										K		N										M		S	
Carbon Steel			Alloy Steel	Hardened Steel			Tool Steel	Cast Steel	Cast Iron	High Strength Steel	Unalloyed Copper	Brass	Brass Casting	Bronze	Aluminum	Aluminum Alloy Casting	Magnesium Alloy Casting	Zinc Alloy Casting	Thermo, Setting Plastic	Thermo, Plastic	Stainless Steels	Titanium Alloys			
~SM25C	SM25C~SM45C	SM45C~	SCM	25~45 HRC	45~55 HRC	50~60 HRC	STD	SC	GC	GCD	Cu	Bs	BsC	CAC	Axx	AC, ALDC	MC	ZDC	Bakelite phenol epoxy	Nylon vinyl chloride	STS	Ti	Ni		
○	○	◎	◎	○	◎	◎	◎	◎	○	○															



M6 OR UNDER



M8 OVER

* ≤M6, 1.5P Tap is removed external center as bottoming type

DIN
371-374
376

CARBIDE

Bright

EDP No	TDZ	TP	LU	CZC -MS	DCON -MS	TD	LF	THL	NOF	TCL	PHD	TCTR
SWGOM 0305015	M3	0.5	18	3.5 x 2.7	3.5	3	56	11	3	1.5P	2.5	6H
SWGOM 0407015	M4	0.7	21	4.5 x 3.4	4.5	4	63	13	3	1.5P	3.3	6H
SWGOM 0508015	M5	0.8	25	6 x 4.9	6	5	70	15	3	1.5P	4.2	6H
SWGOM 0610015	M6	1	30	6 x 4.9	6	6	80	17	3	1.5P	5	6H
SWGOM 0810015	M8	1	34	6 x 4.9	6	8	90	17	4	1.5P	7	6H
SWGOM 0812515	M8	1.25	40	8 x 6.2	8	8	90	20	4	1.5P	6.8	6H
SWGOM 1010015	M10	1	39	7 x 5.5	7	10	100	18	4	1.5P	9	6H
SWGOM 1015015	M10	1.5	44	10 x 8	10	10	100	22	4	1.5P	8.5	6H
SWGOM 1012515	M10	1.25	44	7 x 5.5	7	10	100	22	4	1.5P	8.8	6H
SWGOM 1210015	M12	1	44	9 x 7	9	12	100	18	4	1.5P	11	6H
SWGOM 1212515	M12	1.25	44	9 x 7	9	12	100	22	4	1.5P	10.8	6H
SWGOM 1215015	M12	1.5	44	9 x 7	9	12	100	22	4	1.5P	10.5	6H
SWGOM 1217515	M12	1.75	48	9 x 7	9	12	110	24	4	1.5P	10.2	6H
SWGOM 0305050	M3	0.5	18	3.5 x 2.7	3.5	3	56	11	3	5.0P	2.5	6H
SWGOM 0407050	M4	0.7	21	4.5 x 3.4	4.5	4	63	13	3	5.0P	3.3	6H
SWGOM 0508050	M5	0.8	25	6 x 4.9	6	5	70	15	3	5.0P	4.2	6H
SWGOM 0610050	M6	1	30	6 x 4.9	6	6	80	17	3	5.0P	5	6H
SWGOM 0810050	M8	1	34	6 x 4.9	6	8	90	17	4	5.0P	7	6H
SWGOM 0812550	M8	1.25	40	8 x 6.2	8	8	90	20	4	5.0P	6.8	6H
SWGOM 1010050	M10	1	39	7 x 5.5	7	10	100	18	4	5.0P	9	6H

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

P							K		N											M	S		
Carbon Steel			Alloy Steel	Hardened Steel			Tool Steel	Cast Steel	Cast Iron	High Strength Steel	Unalloyed Copper	Brass	Brass Casting	Bronze	Aluminum	Aluminum Alloy Casting	Magnesium Alloy Casting	Zinc Alloy Casting	Thermo-Setting Plastic	Thermo-Plastic	Stainless Steels	Titanium Alloys	
-SM25C	SM25C~SM45C	SM45C~	SCM	25~45 HRC	45~55 HRC	50~60 HRC	STD	SC	GC	GCD	Cu	Bs	BsC	CAC	Axx	AC, ALDC	MC	ZDC	Bakelite phenol epoxy	Nylon vinyl chloride	STS	Ti	Ni
○	○	○	○	○				○	◎	◎						◎	◎						

SWGOM

DIN Carbide Straight Tap

Tap

EDP No	TDZ	TP	LU	CZC -MS	DCON -MS	TD	LF	THL	NOF	TCL	PHD	TCTR
SWGOM 1012550	M10	1.25	44	7 x 5.5	7	10	100	22	4	5.0P	8.8	6H
SWGOM 1015050	M10	1.5	44	10 x 8	10	10	100	22	4	5.0P	8.5	6H
SWGOM 1210050	M12	1	44	9 x 7	9	12	100	18	4	5.0P	11	6H
SWGOM 1212550	M12	1.25	44	9 x 7	9	12	100	22	4	5.0P	10.8	6H
SWGOM 1215050	M12	1.5	44	9 x 7	9	12	100	22	4	5.0P	10.5	6H
SWGOM 1217550	M12	1.75	48	9 x 7	9	12	110	24	4	5.0P	10.2	6H

DIN
TAP-
STAR

JIS
TAP-
STAR

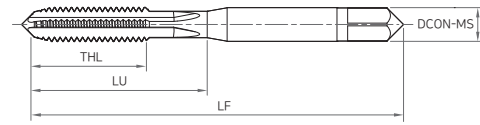
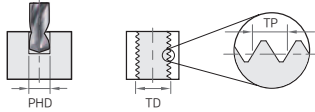
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

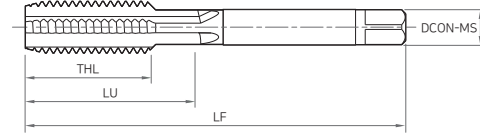
P										K		N										M		S	
Carbon Steel			Alloy Steel	Hardened Steel			Tool Steel	Cast Steel	Cast Iron	High Strength Steel	Unalloyed Copper	Brass	Brass Casting	Bronze	Aluminum	Aluminum, Alloy Casting	Magnesium, Alloy Casting	Zinc, Alloy Casting	Thermo, Setting Plastic	Thermo, Plastic	Stainless Steels	Titanium Alloys			
~SM25C	SM25C ~SM45C	SM45C	SCM	25~45 HRC	45~55 HRC	50~60 HRC	STD	SC	GC	GCD	Cu	Bs	BsC	CAC	Axx	AC, ALDC	MC	ZDC	Bakelite phenol epoxy	Nylon vinyl chloride	STS	Ti	Ni		
○	○	○	○	○				○	◎	◎					◎	◎									

SWGCM DIN Carbide Straight Tap

Tap



M6 OR UNDER



M8 OVER

* ≤M6, 1.5P Tap is removed external center as bottoming type

DIN
371-374
376

CARBIDE

TiCN

EDP No	TDZ	TP	LU	CZC -MS	DCON -MS	TD	LF	THL	NOF	TCL	PHD	TCTR
SWGCM 0305015	M3	0.5	18	3.5 x 2.7	3.5	3	56	11	3	1.5P	2.5	6H
SWGCM 0407015	M4	0.7	21	4.5 x 3.4	4.5	4	63	13	3	1.5P	3.3	6H
SWGCM 0508015	M5	0.8	25	6 x 4.9	6	5	70	15	3	1.5P	4.2	6H
SWGCM 0610015	M6	1	30	6 x 4.9	6	6	80	17	3	1.5P	5	6H
SWGCM 0812515	M8	1.25	40	8 x 6.2	8	8	90	20	4	1.5P	6.8	6H
SWGCM 0810015	M8	1	34	6 x 4.9	6	8	90	17	4	1.5P	7	6H
SWGCM 1010015	M10	1	39	7 x 5.5	7	10	100	18	4	1.5P	9	6H
SWGCM 1012515	M10	1.25	44	7 x 5.5	7	10	100	22	4	1.5P	8.8	6H
SWGCM 1015015	M10	1.5	44	10 x 8	10	10	100	22	4	1.5P	8.5	6H
SWGCM 1210015	M12	1	44	9 x 7	9	12	100	18	4	1.5P	11	6H
SWGCM 1212515	M12	1.25	44	9 x 7	9	12	100	22	4	1.5P	10.8	6H
SWGCM 1215015	M12	1.5	44	9 x 7	9	12	100	22	4	1.5P	10.5	6H
SWGCM 1217515	M12	1.75	48	9 x 7	9	12	110	24	4	1.5P	10.2	6H
SWGCM 0305050	M3	0.5	18	3.5 x 2.7	3.5	3	56	11	3	5.0P	2.5	6H
SWGCM 0407050	M4	0.7	21	4.5 x 3.4	4.5	4	63	13	3	5.0P	3.3	6H
SWGCM 0508050	M5	0.8	25	6 x 4.9	6	5	70	15	3	5.0P	4.2	6H
SWGCM 0610050	M6	1	30	6 x 4.9	6	6	80	17	3	5.0P	5	6H
SWGCM 0810050	M8	1	34	6 x 4.9	6	8	90	17	4	5.0P	7	6H
SWGCM 0812550	M8	1.25	40	8 x 6.2	8	8	90	20	4	5.0P	6.8	6H
SWGCM 1010050	M10	1	39	7 x 5.5	7	10	100	18	4	5.0P	9	6H

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

P									K		N											M	S	
Carbon Steel			Alloy Steel	Hardened Steel			Tool Steel	Cast Steel	Cast Iron	High Strength Steel	Unalloyed Copper	Brass	Brass Casting	Bronze	Aluminum	Aluminum Alloy Casting	Magnesium Alloy Casting	Zinc Alloy Casting	Thermo Setting Plastic	Thermo Plastic	Stainless Steels	Titanium Alloys		
~SM25C	SM25C~SM45C	SM45C~	SCM	25~45 HRC	45~55 HRC	50~60 HRC	STD	SC	GC	GCD	Cu	Bs	BsC	CAC	Axx	AC, ALDC	MC	ZDC	Bakelite phenol epoxy	Nylon vinyl chloride	STS	Ti	Ni	
				○	○	○	○	○	◎	◎														

SWGCM

DIN Carbide Straight Tap

Tap

EDP No	TDZ	TP	LU	CZC -MS	DCON -MS	TD	LF	THL	NOF	TCL	PHD	TCTR
SWGCM 1012550	M10	1.25	44	7 x 5.5	7	10	100	22	4	5.0P	8.8	6H
SWGCM 1015050	M10	1.5	44	10 x 8	10	10	100	22	4	5.0P	8.5	6H
SWGCM 1210050	M12	1	44	9 x 7	9	12	100	18	4	5.0P	11	6H
SWGCM 1212550	M12	1.25	44	9 x 7	9	12	100	22	4	5.0P	10.8	6H
SWGCM 1215050	M12	1.5	44	9 x 7	9	12	100	22	4	5.0P	10.5	6H
SWGCM 1217550	M12	1.75	48	9 x 7	9	12	110	24	4	5.0P	10.2	6H

DIN
TAP-
STAR

JIS
TAP-
STAR

► Applicable Working Material

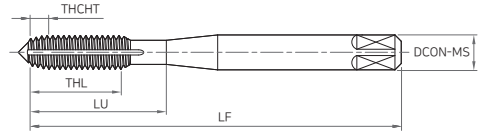
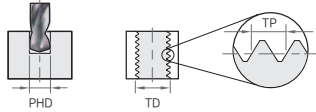
○ : GOOD ◎ : EXCELLENT

P										K		N										M		S	
Carbon Steel			Alloy Steel	Hardened Steel			Tool Steel	Cast Steel	Cast Iron	High Strength Steel	Unalloyed Copper	Brass	Brass Casting	Bronze	Aluminum	Aluminum, Alloy Casting	Magnesium, Alloy Casting	Zinc, Alloy Casting	Thermo, Setting Plastic	Thermo, Plastic	Stainless Steels	Titanium Alloys			
~SM25C	SM25C ~SM45C	SM45C~	SCM	25~45 HRC	45~55 HRC	50~60 HRC	STD	SC	GC	GCD	Cu	Bs	BsC	CAC	Axx	AC, ALDC	MC	ZDC	Bakelite phenol epoxy	Nylon vinyl chloride	STS	Ti	Ni		
					○	○	○	○	◎	◎															

SWMOM

DIN Carbide Roll Tap

Tap



M6 OR UNDER



M8 OVER

※ 2.0P Tap is removed external center as bottoming type

DIN
371-374
376

CARBIDE

Bright

EDP No	TDZ	TP	LU	CZC-MS	DCON-MS	TD	LF	THL	NOF	TCL	PHD	TCTR	THCHT
SWMOM 0305020S	M3	0.5	18	3.5 x 2.7	3.5	3	56	11	S	2.0P	2.79	6HX	C
SWMOM 0407020S	M4	0.7	21	4.5 x 3.4	4.5	4	63	13	S	2.0P	3.68	6HX	C
SWMOM 0508020S	M5	0.8	25	6 x 4.9	6	5	70	15	S	2.0P	4.65	6HX	C
SWMOM 0610020S	M6	1	30	6 x 4.9	6	6	80	17	S	2.0P	5.53	6HX	C
SWMOM 0810020S	M8	1	34	6 x 4.9	6	8	90	17	S	2.0P	7.53	6HX	C
SWMOM 0812520S	M8	1.25	40	8 x 6.2	8	8	90	20	S	2.0P	7.38	6HX	C
SWMOM 1010020S	M10	1	39	7 x 5.5	7	10	90	18	S	2.0P	9.53	6HX	C
SWMOM 1012520S	M10	1.25	44	7 x 5.5	7	10	100	22	S	2.0P	9.38	6HX	C
SWMOM 1015020S	M10	1.5	44	10 x 8	10	10	100	22	S	2.0P	9.23	6HX	C
SWMOM 1210020S	M12	1	36	9 x 7	9	12	100	18	S	2.0P	11.53	6HX	C
SWMOM 1212520S	M12	1.25	44	9 x 7	9	12	100	22	S	2.0P	11.38	6HX	C
SWMOM 1215020S	M12	1.5	44	9 x 7	9	12	100	22	S	2.0P	11.24	6HX	C
SWMOM 1217520S	M12	1.75	48	9 x 7	9	12	110	24	S	2.0P	11.11	6HX	C
SWMOM 0305020M	M3	0.5	18	3.5 x 2.7	3.5	3	56	11	S	2.0P	2.79	6HX	C
SWMOM 0407020M	M4	0.7	21	4.5 x 3.4	4.5	4	63	13	S	2.0P	3.68	6HX	C
SWMOM 0508020M	M5	0.8	25	6 x 4.9	6	5	70	15	S	2.0P	4.65	6HX	C
SWMOM 0610020M	M6	1	30	6 x 4.9	6	6	80	17	S	2.0P	5.53	6HX	C
SWMOM 0810020M	M8	1	34	6 x 4.9	6	8	90	17	S	2.0P	7.53	6HX	C
SWMOM 0812520M	M8	1.25	40	8 x 6.2	8	8	90	20	S	2.0P	7.38	6HX	C
SWMOM 1010020M	M10	1	39	7 x 5.5	7	10	90	18	S	2.0P	9.53	6HX	C

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

P										K		N										M		S	
Carbon Steel			Alloy Steel	Hardened Steel			Tool Steel	Cast Steel	Cast Iron	High Strength Steel	Unalloyed Copper	Brass	Brass Casting	Bronze	Aluminum	Aluminum Alloy Casting	Magnesium Alloy Casting	Zinc Alloy Casting	Thermo-Setting Plastic	Thermo-Plastic	Stainless Steels	Titanium Alloys			
-SM25C	SM25C -SM45C	SM45C-	SCM	25-45 HRC	45-55 HRC	50-60 HRC	STD	SC	GC	GCD	Cu	Bs	BsC	CAC	Axx	AC, ALDC	MC	ZDC	Bakelite phenol epoxy	Nylon vinyl chloride	STS	Ti	Ni		
○	○										◎	◎	◎	◎	◎	◎		◎							

EDP No	TDZ	TP	LU	CZC -MS	DCON -MS	TD	LF	THL	NOF	TCL	PHD	TCTR	THCHT
SWMOM 1012520M	M10	1.25	44	7 x 5.5	7	10	100	22	S	2.0P	9.38	6HX	C
SWMOM 1015020M	M10	1.5	44	10 x 8	10	10	100	22	S	2.0P	9.23	6HX	C
SWMOM 1210020M	M12	1	36	9 x 7	9	12	100	18	S	2.0P	11.53	6HX	C
SWMOM 1212520M	M12	1.25	44	9 x 7	9	12	100	22	S	2.0P	11.38	6HX	C
SWMOM 1215020M	M12	1.5	44	9 x 7	9	12	100	22	S	2.0P	11.24	6HX	C
SWMOM 1217520M	M12	1.75	48	9 x 7	9	12	110	24	S	2.0P	11.11	6HX	C
SWMOM 0305040M	M3	0.5	18	3.5 x 2.7	3.5	3	56	11	S	4.0P	2.79	6HX	B
SWMOM 0407040M	M4	0.7	21	4.5 x 3.4	4.5	4	63	13	S	4.0P	3.68	6HX	B
SWMOM 0508040M	M5	0.8	25	6 x 4.9	6	5	70	15	S	4.0P	4.65	6HX	B
SWMOM 0610040M	M6	1	30	6 x 4.9	6	6	80	17	S	4.0P	5.53	6HX	B
SWMOM 0810040M	M8	1	34	6 x 4.9	6	8	90	17	S	4.0P	7.53	6HX	B
SWMOM 0812540M	M8	1.25	40	8 x 6.2	8	8	90	20	S	4.0P	7.38	6HX	B
SWMOM 1010040M	M10	1	39	7 x 5.5	7	10	90	18	S	4.0P	9.53	6HX	B
SWMOM 1012540M	M10	1.25	44	7 x 5.5	7	10	100	22	S	4.0P	9.38	6HX	B
SWMOM 1015040M	M10	1.5	44	10 x 8	10	10	100	22	S	4.0P	9.23	6HX	B
SWMOM 1210040M	M12	1	36	9 x 7	9	12	100	18	S	4.0P	11.53	6HX	B
SWMOM 1212540M	M12	1.25	44	9 x 7	9	12	100	22	S	4.0P	11.38	6HX	B
SWMOM 1215040M	M12	1.5	44	9 x 7	9	12	100	22	S	4.0P	11.24	6HX	B
SWMOM 1217540M	M12	1.75	48	9 x 7	9	12	110	24	S	4.0P	11.11	6HX	B

* Chamfer Lead : C - 2~3Thread, B - 4~5Thread, E - 1.5~2Thread

* Oil groove S : 1 Oil groove, Oil groove M : 4 Oil groove

DIN
TAP-
STAR

JIS
TAP-
STAR

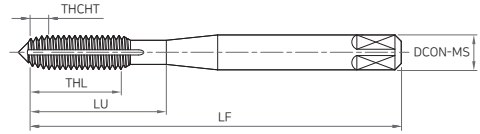
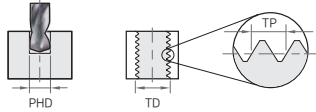
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

P										K		N										M	S	
Carbon Steel			Alloy Steel	Hardened Steel			Tool Steel	Cast Steel	Cast Iron	High Strength Steel	Unalloyed Copper	Brass	Brass Casting	Bronze	Aluminum	Aluminum Alloy Casting	Magnesium Alloy Casting	Zinc Alloy Casting	Thermo, Setting Plastic	Thermo, Plastic	Stainless Steels	Titanium Alloys		
~SM25C	SM25C~SM45C	SM45C~	SCM	25~45 HRC	45~55 HRC	50~60 HRC	STD	SC	GC	GCD	Cu	Bs	BsC	CAC	Axx	AC, ALDC	MC	ZDC	Bakelite phenol epoxy	Nylon vinyl chloride	STS	Ti	Ni	
○	○										◎	◎	◎	◎	◎	◎		◎						

SWMCM DIN Carbide Roll Tap

Tap



M6 OR UNDER



M8 OVER

※ 2.0P Tap is removed external center as bottoming type

DIN
371-374
376

CARBIDE

TiCN

EDP No	TDZ	TP	LU	CZC-MS	DCON-MS	TD	LF	THL	NOF	TCL	PHD	TCTR	THCHT
SWMCM 0305020S	M3	0.5	18	3.5 x 2.7	3.5	3	56	11	S	2.0P	2.79	6HX	C
SWMCM 0407020S	M4	0.7	21	4.5 x 3.4	4.5	4	63	13	S	2.0P	3.68	6HX	C
SWMCM 0508020S	M5	0.8	25	6 x 4.9	6	5	70	15	S	2.0P	4.65	6HX	C
SWMCM 0610020S	M6	1	30	6 x 4.9	6	6	80	17	S	2.0P	5.53	6HX	C
SWMCM 0810020S	M8	1	34	6 x 4.9	6	8	90	17	S	2.0P	7.53	6HX	C
SWMCM 0812520S	M8	1.25	40	8 x 6.2	8	8	90	20	S	2.0P	7.38	6HX	C
SWMCM 1010020S	M10	1	39	7 x 5.5	7	10	90	18	S	2.0P	9.53	6HX	C
SWMCM 1012520S	M10	1.25	44	7 x 5.5	7	10	100	22	S	2.0P	9.38	6HX	C
SWMCM 1015020S	M10	1.5	44	10 x 8	10	10	100	22	S	2.0P	9.23	6HX	C
SWMCM 1210020S	M12	1	36	9 x 7	9	12	100	18	S	2.0P	11.53	6HX	C
SWMCM 1212520S	M12	1.25	44	9 x 7	9	12	100	22	S	2.0P	11.38	6HX	C
SWMCM 1215020S	M12	1.5	44	9 x 7	9	12	100	22	S	2.0P	11.24	6HX	C
SWMCM 1217520S	M12	1.75	48	9 x 7	9	12	110	24	S	2.0P	11.11	6HX	C
SWMCM 0305020M	M3	0.5	18	3.5 x 2.7	3.5	3	56	11	S	2.0P	2.79	6HX	C
SWMCM 0407020M	M4	0.7	21	4.5 x 3.4	4.5	4	63	13	S	2.0P	3.68	6HX	C
SWMCM 0508020M	M5	0.8	25	6 x 4.9	6	5	70	15	S	2.0P	4.65	6HX	C
SWMCM 0610020M	M6	1	30	6 x 4.9	6	6	80	17	S	2.0P	5.53	6HX	C
SWMCM 0810020M	M8	1	34	6 x 4.9	6	8	90	17	S	2.0P	7.53	6HX	C
SWMCM 0812520M	M8	1.25	40	8 x 6.2	8	8	90	20	S	2.0P	7.38	6HX	C
SWMCM 1010020M	M10	1	39	7 x 5.5	7	10	90	18	S	2.0P	9.53	6HX	C

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

P							K		N											M	S		
Carbon Steel			Alloy Steel	Hardened Steel			Tool Steel	Cast Steel	Cast Iron	High Strength Steel	Unalloyed Copper	Brass	Brass Casting	Bronze	Aluminum	Aluminum Alloy Casting	Magnesium Alloy Casting	Zinc Alloy Casting	Thermo-Setting Plastic	Thermo-Plastic	Stainless Steels	Titanium Alloys	
-SM25C	SM25C-SM45C	SM45C-	SCM	25-45 HRC	45-55 HRC	50-60 HRC	STD	SC	GC	GCD	Cu	Bs	BsC	CAC	Axx	AC, ALDC	MC	ZDC	Bakelite phenol epoxy	Nylon vinyl chloride	STS	Ti	Ni
○	○										◎	◎	◎	◎	◎	◎		◎					

EDP No	TDZ	TP	LU	CZC -MS	DCON -MS	TD	LF	THL	NOF	TCL	PHD	TCTR	THCHT
SWMCM 1012520M	M10	1.25	44	7 x 5.5	7	10	100	22	S	2.0P	9.35	6HX	C
SWMCM 1015020M	M10	1.5	44	10 x 8	10	10	100	22	S	2.0P	9.23	6HX	C
SWMCM 1210020M	M12	1	36	9 x 7	9	12	100	18	S	2.0P	11.53	6HX	C
SWMCM 1212520M	M12	1.25	44	9 x 7	9	12	100	22	S	2.0P	11.38	6HX	C
SWMCM 1215020M	M12	1.5	44	9 x 7	9	12	100	22	S	2.0P	11.24	6HX	C
SWMCM 1217520M	M12	1.75	48	9 x 7	9	12	110	24	S	2.0P	11.11	6HX	C
SWMCM 0305040M	M3	0.5	18	3.5 x 2.7	3.5	3	56	11	S	4.0P	2.79	6HX	B
SWMCM 0407040M	M4	0.7	21	4.5 x 3.4	4.5	4	63	13	S	4.0P	3.68	6HX	B
SWMCM 0508040M	M5	0.8	25	6 x 4.9	6	5	70	15	S	4.0P	4.65	6HX	B
SWMCM 0610040M	M6	1	30	6 x 4.9	6	6	80	17	S	4.0P	5.53	6HX	B
SWMCM 0810040M	M8	1	34	6 x 4.9	6	8	90	17	S	4.0P	7.53	6HX	B
SWMCM 0812540M	M8	1.25	40	8 x 6.2	8	8	90	20	S	4.0P	7.38	6HX	B
SWMCM 1010040M	M10	1	39	7 x 5.5	7	10	90	18	S	4.0P	9.53	6HX	B
SWMCM 1012540M	M10	1.25	44	7 x 5.5	7	10	100	22	S	4.0P	9.38	6HX	B
SWMCM 1015040M	M10	1.5	44	10 x 8	10	10	100	22	S	4.0P	9.23	6HX	B
SWMCM 1210040M	M12	1	36	9 x 7	9	12	100	18	S	4.0P	11.53	6HX	B
SWMCM 1212540M	M12	1.25	44	9 x 7	9	12	100	22	S	4.0P	11.38	6HX	B
SWMCM 1215040M	M12	1.5	44	9 x 7	9	12	100	22	S	4.0P	11.24	6HX	B
SWMCM 1217540M	M12	1.75	48	9 x 7	9	12	110	24	S	4.0P	11.11	6HX	B

* Chamfer Lead : C - 2~3Thread, B - 4~5Thread, E - 1.5~2Thread

* Oil groove S : 1 Oil groove, Oil groove M : 4 Oil groove

DIN
TAP-
STAR

JIS
TAP-
STAR

► Applicable Working Material

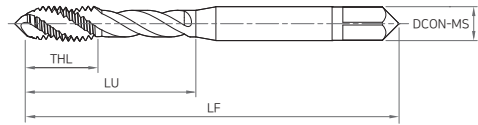
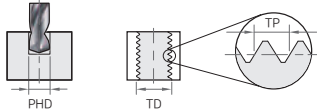
○ : GOOD ◎ : EXCELLENT

P										K		N										M	S	
Carbon Steel			Alloy Steel	Hardened Steel			Tool Steel	Cast Steel	Cast Iron	High Strength Steel	Unalloyed Copper	Brass	Brass Casting	Bronze	Aluminum	Aluminum Alloy Casting	Magnesium Alloy Casting	Zinc Alloy Casting	Thermo, Setting Plastic	Thermo, Plastic	Stainless Steels	Titanium Alloys		
~SM25C	SM25C~SM45C	SM45C~	SCM	25~45 HRC	45~55 HRC	50~60 HRC	STD	SC	GC	GCD	Cu	Bs	BsC	CAC	Axx	AC, ALDC	MC	ZDC	Bakelite phenol epoxy	Nylon vinyl chloride	STS	Ti	Ni	
○	○										◎	◎	◎	◎	◎	◎		◎						

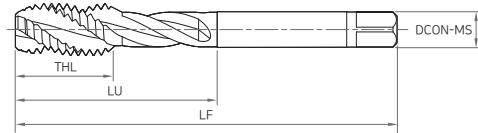
SVPAM

JIS HSSE Spiral Tap

Tap



M6/MF6 OR UNDER



M8/MF8 OVER



EDP No	TDZ	TP	LU	CZC -MS	DCON -MS	TD	LF	THL	NOF	TCL	PHD	TCTR
SVPAM 0204025	M2	0.4	13.5	3 × 2.5	3	2	40	8	3	2.5P	1.6	H2
SVPAM 025045025	M2.5	0.45	14.5	3 × 2.5	3	3	44	9	3	2.5P	2.1	H2
SVPAM 0305025	M3	0.5	17	4 × 3.2	4	3	46	6	3	2.5P	2.5	H2
SVPAM 0407025	M4	0.7	20.5	5 × 4	5	4	52	7.5	3	2.5P	3.3	H2
SVPAM 04507525	M4.5	0.75	20.5	5 × 4	5	5	55	7.5	3	2.5P	3.8	H2
SVPAM 0508025	M5	0.8	25	5.5 × 4.5	5.5	5	60	9	3	2.5P	4.2	H2
SVPAM 0610025	M6	1	29	6 × 4.5	6	6	6.2	11	3	2.5P	5	H2
SVPAM 0812525	M8	1.25	34	6.2 × 5	6.2	8	70	13	3	2.5P	6.8	H2
SVPAM 1015025	M10	1.5	38	7 × 5.5	7	10	75	16	3	2.5P	8.5	H2
SVPAM 1217525	M12	1.75	48	8.5 × 6.5	8.5	12	82	18	3	2.5P	10.2	H2
SVPAM 1420025	M14	2	48	10.5 × 8	10.5	14	88	20	3	2.5P	12	H2
SVPAM 1620025	M16	2	52	12.5 × 10	12.5	16	95	20	3	2.5P	14	H2
SVPAM 1825025	M18	2.5	55	14 × 11	14	18	100	22	4	2.5P	15.5	H3
SVPAM 2025025	M20	2.5	58	15 × 12	15	20	105	25	4	2.5P	17.5	H3
SVPAM 2225025	M22	2.5	63	17 × 13	17	22	115	25	4	2.5P	19.5	H3
SVPAM 2430025	M24	3	66	19 × 15	19	24	120	29	4	2.5P	21	H4
SVPAM 0405025	MF4	0.5	20.5	5 × 4	5	4	52	7.5	3	2.5P	3.5	H2
SVPAM 0505025	MF5	0.5	25	5.5 × 4.5	5.5	5	60	8	3	2.5P	4.5	H2
SVPAM 0607525	MF6	0.75	29	6 × 4.5	6	6	62	8	3	2.5P	5.3	H2
SVPAM 0807525	MF8	0.75	34	6.2 × 5	6.2	8	70	10	3	2.5P	7.3	H3

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

P										K				N										M	S
Carbon Steel			Alloy Steel			Hardened Steel			Tool Steel	Cast Steel	Cast Iron	High Strength Steel	Unalloyed Copper	Brass	Brass Casting	Bronze	Aluminum	Aluminum Alloy Casting	Magnesium Alloy Casting	Zinc Alloy Casting	Thermo-Setting Plastic	Thermo-Plastic	Stainless Steels	Titanium Alloys	
-SM25C	SM25C-SM45C	SM45C-	SCM	25-45 HRC	45-55 HRC	50-60 HRC	STD	SC	GC	GCD	Cu	Bs	BsC	CAC	Axx	AC, ALDC	MC	ZDC	Bakelite phenol epoxy	Nylon vinyl chloride	STS	Ti	Ni		
◎	◎	◎	◎	○				◎	○	○							◎								

EDP No	TDZ	TP	LU	CZC -MS	DCON -MS	TD	LF	THL	NOF	TCL	PHD	TCTR
SVPAM 0810025	MF8	1	34	6.2 x 5	6.2	8	70	10	3	2.5P	7	H2
SVPAM 1007525	MF10	0.75	38	7 x 5.5	7	10	75	14	3	2.5P	9.3	H3
SVPAM 1010025	MF10	1	38	7 x 5.5	7	10	75	14	3	2.5P	9	H3
SVPAM 1012525	MF10	1.25	38	7 x 5.5	7	10	75	14	3	2.5P	8.8	H2
SVPAM 1210025	MF12	1	48	8.5 x 6.5	8.5	12	82	14	3	2.5P	11	H2
SVPAM 1212525	MF12	1.25	48	8.5 x 6.5	8.5	12	82	14	3	2.5P	10.8	H2
SVPAM 1215025	MF12	1.5	48	8.5 x 6.5	8.5	12	82	14	3	2.5P	10.5	H2
SVPAM 1410025	MF14	1	48	10.5 x 8	10.5	14	88	18	3	2.5P	13	H3
SVPAM 1415025	MF14	1.5	48	10.5 x 8	10.5	14	88	18	3	2.5P	12.5	H2
SVPAM 1615025	MF16	1.5	52	12.5 x 10	12.5	16	95	18	3	2.5P	14.5	H2
SVPAM 1815025	MF18	1.5	55	14 x 11	14	18	100	18	4	2.5P	16.5	H2
SVPAM 2015025	MF20	1.5	58	15 x 12	15	20	105	25	4	2.5P	18.5	H3
SVPAM 2215025	MF22	1.5	63	17 x 13	17	22	115	25	4	2.5P	20.5	H3
SVPAM 2415025	MF24	1.5	66	19 x 15	19	24	120	25	4	2.5P	22.5	H3
SVPAM 2420025	MF24	2	66	19 x 15	19	24	120	25	4	2.5P	22	H3

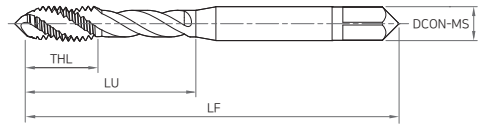
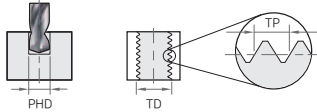
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

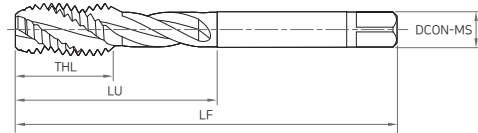
P										K		N										M		S	
Carbon Steel			Alloy Steel	Hardened Steel			Tool Steel	Cast Steel	Cast Iron	High Strength Steel	Unalloyed Copper	Brass	Brass Casting	Bronze	Aluminum	Aluminum Alloy Casting	Magnesium Alloy Casting	Zinc Alloy Casting	Thermo Setting Plastic	Thermo Plastic	Stainless Steels	Titanium Alloys			
~SM25C	SM25C ~SM45C	SM45C~	SCM	25~45 HRC	45~55 HRC	50~60 HRC	STD	SC	GC	GCD	Cu	Bs	BsC	CAC	Axx	AC, ALDC	MC	ZDC	Bakelite phenol epoxy	Nylon vinyl chloride	STS	Ti	Ni		
◎	◎	◎	◎	○				◎	○	○						◎									

SVPNM JIS HSSE Spiral Tap

Tap



M6/MF6 OR UNDER



M8/MF8 OVER



EDP No	TDZ	TP	LU	CZC -MS	DCON -MS	TD	LF	THL	NOF	TCL	PHD	TCTR
SVPNM 0204025	M2	0.4	13.5	3 x 2.5	3	2	40	8	3	2.5P	1.6	H2
SVPNM 025045025	M2.5	0.45	14.5	3 x 2.5	3	3	44	9	3	2.5P	2.1	H2
SVPNM 0305025	M3	0.5	17	4 x 3.2	4	3	49	6	3	2.5P	2.5	H2
SVPNM 0407025	M4	0.7	20.5	5 x 4	5	4	52	7.5	3	2.5P	3.3	H2
SVPNM 04507525	M4.5	0.75	20.5	5 x 4	5	5	55	7.5	3	2.5P	3.8	H2
SVPNM 0508025	M5	0.8	25	5.5 x 4.5	5.5	5	60	9	3	2.5P	4.2	H2
SVPNM 0610025	M6	1	29	6 x 4.5	6	6	62	11	3	2.5P	5	H2
SVPNM 0812525	M8	1.25	34	6.2 x 5	6.2	8	70	13	3	2.5P	6.8	H2
SVPNM 1015025	M10	1.5	38	7 x 5.5	7	10	75	16	3	2.5P	8.5	H2
SVPNM 1217525	M12	1.75	48	8.5 x 6.5	8.5	12	82	18	3	2.5P	10.2	H2
SVPNM 1420025	M14	2	48	10.5 x 8	10.5	14	88	20	3	2.5P	12	H2
SVPNM 1620025	M16	2	52	12.5 x 10	12.5	16	95	20	3	2.5P	14	H2
SVPNM 1825025	M18	2.5	55	14 x 11	14	18	100	22	4	2.5P	15.5	H3
SVPNM 2025025	M20	2.5	58	15 x 12	15	20	105	25	4	2.5P	17.5	H3
SVPNM 2225025	M22	2.5	63	17 x 13	17	22	115	25	4	2.5P	19.5	H3
SVPNM 2430025	M24	3	66	19 x 15	19	24	120	29	4	2.5P	21	H4
SVPNM 0405025	MF4	0.5	20.5	5 x 4	5	4	52	7.5	3	2.5P	3.5	H2
SVPNM 0505025	MF5	0.5	25	5.5 x 4.5	5.5	5	60	8	3	2.5P	4.5	H2
SVPNM 0607525	MF6	0.75	29	6 x 4.5	6	6	62	8	3	2.5P	5.3	H2
SVPNM 0807525	MF8	0.75	34	6.2 x 5	6.2	8	70	10	3	2.5P	7.3	H3

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

P									K		N										M		S	
Carbon Steel			Alloy Steel	Hardened Steel			Tool Steel	Cast Steel	Cast Iron	High Strength Steel	Unalloyed Copper	Brass	Brass Casting	Bronze	Aluminum	Aluminum Alloy Casting	Magnesium Alloy Casting	Zinc Alloy Casting	Thermo-Setting Plastic	Thermo-Plastic	Stainless Steels	Titanium Alloys		
-SM25C	SM25C -SM45C	SM45C-	SCM	25-45 HRC	45-55 HRC	50-60 HRC	STD	SC	GC	GCD	Cu	Bs	BsC	CAC	Axx	AC, ALDC	MC	ZDC	Bakelite phenol epoxy	Nylon vinyl chloride	STS	Ti	Ni	
○	○	○	○	○			○	○	○	◎						○			○		◎	○	○	

SVPNM

JIS HSSE Spiral Tap

Tap

EDP No	TDZ	TP	LU	CZC -MS	DCON -MS	TD	LF	THL	NOF	TCL	PHD	TCTR
SVPNM 0810025	MF8	1	34	6.2 x 5	6.2	8	70	10	3	2.5P	7	H2
SVPNM 1007525	MF10	0.75	38	7 x 5.5	7	10	75	14	3	2.5P	9.3	H3
SVPNM 1010025	MF10	1	38	7 x 5.5	7	10	75	14	3	2.5P	9	H3
SVPNM 1012525	MF10	1.25	38	7 x 5.5	7	10	75	14	3	2.5P	8.8	H2
SVPNM 1210025	MF12	1	48	8.5 x 6.5	8.5	12	82	14	3	2.5P	11	H2
SVPNM 1212525	MF12	1.25	48	8.5 x 6.5	8.5	12	82	14	3	2.5P	10.8	H2
SVPNM 1215025	MF12	1.5	48	8.5 x 6.5	8.5	12	82	14	3	2.5P	10.5	H2
SVPNM 1410025	MF14	1	48	10.5 x 8	10.5	14	88	18	3	2.5P	13	H3
SVPNM 1415025	MF14	1.5	48	10.5 x 8	10.5	14	88	18	3	2.5P	12.5	H2
SVPNM 1615025	MF16	1.5	52	12.5 x 10	12.5	16	95	18	3	2.5P	14.5	H2
SVPNM 1815025	MF18	1.5	55	14 x 11	14	18	100	18	4	2.5P	16.5	H2
SVPNM 2015025	MF20	1.5	58	15 x 12	15	20	105	25	4	2.5P	18.5	H3
SVPNM 2215025	MF22	1.5	63	17 x 13	17	22	115	25	4	2.5P	20.5	H3
SVPNM 2415025	MF24	1.5	66	19 x 15	19	24	120	25	4	2.5P	22.5	H3
SVPNM 2420025	MF24	2	66	19 x 15	19	24	120	25	4	2.5P	22	H3

DIN
TAP-
STAR

JIS
TAP-
STAR

► Applicable Working Material

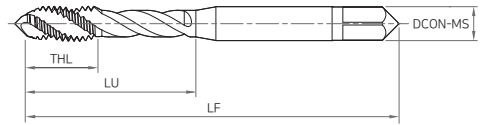
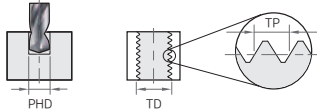
○ : GOOD ◎ : EXCELLENT

P									K		N										M		S	
Carbon Steel			Alloy Steel	Hardened Steel			Tool Steel	Cast Steel	Cast Iron	High Strength Steel	Unalloyed Copper	Brass	Brass Casting	Bronze	Aluminum	Aluminum Alloy Casting	Magnesium Alloy Casting	Zinc Alloy Casting	Thermo Setting Plastic	Thermo Plastic	Stainless Steels	Titanium Alloys		
~SM25C	SM25C ~SM45C	SM45C~	SCM	25~45 HRC	45~55 HRC	50~60 HRC	STD	SC	GC	GCD	Cu	Bs	BsC	CAC	Axx	AC, ALDC	MC	ZDC	Bakelite phenol epoxy	Nylon vinyl chloride	STS	Ti	Ni	
○	○	○	○	○			○	○	○	◎						○			○		◎	○	○	

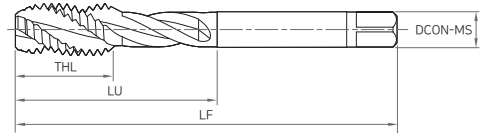
SVPHM

JIS HSSE Spiral Tap

Tap



M6/MF6 OR UNDER



M8/MF8 OVER



EDP No	TDZ	TP	LU	CZC-MS	DCON-MS	TD	LF	THL	NOF	TCL	PHD	TCTR
SVPHM 0204025	M2	0.4	13.5	3 x 2.5	3	2	40	8	3	2.5P	1.6	H2
SVPHM 025045025	M2.5	0.45	14.5	3 x 2.5	3	3	44	9	3	2.5P	2.1	H2
SVPHM 0305025	M3	0.5	17	4 x 3.2	4	3	46	6	3	2.5P	2.5	H2
SVPHM 0407025	M4	0.7	20.5	5 x 4	5	4	52	7.5	3	2.5P	3.3	H2
SVPHM 04507525	M4.5	0.75	20.5	5 x 4	5	5	55	7.5	3	2.5P	3.8	H2
SVPHM 0508025	M5	0.8	25	5.5 x 4.5	5.5	5	60	9	3	2.5P	4.2	H2
SVPHM 0610025	M6	1	29	6 x 4.5	6	6	62	11	3	2.5P	5	H2
SVPHM 0812525	M8	1.25	34	6.2 x 5	6.2	8	70	13	3	2.5P	6.8	H2
SVPHM 1015025	M10	1.5	38	7 x 5.5	7	10	75	16	3	2.5P	8.5	H2
SVPHM 1217525	M12	1.75	48	8.5 x 6.5	8.5	12	82	18	3	2.5P	10.2	H2
SVPHM 1420025	M14	2	48	10.5 x 8	10.5	14	88	20	3	2.5P	12	H2
SVPHM 1620025	M16	2	52	12.5 x 10	12.5	16	95	20	3	2.5P	14	H2
SVPHM 1825025	M18	2.5	55	14 x 11	14	18	100	22	4	2.5P	15.5	H3
SVPHM 2025025	M20	2.5	58	15 x 12	15	20	105	25	4	2.5P	17.5	H3
SVPHM 2225025	M22	2.5	63	17 x 13	17	22	115	25	4	2.5P	19.5	H3
SVPHM 2430025	M24	3	66	19 x 15	19	24	120	29	4	2.5P	21	H4
SVPHM 0405025	MF4	0.5	20.5	5 x 4	5	4	52	7.5	3	2.5P	3.5	H2
SVPHM 0505025	MF5	0.5	25	5.5 x 4.5	5.5	5	60	8	3	2.5P	4.5	H2
SVPHM 0607525	MF6	0.75	29	6 x 4.5	6	6	62	8	3	2.5P	5.3	H2
SVPHM 0807525	MF8	0.75	34	6.2 x 5	6.2	8	70	10	3	2.5P	7.3	H3

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

P									K		N										M	S	
Carbon Steel			Alloy Steel	Hardened Steel			Tool Steel	Cast Steel	Cast Iron	High Strength Steel	Unalloyed Copper	Brass	Brass Casting	Bronze	Aluminum	Aluminum Alloy Casting	Magnesium Alloy Casting	Zinc Alloy Casting	Thermo-Setting Plastic	Thermo-Plastic	Stainless Steels	Titanium Alloys	
-SM25C	SM25C-SM45C	SM45C-	SCM	25-45 HRC	45-55 HRC	50-60 HRC	STD	SC	GC	GCD	Cu	Bs	BsC	CAC	Axx	AC, ALDC	MC	ZDC	Bakelite phenol epoxy	Nylon vinyl chloride	STS	Ti	Ni
◎	◎	◎	◎	○				◎	○	○						◎							

EDP No	TDZ	TP	LU	CZC-MS	DCON-MS	TD	LF	THL	NOF	TCL	PHD	TCTR
SVPHM 0810025	MF8	1	34	6.2 x 5	6.2	8	70	10	3	2.5P	7	H2
SVPHM 1007525	MF10	0.75	38	7 x 5.5	7	10	75	14	3	2.5P	9.3	H3
SVPHM 1010025	MF10	1	38	7 x 5.5	7	10	75	14	3	2.5P	9	H3
SVPHM 1012525	MF10	1.25	38	7 x 5.5	7	10	75	14	3	2.5P	8.8	H2
SVPHM 1210025	MF12	1	48	8.5 x 6.5	8.5	12	82	14	3	2.5P	11	H2
SVPHM 1212525	MF12	1.25	48	8.5 x 6.5	8.5	12	82	14	3	2.5P	10.8	H2
SVPHM 1215025	MF12	1.5	48	8.5 x 6.5	8.5	12	82	14	3	2.5P	10.5	H2
SVPHM 1410025	MF14	1	48	10.5 x 8	10.5	14	88	18	3	2.5P	13	H3
SVPHM 1415025	MF14	1.5	48	10.5 x 8	10.5	14	88	18	3	2.5P	12.5	H2
SVPHM 1615025	MF16	1.5	52	12.5 x 10	12.5	16	95	18	3	2.5P	14.5	H2
SVPHM 1815025	MF18	1.5	55	14 x 11	14	18	100	18	4	2.5P	16.5	H2
SVPHM 2015025	MF20	1.5	58	15 x 12	15	20	105	25	4	2.5P	18.5	H3
SVPHM 2215025	MF22	1.5	63	17 x 13	17	22	115	25	4	2.5P	20.5	H3
SVPHM 2415025	MF24	1.5	66	19 x 15	19	24	120	25	4	2.5P	22.5	H3
SVPHM 2420025	MF24	2	66	19 x 15	19	24	120	25	4	2.5P	22	H3

► Applicable Working Material

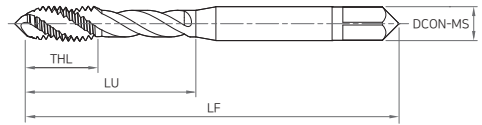
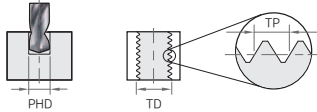
○ : GOOD ◎ : EXCELLENT

P										K		N										M		S	
Carbon Steel			Alloy Steel	Hardened Steel			Tool Steel	Cast Steel	Cast Iron	High Strength Steel	Unalloyed Copper	Brass	Brass Casting	Bronze	Aluminum	Aluminum Alloy Casting	Magnesium Alloy Casting	Zinc Alloy Casting	Thermo Setting Plastic	Thermo Plastic	Stainless Steels	Titanium Alloys			
~SM25C	SM25C~SM45C	SM45C~	SCM	25~45 HRC	45~55 HRC	50~60 HRC	STD	SC	GC	GCD	Cu	Bs	BsC	CAC	Axx	AC, ALDC	MC	ZDC	Bakelite phenol epoxy	Nylon vinyl chloride	STS	Ti	Ni		
◎	◎	◎	◎	○				◎	○	○						◎									

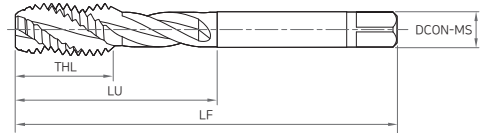
SVPOM

JIS HSSE Spiral Tap

Tap



M6/MF6 OR UNDER



M8/MF8 OVER



EDP No	TDZ	TP	LU	CZC -MS	DCON -MS	TD	LF	THL	NOF	TCL	PHD	TCTR
SVPOM 0204025	M2	0.4	13.5	3 × 2.5	3	2	40	8	2	2.5P	1.6	H2
SVPOM 025045025	M2.5	0.45	14.5	3 × 2.5	3	3	44	9	2	2.5P	2.1	H2
SVPOM 0305025	M3	0.5	17	4 × 3.2	4	3	46	6	3	2.5P	2.5	H2
SVPOM 0407025	M4	0.7	20.5	5 × 4	5	4	52	7.5	3	2.5P	3.3	H2
SVPOM 04507525	M4.5	0.75	20.5	5 × 4	5	5	55	7.5	2	2.5P	3.8	H2
SVPOM 0508025	M5	0.8	25	5.5 × 4.5	5.5	5	60	9	3	2.5P	4.2	H2
SVPOM 0610025	M6	1	29	6 × 4.5	6	6	62	11	3	2.5P	5	H2
SVPOM 0812525	M8	1.25	34	6.2 × 5	6.2	8	70	13	3	2.5P	6.8	H2
SVPOM 1015025	M10	1.5	38	7 × 5.5	7	10	75	16	3	2.5P	8.5	H2
SVPOM 1217525	M12	1.75	48	8.5 × 6.5	8.5	12	82	18	3	2.5P	10.2	H2
SVPOM 1420025	M14	2	48	10.5 × 8	10.5	14	88	20	3	2.5P	12	H2
SVPOM 1620025	M16	2	52	12.5 × 10	12.5	16	95	20	3	2.5P	14	H2
SVPOM 1825025	M18	2.5	55	14 × 11	14	18	100	22	4	2.5P	15.5	H3
SVPOM 2025025	M20	2.5	58	15 × 12	15	20	105	25	4	2.5P	17.5	H3
SVPOM 2225025	M22	2.5	63	17 × 13	17	22	115	25	4	2.5P	19.5	H3
SVPOM 2430025	M24	3	66	19 × 15	19	24	120	29	4	2.5P	21	H4
SVPOM 0405025	MF4	0.5	20.5	5 × 4	5	4	52	7.5	2	2.5P	3.5	H2
SVPOM 0505025	MF5	0.5	25	5.5 × 4.5	5.5	5	60	8	2	2.5P	4.5	H2
SVPOM 0607525	MF6	0.75	29	6 × 4.5	6	6	62	8	2	2.5P	5.3	H2
SVPOM 0807525	MF8	0.75	34	6.2 × 5	6.2	8	70	10	2	2.5P	7.3	H3

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

P									K		N										M	S	
Carbon Steel			Alloy Steel	Hardened Steel			Tool Steel	Cast Steel	Cast Iron	High Strength Steel	Unalloyed Copper	Brass	Brass Casting	Bronze	Aluminum	Aluminum Alloy Casting	Magnesium Alloy Casting	Zinc Alloy Casting	Thermo-Setting Plastic	Thermo-Plastic	Stainless Steels	Titanium Alloys	
-SM25C	SM25C-SM45C	SM45C-	SCM	25-45 HRC	45-55 HRC	50-60 HRC	STD	SC	GC	GCD	Cu	Bs	BsC	CAC	Axx	AC, ALDC	MC	ZDC	Bakelite phenol epoxy	Nylon vinyl chloride	STS	Ti	Ni
											◎	◎	◎	◎	◎	◎	○	○	◎				

SVPOM

JIS HSSE Spiral Tap

Tap

EDP No	TDZ	TP	LU	CZC-MS	DCON-MS	TD	LF	THL	NOF	TCL	PHD	TCTR
SVPOM 0810025	MF8	1	34	6.2 x 5	6.2	8	70	10	3	2.5P	7	H2
SVPOM 1007525	MF10	0.75	38	7 x 5.5	7	10	75	14	2	2.5P	9.3	H3
SVPOM 1010025	MF10	1	38	7 x 5.5	7	10	75	14	2	2.5P	9	H3
SVPOM 1012525	MF10	1.25	38	7 x 5.5	7	10	75	14	3	2.5P	8.8	H2
SVPOM 1210025	MF12	1	48	8.5 x 6.5	8.5	12	82	14	3	2.5P	11	H2
SVPOM 1212525	MF12	1.25	48	8.5 x 6.5	8.5	12	82	14	3	2.5P	10.8	H2
SVPOM 1215025	MF12	1.5	48	8.5 x 6.5	8.5	12	82	14	3	2.5P	10.5	H2
SVPOM 1410025	MF14	1	48	10.5 x 8	10.5	14	88	18	3	2.5P	13	H3
SVPOM 1415025	MF14	1.5	48	10.5 x 8	10.5	14	88	18	3	2.5P	12.5	H2
SVPOM 1615025	MF16	1.5	52	12.5 x 10	12.5	16	95	18	3	2.5P	14.5	H2
SVPOM 1815025	MF18	1.5	55	14 x 11	14	18	100	18	4	2.5P	16.5	H2
SVPOM 2015025	MF20	1.5	58	15 x 12	15	20	105	25	4	2.5P	18.5	H3
SVPOM 2215025	MF22	1.5	63	17 x 13	17	22	115	25	4	2.5P	20.5	H3
SVPOM 2415025	MF24	1.5	66	19 x 15	19	24	120	25	4	2.5P	22.5	H3
SVPOM 2420025	MF24	2	66	19 x 15	19	24	120	25	4	2.5P	22	H3

DIN
TAP-
STAR

JIS
TAP-
STAR

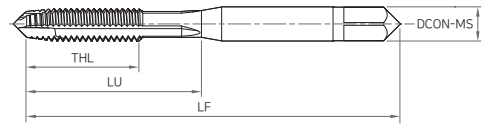
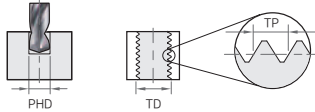
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

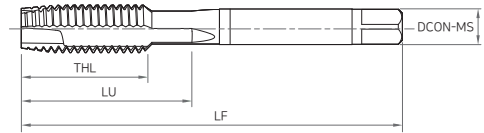
P										K		N										M	S	
Carbon Steel			Alloy Steel	Hardened Steel			Tool Steel	Cast Steel	Cast Iron	High Strength Steel	Unalloyed Copper	Brass	Brass Casting	Bronze	Aluminum	Aluminum Alloy Casting	Magnesium Alloy Casting	Zinc Alloy Casting	Thermo. Setting Plastic	Thermo. Plastic	Stainless Steels	Titanium Alloys		
~SM25C	SM25C~SM45C	SM45C~	SCM	25~45 HRC	45~55 HRC	50~60 HRC	STD	SC	GC	GCD	Cu	Bs	BsC	CAC	Axx	AC, ALDC	MC	ZDC	Bakelite phenol epoxy	Nylon vinyl chloride	STS	Ti	Ni	
											◎	◎	◎	◎	◎	◎	○	○	◎					

SVNAM JIS HSSE Point Tap

Tap



M10/MF10 OR UNDER



M12/MF12 OVER

Black
Ring

HSSE

TIAIN

EDP No	TDZ	TP	LU	CZC -MS	DCON -MS	TD	LF	THL	NOF	TCL	PHD	TCTR
SVNAM 0204050	M2	0.4	12.5	3 x 2.5	3	2	40	8	3	5.0P	1.6	H2
SVNAM 025045050	M2.5	0.45	14.5	3 x 2.5	3	3	44	9	3	5.0P	2.1	H2
SVNAM 0305050	M3	0.5	18	4 x 3.2	4	3	46	11	3	5.0P	2.5	H2
SVNAM 0407050	M4	0.7	21	5 x 4	5	4	52	13	3	5.0P	3.3	H2
SVNAM 04507550	M4.5	0.75	21	5 x 4	5	5	55	13	3	5.0P	3.8	H2
SVNAM 0508050	M5	0.8	25	5.5 x 4.5	5.5	5	60	16	3	5.0P	4.2	H2
SVNAM 0610050	M6	1	30	6 x 4.5	6	6	62	19	3	5.0P	5	H2
SVNAM 0812550	M8	1.25	35	6.2 x 5	6.2	8	70	22	3	5.0P	6.8	H3
SVNAM 1015050	M10	1.5	39	7 x 5.5	7	10	75	24	3	5.0P	8.5	H3
SVNAM 1217550	M12	1.75	48	8.5 x 6.5	8.5	12	82	29	3	5.0P	10.2	H4
SVNAM 1420050	M14	2	48	10.5 x 8	10.5	14	88	30	3	5.0P	12	H4
SVNAM 1620050	M16	2	52	12.5 x 10	12.5	16	95	32	3	5.0P	14	H4
SVNAM 1825050	M18	2.5	55	14 x 11	14	18	100	34	3	5.0P	15.5	H4
SVNAM 2025050	M20	2.5	58	15 x 12	15	20	105	34	3	5.0P	17.5	H4
SVNAM 2225050	M22	2.5	63	17 x 13	17	22	115	34	3	5.0P	19.5	H4
SVNAM 2430050	M24	3	66	19 x 15	19	24	120	38	3	5.0P	21	H4
SVNAM 0405050	MF4	0.5	21	5 x 4	5	4	52	10	3	5.0P	3.5	H2
SVNAM 0505050	MF5	0.5	25	5.5 x 4.5	5.5	5	60	12	3	5.0P	4.5	H2
SVNAM 0607550	MF6	0.75	30	6 x 4.5	6	6	62	14	3	5.0P	5.3	H2
SVNAM 0807550	MF8	0.75	35	6.2 x 5	6.2	8	70	19	3	5.0P	7.3	H2

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

P										K		N										M		S	
Carbon Steel			Alloy Steel	Hardened Steel			Tool Steel	Cast Steel	Cast Iron	High Strength Steel	Unalloyed Copper	Brass	Brass Casting	Bronze	Aluminum	Aluminum Alloy Casting	Magnesium Alloy Casting	Zinc Alloy Casting	Thermo-Setting Plastic	Thermo-Plastic	Stainless Steels	Titanium Alloys			
-SM25C	SM25C-SM45C	SM45C-	SCM	25-45 HRC	45-55 HRC	50-60 HRC	STD	SC	GC	GCD	Cu	Bs	BsC	CAC	Axx	AC, ALDC	MC	ZDC	Bakelite phenol epoxy	Nylon vinyl chloride	STS	Ti	Ni		
◎	◎	◎	◎	○				◎	○	○						◎									

SVNAM

JIS HSSE Point Tap

Tap

EDP No	TDZ	TP	LU	CZC-MS	DCON-MS	TD	LF	THL	NOF	TCL	PHD	TCTR
SVNAM 0810050	MF8	1	35	6.2 x 5	6.2	8	70	19	3	5.0P	7	H3
SVNAM 1007550	MF10	0.75	39	7 x 5.5	7	10	75	20	3	5.0P	9.3	H3
SVNAM 1010050	MF10	1	39	7 x 5.5	7	10	75	20	3	5.0P	9	H3
SVNAM 1012550	MF10	1.25	39	7 x 5.5	7	10	75	20	3	5.0P	8.8	H3
SVNAM 1210050	MF12	1	48	8.5 x 6.5	8.5	12	82	22	3	5.0P	11	H3
SVNAM 1212550	MF12	1.25	48	8.5 x 6.5	8.5	12	82	22	3	5.0P	10.8	H3
SVNAM 1215050	MF12	1.5	48	8.5 x 6.5	8.5	12	82	22	3	5.0P	10.5	H3
SVNAM 1410050	MF14	1	48	10.5 x 8	10.5	14	88	22	3	5.0P	13	H3
SVNAM 1415050	MF14	1.5	48	10.5 x 8	10.5	14	88	22	3	5.0P	12.5	H3
SVNAM 1615050	MF16	1.5	52	12.5 x 10	12.5	16	95	22	3	5.0P	14.5	H3
SVNAM 1815050	MF18	1.5	55	14 x 11	14	18	100	25	3	5.0P	16.5	H4
SVNAM 2015050	MF20	1.5	58	15 x 12	15	20	105	25	3	5.0P	18.5	H4
SVNAM 2215050	MF22	1.5	63	17 x 13	17	22	115	25	3	5.0P	20.5	H4
SVNAM 2415050	MF24	1.5	66	19 x 15	19	24	120	28	3	5.0P	22.5	H4
SVNAM 2420050	MF24	2	66	19 x 15	19	24	120	28	3	5.0P	22	H4

DIN
TAP-
STAR

JIS
TAP-
STAR

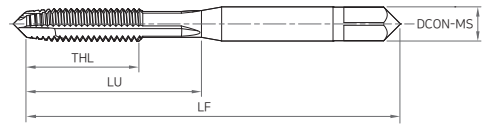
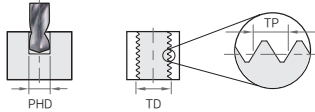
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

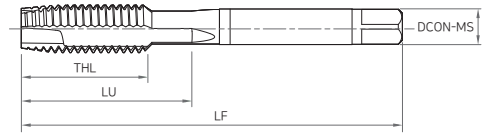
P								K		N										M	S		
Carbon Steel			Alloy Steel	Hardened Steel			Tool Steel	Cast Steel	Cast Iron	High Strength Steel	Unalloyed Copper	Brass	Brass Casting	Bronze	Aluminum	Aluminum Alloy Casting	Magnesium Alloy Casting	Zinc Alloy Casting	Thermo, Setting Plastic	Thermo, Plastic	Stainless Steels	Titanium Alloys	
~SM25C	SM25C ~SM45C	SM45C~	SCM	25~45 HRC	45~55 HRC	50~60 HRC	STD	SC	GC	GCD	Cu	Bs	BsC	CAC	Axx	AC, ALDC	MC	ZDC	Bakelite phenol epoxy	Nylon vinyl chloride	STS	Ti	Ni
◎	◎	◎	◎	○				◎	○	○						◎							

SVNNM JIS HSSE Point Tap

Tap



M10/MF10 OR UNDER



M12/MF12 OVER

Blue
Ring

HSSE

Nitride

EDP No	TDZ	TP	LU	CZC -MS	DCON -MS	TD	LF	THL	NOF	TCL	PHD	TCTR
SVNNM 0204050	M2	0.4	13.5	3 x 2.5	3	2	40	8	3	5.0P	1.6	H2
SVNNM 025045050	M2.5	0.45	14.5	3 x 2.5	3	3	44	9	3	5.0P	2.1	H2
SVNNM 0305050	M3	0.5	18	4 x 3.2	4	3	46	11	3	5.0P	2.5	H2
SVNNM 0407050	M4	0.7	21	5 x 4	5	4	52	13	3	5.0P	3.3	H2
SVNNM 04507550	M4.5	0.75	21	5 x 4	5	5	55	13	3	5.0P	3.8	H2
SVNNM 0508050	M5	0.8	25	5.5 x 4.5	5.5	5	60	16	3	5.0P	4.2	H2
SVNNM 0610050	M6	1	30	6 x 4.5	6	6	62	19	3	5.0P	5	H2
SVNNM 0812550	M8	1.25	35	6.2 x 5	6.2	8	70	22	3	5.0P	6.8	H3
SVNNM 1015050	M10	1.5	39	7 x 5.5	7	10	75	24	3	5.0P	8.5	H3
SVNNM 1217550	M12	1.75	48	8.5 x 6.5	8.5	12	82	29	3	5.0P	10.2	H4
SVNNM 1420050	M14	2	48	10.5 x 8	10.5	14	88	30	3	5.0P	12	H4
SVNNM 1620050	M16	2	52	12.5 x 10	12.5	16	95	32	3	5.0P	14	H4
SVNNM 1825050	M18	2.5	55	14 x 11	14	18	100	34	3	5.0P	15.5	H4
SVNNM 2025050	M20	2.5	58	15 x 12	15	20	105	34	3	5.0P	17.5	H4
SVNNM 2225050	M22	2.5	63	17 x 13	17	22	115	34	3	5.0P	19.5	H4
SVNNM 2430050	M24	3	66	19 x 15	19	24	120	38	3	5.0P	21	H4
SVNNM 0405050	MF4	0.5	21	5 x 4	5	4	52	10	3	5.0P	3.5	H2
SVNNM 0505050	MF5	0.5	25	5.5 x 4.5	5.5	5	60	12	3	5.0P	4.5	H2
SVNNM 0607550	MF6	0.75	30	6 x 4.5	6	6	62	14	3	5.0P	5.3	H2
SVNNM 0807550	MF8	0.75	35	6.2 x 5	6.2	8	70	19	3	5.0P	7.3	H3

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

P							K		N										M		S		
Carbon Steel		Alloy Steel	Hardened Steel			Tool Steel	Cast Steel	Cast Iron	High Strength Steel	Unalloyed Copper	Brass	Brass Casting	Bronze	Aluminum	Aluminum Alloy Casting	Magnesium Alloy Casting	Zinc Alloy Casting	Thermo-Setting Plastic	Thermo-Plastic	Stainless Steels	Titanium Alloys		
-SM25C	SM25C -SM45C	SM45C-	SCM	25-45 HRC	45-55 HRC	50-60 HRC	STD	SC	GC	GCD	Cu	Bs	BsC	CAC	Axx	AC, ALDC	MC	ZDC	Bakelite phenol epoxy	Nylon vinyl chloride	STS	Ti	Ni
○	○	○	○	○			○	○	○	◎									○		◎	○	○

SVNNM

JIS HSSE Point Tap

Tap

EDP No	TDZ	TP	LU	CZC -MS	DCON -MS	TD	LF	THL	NOF	TCL	PHD	TCTR
SVNNM 0810050	MF8	1	35	6.2 x 5	6.2	8	70	19	3	5.0P	7	H3
SVNNM 1007550	MF10	0.75	39	7 x 5.5	7	10	75	20	3	5.0P	9.3	H3
SVNNM 1010050	MF10	1	39	7 x 5.5	7	10	75	20	3	5.0P	9	H3
SVNNM 1012550	MF10	1.25	39	7 x 5.5	7	10	75	20	3	5.0P	8.8	H3
SVNNM 1210050	MF12	1	48	8.5 x 6.5	8.5	12	82	22	3	5.0P	11	H3
SVNNM 1212550	MF12	1.25	48	8.5 x 6.5	8.5	12	82	22	3	5.0P	10.8	H3
SVNNM 1215050	MF12	1.5	48	8.5 x 6.5	8.2	12	82	22	3	5.0P	10.5	H3
SVNNM 1410050	MF14	1	48	10.5 x 8	10.5	14	88	22	3	5.0P	13	H3
SVNNM 1415050	MF14	1.5	48	10.5 x 8	10.5	14	88	22	3	5.0P	12.5	H3
SVNNM 1615050	MF16	1.5	52	12.5 x 10	12.5	16	95	22	3	5.0P	14.5	H3
SVNNM 1815050	MF18	1.5	55	14 x 11	14	18	100	25	3	5.0P	16.5	H4
SVNNM 2015050	MF20	1.5	58	15 x 12	15	20	105	25	3	5.0P	18.5	H4
SVNNM 2215050	MF22	1.5	63	17 x 13	17	22	115	25	3	5.0P	20.5	H4
SVNNM 2415050	MF24	1.5	66	19 x 15	19	24	120	28	3	5.0P	22.5	H4
SVNNM 2420050	MF24	2	66	19 x 15	19	24	120	28	3	5.0P	22	H4

DIN
TAP-
STAR

JIS
TAP-
STAR

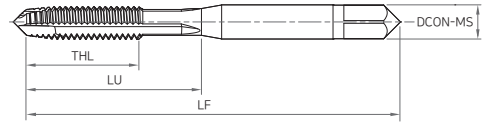
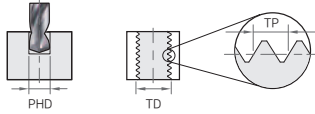
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

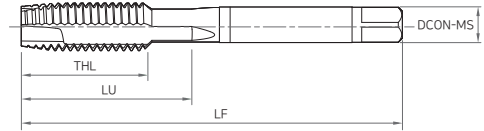
P										K		N										M		S	
Carbon Steel			Alloy Steel	Hardened Steel			Tool Steel	Cast Steel	Cast Iron	High Strength Steel	Unalloyed Copper	Brass	Brass Casting	Bronze	Aluminum	Aluminum Alloy Casting	Magnesium Alloy Casting	Zinc Alloy Casting	Thermo, Setting Plastic	Thermo, Plastic	Stainless Steels	Titanium Alloys			
~SM25C	SM25C ~SM45C	SM45C~	SCM	25~45 HRC	45~55 HRC	50~60 HRC	STD	SC	GC	GCD	Cu	Bs	BsC	CAC	Axx	AC, ALDC	MC	ZDC	Bakelite phenol epoxy	Nylon vinyl chloride	STS	Ti	Ni		
○	○	○	○	○			○	○	○	◎						○			○		◎	○	○		

SVNHM JIS HSSE Point Tap

Tap



M10/MF10 OR UNDER



M12/MF12 OVER

HSSE

HOMO

EDP No	TDZ	TP	LU	CZC -MS	DCON -MS	TD	LF	THL	NOF	TCL	PHD	TCTR
SVNHM 0204050	M2	0.4	13.5	3 x 2.5	3	2	40	8	3	5.0P	1.6	H2
SVNHM 025045050	M2.5	0.45	14.5	3 x 2.5	3	3	44	9	3	5.0P	2.1	H2
SVNHM 0305050	M3	0.5	18	4 x 3.2	4	3	46	11	3	5.0P	2.5	H2
SVNHM 0407050	M4	0.7	21	5 x 4	5	4	52	13	3	5.0P	3.3	H2
SVNHM 04507550	M4.5	0.75	21	5 x 4	5	5	55	13	3	5.0P	3.8	H2
SVNHM 0508050	M5	0.8	25	5.5 x 4.5	5.5	5	60	16	3	5.0P	4.2	H2
SVNHM 0610050	M6	1	30	6 x 4.5	6	6	62	19	3	5.0P	5	H2
SVNHM 0812550	M8	1.25	35	6.2 x 5	6.2	8	70	22	3	5.0P	6.8	H3
SVNHM 1015050	M10	1.5	39	7 x 5.5	7	10	75	24	3	5.0P	8.5	H3
SVNHM 1217550	M12	1.75	48	8.5 x 6.5	8.5	12	82	29	3	5.0P	10.2	H4
SVNHM 1420050	M14	2	48	10.5 x 8	10.5	14	88	30	3	5.0P	12	H4
SVNHM 1620050	M16	2	52	12.5 x 10	12.5	16	95	32	3	5.0P	14	H4
SVNHM 1825050	M18	2.5	55	14 x 11	14	18	100	34	3	5.0P	15.5	H4
SVNHM 2025050	M20	2.5	58	15 x 12	15	20	105	34	3	5.0P	17.5	H4
SVNHM 2225050	M22	2.5	63	17 x 13	17	22	115	34	3	5.0P	19.5	H4
SVNHM 2430050	M24	3	66	19 x 15	19	24	120	38	3	5.0P	21	H4
SVNHM 0405050	MF4	0.5	21	5 x 4	5	4	52	10	3	5.0P	3.5	H2
SVNHM 0505050	MF5	0.5	25	5.5 x 4.5	5.5	5	60	12	3	5.0P	4.5	H2
SVNHM 0607550	MF6	0.75	30	6 x 4.5	6	6	62	14	3	5.0P	5.3	H2
SVNHM 0807550	MF8	0.75	35	6.2 x 5	6.2	8	70	19	3	5.0P	7.3	H3

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

P										K		N										M	S
Carbon Steel			Alloy Steel	Hardened Steel			Tool Steel	Cast Steel	Cast Iron	High Strength Steel	Unalloyed Copper	Brass	Brass Casting	Bronze	Aluminum	Aluminum Alloy Casting	Magnesium Alloy Casting	Zinc Alloy Casting	Thermo-Setting Plastic	Thermo-Plastic	Stainless Steels	Titanium Alloys	
-SM25C	SM25C-SM45C	SM45C-	SCM	25-45 HRC	45-55 HRC	50-60 HRC	STD	SC	GC	GCD	Cu	Bs	BsC	CAC	Axx	AC, ALDC	MC	ZDC	Bakelite phenol epoxy	Nylon vinyl chloride	STS	Ti	Ni
◎	◎	◎	◎	○				◎	○	○						◎							

SVNHM

JIS HSSE Point Tap

Tap

EDP No	TDZ	TP	LU	CZC-MS	DCON-MS	TD	LF	THL	NOF	TCL	PHD	TCTR
SVNHM 0810050	MF8	1	35	6.2 x 5	6.2	8	70	19	3	5.0P	7	H3
SVNHM 1007550	MF10	0.75	39	7 x 5.5	7	10	75	20	3	5.0P	9.3	H3
SVNHM 1010050	MF10	1	39	7 x 5.5	7	10	75	20	3	5.0P	9	H3
SVNHM 1012550	MF10	1.25	39	7 x 5.5	7	10	75	20	3	5.0P	8.8	H3
SVNHM 1210050	MF12	1	48	8.5 x 6.5	8.5	12	82	22	3	5.0P	11	H3
SVNHM 1212550	MF12	1.25	48	8.5 x 6.5	8.5	12	82	22	3	5.0P	10.8	H3
SVNHM 1215050	MF12	1.5	48	8.5 x 6.5	8.5	12	82	22	3	5.0P	10.5	H3
SVNHM 1410050	MF14	1	48	10.5 x 8	10.5	14	88	22	3	5.0P	13	H3
SVNHM 1415050	MF14	1.5	48	10.5 x 8	10.5	14	88	22	3	5.0P	12.5	H3
SVNHM 1615050	MF16	1.5	52	12.5 x 10	12.5	16	95	22	3	5.0P	14.5	H3
SVNHM 1815050	MF18	1.5	55	14 x 11	14	18	100	25	3	5.0P	16.5	H4
SVNHM 2015050	MF20	1.5	58	15 x 12	15	20	105	25	3	5.0P	18.5	H4
SVNHM 2215050	MF22	1.5	63	17 x 13	17	22	115	25	3	5.0P	20.5	H4
SVNHM 2415050	MF24	1.5	66	19 x 15	19	24	120	28	3	5.0P	22.5	H4
SVNHM 2420050	MF24	2	66	19 x 15	19	24	120	28	3	5.0P	22	H4

DIN
TAP-
STAR

JIS
TAP-
STAR

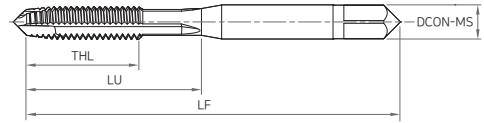
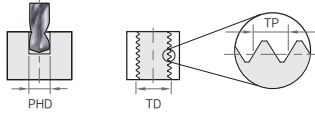
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

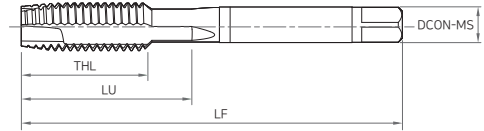
P								K		N										M	S		
Carbon Steel			Alloy Steel	Hardened Steel			Tool Steel	Cast Steel	Cast Iron	High Strength Steel	Unalloyed Copper	Brass	Brass Casting	Bronze	Aluminum	Aluminum Alloy Casting	Magnesium Alloy Casting	Zinc Alloy Casting	Thermo, Setting Plastic	Thermo, Plastic	Stainless Steels	Titanium Alloys	
~SM25C	SM25C ~SM45C	SM45C~	SCM	25~45 HRC	45~55 HRC	50~60 HRC	STD	SC	GC	GCD	Cu	Bs	BsC	CAC	Axx	AC, ALDC	MC	ZDC	Bakelite phenol epoxy	Nylon vinyl chloride	STS	Ti	Ni
◎	◎	◎	◎	○				◎	○	○						◎							

SVNOM JIS HSSE Point Tap

Tap



M10/MF10 OR UNDER



M12/MF12 OVER

Yellow
Ring

HSSE

Bright

EDP No	TDZ	TP	LU	CZC -MS	DCON -MS	TD	LF	THL	NOF	TCL	PHD	TCTR
SVNOM 0204050	M2	0.4	13.5	3 x 2.5	3	2	40	8	2	5.0P	1.6	H2
SVNOM 025045050	M2.5	0.45	14.5	3 x 2.5	3	3	44	9	2	5.0P	2.1	H2
SVNOM 0305050	M3	0.5	18	4 x 3.2	4	3	46	11	3	5.0P	2.5	H2
SVNOM 0407050	M4	0.7	21	5 x 4	5	4	52	13	3	5.0P	3.3	H2
SVNOM 04507550	M4.5	0.75	21	5 x 4	5	5	55	13	2	5.0P	3.8	H2
SVNOM 0508050	M5	0.8	25	5.5 x 4.5	5.5	5	60	16	3	5.0P	4.2	H2
SVNOM 0610050	M6	1	30	6 x 4.5	6	6	62	19	3	5.0P	5	H2
SVNOM 0812550	M8	1.25	35	6.2 x 5	6.2	8	70	22	3	5.0P	6.8	H3
SVNOM 1015050	M10	1.5	39	7 x 5.5	7	10	75	24	3	5.0P	8.5	H3
SVNOM 1217550	M12	1.75	48	8.5 x 6.5	8.5	12	82	29	3	5.0P	10.2	H4
SVNOM 1420050	M14	2	48	10.5 x 8	10.5	14	88	30	3	5.0P	12	H4
SVNOM 1620050	M16	2	52	12.5 x 10	12.5	16	95	32	3	5.0P	14	H4
SVNOM 1825050	M18	2.5	55	14 x 11	14	18	100	34	3	5.0P	15.5	H4
SVNOM 2025050	M20	2.5	58	15 x 12	15	20	105	34	3	5.0P	17.5	H4
SVNOM 2225050	M22	2.5	63	17 x 13	17	22	115	34	3	5.0P	19.5	H4
SVNOM 2430050	M24	3	66	19 x 15	19	24	120	38	3	5.0P	21	H4
SVNOM 0405050	MF4	0.5	21	5 x 4	5	4	52	10	2	5.0P	3.5	H2
SVNOM 0505050	MF5	0.5	25	5.5 x 4.5	5.5	5	60	12	2	5.0P	4.5	H2
SVNOM 0607550	MF6	0.75	30	6 x 4.5	6	6	62	14	2	5.0P	5.3	H2
SVNOM 0807550	MF8	0.75	35	6.2 x 5	6.2	8	70	19	2	5.0P	7.3	H3

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

P										K		N										M		S	
Carbon Steel			Alloy Steel	Hardened Steel			Tool Steel	Cast Steel	Cast Iron	High Strength Steel	Unalloyed Copper	Brass	Brass Casting	Bronze	Aluminum	Aluminum Alloy Casting	Magnesium Alloy Casting	Zinc Alloy Casting	Thermo-Setting Plastic	Thermo-Plastic	Stainless Steels	Titanium Alloys			
-SM25C	SM25C -SM45C	SM45C-	SCM	25-45 HRC	45-55 HRC	50-60 HRC	STD	SC	GC	GCD	Cu	Bs	BsC	CAC	Axx	AC, ALDC	MC	ZDC	Bakelite phenol epoxy	Nylon vinyl chloride	STS	Ti	Ni		
											◎	◎	◎	◎	◎	◎	○	○	◎						

SVNOM

JIS HSSE Point Tap

Tap

EDP No	TDZ	TP	LU	CZC -MS	DCON -MS	TD	LF	THL	NOF	TCL	PHD	TCTR
SVNOM 0810050	MF8	1	35	6.2 x 5	6.2	8	70	19	3	5.0P	7	H3
SVNOM 1007550	MF10	0.75	39	7 x 5.5	7	10	75	20	2	5.0P	9.3	H3
SVNOM 1010050	MF10	1	39	7 x 5.5	7	10	75	20	2	5.0P	9	H3
SVNOM 1012550	MF10	1.25	39	7 x 5.5	7	10	75	20	3	5.0P	8.8	H3
SVNOM 1210050	MF12	1	48	8.5 x 6.5	8.5	12	82	22	3	5.0P	11	H3
SVNOM 1212550	MF12	1.25	48	8.5 x 6.5	8.5	12	82	22	3	5.0P	10.8	H3
SVNOM 1215050	MF12	1.5	48	8.5 x 6.5	8.5	12	82	22	3	5.0P	10.5	H3
SVNOM 1410050	MF14	1	48	10.5 x 8	10.5	14	88	22	3	5.0P	13	H3
SVNOM 1415050	MF14	1.5	48	10.5 x 8	10.5	14	88	22	3	5.0P	12.5	H3
SVNOM 1615050	MF16	1.5	52	12.5 x 10	12.5	16	95	22	3	5.0P	14.5	H3
SVNOM 1815050	MF18	1.5	55	14 x 11	14	18	100	25	3	5.0P	16.5	H4
SVNOM 2015050	MF20	1.5	58	15 x 12	15	20	105	25	3	5.0P	18.5	H4
SVNOM 2215050	MF22	1.5	63	17 x 13	17	22	115	25	3	5.0P	20.5	H4
SVNOM 2415050	MF24	1.5	66	19 x 15	19	24	120	28	3	5.0P	22.5	H4
SVNOM 2420050	MF24	2	66	19 x 15	19	24	120	28	3	5.0P	22	H4

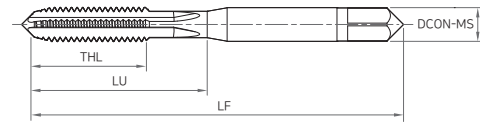
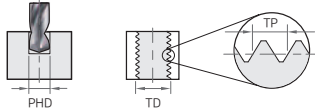
DIN
TAP-
STAR

JIS
TAP-
STAR

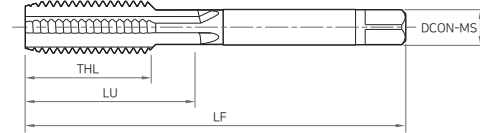
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

P										K		N										M	S	
Carbon Steel			Alloy Steel	Hardened Steel			Tool Steel	Cast Steel	Cast Iron	High Strength Steel	Unalloyed Copper	Brass	Brass Casting	Bronze	Aluminum	Aluminum Alloy Casting	Magnesium Alloy Casting	Zinc Alloy Casting	Thermo. Setting Plastic	Thermo. Plastic	Stainless Steels	Titanium Alloys		
~SM25C	SM25C ~SM45C	SM45C~	SCM	25~45 HRC	45~55 HRC	50~60 HRC	STD	SC	GC	GCD	Cu	Bs	BsC	CAC	Axx	AC, ALDC	MC	ZDC	Bakelite phenol epoxy	Nylon vinyl chloride	STS	Ti	Ni	
											◎	◎	◎	◎	◎	◎	○	○	◎					



M10/MF10 OR UNDER



M12/MF12 OVER



EDP No	TDZ	TP	LU	CZC -MS	DCON -MS	TD	LF	THL	NOF	TCL	PHD	TCTR
SVSAM 0305015	M3	0.5	18	4 x 3.2	4	3	46	11	3	1.5P	2.5	H2
SVSAM 0407015	M4	0.7	21	5 x 4	5	4	52	13	3	1.5P	3.3	H2
SVSAM 04507515	M4.5	0.75	21	5 x 4	5	5	55	13	3	1.5P	3.8	H2
SVSAM 0508015	M5	0.8	25	5.5 x 4.5	5.5	5	60	16	3	1.5P	4.2	H2
SVSAM 0610015	M6	1	30	6 x 4.5	6	6	62	19	3	1.5P	5	H2
SVSAM 0812515	M8	1.25	35	6.2 x 5	6.2	8	70	22	4	1.5P	6.8	H2
SVSAM 1015015	M10	1.5	39	7 x 5.5	7	10	75	24	4	1.5P	8.5	H3
SVSAM 1217515	M12	1.75	48	8.5 x 6.5	8.5	12	82	29	4	1.5P	10.2	H3
SVSAM 1420015	M14	2	48	10.5 x 8	10.5	14	88	30	4	1.5P	12	H3
SVSAM 1620015	M16	2	52	12.5 x 10	12.5	16	95	32	4	1.5P	14	H3
SVSAM 1825015	M18	2.5	55	14 x 11	14	18	100	34	4	1.5P	15.5	H3
SVSAM 2025015	M20	2.5	58	15 x 12	15	20	105	34	4	1.5P	17.5	H3
SVSAM 2225015	M22	2.5	63	17 x 13	17	22	115	34	4	1.5P	19.5	H3
SVSAM 2430015	M24	3	66	19 x 15	19	24	120	38	4	1.5P	21	H3
SVSAM 0810015	MF8	1	35	6.2 x 5	6.2	8	70	19	4	1.5P	7	H2
SVSAM 1012515	MF10	1.25	39	7 x 5.5	7	10	75	20	4	1.5P	8.8	H2
SVSAM 1210015	MF12	1	48	8.5 x 6.5	8.5	12	82	22	4	1.5P	11	H2
SVSAM 1212515	MF12	1.25	48	8.5 x 6.5	8.5	12	82	22	4	1.5P	10.8	H2
SVSAM 1215015	MF12	1.5	48	8.5 x 6.5	8.5	12	82	22	4	1.5P	10.5	H3
SVSAM 1415015	MF14	1.5	48	10.5 x 8	10.5	14	88	22	4	1.5P	12.5	H3

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

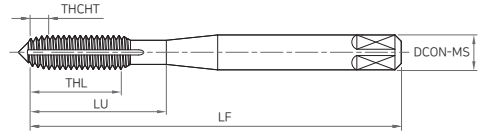
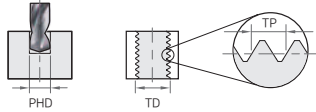
P								K		N										M	S		
Carbon Steel			Alloy Steel	Hardened Steel			Tool Steel	Cast Steel	Cast Iron	High Strength Steel	Unalloyed Copper	Brass	Brass Casting	Bronze	Aluminum	Aluminum Alloy Casting	Magnesium Alloy Casting	Zinc Alloy Casting	Thermo-Setting Plastic	Thermo-Plastic	Stainless Steels	Titanium Alloys	
-SM25C	SM25C -SM45C	SM45C-	SCM	25-45 HRC	45-55 HRC	50-60 HRC	STD	SC	GC	GCD	Cu	Bs	BsC	CAC	Axx	AC, ALDC	MC	ZDC	Bakelite phenol epoxy	Nylon vinyl chloride	STS	Ti	Ni
				○					◎														

EDP No	TDZ	TP	LU	CZC -MS	DCON -MS	TD	LF	THL	NOF	TCL	PHD	TCTR
SVSAM 1615015	MF16	1.5	52	12.5 x 10	12.5	16	95	22	4	1.5P	14.5	H3
SVSAM 1815015	MF18	1.5	55	14 x 11	14	18	100	25	4	1.5P	16.5	H3
SVSAM 2015015	MF20	1.5	58	15 x 12	15	20	105	25	4	1.5P	18.5	H3
SVSAM 2215015	MF22	1.5	63	17 x 13	17	22	115	25	4	1.5P	20.5	H3
SVSAM 2415015	MF24	1.5	66	19 x 15	19	24	120	28	4	1.5P	22.5	H3
SVSAM 2420015	MF24	2	66	19 x 15	19	24	120	28	4	1.5P	22	H3
SVSAM 0305050	M3	0.5	18	4 x 3.2	4	3	46	11	3	5.0P	2.5	H2
SVSAM 0407050	M4	0.7	21	5 x 4	5	4	52	13	3	5.0P	3.3	H2
SVSAM 04507550	M4.5	0.75	21	5 x 4	5	5	55	13	3	5.0P	3.8	H2
SVSAM 0508050	M5	0.8	25	5.5 x 4.5	5.5	5	60	16	3	5.0P	4.2	H2
SVSAM 0610050	M6	1	30	6 x 4.5	6	6	62	19	3	5.0P	5	H2
SVSAM 0812550	M8	1.25	35	6.2 x 5	6.2	8	70	22	4	5.0P	6.8	H2
SVSAM 1015050	M10	1.5	39	7 x 5.5	7	10	75	24	4	5.0P	8.5	H3
SVSAM 1217550	M12	1.75	48	8.5 x 6.5	8.5	12	82	29	4	5.0P	10.2	H3
SVSAM 1420050	M14	2	48	10.5 x 8	10.5	14	88	30	4	5.0P	12	H3
SVSAM 1620050	M16	2	52	12.5 x 10	12.5	16	95	32	4	5.0P	14	H3
SVSAM 1825050	M18	2.5	55	14 x 11	14	18	100	34	4	5.0P	15.5	H3
SVSAM 2025050	M20	2.5	58	15 x 12	15	20	105	34	4	5.0P	17.5	H3
SVSAM 2225050	M22	2.5	63	17 x 13	17	22	115	34	4	5.0P	19.5	H3
SVSAM 2430050	M24	3	66	19 x 15	19	24	120	38	4	5.0P	21	H3
SVSAM 0810050	MF8	1	35	6.2 x 5	6.2	8	70	19	4	5.0P	7	H2
SVSAM 1012550	MF10	1.25	39	7 x 5.5	7	10	75	20	4	5.0P	8.8	H2
SVSAM 1210050	MF12	1	48	8.5 x 6.5	8.5	12	82	22	4	5.0P	11	H2
SVSAM 1212550	MF12	1.25	48	8.5 x 6.5	8.5	12	82	22	4	5.0P	10.8	H2
SVSAM 1215050	MF12	1.5	48	8.5 x 6.5	8.5	12	82	22	4	5.0P	10.5	H3
SVSAM 1415050	MF14	1.5	48	10.5 x 8	10.5	14	88	22	4	5.0P	12.5	H3
SVSAM 1615050	MF16	1.5	52	12.5 x 10	12.5	16	95	22	4	5.0P	14.5	H3
SVSAM 1815050	MF18	1.5	55	14 x 11	14	18	100	25	4	5.0P	16.5	H3
SVSAM 2015050	MF20	1.5	58	15 x 12	15	20	105	25	4	5.0P	18.5	H3
SVSAM 2215050	MF22	1.5	63	17 x 13	17	22	115	25	4	5.0P	20.5	H3
SVSAM 2415050	MF24	1.5	66	19 x 15	19	24	120	28	4	5.0P	22.5	H3
SVSAM 2420050	MF24	2	66	19 x 15	19	24	120	28	4	5.0P	22	H3

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

P									K		N										M	S	
Carbon Steel			Alloy Steel	Hardened Steel			Tool Steel	Cast Steel	Cast Iron	High Strength Steel	Unalloyed Copper	Brass	Brass Casting	Bronze	Aluminum	Aluminum Alloy Casting	Magnesium Alloy Casting	Zinc Alloy Casting	Thermo-Setting Plastic	Thermo-Plastic	Stainless Steels	Titanium Alloys	
~SM25C	SM25C~SM45C	SM45C~	SCM	25~45 HRC	45~55 HRC	50~60 HRC	STD	SC	GC	GCD	Cu	Bs	BsC	CAC	Axx	AC, ALDC	MC	ZDC	Bakelite phenol epoxy	Nylon vinyl chloride	STS	Ti	Ni
					○				◎														



M6 OR UNDER



M8 OVER

※ 2.0P Tap is removed external center as bottoming type

HSSE

Bright

EDP No	TDZ	TP	LU	CZC-MS	DCON-MS	TD	LF	THL	NOF	TCL	PHD	TCTR	THCHT
SVROM 0305020S	M3	0.5	17	4 x 3.2	4	3	46	11	S	2.0P	2.78	GH5	C
SVROM 0407020S	M4	0.7	19.5	5 x 4	5	4	52	13	S	2.0P	3.68	GH6	C
SVROM 0508020S	M5	0.8	23	5.5 x 4.5	5.5	5	60	16	S	2.0P	4.63	GH6	C
SVROM 0610020S	M6	1	27	6 x 4.5	6	6	62	19	S	2.0P	5.53	GH7	C
SVROM 0810020S	M8	1	35	6.2 x 5	6.2	8	70	22	S	2.0P	7.39	GH7	C
SVROM 0812520S	M8	1.25	35	6.2 x 5	6.2	8	70	22	S	2.0P	7.53	GH7	C
SVROM 1012520S	M10	1.25	40	7 x 5.5	7	10	75	24	S	2.0P	9.39	GH7	C
SVROM 1015020S	M10	1.5	40	7 x 5.5	7	10	75	24	S	2.0P	9.24	GH7	C
SVROM 1210020S	M12	1	44	8.5 x 6.5	8.5	12	82	29	S	2.0P	11.53	GH7	C
SVROM 1212520S	M12	1.25	44	8.5 x 6.5	8.5	12	82	29	S	2.0P	11.39	GH7	C
SVROM 1215020S	M12	1.5	44	8.5 x 6.5	8.5	12	82	29	S	2.0P	11.25	GH7	C
SVROM 1217520S	M12	1.75	44	8.5 x 6.5	8.5	12	82	29	S	2.0P	11.12	GH8	C
SVROM 0305020M	M3	0.5	17	4 x 3.2	4	3	46	11	M	2.0P	2.78	GH5	C
SVROM 0407020M	M4	0.7	19.5	5 x 4	5	4	52	13	M	2.0P	3.68	GH6	C
SVROM 0508020M	M5	0.8	23	5.5 x 4.5	5.5	5	60	16	M	2.0P	4.63	GH6	C
SVROM 0610020M	M6	1	27	6 x 4.5	6	6	62	19	M	2.0P	5.53	GH7	C
SVROM 0810020M	M8	1	35	6.2 x 5	6.2	8	70	22	M	2.0P	7.53	GH7	C
SVROM 0812520M	M8	1.25	35	6.2 x 5	6.2	8	70	22	M	2.0P	7.39	GH7	C
SVROM 1012520M	M10	1.25	40	7 x 5.5	7	10	75	24	M	2.0P	9.39	GH7	C
SVROM 1015020M	M10	1.5	40	7 x 5.5	7	10	75	24	M	2.0P	9.24	GH7	C

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

P										K		N										M	S	
Carbon Steel			Alloy Steel	Hardened Steel			Tool Steel	Cast Steel	Cast Iron	High Strength Steel	Unalloyed Copper	Brass	Brass Casting	Bronze	Aluminum	Aluminum Alloy Casting	Magnesium Alloy Casting	Zinc Alloy Casting	Thermo Setting Plastic	Thermo Plastic	Stainless Steels	Titanium Alloys		
-SM25C	SM25C -SM45C	SM45C	SCM	25-45 HRC	45-55 HRC	50-60 HRC	STD	SC	GC	GCD	Cu	Bs	BsC	CAC	Axx	AC, ALDC	MC	ZDC	Bakelite phenol epoxy	Nylon vinyl chloride	STS	Ti	Ni	
○	○										○	○	○	○	○	◎		○						

EDP No	TDZ	TP	LU	CZC -MS	DCON -MS	TD	LF	THL	NOF	TCL	PHD	TCTR	THCHT
SVROM 1210020M	M12	1	44	8.5 x 6.5	8.5	12	82	29	M	2.0P	11.53	GH7	C
SVROM 1212520M	M12	1.25	44	8.5 x 6.5	8.5	12	82	29	M	2.0P	11.39	GH7	C
SVROM 1215020M	M12	1.5	44	8.5 x 6.5	8.5	12	82	29	M	2.0P	11.24	GH7	C
SVROM 1217520M	M12	1.75	44	8.5 x 6.5	8.5	12	82	29	M	2.0P	11.12	GH8	C
SVROM 0305040M	M3	0.5	17	4 x 3.2	4	3	46	11	M	4.0P	2.78	GH5	B
SVROM 0407040M	M4	0.7	19.5	5 x 4	5	4	52	13	M	4.0P	3.68	GH6	B
SVROM 0508040M	M5	0.8	23	5.5 x 4.5	5.5	5	60	16	M	4.0P	4.63	GH6	B
SVROM 0610040M	M6	1	27	6 x 4.5	6	6	62	19	M	4.0P	5.53	GH7	B
SVROM 0810040M	M8	1	35	6.2 x 5	6.2	8	70	22	M	4.0P	7.53	GH7	B
SVROM 0812540M	M8	1.25	35	6.2 x 5	6.2	8	70	22	M	4.0P	7.39	GH7	B
SVROM 1012540M	M10	1.25	40	7 x 5.5	7	10	75	24	M	4.0P	9.39	GH7	B
SVROM 1015040M	M10	1.5	40	7 x 5.5	7	10	75	24	M	4.0P	9.24	GH7	B
SVROM 1210040M	M12	1	44	8.5 x 6.5	8.5	12	82	29	M	4.0P	11.53	GH7	B
SVROM 1212540M	M12	1.25	44	8.5 x 6.5	8.5	12	82	29	M	4.0P	11.39	GH7	B
SVROM 1215040M	M12	1.5	44	8.5 x 6.5	8.5	12	82	29	M	4.0P	11.24	GH7	B
SVROM 1217540M	M12	1.75	44	8.5 x 6.5	8.5	12	82	29	M	4.0P	11.12	GH8	B

* Chamfer Lead : C - 2~3Thread, B - 4~5Thread, E - 1.5~2Thread

* Oil groove S : 1 Oil groove, Oil groove M : 4 Oil groove

DIN
TAP-
STARJIS
TAP-
STAR

► Applicable Working Material

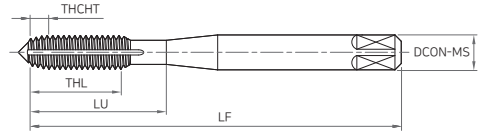
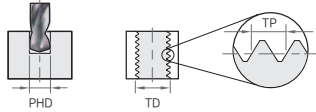
○ : GOOD ◎ : EXCELLENT

P										K		N										M		S	
Carbon Steel			Alloy Steel	Hardened Steel			Tool Steel	Cast Steel	Cast Iron	High Strength Steel	Unalloyed Copper	Brass	Brass Casting	Bronze	Aluminum	Aluminum Alloy Casting	Magnesium Alloy Casting	Zinc Alloy Casting	Thermo Setting Plastic	Thermo Plastic	Stainless Steels	Titanium Alloys			
~SM25C	SM25C~SM45C	SM45C~	SCM	25~45 HRC	45~55 HRC	50~60 HRC	STD	SC	GC	GCD	Cu	Bs	BsC	CAC	Axx	AC, ALDC	MC	ZDC	Bakelite phenol epoxy	Nylon vinyl chloride	STS	Ti	Ni		
○	○										○	○	○	○	○	◎		○							

SVRTM

JIS HSSE Roll Tap

Tap



M6 OR UNDER



M8 OVER

※ 2.0P Tap is removed external center as bottoming type

HSSE

TIN

EDP No	TDZ	TP	LU	CZC-MS	DCON-MS	TD	LF	THL	NOF	TCL	PHD	TCTR	THCHT
SVRTM 0305020S	M3	0.5	17	4 x 3.2	4	3	46	11	S	2.0P	2.78	GH5	C
SVRTM 0407020S	M4	0.7	19.5	5 x 4	5	4	52	13	S	2.0P	3.68	GH6	C
SVRTM 0508020S	M5	0.8	23	5.5 x 4.5	5.5	5	60	16	S	2.0P	4.63	GH6	C
SVRTM 0610020S	M6	1	27	6 x 4.5	6	6	62	19	S	2.0P	5.53	GH7	C
SVRTM 0810020S	M8	1	35	6.2 x 5	6.2	8	70	22	S	2.0P	7.39	GH7	C
SVRTM 0812520S	M8	1.25	35	6.2 x 5	6.2	8	70	22	S	2.0P	7.53	GH7	C
SVRTM 1012520S	M10	1.25	40	7 x 5.5	7	10	75	24	S	2.0P	9.39	GH7	C
SVRTM 1015020S	M10	1.5	40	7 x 5.5	7	10	75	24	S	2.0P	9.24	GH7	C
SVRTM 1210020S	M12	1	44	8.5 x 6.5	8.5	12	82	29	S	2.0P	11.53	GH7	C
SVRTM 1212520S	M12	1.25	44	8.5 x 6.5	8.5	12	82	29	S	2.0P	11.39	GH7	C
SVRTM 1215020S	M12	1.5	44	8.5 x 6.5	8.5	12	82	29	S	2.0P	11.24	GH7	C
SVRTM 1217520S	M12	1.75	44	8.5 x 6.5	8.5	12	82	29	S	2.0P	11.12	GH8	C
SVRTM 0305020M	M3	0.5	17	4 x 3.2	4	3	46	11	M	2.0P	2.78	GH5	C
SVRTM 0407020M	M4	0.7	19.5	5 x 4	5	4	52	13	M	2.0P	3.65	GH6	C
SVRTM 0508020M	M5	0.8	23	5.5 x 4.5	5.5	5	60	16	M	2.0P	4.63	GH6	C
SVRTM 0610020M	M6	1	27	6 x 4.5	6	6	62	19	M	2.0P	5.53	GH7	C
SVRTM 0810020M	M8	1	35	6.2 x 5	6.2	8	70	22	M	2.0P	7.53	GH7	C
SVRTM 0812520M	M8	1.25	35	6.2 x 5	6.2	8	70	22	M	2.0P	7.39	GH7	C
SVRTM 1012520M	M10	1.25	40	7 x 5.5	7	10	75	24	M	2.0P	9.39	GH7	C
SVRTM 1015020M	M10	1.5	40	7 x 5.5	7	10	75	24	M	2.0P	9.24	GH7	C

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

P							K		N										M	S			
Carbon Steel			Alloy Steel	Hardened Steel			Tool Steel	Cast Steel	Cast Iron	High Strength Steel	Unalloyed Copper	Brass	Brass Casting	Bronze	Aluminum	Aluminum Alloy Casting	Magnesium Alloy Casting	Zinc Alloy Casting	Thermo Setting Plastic	Thermo Plastic	Stainless Steels	Titanium Alloys	
-SM25C	SM25C -SM45C	SM45C-	SCM	25-45 HRC	45-55 HRC	50-60 HRC	STD	SC	GC	GCD	Cu	Bs	BsC	CAC	Axx	AC, ALDC	MC	ZDC	Bakelite phenol epoxy	Nylon vinyl chloride	STS	Ti	Ni
○	○										○	○	○	○	○	◎		○					

EDP No	TDZ	TP	LU	CZC -MS	DCON -MS	TD	LF	THL	NOF	TCL	PHD	TCTR	THCHT
SVRTM 1210020M	M12	1	44	8.5 x 6.5	8.5	12	82	29	M	2.0P	11.53	GH7	C
SVRTM 1212520M	M12	1.25	44	8.5 x 6.5	8.5	12	82	29	M	2.0P	11.39	GH7	C
SVRTM 1215020M	M12	1.5	44	8.5 x 6.5	8.5	12	82	29	M	2.0P	11.24	GH7	C
SVRTM 1217520M	M12	1.75	44	8.5 x 6.5	8.5	12	82	29	M	2.0P	11.12	GH8	C
SVRTM 0305040M	M3	0.5	17	4 x 3.2	4	3	46	11	M	4.0P	2.78	GH5	B
SVRTM 0407040M	M4	0.7	19.5	5 x 4	5	4	52	13	M	4.0P	3.68	GH6	B
SVRTM 0508040M	M5	0.8	23	5.5 x 4.5	5.5	5	60	16	M	4.0P	4.63	GH6	B
SVRTM 0610040M	M6	1	27	6 x 4.5	6	6	62	19	M	4.0P	5.53	GH7	B
SVRTM 0810040M	M8	1	35	6.2 x 5	6.2	8	70	22	M	4.0P	7.53	GH7	B
SVRTM 0812540M	M8	1.25	35	6.2 x 5	6.2	8	70	22	M	4.0P	7.39	GH7	B
SVRTM 1012540M	M10	1.25	40	7 x 5.5	7	10	75	24	M	4.0P	9.39	GH7	B
SVRTM 1015040M	M10	1.5	40	7 x 5.5	7	10	75	24	M	4.0P	9.24	GH7	B
SVRTM 1210040M	M12	1	44	8.5 x 6.5	8.5	12	82	29	M	4.0P	11.53	GH7	B
SVRTM 1212540M	M12	1.25	44	8.5 x 6.5	8.5	12	82	29	M	4.0P	11.39	GH7	B
SVRTM 1215040M	M12	1.5	44	8.5 x 6.5	8.5	12	82	29	M	4.0P	11.24	GH7	B
SVRTM 1217540M	M12	1.75	44	8.5 x 6.5	8.5	12	82	29	M	4.0P	11.12	GH8	B

* Chamfer Lead : C ~ 2~3Thread, B ~ 4~5Thread, E ~ 1.5~2Thread

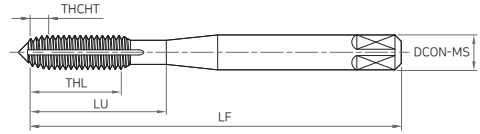
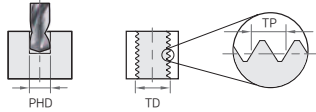
* Oil groove S : 1 Oil groove, Oil groove M : 4 Oil groove

DIN
TAP-
STARJIS
TAP-
STAR

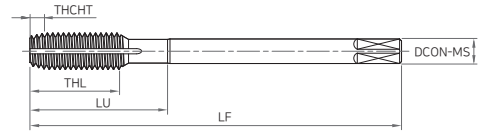
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

P										K		N										M	S	
Carbon Steel			Alloy Steel	Hardened Steel			Tool Steel	Cast Steel	Cast Iron	High Strength Steel	Unalloyed Copper	Brass	Brass Casting	Bronze	Aluminum	Aluminum Alloy Casting	Magnesium Alloy Casting	Zinc Alloy Casting	Thermo Setting Plastic	Thermo Plastic	Stainless Steels	Titanium Alloys		
~SM25C	SM25C~SM45C	SM45C~	SCM	25~45 HRC	45~55 HRC	50~60 HRC	STD	SC	GC	GCD	Cu	Bs	BsC	CAC	Axx	AC, ALDC	MC	ZDC	Bakelite phenol epoxy	Nylon vinyl chloride	STS	Ti	Ni	
○	○										○	○	○	○	○	◎		○						



M6 OR UNDER



M8 OVER

2.0P Tap is removed external center as bottoming type

HSSE

TiCN

EDP No	TDZ	TP	LU	CZC-MS	DCON-MS	TD	LF	THL	NOF	TCL	PHD	TCTR	THCHT
SVRCM 0305020S	M3	0.5	17	4 x 3.2	4	3	46	11	S	2.0P	2.78	GH5	C
SVRCM 0407020S	M4	0.7	19.5	5 x 4	5	4	52	13	S	2.0P	3.68	GH6	C
SVRCM 0508020S	M5	0.8	23	5.5 x 4.5	5.5	5	60	16	S	2.0P	4.63	GH6	C
SVRCM 0610020S	M6	1	27	6 x 4.5	6	6	62	19	S	2.0P	5.53	GH7	C
SVRCM 0810020S	M8	1	35	6.2 x 5	6.2	8	70	22	S	2.0P	7.39	GH7	C
SVRCM 0812520S	M8	1.25	35	6.2 x 5	6.2	8	70	22	S	2.0P	7.53	GH7	C
SVRCM 1012520S	M10	1.25	40	7 x 5.5	7	10	75	24	S	2.0P	9.39	GH7	C
SVRCM 1015020S	M10	1.5	40	7 x 5.5	7	10	75	24	S	2.0P	9.24	GH7	C
SVRCM 1210020S	M12	1	44	8.5 x 6.5	8.5	12	82	29	S	2.0P	11.53	GH7	C
SVRCM 1212520S	M12	1.25	44	8.5 x 6.5	8.5	12	82	29	S	2.0P	11.39	GH7	C
SVRCM 1215020S	M12	1.5	44	8.5 x 6.5	8.5	12	82	29	S	2.0P	11.24	GH7	C
SVRCM 1217520S	M12	1.75	44	8.5 x 6.5	8.5	12	82	29	S	2.0P	11.12	GH8	C
SVRCM 0305020M	M3	0.5	17	4 x 3.2	4	3	46	11	M	2.0P	2.78	GH5	C
SVRCM 0407020M	M4	0.7	19.5	5 x 4	5	4	52	13	M	2.0P	3.68	GH6	C
SVRCM 0508020M	M5	0.8	23	5.5 x 4.5	5.5	5	60	16	M	2.0P	4.63	GH6	C
SVRCM 0610020M	M6	1	27	6 x 4.5	6	6	62	19	M	2.0P	5.53	GH7	C
SVRCM 0810020M	M8	1	35	6.2 x 5	6.2	8	70	22	M	2.0P	7.53	GH7	C
SVRCM 0812520M	M8	1.25	35	6.2 x 5	6.2	8	70	22	M	2.0P	7.39	GH7	C
SVRCM 1012520M	M10	1.25	40	7 x 5.5	7	10	75	24	M	2.0P	9.39	GH7	C
SVRCM 1015020M	M10	1.5	40	7 x 5.5	7	10	75	24	M	2.0P	9.24	GH7	C

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

P							K		N										M	S			
Carbon Steel		Alloy Steel	Hardened Steel			Tool Steel	Cast Steel	Cast Iron	High Strength Steel	Unalloyed Copper	Brass	Brass Casting	Bronze	Aluminum	Aluminum Alloy Casting	Magnesium Alloy Casting	Zinc Alloy Casting	Thermo-Setting Plastic	Thermo-Plastic	Stainless Steels	Titanium Alloys		
-SM25C	SM25C -SM45C	SM45C-	SCM	25-45 HRC	45-55 HRC	50-60 HRC	STD	SC	GC	GCD	Cu	Bs	BsC	CAC	Axx	AC, ALDC	MC	ZDC	Bakelite phenol epoxy	Nylon vinyl chloride	STS	Ti	Ni
○	○										○	○	○	○	○	◎		○					

EDP No	TDZ	TP	LU	CZC -MS	DCON -MS	TD	LF	THL	NOF	TCL	PHD	TCTR	THCHT
SVRCM 1210020M	M12	1	44	8.5 x 6.5	8.5	12	82	29	M	2.0P	11.53	GH7	C
SVRCM 1212520M	M12	1.25	44	8.5 x 6.5	8.5	12	82	29	M	2.0P	11.39	GH7	C
SVRCM 1215020M	M12	1.5	44	8.5 x 6.5	8.5	12	82	29	M	2.0P	11.24	GH7	C
SVRCM 1217520M	M12	1.75	44	8.5 x 6.5	8.5	12	82	29	M	2.0P	11.12	GH8	C
SVRCM 0305040M	M3	0.5	17	4 x 3.2	4	3	46	11	M	4.0P	2.78	GH5	B
SVRCM 0407040M	M4	0.7	19.5	5 x 4	5	4	52	13	M	4.0P	3.68	GH6	B
SVRCM 0508040M	M5	0.8	23	5.5 x 4.5	5.5	5	60	16	M	4.0P	4.63	GH6	B
SVRCM 0610040M	M6	1	27	6 x 4.5	6	6	62	19	M	4.0P	5.53	GH7	B
SVRCM 0810040M	M8	1	35	6.2 x 5	6.2	8	70	22	M	4.0P	7.53	GH7	B
SVRCM 0812540M	M8	1.25	35	6.2 x 5	6.2	8	70	22	M	4.0P	7.39	GH7	B
SVRCM 1012540M	M10	1.25	40	7 x 5.5	7	10	75	24	M	4.0P	9.39	GH7	B
SVRCM 1015040M	M10	1.5	40	7 x 5.5	7	10	75	24	M	4.0P	9.24	GH7	B
SVRCM 1210040M	M12	1	44	8.5 x 6.5	8.5	12	82	29	M	4.0P	11.53	GH7	B
SVRCM 1212540M	M12	1.25	44	8.5 x 6.5	8.5	12	82	29	M	4.0P	11.39	GH7	B
SVRCM 1215040M	M12	1.5	44	8.5 x 6.5	8.5	12	82	29	M	4.0P	11.24	GH7	B
SVRCM 1217540M	M12	1.75	44	8.5 x 6.5	8.5	12	82	29	M	4.0P	11.12	GH8	B

* Chamfer Lead : C - 2~3Thread, B - 4~5Thread, E - 1.5~2Thread

* Oil groove S : 1 Oil groove, Oil groove M : 4 Oil groove

DIN
TAP-
STARJIS
TAP-
STAR

► Applicable Working Material

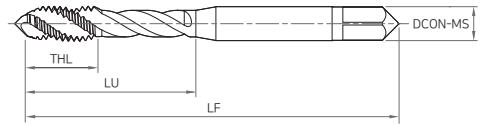
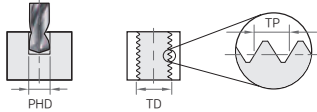
○ : GOOD ◎ : EXCELLENT

P										K		N										M	S	
Carbon Steel			Alloy Steel	Hardened Steel			Tool Steel	Cast Steel	Cast Iron	High Strength Steel	Unalloyed Copper	Brass	Brass Casting	Bronze	Aluminum	Aluminum Alloy Casting	Magnesium Alloy Casting	Zinc Alloy Casting	Thermo Setting Plastic	Thermo Plastic	Stainless Steels	Titanium Alloys		
~SM25C	SM25C~SM45C	SM45C~	SCM	25~45 HRC	45~55 HRC	50~60 HRC	STD	SC	GC	GCD	Cu	Bs	BsC	CAC	Axx	AC, ALDC	MC	ZDC	Bakelite phenol epoxy	Nylon vinyl chloride	STS	Ti	Ni	
○	○										○	○	○	○	○	◎		○						

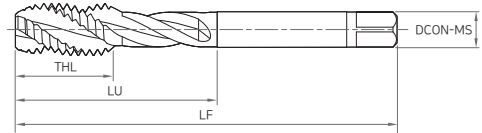
SWPOM

JIS Carbide Spiral Tap

Tap



M6 OR UNDER



M8 OVER

CARBIDE

Bright

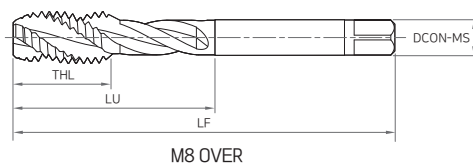
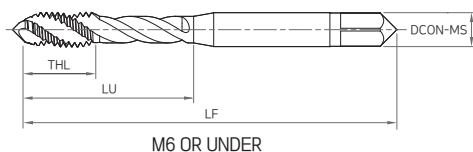
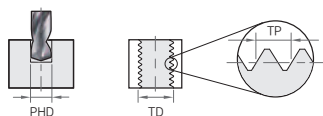
15°
HELIX

EDP No	TDZ	TP	LU	CZC -MS	DCON -MS	TD	LF	THL	NOF	TCL	PHD	TCTR
SWPOM 0305025	M3	0.5	17	4 × 3.2	4	3	46	11	3	2.5P	2.5	WH3
SWPOM 0407025	M4	0.7	19.5	5 × 4	5	4	52	13	3	2.5P	3.3	WH3
SWPOM 0508025	M5	0.8	23	5.5 × 4.5	5.5	5	60	16	3	2.5P	4.2	WH3
SWPOM 0610025	M6	1	27	6 × 4.5	6	6	62	19	3	2.5P	5	WH3
SWPOM 0812525	M8	1.25	35	6.2 × 5	6.2	8	70	22	3	2.5P	6.8	WH4
SWPOM 1015025	M10	1.5	40	7 × 5.5	7	10	75	24	3	2.5P	8.5	WH4
SWPOM 1217525	M12	1.75	44	8.5 × 6.5	8.5	12	82	29	3	2.5P	10.2	WH5
SWPOM 0810025	M8	1	35	6.2 × 5	6.2	8	70	22	3	2.5P	7	WH3
SWPOM 1010025	M10	1	40	7 × 5.5	7	10	75	24	3	2.5P	9	WH3
SWPOM 1012525	M10	1.25	40	7 × 5.5	7	10	75	24	3	2.5P	8.8	WH4
SWPOM 1210025	M12	1	44	8.5 × 6.5	8.5	12	82	29	3	2.5P	11	WH3
SWPOM 1212525	M12	1.25	44	8.5 × 6.5	8.5	12	82	29	3	2.5P	10.8	WH4
SWPOM 1215025	M12	1.5	44	8.5 × 6.5	8.5	12	82	29	3	2.5P	10.5	WH4

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

P										K		N										M	S	
Carbon Steel			Alloy Steel	Hardened Steel			Tool Steel	Cast Steel	Cast Iron	High Strength Steel	Unalloyed Copper	Brass	Brass Casting	Bronze	Aluminum	Aluminum Alloy Casting	Magnesium Alloy Casting	Zinc Alloy Casting	Thermo-Setting Plastic	Thermo-Plastic	Stainless Steels	Titanium Alloys		
~SM25C	SM25C~SM45C	SM45C~	SCM	25-45 HRC	45-55 HRC	50-60 HRC	STD	SC	GC	GCD	Cu	Bs	BsC	CAC	Axx	AC, ALDC	MC	ZDC	Bakelite phenol epoxy	Nylon vinyl chloride	STS	Ti	Ni	
◎	◎	◎	◎	○				◎	○	○					◎	◎								

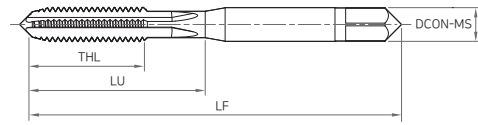
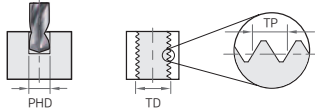


EDP No	TDZ	TP	LU	CZC-MS	DCON-MS	TD	LF	THL	NOF	TCL	PHD	TCTR
SWPCM 0305025	M3	0.5	17	4 x 3.2	4	3	46	11	3	2.5P	2.5	WH3
SWPCM 0407025	M4	0.7	19.5	5 x 4	5	4	52	13	3	2.5P	3.3	WH3
SWPCM 0508025	M5	0.8	23	5.5 x 4.5	5.5	5	60	16	3	2.5P	4.2	WH3
SWPCM 0610025	M6	1	27	6 x 4.5	6	6	62	19	3	2.5P	5	WH3
SWPCM 0812525	M8	1.25	35	6.2 x 5	6.2	8	70	22	3	2.5P	6.8	WH4
SWPCM 1015025	M10	1.5	40	7 x 5.5	7	10	75	24	3	2.5P	8.5	WH4
SWPCM 1217525	M12	1.75	44	8.5 x 6.5	8.5	12	82	29	3	2.5P	10.2	WH5
SWPCM 0810025	M8	1	35	6.2 x 5	6.2	8	70	22	3	2.5P	7	WH3
SWPCM 1010025	M10	1	40	7 x 5.5	7	10	75	24	3	2.5P	9	WH3
SWPCM 1012525	M10	1.25	40	7 x 5.5	7	10	75	24	3	2.5P	8.8	WH4
SWPCM 1210025	M12	1	44	8.5 x 6.5	8.5	12	82	29	3	2.5P	11	WH3
SWPCM 1212525	M12	1.25	44	8.5 x 6.5	8.5	12	82	29	3	2.5P	10.8	WH4
SWPCM 1215025	M12	1.5	44	8.5 x 6.5	8.5	12	82	29	3	2.5P	10.5	WH4

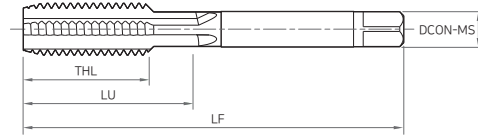
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

P										K		N										M		S	
Carbon Steel			Alloy Steel	Hardened Steel			Tool Steel	Cast Steel	Cast Iron	High Strength Steel	Unalloyed Copper	Brass	Brass Casting	Bronze	Aluminum	Aluminum Alloy Casting	Magnesium Alloy Casting	Zinc Alloy Casting	Thermo-setting Plastic	Thermo-Plastic	Stainless Steels	Titanium Alloys			
~SM25C	SM25C~SM45C	SM45C~	SCM	25~45 HRC	45~55 HRC	50~60 HRC	STD	SC	GC	GCD	Cu	Bs	BsC	CAC	Axx	AC, ALDC	MC	ZDC	Bakelite phenol epoxy	Nylon vinyl chloride	STS	Ti	Ni		
○	○	◎	◎	○	◎	◎	◎	◎	○	○															



M6 OR UNDER



M8 OVER

* ≤M6, 1.5P Tap is removed external center as bottoming type

CARBIDE

Bright

EDP No	TDZ	TP	LU	CZC-MS	DCON-MS	TD	LF	THL	NOF	TCL	PHD	TCTR
SWSOM 0305015	M03	0.5	17	4 × 3.2	4	3	46	11	3	1.5P	2.5	WH3
SWSOM 0407015	M04	0.7	19.5	5 × 4	5	4	52	13	3	1.5P	3.3	WH3
SWSOM 0508015	M05	0.8	23	5.5 × 4.5	5.5	5	60	16	3	1.5P	4.2	WH3
SWSOM 0610015	M06	1	27	6 × 4.5	6	6	62	19	3	1.5P	5	WH3
SWSOM 0812515	M08	1.25	35	6.2 × 5	6.2	8	70	22	4	1.5P	6.8	WH4
SWSOM 1015015	M10	1.5	40	7 × 5.5	7	10	75	24	4	1.5P	8.5	WH4
SWSOM 1217515	M12	1.75	44	8.5 × 6.5	8.5	12	82	29	4	1.5P	10.2	WH5
SWSOM 0810015	M08	1	35	6.2 × 5	6.2	8	70	22	4	1.5P	7	WH3
SWSOM 1010015	M10	1	40	7 × 5.5	7	10	75	24	4	1.5P	9	WH3
SWSOM 1012515	M10	1.25	40	7 × 5.5	7	10	75	24	4	1.5P	8.8	WH4
SWSOM 1210015	M12	1	44	8.5 × 6.5	8.5	12	82	29	4	1.5P	11	WH3
SWSOM 1212515	M12	1.25	44	8.5 × 6.5	8.5	12	82	29	4	1.5P	10.8	WH4
SWSOM 1215015	M12	1.5	44	8.5 × 6.5	8.5	12	82	29	4	1.5P	10.5	WH4
SWSOM 0305030	M03	0.5	17	4 × 3.2	4	3	46	11	3	3.0P	2.5	WH3
SWSOM 0407030	M04	0.7	19.5	5 × 4	5	4	52	13	3	3.0P	3.3	WH3
SWSOM 0508030	M05	0.8	23	5.5 × 4.5	5.5	5	60	16	3	3.0P	4.2	WH3
SWSOM 0610030	M06	1	27	6 × 4.5	6	6	62	19	3	3.0P	5	WH3
SWSOM 0812530	M08	1.25	35	6.2 × 5	6.2	8	70	22	4	3.0P	6.8	WH4
SWSOM 1015030	M10	1.5	40	7 × 5.5	7	10	75	24	4	3.0P	8.5	WH4
SWSOM 1217530	M12	1.75	44	8.5 × 6.5	8.5	12	82	29	4	3.0P	10.2	WH5

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

P							K		N											M	S		
Carbon Steel			Alloy Steel	Hardened Steel			Tool Steel	Cast Steel	Cast Iron	High Strength Steel	Unalloyed Copper	Brass	Brass Casting	Bronze	Aluminum	Aluminum Alloy Casting	Magnesium Alloy Casting	Zinc Alloy Casting	Thermo-Setting Plastic	Thermo-Plastic	Stainless Steels	Titanium Alloys	
-SM25C	SM25C -SM45C	SM45C-	SCM	25-45 HRC	45-55 HRC	50-60 HRC	STD	SC	GC	GCD	Cu	Bs	BsC	CAC	Axx	AC, ALDC	MC	ZDC	Bakelite phenol epoxy	Nylon vinyl chloride	STS	Ti	Ni
○	○	○	○	○				○	◎	◎						◎	◎						

EDP No	TDZ	TP	LU	CZC -MS	DCON -MS	TD	LF	THL	NOF	TCL	PHD	TCTR
SWSOM 0810030	M08	1	35	6.2 x 5	6.2	8	70	22	4	3.0P	7	WH3
SWSOM 1010030	M10	1	40	7 x 5.5	7	10	75	24	4	3.0P	9	WH3
SWSOM 1012530	M10	1.25	40	7 x 5.5	7	10	75	24	4	3.0P	8.8	WH4
SWSOM 1210030	M12	1	44	8.5 x 6.5	8.5	12	82	29	4	3.0P	11	WH3
SWSOM 1212530	M12	1.25	44	8.5 x 6.5	8.5	12	82	29	4	3.0P	10.8	WH4
SWSOM 1215030	M12	1.5	44	8.5 x 6.5	8.5	12	82	29	4	3.0P	10.5	WH4

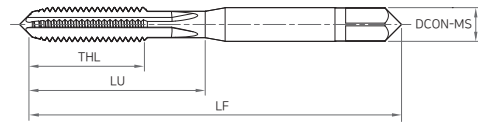
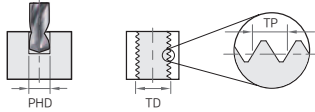
DIN
TAP-
STAR

JIS
TAP-
STAR

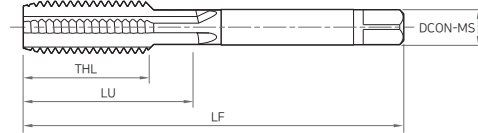
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

P										K		N										M		S	
Carbon Steel			Alloy Steel	Hardened Steel			Tool Steel	Cast Steel	Cast Iron	High Strength Steel	Unalloyed Copper	Brass	Brass Casting	Bronze	Aluminum	Aluminum, Alloy Casting	Magnesium, Alloy Casting	Zinc, Alloy Casting	Thermo, Setting Plastic	Thermo, Plastic	Stainless Steels	Titanium Alloys			
~SM25C	SM25C ~SM45C	SM45C	SCM	25~45 HRC	45~55 HRC	50~60 HRC	STD	SC	GC	GCD	Cu	Bs	BsC	CAC	Axx	AC, ALDC	MC	ZDC	Bakelite phenol epoxy	Nylon vinyl chloride	STS	Ti	Ni		
○	○	○	○	○				○	◎	◎					◎	◎									



M6 OR UNDER



M8 OVER

* ≤M6, 1.5P Tap is removed external center as bottoming type

CARBIDE

TiCN

EDP No	TDZ	TP	LU	CZC-MS	DCON-MS	TD	LF	THL	NOF	TCL	PHD	TCTR
SWSCM 0305015	M03	0.5	17	4 × 3.2	4	3	46	11	3	1.5P	2.5	WH3
SWSCM 0407015	M04	0.7	19.5	5 × 4	5	4	52	13	3	1.5P	3.3	WH3
SWSCM 0508015	M05	0.8	23	5.5 × 4.5	5.5	5	60	16	3	1.5P	4.2	WH3
SWSCM 0610015	M06	1	27	6 × 4.5	6	6	62	19	3	1.5P	5	WH3
SWSCM 0812515	M08	1.25	35	6.2 × 5	6.2	8	70	22	4	1.5P	6.8	WH4
SWSCM 1015015	M10	1.5	40	7 × 5.5	7	10	75	24	4	1.5P	8.5	WH4
SWSCM 1217515	M12	1.75	44	8.5 × 6.5	8.5	12	82	29	4	1.5P	10.2	WH5
SWSCM 0810015	M08	1	35	6.2 × 5	6.2	8	70	22	4	1.5P	7	WH3
SWSCM 1010015	M10	1	40	7 × 5.5	7	10	75	24	4	1.5P	9	WH3
SWSCM 1012515	M10	1.25	40	7 × 5.5	7	10	75	24	4	1.5P	8.8	WH4
SWSCM 1210015	M12	1	44	8.5 × 6.5	8.5	12	82	29	4	1.5P	11	WH3
SWSCM 1212515	M12	1.25	44	8.5 × 6.5	8.5	12	82	29	4	1.5P	10.8	WH4
SWSCM 1215015	M12	1.5	44	8.5 × 6.5	8.5	12	82	29	4	1.5P	10.5	WH4
SWSCM 0305030	M03	0.5	17	4 × 3.2	4	3	46	11	3	3.0P	2.5	WH3
SWSCM 0407030	M04	0.7	19.5	5 × 4	5	4	52	13	3	3.0P	3.3	WH3
SWSCM 0508030	M05	0.8	23	5.5 × 4.5	5.5	5	60	16	3	3.0P	4.2	WH3
SWSCM 0610030	M06	1	27	6 × 4.5	6	6	62	19	3	3.0P	5	WH3
SWSCM 0812530	M08	1.25	35	6.2 × 5	6.2	8	70	22	4	3.0P	6.8	WH4
SWSCM 1015030	M10	1.5	40	7 × 5.5	7	10	75	24	4	3.0P	8.5	WH4
SWSCM 1217530	M12	1.75	44	8.5 × 6.5	8.5	12	82	29	4	3.0P	10.2	WH5

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

P										K		N										M		S	
Carbon Steel			Alloy Steel	Hardened Steel			Tool Steel	Cast Steel	Cast Iron	High Strength Steel	Unalloyed Copper	Brass	Brass Casting	Bronze	Aluminum	Aluminum Alloy Casting	Magnesium Alloy Casting	Zinc Alloy Casting	Thermo-Setting Plastic	Thermo-Plastic	Stainless Steels	Titanium Alloys			
-SM25C	SM25C-SM45C	SM45C-	SCM	25-45 HRC	45-55 HRC	50-60 HRC	STD	SC	GC	GCD	Cu	Bs	BsC	CAC	Axx	AC, ALDC	MC	ZDC	Bakelite phenol epoxy	Nylon vinyl chloride	STS	Ti	Ni		
					○	○	○	○	◎	◎															

EDP No	TDZ	TP	LU	CZC-MS	DCON-MS	TD	LF	THL	NOF	TCL	PHD	TCTR
SWSCM 0810030	M08	1	35	6.2 x 5	6.2	8	70	22	4	3.0P	7	WH3
SWSCM 1010030	M10	1	40	7 x 5.5	7	10	75	24	4	3.0P	9	WH3
SWSCM 1012530	M10	1.25	40	7 x 5.5	7	10	75	24	4	3.0P	8.8	WH4
SWSCM 1210030	M12	1	44	8.5 x 6.5	8.5	12	82	29	4	3.0P	11	WH3
SWSCM 1212530	M12	1.25	44	8.5 x 6.5	8.5	12	82	29	4	3.0P	10.8	WH4
SWSCM 1215030	M12	1.5	44	8.5 x 6.5	8.5	12	82	29	4	3.0P	10.5	WH4

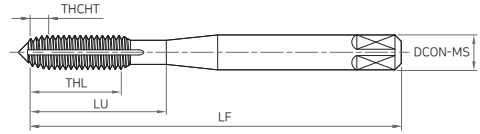
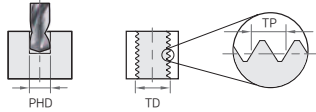
DIN
TAP-
STAR

JIS
TAP-
STAR

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

P										K		N										M	S	
Carbon Steel			Alloy Steel	Hardened Steel			Tool Steel	Cast Steel	Cast Iron	High Strength Steel	Unalloyed Copper	Brass	Brass Casting	Bronze	Aluminum	Aluminum, Alloy Casting	Magnesium, Alloy Casting	Zinc, Alloy Casting	Thermo, Setting Plastic	Thermo, Plastic	Stainless Steels	Titanium Alloys		
~SM25C	SM25C~SM45C	SM45C~	SCM	25~45 HRC	45~55 HRC	50~60 HRC	STD	SC	GC	GCD	Cu	Bs	BsC	CAC	Axx	AC, ALDC	MC	ZDC	Bakelite phenol epoxy	Nylon vinyl chloride	STS	Ti	Ni	
					○	○	○	○	◎	◎														



M6 OR UNDER



M8 OVER

※ 2.0P Tap is removed external center as bottoming type

CARBIDE

Bright

EDP No	TDZ	TP	LU	CZC-MS	DCON-MS	TD	LF	THL	NOF	TCL	PHD	TCTR	THCHT
SWROM 0305020S	M3	0.5	17	4 x 3.2	4	3	46	11	S	2.0P	2.78	GH5	C
SWROM 0407020S	M4	0.7	19.5	5 x 4	5	4	52	13	S	2.0P	3.68	GH6	C
SWROM 0508020S	M5	0.8	23	5.5 x 4.5	5.5	5	60	16	S	2.0P	4.63	GH6	C
SWROM 0610020S	M6	1	27	6 x 4.5	6	6	62	19	S	2.0P	5.53	GH7	C
SWROM 0812520S	M8	1.25	35	6.2 x 5	6.2	8	70	22	S	2.0P	7.39	GH7	C
SWROM 1012520S	M10	1.25	40	7 x 5.5	7	10	75	24	S	2.0P	9.39	GH7	C
SWROM 1015020S	M10	1.5	40	7 x 5.5	7	10	75	24	S	2.0P	9.24	GH7	C
SWROM 1210020S	M12	1	44	8.5 x 6.5	8.5	12	82	29	S	2.0P	11.53	GH7	C
SWROM 1212520S	M12	1.25	44	8.5 x 6.5	8.5	12	82	29	S	2.0P	11.39	GH7	C
SWROM 1215020S	M12	1.5	44	8.5 x 6.5	8.5	12	82	29	S	2.0P	11.24	GH7	C
SWROM 1217520S	M12	1.75	44	8.5 x 6.5	8.5	12	82	29	S	2.0P	11.12	GH8	C
SWROM 0305020M	M3	0.5	17	4 x 3.2	4	3	46	11	M	2.0P	2.78	GH5	C
SWROM 0407020M	M4	0.7	19.5	5 x 4	5	4	52	13	M	2.0P	3.68	GH6	C
SWROM 0508020M	M5	0.8	23	5.5 x 4.5	5.5	5	60	16	M	2.0P	4.63	GH6	C
SWROM 0610020M	M6	1	27	6 x 4.5	6	6	62	19	M	2.0P	5.53	GH7	C
SWROM 0812520M	M8	1.25	35	6.2 x 5	6.2	8	70	22	M	2.0P	7.39	GH7	C
SWROM 1012520M	M10	1.25	40	7 x 5.5	7	10	75	24	M	2.0P	9.39	GH7	C
SWROM 1015020M	M10	1.5	40	7 x 5.5	7	10	75	24	M	2.0P	9.24	GH7	C
SWROM 1210020M	M12	1	44	8.5 x 6.5	8.5	12	82	29	M	2.0P	11.53	GH7	C
SWROM 1212520M	M12	1.25	44	8.5 x 6.5	8.5	12	82	29	M	2.0P	11.39	GH7	C

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

P										K				N										M	S
Carbon Steel			Alloy Steel			Hardened Steel			Tool Steel	Cast Steel	Cast Iron	High Strength Steel	Unalloyed Copper	Brass	Brass Casting	Bronze	Aluminum	Aluminum Alloy Casting	Magnesium Alloy Casting	Zinc Alloy Casting	Thermo-Setting Plastic	Thermo-Plastic	Stainless Steels	Titanium Alloys	
-SM25C	SM25C-SM45C	SM45C-	SCM	25-45 HRC	45-55 HRC	50-60 HRC	STD	SC	GC	GCD	Cu	Bs	BsC	CAC	Axx	AC, ALDC	MC	ZDC	Bakelite phenol epoxy	Nylon vinyl chloride	STS	Ti	Ni		
○	○										◎	◎	◎	◎	◎	◎	◎	◎	◎						

SWROM

JIS Carbide Roll Tap

Tap

EDP No	TDZ	TP	LU	CZC -MS	DCON -MS	TD	LF	THL	NOF	TCL	PHD	TCTR	THCHT
SWROM 1215020M	M12	1.5	44	8.5 x 6.5	8.5	12	82	29	M	2.0P	11.24	GH7	C
SWROM 1217520M	M12	1.75	44	8.5 x 6.5	8.5	12	82	29	M	2.0P	11.12	GH8	C
SWROM 0305040M	M3	0.5	17	4 x 3.2	4	3	46	11	M	4.0P	2.78	GH5	B
SWROM 0407040M	M4	0.7	19.5	5 x 4	5	4	52	13	M	4.0P	3.68	GH6	B
SWROM 0508040M	M5	0.8	23	5.5 x 4.5	5.5	5	60	16	M	4.0P	4.63	GH6	B
SWROM 0610040M	M6	1	27	6 x 4.5	6	6	62	19	M	4.0P	5.53	GH7	B
SWROM 0812540M	M8	1.25	35	6.2 x 5	6.2	8	70	22	M	4.0P	7.39	GH7	B
SWROM 1012540M	M10	1.25	40	7 x 5.5	7	10	75	24	M	4.0P	9.39	GH7	B
SWROM 1015040M	M10	1.5	40	7 x 5.5	7	10	75	24	M	4.0P	9.24	GH7	B
SWROM 1210040M	M12	1	44	8.5 x 6.5	8.5	12	82	29	M	4.0P	11.53	GH7	B
SWROM 1212540M	M12	1.25	44	8.5 x 6.5	8.5	12	82	29	M	4.0P	11.39	GH7	B
SWROM 1215040M	M12	1.5	44	8.5 x 6.5	8.5	12	82	29	M	4.0P	11.24	GH7	B
SWROM 1217540M	M12	1.75	44	8.5 x 6.5	8.5	12	82	29	M	4.0P	11.12	GH8	B

* Chamfer Lead : C - 2~3Thread, B - 4~5Thread, E - 1.5~2Thread

* Oil groove S : 1 Oil groove, Oil groove M : 4 Oil groove

DIN
TAP-
STAR

JIS
TAP-
STAR

► Applicable Working Material

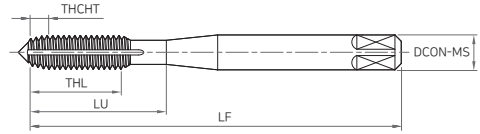
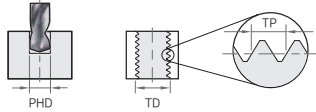
○ : GOOD ◎ : EXCELLENT

P										K		N										M		S	
Carbon Steel			Alloy Steel	Hardened Steel			Tool Steel	Cast Steel	Cast Iron	High Strength Steel	Unalloyed Copper	Brass	Brass Casting	Bronze	Aluminum	Aluminum Alloy Casting	Magnesium Alloy Casting	Zinc Alloy Casting	Thermo, Setting Plastic	Thermo, Plastic	Stainless Steels	Titanium Alloys			
~SM25C	SM25C~SM45C	SM45C~	SCM	25~45 HRC	45~55 HRC	50~60 HRC	STD	SC	GC	GCD	Cu	Bs	BsC	CAC	Axx	AC, ALDC	MC	ZDC	Bakelite phenol epoxy	Nylon vinyl chloride	STS	Ti	Ni		
○	○										◎	◎	◎	◎	◎	◎		◎							

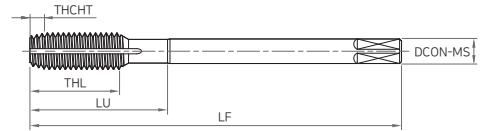
SWRCM

JIS Carbide Roll Tap

Tap



M6 OR UNDER



M8 OVER

※ 2.0P Tap is removed external center as bottoming type

CARBIDE

TiCN

EDP No	TDZ	TP	LU	CZC-MS	DCON-MS	TD	LF	THL	NOF	TCL	PHD	TCTR	THCHT
SWRCM 0305020S	M3	0.5	17	4 x 3.2	4	3	46	11	S	2.0P	2.78	GH5	C
SWRCM 0407020S	M4	0.7	19.5	5 x 4	5	4	52	13	S	2.0P	3.68	GH6	C
SWRCM 0508020S	M5	0.8	23	5.5 x 4.5	5.5	5	60	16	S	2.0P	4.63	GH6	C
SWRCM 0610020S	M6	1	27	6 x 4.5	6	6	62	19	S	2.0P	5.53	GH7	C
SWRCM 0812520S	M8	1.25	35	6.2 x 5	6.2	8	70	22	S	2.0P	7.39	GH7	C
SWRCM 1012520S	M10	1.25	40	7 x 5.5	7	10	75	24	S	2.0P	9.39	GH7	C
SWRCM 1015020S	M10	1.5	40	7 x 5.5	7	10	75	24	S	2.0P	9.24	GH7	C
SWRCM 1210020S	M12	1	44	8.5 x 6.5	8.5	12	82	29	S	2.0P	11.53	GH7	C
SWRCM 1212520S	M12	1.25	44	8.5 x 6.5	8.5	12	82	29	S	2.0P	11.39	GH7	C
SWRCM 1215020S	M12	1.5	44	8.5 x 6.5	8.5	12	82	29	S	2.0P	11.24	GH7	C
SWRCM 1217520S	M12	1.75	44	8.5 x 6.5	8.5	12	82	29	S	2.0P	11.12	GH8	C
SWRCM 0305020M	M3	0.5	17	4 x 3.2	4	3	46	11	M	2.0P	2.78	GH5	C
SWRCM 0407020M	M4	0.7	19.5	5 x 4	5	4	52	13	M	2.0P	3.68	GH6	C
SWRCM 0508020M	M5	0.8	23	5.5 x 4.5	5.5	5	60	16	M	2.0P	4.63	GH6	C
SWRCM 0610020M	M6	1	27	6 x 4.5	6	6	62	19	M	2.0P	5.53	GH7	C
SWRCM 0812520M	M8	1.25	35	6.2 x 5	6.2	8	70	22	M	2.0P	7.39	GH7	C
SWRCM 1012520M	M10	1.25	40	7 x 5.5	7	10	75	24	M	2.0P	9.39	GH7	C
SWRCM 1015020M	M10	1.5	40	7 x 5.5	7	10	75	24	M	2.0P	9.24	GH7	C
SWRCM 1210020M	M12	1	44	8.5 x 6.5	8.5	12	82	29	M	2.0P	11.53	GH7	C
SWRCM 1212520M	M12	1.25	44	8.5 x 6.5	8.5	12	82	29	M	2.0P	11.39	GH7	C

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

P										K		N										M	S	
Carbon Steel			Alloy Steel	Hardened Steel			Tool Steel	Cast Steel	Cast Iron	High Strength Steel	Unalloyed Copper	Brass	Brass Casting	Bronze	Aluminum	Aluminum Alloy Casting	Magnesium Alloy Casting	Zinc Alloy Casting	Thermo-Setting Plastic	Thermo-Plastic	Stainless Steels	Titanium Alloys		
-SM25C	SM25C-SM45C	SM45C-	SCM	25-45 HRC	45-55 HRC	50-60 HRC	STD	SC	GC	GCD	Cu	Bs	BsC	CAC	Axx	AC, ALDC	MC	ZDC	Bakelite phenol epoxy	Nylon vinyl chloride	STS	Ti	Ni	
○	○										◎	◎	◎	◎	◎	◎		◎						

EDP No	TDZ	TP	LU	CZC -MS	DCON -MS	TD	LF	THL	NOF	TCL	PHD	TCTR	THCHT
SWRCM 1215020M	M12	1.5	44	8.5 x 6.5	8.5	12	82	29	M	2.0P	11.24	GH7	C
SWRCM 1217520M	M12	1.75	44	8.5 x 6.5	8.5	12	82	29	M	2.0P	11.12	GH8	C
SWRCM 0305040M	M3	0.5	17	4 x 3.2	4	3	46	11	M	4.0P	2.78	GH5	B
SWRCM 0407040M	M4	0.7	19.5	5 x 4	5	4	52	13	M	4.0P	3.68	GH6	B
SWRCM 0508040M	M5	0.8	23	5.5 x 4.5	5.5	5	60	16	M	4.0P	4.63	GH6	B
SWRCM 0610040M	M6	1	27	6 x 4.5	6	6	62	19	M	4.0P	5.53	GH7	B
SWRCM 0812540M	M8	1.25	35	6.2 x 5	6.2	8	70	22	M	4.0P	7.39	GH7	B
SWRCM 1012540M	M10	1.25	40	7 x 5.5	7	10	75	24	M	4.0P	9.39	GH7	B
SWRCM 1015040M	M10	1.5	40	7 x 5.5	7	10	75	24	M	4.0P	9.24	GH7	B
SWRCM 1210040M	M12	1	44	8.5 x 6.5	8.5	12	82	29	M	4.0P	11.53	GH7	B
SWRCM 1212540M	M12	1.25	44	8.5 x 6.5	8.5	12	82	29	M	4.0P	11.39	GH7	B
SWRCM 1215040M	M12	1.5	44	8.5 x 6.5	8.5	12	82	29	M	4.0P	11.24	GH7	B
SWRCM 1217540M	M12	1.75	44	8.5 x 6.5	8.5	12	82	29	M	4.0P	11.12	GH8	B

* Chamfer Lead : C - 2~3Thread, B - 4~5Thread, E - 1.5~2Thread

* Oil groove S : 1 Oil groove, Oil groove M : 4 Oil groove

DIN
TAP-
STAR

JIS
TAP-
STAR

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

P										K		N										M	S	
Carbon Steel			Alloy Steel	Hardened Steel			Tool Steel	Cast Steel	Cast Iron	High Strength Steel	Unalloyed Copper	Brass	Brass Casting	Bronze	Aluminum	Aluminum Alloy Casting	Magnesium Alloy Casting	Zinc Alloy Casting	Thermo, Setting Plastic	Thermo, Plastic	Stainless Steels	Titanium Alloys		
~SM25C	SM25C~SM45C	SM45C~	SCM	25~45 HRC	45~55 HRC	50~60 HRC	STD	SC	GC	GCD	Cu	Bs	BsC	CAC	Axx	AC, ALDC	MC	ZDC	Bakelite phenol epoxy	Nylon vinyl chloride	STS	Ti	Ni	
○	○										◎	◎	◎	◎	◎	◎		◎						

Centering Tool Series

Centering Tool

P. 581

Centering Tool

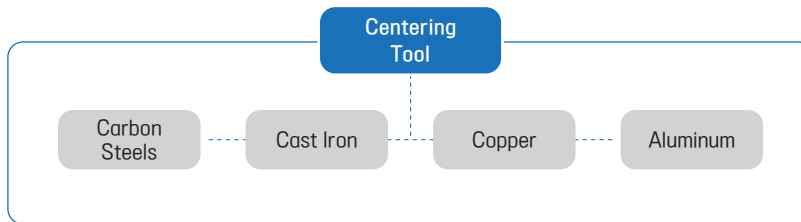
Characteristics

- Suitable for machining a wide range of materials, from carbon steel to cast iron, copper, and aluminum
- Processing the corners chamfering and R shape processing

Features

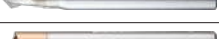
- Enough to customized work on corner chamfering and R shape processing
- Excellent retentivity for Flute hardness and High temperature harness by applied to TiAlN, AlTiN coating

Applications



Centering Tool

Contents

EDP No	Geometry	Product	Page
CDS		Solid Center Drill	583
LDS		NC Spotting Drill	584
LDF---W		NC Spotting Drill - Multi Type	586
CES302(60°)		Centering End Mill - Solid Type(60°)	587
CES302(90°)		Centering End Mill - Solid Type(90°)	588
CEM---W		Centering End Mill - Brazed Type	589
CRC		Corner Rounding Cutter	590
CFT---W		Chamfer Tool	591
CCT		Chamfer Cutter	592
CCF		Chamfer Cutter Face	593

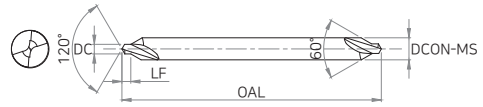
EDP No. System

* If expressed as an integer, the decimal point is omitted.

C ①	DS ②	030 ③

① Appearance	② Type	③ Diameter
C : Center	DS : Drill Spotting(Metric)	30
L : Leading	DA : Drill Spotting(Inch) (Variable Point Angle)	35
CE : Centering End Mill	DF : Drill Spotting Multy Type	40
CR : Corner Rounding	S : End Mill Solid Type	
CF : Chamfer	M : End Mill Brazed Type	
CC : Chamfer Cutter	C : Cutter	
	T : Tool	
	F : Face	

CDS Solid Center Drill



Centering
Tool

Centering
Tool

► Tolerance

DC		Shank Dia
All Sizes	0 ~ +0.1	h6



EDP No	DC	LF	OAL	DCONMS
CDS 010	1	1.5	40	3
CDS 015	1.5	2.2	40	4
CDS 020	2	3	45	5
CDS 025	2.5	3.8	45	6
CDS 030	3	4.8	55	8
CDS 040	4	6	60	10
CDS 050	5	7.5	65	12

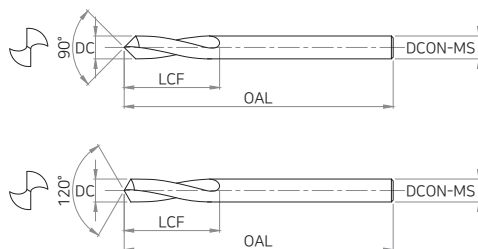
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	Steel HRc30~50	~FCD500					
		○			○	○		○	○	

LDS NC Spotting Drill

Centering
Tool



Centering
Tool

► Tolerance

DC		Shank Dia
All Sizes	0 ~ +0.1	h6



EDP No	DC	LCF	OAL	DCONMS	Point Angle
LDS 030	3	9	50	3	90°
LDS 030L	3	10	100	3	90°
LDS 030A	3	9	50	3	120°
LDS 040	4	10	50	4	90°
LDS 040L	4	12	100	4	90°
LDS 040A	4	10	50	4	120°
LDS 050	5	12	50	5	90°
LDS 050A	5	12	50	5	120°
LDS 060	6	13	60	6	90°
LDS 060L	6	18	110	6	90°
LDS 060A	6	13	60	6	120°
LDS 080	8	23	70	8	90°
LDS 080L	8	23	150	8	90°
LDS 080A	8	23	70	8	120°
LDS 100	10	24	80	10	90°
LDS 100L	10	24	150	10	90°
LDS 100A	10	24	80	10	120°
LDS 120	12	28	80	12	90°
LDS 120L	12	24	150	12	90°
LDS 120A	12	28	80	12	120°

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
		○			○	○		○	○	

LDS

NC Spotting Drill

Centering
Tool

EDP No	DC	LCF	OAL	DCONMS	Point Angle
LDS 160	16	32	90	16	90°
LDS 160A	16	32	90	16	120°
LDS 200	20	35	100	20	90°
LDS 200A	20	35	100	20	120°

Centering
Tool

► Applicable Working Material

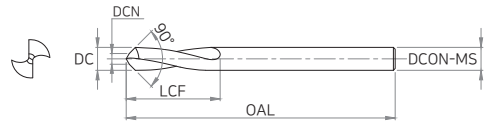
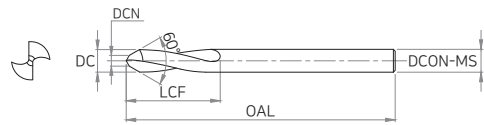
○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
		○			○	○		○	○	

LDF-W

NC Spotting Drill - Multi Type

Centering
Tool



Centering
Tool

► Tolerance

DC		Shank Dia
All Sizes	0 ~ +0.1	h6



EDP No	DC	LCF	OAL	DCONMS	DCN
LDF 0360W	3	9	50	3	1.5
LDF 0390W	3	9	50	3	1.2
LDF 0460W	4	10	50	4	1.7
LDF 0490W	4	10	50	4	1.3
LDF 0560W	5	12	50	5	1.9
LDF 0590W	5	12	50	5	1.5
LDF 0660W	6	18	60	6	1.9
LDF 0690W	6	18	60	6	1.5
LDF 0860W	8	23	70	8	1.9
LDF 0890W	8	23	70	8	1.6
LDF 1060W	10	24	80	10	2.1
LDF 1090W	10	24	80	10	2.1
LDF 1260W	12	28	80	12	2.1
LDF 1290W	12	28	80	12	2.1

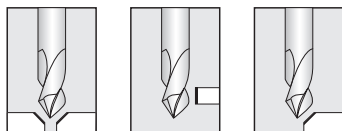
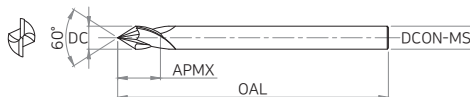
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
		○			○	○		○	○	

CES302(60°)

Centering End Mill - Solid Type(60°)



Centering
Tool

Centering
Tool

► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.05	h6



EDP No		DC	APMX	OAL	DCONMS
Uncoated	Coated				
CES302 030-60S3	CES302 030-60S3-C	3	6	50	3
CES302 040-60S4	CES302 040-60S4-C	4	8	50	4
CES302 050-60S5	CES302 050-60S5-C	5	10	50	5
CES302 060-60	CES302 060-60-C	6	12	60	6
CES302 080-60	CES302 080-60-C	8	16	70	8
CES302 100-60	CES302 100-60-C	10	18	70	10
CES302 120-60	CES302 120-60-C	12	20	75	12

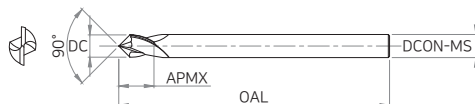
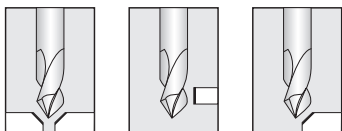
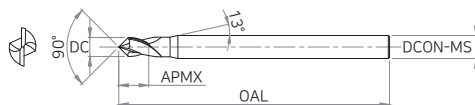
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
		○			○	○		○	○	

CES302(90°)

Centering End Mill - Solid Type(90°)



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.05	h6



EDP No		DC	APMX	OAL	DCONMS
Uncoated	Coated				
CES302 020	CES302 020-C	2	5	50	3
CES302 030	CES302 030-C	3	6	50	6
CES302 030S3	CES302 030S3-C	3	6	50	3
CES302 040	CES302 040-C	4	8	50	6
CES302 040S4	CES302 040S4-C	4	8	50	4
CES302 050	CES302 050-C	5	10	50	6
CES302 050S5	CES302 050S5-C	5	10	50	5
CES302 060	CES302 060-C	6	12	60	6
CES302 080	CES302 080-C	8	16	70	8
CES302 100	CES302 100-C	10	18	70	10
CES302 120	CES302 120-C	12	20	75	12
CES302 140	CES302 140-C	14	24	80	14
CES302 160	CES302 160-C	16	26	80	16
CES302 200	CES302 200-C	20	32	100	20

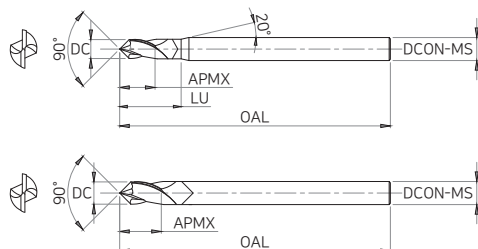
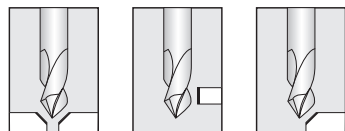
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	Steel ~HB225	HB225 ~325	HRc30~50	~FCD500					
		○			○	○		○	○	

CEM-W

Centering End Mill - Brazed Type



Centering
Tool

Centering
Tool

► Tolerance

DC		Shank Dia
All Sizes	0 ~ +0.1	h7



EDP No	DC	APMX	LU	OAL	DCONMS
CEM 1016W	10	15	33	115	16
CEM 1216W	12	20	39	145	16
CEM 1620W	16	23	39.5	150	20
CEM 2025W	20	25	43.8	155	25

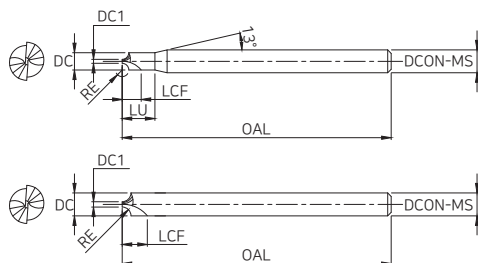
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
		○			○	○		○	○	

CRC Corner Rounding Cutter

Centering
Tool



► Tolerance

DC		Shank Dia
All Sizes	±0.05	h6



EDP No	DC	DC1	RE	LCF	LU	OAL	DCONMS
CRC 209 050	2	0.9	0.5	2	3	45	4
CRC 209 075	2.5	0.9	0.75	2.5	4	45	4
CRC 209 100	3	0.9	1	3	5	50	6
CRC 259 100	8	5.9	1	8	-	60	8
CRC 214 150	4.5	1.4	1.5	4.5	8	50	6
CRC 249 150	8	4.9	1.5	8	-	60	8
CRC 214 200	5.5	1.47	2	5.5	10	50	6
CRC 239 200	8	3.9	2	8	-	60	8
CRC 219 250	7	1.9	2.5	7	13	60	8
CRC 219 300	8	1.9	3	8	-	60	8
CRC 219 350	9	1.9	3.5	9	13	70	10
CRC 219 400	10	1.9	4	10	-	70	10
CRC 219 450	11	1.9	4.5	11	13	80	12
CRC 219 500	12	1.9	5	12	-	80	12
CRC 239 600	16	3.9	6	16	-	85	16
CRC 259 700	20	5.9	7	20	-	85	20
CRC 239 800	20	3.9	8	20	-	85	20

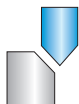
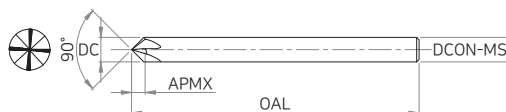
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

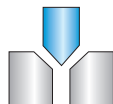
H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	~325	HRC30~50	~FCD500					
		○			○	○		○	○	

CFT-W Chamfer Tool

Centering
Tool



Available work(O)



Available work(O)

Centering
Tool

► Tolerance

DC		Shank Dia
All Sizes	0 ~ +0.1	h6



EDP No	DC	APMX	OAL	DCONMS	ZEFP	Point Angle
CFT 0660W	6	5.1	50	6	3	60°
CFT 0690W	6	3	50	6	3	90°
CFT 0860W	8	6.9	60	8	3	60°
CFT 0890W	8	4	60	8	3	90°
CFT 1060W	10	8.6	70	10	4	60°
CFT 1090W	10	5	70	10	4	90°
CFT 1260W	12	10.3	75	12	4	60°
CFT 1290W	12	6	75	12	4	90°

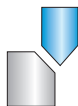
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

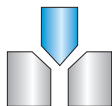
H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
		○			○	○		○	○	

CCT Chamfer Cutter

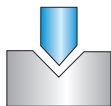
Centering
Tool



Available work(O)



Available work(O)



Available work(O)

► Tolerance

DC		Shank Dia
All Sizes	0 ~ +0.1	h6



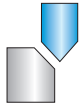
EDP No	DC	APMX	OAL	DCONMS
CCT 502 030 S3	3	1.5	60	3
CCT 502 040 S4	4	2	60	4
CCT 502 060	6	3	60	6
CCT 502 080	8	4	65	8
CCT 502 100	10	5	70	10
CCT 502 120	12	6	75	12

► Applicable Working Material

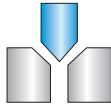
○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
		○			○	○		○	○	

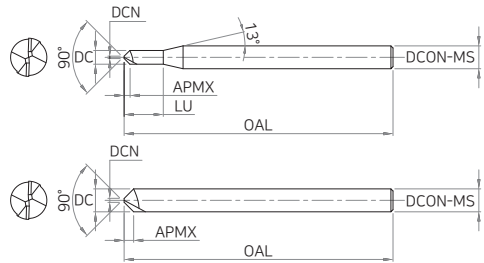
CCF Chamfer Cutter Face



Available work(O)



Available work(O)



Centering
Tool

Centering
Tool

► Tolerance

DC		Shank Dia
All Sizes	0 ~ +0.1	h6



EDP No	DC	APMX	LU	OAL	DCONMS	DCN
CCF 502 020 S4	2	0.85	6	50	4	0.3
CCF 502 020	2	0.85	6	50	6	0.3
CCF 502 040 S4	4	1.85	-	50	4	0.3
CCF 502 040	4	1.85	12	50	6	0.3
CCF 502 060	6	2.85	-	50	6	0.3
CCF 502 080	8	3.8	-	60	8	0.4
CCF 502 100	10	4.75	-	70	10	0.5
CCF 502 120	12	5.75	-	75	12	0.5

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	~325	HRc30~50	~FCD500					
		○			○	○		○	○	

Reamer Series

Reamer

P. 595

Reamer

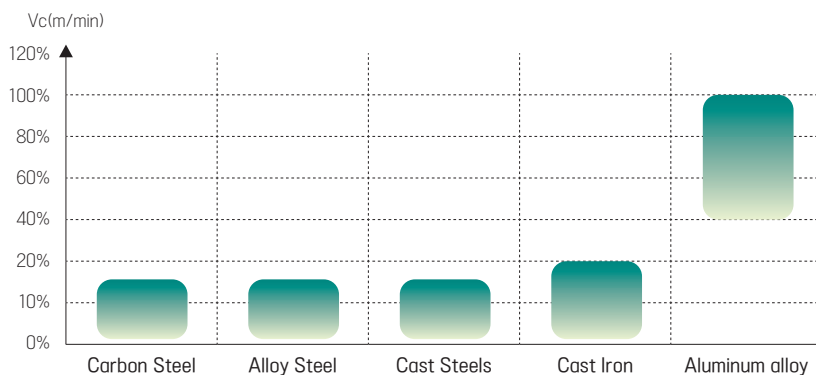
Characteristics

- Suitable to work for Carbon Steels, Alloy Steels, Prehardened Steels, Copper, Cast Iron, Aluminum
- Extend customer choice with variety of size and type

Features

- Excellent Chip emission by applied to Helical cutting edge
- Reduced friction by applied to clearance angle of the chamfer

Vc by Application area



Contents

EDP No	Geometry	Product	Page
SSR		Straight Flute Reamer	596
SHR		Helical Flute Reamer	597
HRS-W		Helical Neck Type Reamer	598
SBR		High-Helix Broach Reamer	601

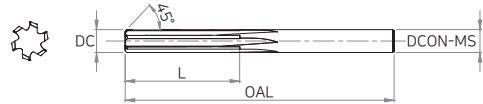
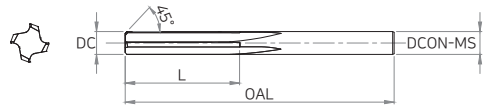
EDP No. System

* If expressed as an integer, the decimal point is omitted.

SS R 060		
①	②	③
Appearance	Type	Diameter
SS : Solid Straight	R : Reamer	030 : Ø3.0
SH : Solid Helix	S : Separate Diameter	035 : Ø3.5
HR : Neck Type Helix		040 : Ø4.0
SB : Solid Broach		

SSR Straight Flute Reamer

Reamer



► Tolerance

DC		Shank Dia
~ Ø3	+0.002 ~ +0.006	h6
Ø3.5 ~ Ø6	+0.004 ~ +0.009	
Ø6.5 ~ Ø10	+0.006 ~ +0.012	
Ø11 ~ Ø12	+0.007 ~ +0.015	



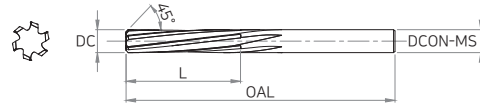
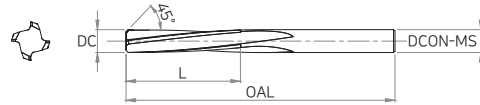
EDP No	DC	L	OAL	DCON-MS	NOF
SSR 020	2	25	60	4	4
SSR 025	2.5	25	60	4	4
SSR 030	3	28	70	4	6
SSR 035	3.5	30	75	4	6
SSR 040	4	30	75	4	6
SSR 045	4.5	35	80	6	6
SSR 050	5	35	80	6	6
SSR 055	5.5	35	80	6	6
SSR 060	6	35	80	6	6
SSR 065	6.5	45	100	8	6
SSR 070	7	45	100	8	6
SSR 080	8	45	100	8	6
SSR 090	9	50	110	10	6
SSR 100	10	50	110	10	6
SSR 110	11	50	120	12	6
SSR 120	12	50	120	12	6

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
		○	○	○	○	○		○	○	

SHR Helical Flute Reamer



► Tolerance

DC		Shank Dia
~ Ø3	+0.002 ~ +0.006	h6
Ø3.5 ~ Ø6	+0.004 ~ +0.009	
Ø6.5 ~ Ø10	+0.006 ~ +0.012	
Ø11 ~ Ø12	+0.007 ~ +0.015	



EDP No	DC	L	OAL	DCON-MS	NOF
SHR 020	2	25	60	4	4
SHR 025	2.5	25	60	4	4
SHR 030	3	28	70	4	6
SHR 035	3.5	30	75	4	6
SHR 040	4	30	75	4	6
SHR 045	4.5	35	80	6	6
SHR 050	5	35	80	6	6
SHR 055	5.5	35	80	6	6
SHR 060	6	35	80	6	6
SHR 065	6.5	45	100	8	6
SHR 070	7	45	100	8	6
SHR 080	8	45	100	8	6
SHR 090	9	50	110	10	6
SHR 100	10	50	110	10	6
SHR 110	11	50	120	12	6
SHR 120	12	50	120	12	6

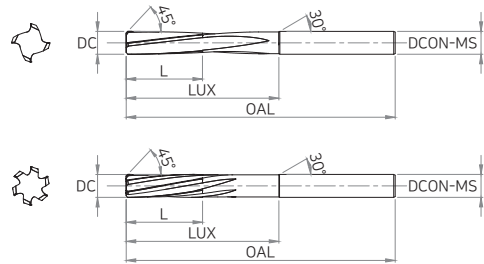
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	~325	HRc30~50	~FCD500					
		○	○	○	○	○		○	○	

HRS-W

Helical Neck Type Reamer



► Tolerance

DC		Shank Dia
~ Ø5.03	0 ~ +0.004	h6
Ø5.5 ~ Ø12.05	0 ~ +0.005	



EDP No	DC	L	LUX	OAL	DCON-MS	NOF
HRS 0198W	1.98	12	22	50	4	4
HRS 0199W	1.99	12	22	50	4	4
HRS 0200W	2	12	22	50	4	4
HRS 0201W	2.01	12	22	50	4	4
HRS 0202W	2.02	12	22	50	4	4
HRS 0203W	2.03	12	22	50	4	4
HRS 0248W	2.48	16	26	60	4	4
HRS 0249W	2.49	16	26	60	4	4
HRS 0250W	2.5	16	26	60	4	4
HRS 0251W	2.51	16	26	60	4	4
HRS 0252W	2.52	16	26	60	4	4
HRS 0253W	2.53	16	26	60	4	4
HRS 0297W	2.97	18	30	65	4	6
HRS 0298W	2.98	18	30	65	4	6
HRS 0299W	2.99	18	30	65	4	6
HRS 0300W	3	18	30	65	4	6
HRS 0301W	3.01	18	30	65	4	6
HRS 0302W	3.02	18	30	65	4	6
HRS 0303W	3.03	18	30	65	4	6
HRS 0350W	3.5	20	35	75	4	6

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
		○	○	○	○	○		○	○	

HRS-W

Helical Neck Type Reamer

Reamer

Reamer

EDP No	DC	L	LUX	OAL	DCON-MS	NOF
HRS 0397W	3.97	20	35	75	4	6
HRS 0398W	3.98	20	35	75	4	6
HRS 0399W	3.99	20	35	75	4	6
HRS 0400W	4	20	35	75	4	6
HRS 0401W	4.01	20	35	75	4	6
HRS 0402W	4.02	20	35	75	4	6
HRS 0403W	4.03	20	35	75	4	6
HRS 0450W	4.5	25	40	80	6	6
HRS 0497W	4.97	25	40	80	6	6
HRS 0498W	4.98	25	40	80	6	6
HRS 0499W	4.99	25	40	80	6	6
HRS 0500W	5	25	40	80	6	6
HRS 0501W	5.01	25	40	80	6	6
HRS 0502W	5.02	25	40	80	6	6
HRS 0503W	5.03	25	40	80	6	6
HRS 0550W	5.5	25	45	80	6	6
HRS 0597W	5.97	25	45	80	6	6
HRS 0598W	5.98	25	45	80	6	6
HRS 0599W	5.99	25	45	80	6	6
HRS 0600W	6	25	45	80	6	6
HRS 0601W	6.01	25	45	80	6	6
HRS 0602W	6.02	25	45	80	6	6
HRS 0603W	6.03	25	45	80	6	6
HRS 0650W	6.5	30	60	100	8	6
HRS 0700W	7	30	60	100	8	6
HRS 0750W	7.5	33	65	100	8	6
HRS 0797W	7.97	33	65	100	8	6
HRS 0798W	7.98	33	65	100	8	6
HRS 0799W	7.99	33	65	100	8	6
HRS 0800W	8	33	65	100	8	6
HRS 0801W	8.01	33	65	100	8	6
HRS 0802W	8.02	33	65	100	8	6
HRS 0803W	8.03	33	65	100	8	6
HRS 0850W	8.5	35	70	110	10	6

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	~325	HRc30~50	~FCD500					
		○	○	○	○	○		○	○	

HRS-W

Helical Neck Type Reamer

Reamer

Reamer

EDP No	DC	L	LUX	OAL	DCON-MS	NOF
HRS 0900W	9	35	70	110	10	6
HRS 0997W	9.97	35	70	110	10	6
HRS 0998W	9.98	35	70	110	10	6
HRS 0999W	9.99	35	70	110	10	6
HRS 1000W	10	35	70	110	10	6
HRS 1001W	10.01	35	70	110	10	6
HRS 1002W	10.02	35	70	110	10	6
HRS 1003W	10.03	35	70	110	10	6
HRS 1004W	10.04	35	70	110	10	6
HRS 1005W	10.05	35	70	110	10	6
HRS 1100W	11	40	80	120	12	6
HRS 1197W	11.97	40	80	120	12	6
HRS 1198W	11.98	40	80	120	12	6
HRS 1199W	11.99	40	80	120	12	6
HRS 1200W	12	40	80	120	12	6
HRS 1201W	12.01	40	80	120	12	6
HRS 1202W	12.02	40	80	120	12	6
HRS 1203W	12.03	40	80	120	12	6
HRS 1204W	12.04	40	80	120	12	6
HRS 1205W	12.05	40	80	120	12	6

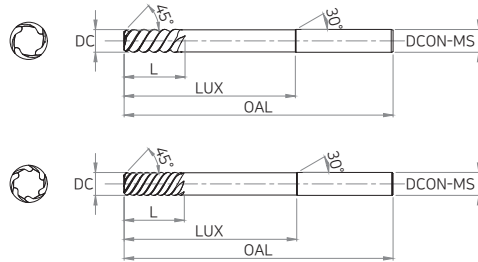
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FCD500					
		○	○	○	○	○		○	○	

SBR

High-Helix Broach Reamer



► Tolerance

DC		Shank Dia
~ Ø3	+0.002 ~ +0.006	h6
Ø4 ~ Ø6	+0.004 ~ +0.009	
Ø8 ~ Ø10	+0.006 ~ +0.012	
Ø12 ~ Ø18	+0.007 ~ +0.015	
Ø20	+0.007 ~ +0.017	



EDP No	DC	L	OAL	LUX	DCON-MS	NOF
SBR 030	3	12	70	40	4	4
SBR 040	4	12	75	45	4	4
SBR 050	5	16	80	45	6	4
SBR 060	6	16	80	45	6	4
SBR 080	8	20	100	60	8	4
SBR 100	10	25	110	65	10	4
SBR 120	12	28	120	70	12	4
SBR 140	14	30	145	90	14	4
SBR 160	16	35	155	100	16	6
SBR 180	18	38	170	110	18	6
SBR 200	20	40	180	120	20	6

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

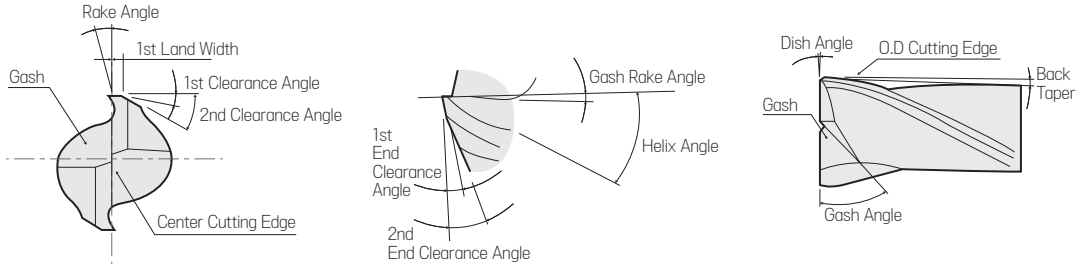
H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	Steel HRc30~50	~FCD500					
		○	○	○	○	○		○	○	

Technical Data



Technical Data

Nomenclature of Endmill



Application range of Grade

Workpiece	Grade
Carbon Steel, Alloy Steels, Tool Steel, Metal Mold Steel	· Micro Grain Carbide · P30
Cast Iron, Ductile	· Micro Grain Carbide · K10~K20
Heat Treatment Steel(HRc 40~60)	· Ultrafinest Carbide
Aluminium, Nonferrous Material	· Micro Grain Carbide- K10

Formula of End Milling

① Cutting Speed	$V = \frac{\pi \times D \times N}{1000} \text{ (m/min)}$	V : Cutting Speed D : Diameter of End Mill N : End Mill revolution	(m/min) (mm) (RPM)
② Feed per tooth	$fz = \frac{F}{Z \times N} \text{ (mm/tooth)}$	fz : Feed per tooth F : Table feed rate Z : No. of teeth N : End Mill revolution	(mm/tooth) (tooth) (RPM)
③ Table Feed rate	$F = fz \times Z \times N$	F : Feed rate fz : Feed per tooth Z : No. of teeth N : End Mill revolution	(mm/min) (mm/tooth) (tooth) (RPM)
④ Cutting Time	$Tc = \frac{L}{F}$	Tc : Cutting Time F : Table feed rate L : Length of cut (Workpiece Length+Diameter of Endmill+α)	(min) (mm/min) (mm)

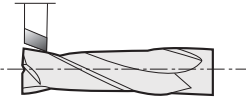
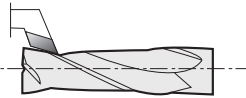
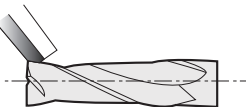


For Regrinding

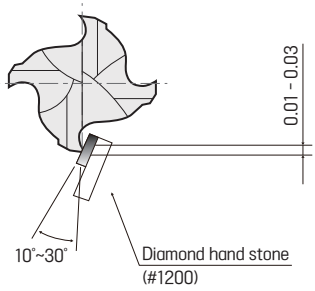
► Regrinding range

Application Range	Cutter Dia	Amount Of Flank Wear
Finish Machining	~ $\varnothing 10$	0.05 ~ 0.1
	$\varnothing 11 \sim \varnothing 30$	0.1 ~ 0.25
	$\varnothing 31 \sim \varnothing 50$	0.2 ~ 0.35
Rough Machining	~ $\varnothing 10$	0.08 ~ 0.15
	$\varnothing 11 \sim \varnothing 30$	0.15 ~ 0.35
	$\varnothing 31 \sim \varnothing 50$	0.3 ~ 0.45

► Regrinding Method of Relief

		① Concave method · In case when precise outer Diameter dimension is required. · In case of aluminium machining.
		② Flat method · Excellent machinability - Applicable to ball end mill and taper end mill. · Secondary clearance angle work is required. - When Diameter is large.
		③ Eccentric method · Excellent toughness and surface roughness. · Secondary clearance angle work is not required.

► Honing

 10°~30° Diamond hand stone (#1200) 0.01~0.03	1. Recommend honing for machining mold metal and high Hardness Workpiece. -The amount of honing shall be less than that of feed per blade. 2. When using end mill without honing, machine for 10 to 30 seconds at feed rate of less than 0.01 mm/blade and then machine at normal feed rate. 3. Honing is not required for machining aluminium and non-ferrous metal.

Technical Data

Trouble Shooting for End Milling

Problem	Cause	Solution
(1) Rupture	· High feed · High slotting volume · High protrusion volume · Worn out of flute · Longer cutting length	· Reduce feed · Reduce slotting volume · Reduce protrusion volume · Regrind at the beginning · Reduce cutting length
(2) Wear / Burning	· High speed · Small rake angle · High Hardness of material	· Reduce speed, Supply enough oil · Correct to proper rake angle · Supply Dry > soluble > Non-water soluble oil and do surface treatment"
(3) Chattering	· Improper cutting condition · Lack of Strength in machinery and chuck · Poorly fixed material · High protrusion volume · Large clearance of rake angle	· Adjust cutting and feed speed · Replace machinery and chuck · Contain a material firmly · Reduce protrusion volume · Reduce clearance of rake angle
(4) Defective of cutting edge	· Hige feed · Small rake angle · Chattering occurs · Poorly sealed material · High slotting volume · High protrusion volume · Lack of Strength in machinery	· Reduce feed · Adjust angle properly · Reduce Chattering by lowing the number of turning · Contain a material firmly · Reduce slotting volume · Reduce protrusion volume · Replace machinery
(5) Bad Cutability	· Worn out of cutting edge · Improper endmill · Small rake angle	· Regrind at the beginning · Replace proper endmill · Correct to proper rake angle
(6) Poor chip emission	· Low injection pressure of the oil · Small chip pocket · Worn out of cutting edge · High slotting volume	· Increase oil volume and pressure · Use fewer flute endmill or Reduce feed · Regrind at the beginning · Reduce slotting volume
(7) Burr on surface	· High feed · Low speed · Worn out of cutting edge · High slotting volume	· Reduce feed · Speed up · Regrind at the beginning · Reduce slotting volume
(8) Incorrect dimension	· Incorrect machinery or chuck · Incorrect rigidity of machinery or chuck · longer cutting length · Fewer number of flutes	· Correct machinery or chuck · Replace machinery or chuck · Reduce cutting length · Replace to larger number of flutes endmill
(9) Fusion	· Lack of oil or affination between tool and material	· Supply Dry > soluble > Non-water soluble oil · For Alloy Steels, use active type non-water soluble oil



ZE702, ZE712 SERIES ► Slotting

Workpiece	Hardened Steels Heat Resistant Steels		Hardened Steels									
Hardness	HRc30 ~ HRc40		HRc40 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc60 ~ HRc65		HRc 65 ~ HRc70	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
0.2	50,000	130	45,000	115	40,000	95	33,000	60	33,000	45	26,400	30
0.3	50,000	190	45,000	140	40,000	115	33,000	70	25,000	50	20,000	35
0.4	50,000	235	45,000	180	40,000	140	33,000	90	25,000	55	20,000	40
0.5	50,000	370	45,000	280	40,000	220	33,000	140	25,000	85	20,000	60
0.6	50,000	470	45,000	360	40,000	285	30,000	160	25,000	105	20,000	75
0.8	50,000	600	40,000	440	30,000	295	25,000	185	19,000	110	15,200	80
0.9	49,000	655	39,000	520	27,800	330	22,700	205	17,500	125	14,000	90
1	48,000	750	38,000	570	25,500	360	20,500	215	16,000	135	12,500	85
2	33,300	850	26,000	680	17,500	420	14,500	260	11,000	160	9,500	115
3	21,800	850	17,300	680	11,500	420	9,500	260	7,500	160	6,400	115
4	16,700	880	13,200	700	8,800	440	7,200	270	5,600	170	4,750	118
5	15,700	1,000	12,500	805	8,300	500	6,400	285	5,100	180	4,450	132
6	13,100	950	10,350	770	6,900	480	5,300	280	4,200	180	3,700	130
8	9,880	930	7,800	720	5,200	445	4,000	255	3,200	165	2,800	120
10	7,800	850	6,150	680	4,100	415	3,200	240	2,550	155	2,200	112
12	6,650	850	5,250	680	3,500	415	2,650	240	2,100	155	1,860	112
16	4,900	730	3,900	580	2,600	365	2,000	210	1,600	135	1,400	95
20	3,900	660	3,100	525	2,050	335	1,600	195	1,300	125	1,100	85

RPM = rev / min
FEED = mm / min

ap : 0.05D

ap : 0.02D

ZE702, ZE712 SERIES ► Side Cutting

Workpiece	Hardened Steels Heat Resistant Steels		Hardened Steels									
Hardness	HRc30 ~ HRc40		HRc40 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc60 ~ HRc65		HRc 65 ~ HRc70	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1	48,000	1,050	38,000	820	25,500	510	20,500	310	16,000	190	12,500	125
2	33,300	1,200	26,000	970	17,500	600	14,500	370	11,000	230	9,500	165
3	21,800	1,200	17,300	970	11,500	600	9,500	370	7,500	230	6,400	165
4	16,700	1,250	13,200	1,000	8,800	625	7,200	385	5,600	240	4,750	170
5	15,700	1,450	12,500	1,150	8,300	710	6,400	410	5,100	260	4,450	190
6	13,100	1,350	10,350	1,100	6,900	690	5,300	400	4,200	255	3,700	185
8	9,880	1,320	7,800	1,030	5,200	635	4,000	365	3,200	235	2,800	170
10	7,800	1,200	6,150	970	4,100	590	3,200	340	2,550	220	2,200	160
12	6,650	1,200	5,250	970	3,500	590	2,650	340	2,100	220	1,860	160
16	4,900	1,050	3,900	840	2,600	520	2,000	300	1,600	190	1,400	140
20	3,900	950	3,100	750	2,050	475	1,600	275	1,300	175	1,100	125

RPM = rev / min
FEED = mm / min

ap : 1.0D

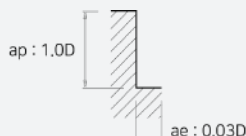
ae : 0.03D

Technical Data

ZE704, ZE714, ZE724 SERIES ► Side Cutting

Workpiece	Hardened Steels Heat Resistant Steels		Hardened Steels									
Hardness	HRC30 ~ HRC40		HRC40 ~ HRC50		HRC50 ~ HRC55		HRC55 ~ HRC60		HRC60 ~ HRC65		HRC 65 ~ HRC70	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1	48,000	1,480	38,000	1,050	25,500	710	20,500	430	16,000	270	12,500	175
2	33,300	1,750	26,000	1,250	17,500	840	14,500	520	11,000	320	9,500	230
3	21,800	1,750	17,300	1,250	11,500	840	9,500	520	7,500	320	6,400	230
4	16,700	1,800	13,200	1,300	8,800	880	7,200	540	5,600	335	4,750	240
5	15,700	2,000	12,500	1,500	8,300	1,000	6,400	580	5,100	370	4,450	270
6	13,100	1,950	10,350	1,400	6,900	950	5,300	560	4,200	350	3,700	260
8	9,880	1,880	7,800	1,350	5,200	900	4,000	520	3,200	330	2,800	240
10	7,800	1,750	6,150	1,260	4,100	840	3,200	480	2,550	310	2,200	220
12	6,650	1,750	5,250	1,260	3,500	840	2,650	480	2,100	300	1,860	220
16	4,900	1,500	3,900	1,100	2,600	730	2,000	420	1,600	270	1,400	200
20	3,900	1,300	3,100	970	2,050	650	1,600	380	1,300	250	1,100	180

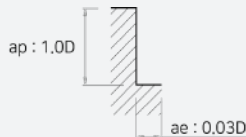
RPM = rev / min
FEED = mm / min

ZE716, ZR706, ZR736 SERIES

Workpiece	Hardened Steels Heat Resistant Steels		Hardened Steels									
Hardness	HRC30 ~ HRC40		HRC40 ~ HRC50		HRC50 ~ HRC55		HRC55 ~ HRC60		HRC60 ~ HRC65		HRC 65 ~ HRC70	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
6	24,800	5,350	23,500	4,900	16,000	4,900	13,500	3,300	10,500	2,100	8,000	1,450
8	20,000	5,500	19,000	5,000	12,000	4,600	10,000	3,100	8,000	2,000	6,000	1,400
10	16,000	4,900	15,500	4,500	9,500	4,100	8,000	2,900	6,400	1,800	4,800	1,300
12	13,000	4,500	12,500	4,100	8,000	3,800	6,600	2,500	5,300	1,600	4,000	1,150
16	10,000	4,000	9,700	3,700	6,000	3,400	5,000	2,300	4,000	1,250	3,000	870
20	8,000	3,350	7,800	3,400	4,800	3,200	4,000	2,100	3,200	1,020	2,400	690

RPM = rev / min
FEED = mm / min

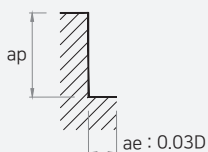





ZSLNS20, ZSLNS40 SERIES

Workpiece	Alloy Steels, Heat Resistant Steels			Hardened Steels			Hardened Steels			Copper, Copper alloy		
Hardness	HRc30 ~ HRc45			HRc45 ~ HRc55			HRc55 ~ HRc65			-		
Diameter (mm)	RPM	FEED	Ae (mm)	RPM	FEED	Ae(mm)	RPM	FEED	Ae (mm)	RPM	FEED	Ae (mm)
0.4	34,100 ~ 50,000	350 ~ 590	0.005 ~ 0.028	30,500 ~ 35,200	295 ~ 340	0.003 ~ 0.020	18,300 ~ 24,600	120 ~ 200	0.002 ~ 0.012	48,000 ~ 50,000	790 ~ 920	0.008 ~ 0.048
0.5	25,650 ~ 33,000	370 ~ 470	0.006 ~ 0.035	23,750 ~ 26,000	285 ~ 315	0.004 ~ 0.025	14,200 ~ 18,000	115 ~ 130	0.003 ~ 0.015	44,000 ~ 50,000	800 ~ 1,150	0.010 ~ 0.060
0.6	20,900 ~ 35,200	330 ~ 560	0.007 ~ 0.030	19,900 ~ 22,000	260 ~ 290	0.005 ~ 0.021	11,900 ~ 15,500	100 ~ 120	0.003 ~ 0.013	37,500 ~ 50,000	770 ~ 1,250	0.011 ~ 0.051
0.8	16,150 ~ 26,400	360 ~ 590	0.009 ~ 0.040	15,200 ~ 16,700	280 ~ 310	0.006 ~ 0.028	9,000 ~ 11,700	110 ~ 125	0.004 ~ 0.017	28,500 ~ 47,000	770 ~ 1,300	0.015 ~ 0.068
1.0	12,300 ~ 18,700	350 ~ 540	0.011 ~ 0.028	10,500 ~ 11,500	250 ~ 280	0.008 ~ 0.020	6,300 ~ 8,050	100 ~ 115	0.005 ~ 0.012	22,500 ~ 34,000	810 ~ 1,300	0.018 ~ 0.048
1.2	10,450 ~ 17,600	350 ~ 590	0.025 ~ 0.070	9,100 ~ 10,000	250 ~ 280	0.015 ~ 0.042	5,400 ~ 7,000	100 ~ 115	0.009 ~ 0.026	22,500 ~ 31,500	950 ~ 1,350	0.036 ~ 0.101
1.5	9,100 ~ 17,600	430 ~ 830	0.017 ~ 0.077	7,000 ~ 8,000	250 ~ 280	0.012 ~ 0.055	4,300 ~ 5,500	100 ~ 115	0.007 ~ 0.033	14,500 ~ 25,000	770 ~ 1,320	0.028 ~ 0.132
2.0	6,350 ~ 10,550	340 ~ 570	0.021 ~ 0.140	6,100 ~ 6,700	270 ~ 300	0.015 ~ 0.100	3,600 ~ 4,700	100 ~ 120	0.009 ~ 0.060	11,500 ~ 18,500	770 ~ 1,250	0.036 ~ 0.240
3.0	4,300 ~ 7,050	550 ~ 900	0.056 ~ 0.210	3,990 ~ 4,600	445 ~ 515	0.040 ~ 0.150	2,400 ~ 3,200	105 ~ 310	0.024 ~ 0.090	9,000 ~ 13,000	1,400 ~ 2,110	0.096 ~ 0.360
4.0	3,200 ~ 5,300	400 ~ 675	0.074 ~ 0.280	3,000 ~ 3,400	335 ~ 380	0.053 ~ 0.200	1,800 ~ 2,400	75 ~ 230	0.032 ~ 0.120	6,750 ~ 9,750	1,050 ~ 1,575	0.128 ~ 0.480

RPM = rev / min
FEED = mm / min

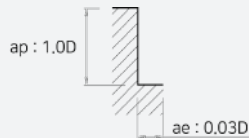


Technical Data

ZR702, ZR732 SERIES ► Side Cutting

Workpiece	Hardened Steels Heat Resistant Steels		Hardened Steels									
Hardness	HRc30 ~ HRc40		HRc40 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc60 ~ HRc65		HRc 65 ~ HRc70	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2	33,300	960	26,000	776	17,500	480	14,500	296	11,000	184	9,500	132
3	21,800	960	17,300	776	11,500	480	9,500	296	7,500	184	6,400	132
4	16,700	1,000	13,200	800	8,800	500	7,200	308	5,600	192	4,750	136
5	15,700	1,160	12,500	920	8,300	568	6,400	328	5,100	208	4,450	152
6	13,100	1,080	10,350	880	6,900	552	5,300	320	4,200	204	3,700	148
8	9,880	1,056	7,800	824	5,200	508	4,000	292	3,200	188	2,800	136
10	7,800	960	6,150	776	4,100	472	3,200	272	2,550	176	2,200	128
12	6,650	960	5,250	776	3,500	472	2,650	272	2,100	176	1,860	128
16	4,900	840	3,900	672	2,600	416	2,000	240	1,600	152	1,400	112
20	3,900	760	3,100	600	2,050	380	1,600	220	1,300	140	1,100	100

RPM = rev / min
FEED = mm / min



ZR702, ZR732 SERIES ► Slotting

Workpiece	Hardened Steels Heat Resistant Steels		Hardened Steels									
Hardness	HRc30 ~ HRc40		HRc40 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc60 ~ HRc65		HRc 65 ~ HRc70	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2	33,300	680	26,000	544	17,500	336	14,500	208	11,000	128	9,500	92
3	21,800	680	17,300	544	11,500	336	9,500	208	7,500	128	6,400	92
4	16,700	704	13,200	560	8,800	352	7,200	216	5,600	136	4,750	94
5	15,700	800	12,500	644	8,300	400	6,400	228	5,100	144	4,450	106
6	13,100	760	10,350	616	6,900	384	5,300	224	4,200	144	3,700	104
8	9,880	744	7,800	576	5,200	356	4,000	204	3,200	132	2,800	96
10	7,800	680	6,150	544	4,100	332	3,200	192	2,550	124	2,200	90
12	6,650	680	5,250	544	3,500	332	2,650	192	2,100	124	1,860	90
16	4,900	584	3,900	464	2,600	292	2,000	168	1,600	108	1,400	78
20	3,900	528	3,100	420	2,050	268	1,600	168	1,300	100	1,100	70

RPM = rev / min
FEED = mm / min





■ ZR704, ZR714, ZR724, ZR734 SERIES ► Side Cutting

Workpiece	Hardened Steels Heat Resistant Steels		Hardened Steels									
Hardness	HRc30 ~ HRc40		HRc40 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc60 ~ HRc65		HRc 65 ~ HRc70	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1	48,000	1,480	38,000	1,050	25,500	710	20,500	430	16,000	270	12,500	175
2	33,300	1,750	26,000	1,250	17,500	840	14,500	520	11,000	320	9,500	230
3	21,800	1,750	17,300	1,250	11,500	840	9,500	520	7,500	320	6,400	230
4	16,700	1,800	13,200	1,300	8,800	880	7,200	540	5,600	335	4,750	240
5	15,700	2,000	12,500	1,500	8,300	1,000	6,400	580	5,100	370	4,450	270
6	13,100	1,950	10,350	1,400	6,900	950	5,300	560	4,200	350	3,700	260
8	9,880	1,880	7,800	1,350	5,200	900	4,000	520	3,200	330	2,800	240
10	7,800	1,750	6,150	1,260	4,100	840	3,200	480	2,550	310	2,200	220
12	6,650	1,750	5,250	1,260	3,500	840	2,650	480	2,100	300	1,860	220
16	4,900	1,500	3,900	1,100	2,600	730	2,000	420	1,600	270	1,400	200
20	3,900	1,300	3,100	970	2,050	650	1,600	380	1,300	250	1,100	180

RPM = rev / min
 FEED = mm / min

■ ZS124, ZS1(2)04, ZS204 SERIES ► Side Cutting

Workpiece	Hardened Steels Heat Resistant Steels		Hardened Steels							
Hardness	HRc30 ~ HRc40		HRc40 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc 65 ~ HRc70	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
4	17,200	1,690	11,440	1,140	9,360	700	7,280	430	6,170	310
6	13,450	1,820	8,970	1,230	6,890	720	5,460	450	4,810	330
8	9,100	1,750	6,760	1,170	5,200	670	4,160	420	3,640	310
10	8,000	1,630	5,330	1,090	4,160	620	3,320	400	2,860	280
12	6,830	1,630	4,550	1,010	3,450	580	2,730	370	2,420	260

RPM = rev / min
 FEED = mm / min

Technical Data

ZSLNR20 SERIES

Workpiece				Carbon Steels, Alloy Steels (180~250HB)		Prehardened Steels (HRC35~45)		Hardened Steels (HRC45~55)		Hardened Steels (HRC55~65)	
Ratio to standard depth of cut				Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%	
Mill Dia (mm)	Diameter (mm)	Neck Length (mm)	Depth of Cut (mm)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)
1	0.1	8	0.024	23,328	880	19,829	748	17,496	587	16,330	479
		10	0.009	24,000	451	18,000	276	17,800	221	15,000	193
0.8	0.1	4	0.032	48,000	1,102	28,000	518	20,000	320	20,000	288
		6	0.019	38,700	800	25,000	461	18,000	288	18,000	256
		8	0.015	29,025	600	20,000	369	16,200	259	16,200	230
		12	0.012	29,025	570	20,000	350	16,200	246	16,200	219
	0.2	4	0.056	48,000	1,102	28,000	518	20,000	320	20,000	288
		6	0.032	38,700	800	25,000	461	18,000	288	18,000	256
1	0.1	4	0.038	32,400	1,359	27,540	1,039	24,300	815	22,680	666
		6	0.024	26,244	990	22,307	842	19,683	660	18,371	539
		8	0.024	23,328	880	19,829	748	17,496	587	16,330	479
		10	0.015	20,412	770	17,350	655	15,309	514	14,288	419
		12	0.015	18,144	609	15,422	453	13,608	399	12,701	320
		16	0.009	18,144	533	15,422	420	13,608	342	12,701	266
		20	0.006	13,608	399	11,567	315	10,206	257	9,526	200
	0.2	4	0.07	32,400	1,359	27,540	1,039	24,300	815	22,680	666
		6	0.04	26,244	990	22,307	842	19,683	660	18,371	539
		8	0.04	23,328	880	19,829	748	17,496	587	16,330	479
		10	0.025	20,412	770	17,350	655	15,309	514	14,288	419
		12	0.025	18,144	609	15,422	453	13,608	399	12,701	320
		16	0.015	18,144	533	15,422	420	13,608	342	12,701	266
		20	0.01	13,608	399	11,567	315	10,206	257	9,526	200
	0.3	6	0.04	26,244	990	22,307	842	19,683	660	18,371	539
		10	0.025	20,412	770	17,350	655	15,309	514	14,288	419
		16	0.015	18,144	533	15,422	420	13,608	342	12,701	266
		20	0.01	13,608	399	11,567	315	10,206	257	9,526	200
1.5	0.1	4	0.042	24,930	1,130	20,956	868	18,711	678	17,364	556
		8	0.036	22,680	1,027	19,278	873	17,010	685	15,876	559
		12	0.036	18,144	822	15,422	698	13,608	548	12,701	447
		15	0.023	14,112	568	11,995	423	10,584	373	9,878	298
		20	0.018	14,112	568	11,995	423	10,584	373	9,878	298
	0.2	4	0.07	24,930	1,130	20,956	868	18,711	678	17,364	556
		8	0.06	22,680	1,027	19,278	873	17,010	685	15,876	559
		12	0.06	18,144	822	15,422	698	13,608	548	12,701	447
		15	0.038	14,112	568	11,995	423	10,584	373	9,878	298
		20	0.03	14,112	568	11,995	423	10,584	373	9,878	298
	0.3	8	0.06	22,680	1,027	19,278	873	17,010	685	15,876	559
		15	0.038	14,112	568	11,995	423	10,584	373	9,878	298
		20	0.03	14,112	568	11,995	423	10,584	373	9,878	298
2	0.2	6	0.08	20,790	1,635	17,672	1,389	15,593	981	14,553	801
		8	0.07	18,900	1,486	16,065	1,263	14,175	892	13,230	728
		12	0.04	15,309	1,083	13,013	921	11,482	722	10,716	590
		16	0.04	13,608	963	11,567	818	10,206	642	9,526	524
		20	0.035	11,907	843	10,121	716	8,930	562	8,335	459



ZSLNR20 SERIES

Workpiece				Carbon Steels, Alloy Steels (180~250HB)		Prehardened Steels (HRC35~45)		Hardened Steels (HRC45~55)		Hardened Steels (HRC55~65)	
Ratio to standard depth of cut				Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%	
Mill Dia (mm)	Diameter (mm)	Neck Length (mm)	Depth of Cut (mm)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)
2	0.2	25	0.025	11,907	843	10,121	716	8,930	562	8,335	459
		30	0.017	11,312	800	9,615	680	8,484	534	7,918	436
2	0.3	8	0.09	18,900	1,651	16,065	1,403	14,175	991	13,230	809
		16	0.06	13,608	1,070	11,567	909	10,206	713	9,526	583
		20	0.037	11,907	936	10,121	796	8,930	624	8,335	510
	0.5	6	0.017	20,709	1,635	17,672	1,389	15,593	981	14,553	801
		8	0.014	18,900	1,651	16,065	1,403	14,175	991	13,230	809
		12	0.08	15,309	1,204	13,013	1,023	11,482	802	10,716	655
		16	0.08	13,608	1,070	11,567	909	10,206	713	9,526	583
		20	0.05	11,907	936	10,121	796	8,930	624	8,335	510
		25	0.05	11,907	936	10,121	796	8,930	624	8,335	510
		30	0.03	11,312	889	9,615	756	8,484	593	7,918	484
	0.8	8	0.2	18,900	1,651	16,065	1,403	14,175	991	13,230	809
		16	0.1	13,608	1,070	11,567	909	10,206	713	9,526	583
		20	0.06	11,907	936	10,121	796	8,930	624	8,335	510
3	0.2	8	0.09	14,400	1,415	12,240	1,203	10,800	849	10,080	693
		12	0.07	14,400	1,415	12,240	1,203	10,800	849	10,080	693
		16	0.05	14,400	1,415	12,240	1,203	10,800	849	10,080	693
		20	0.05	11,664	1,146	9,914	974	8,748	764	8,165	624
		30	0.04	9,072	1,146	7,711	974	6,804	764	6,350	624
		35	0.035	9,072	1,146	7,711	974	6,804	764	6,350	624
	0.3	8	0.13	14,400	1,572	12,240	1,337	10,800	943	10,080	771
		16	0.075	14,400	1,572	12,240	1,337	10,800	943	10,080	771
		20	0.075	11,664	1,274	9,914	1,083	8,748	849	8,165	693
		30	0.06	9,072	1,274	7,711	1,083	6,804	849	6,350	693
	0.5	8	0.18	14,400	1,572	12,240	1,337	10,800	943	10,080	771
		12	0.13	14,400	1,572	12,240	1,337	10,800	943	10,080	771
		16	0.1	14,400	1,572	12,240	1,337	10,800	943	10,080	771
		20	0.1	11,664	1,274	9,914	1,083	8,748	849	8,165	693
		30	0.08	9,072	1,274	7,711	1,083	6,804	849	6,350	693
		35	0.065	9,072	1,274	7,711	1,083	6,804	849	6,350	693

- Please adjust the cutting depth index according to the cutting depth factors of above table.
- In actual machining, the condition should be adjusted according to the machining shape, purpose and machine type.
- If RPM of the machine is low, the feed rate should be low in the same ratio as RPM.

Technical Data

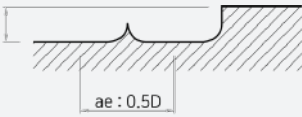
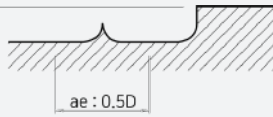
ZSTNR20 SERIES

Workpiece				Carbon Steels, Alloy Steels (180~250HB)		Prehardened Steels (HRC35~45)		Hardened Steels (HRC45~55)		Hardened Steels (HRC55~65)	
Ratio to standard depth of cut				Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%	
Mill Dia (mm)	Diameter (mm)	Neck Length (mm)	Depth of Cut (mm)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)
0.2	0.05	0.5	0.02	50,000	258	50,000	205	50,000	180	50,000	160
		1	0.014	50,000	258	50,000	205	50,000	180	50,000	160
		1.5	0.008	50,000	240	45,900	202	45,900	170	45,900	153
		2	0.008	42,000	202	36,700	176	36,700	162	36,700	147
0.3	0.05	1	0.021	50,000	585	50,000	456	50,000	336	50,000	320
		1.5	0.016	50,000	585	45,000	456	45,000	336	45,000	320
		2	0.012	45,000	530	45,000	420	45,000	300	45,000	290
		2.5	0.01	40,000	471	40,000	373	40,000	267	40,000	258
		3	0.008	35,000	412	35,000	326	30,000	200	30,000	194
0.4	0.05	1	0.025	50,000	580	50,000	461	40,000	320	36,000	270
		1.5	0.02	50,000	580	50,000	461	40,000	320	36,000	270
		2	0.016	45,000	520	45,000	410	36,000	290	34,000	240
		2.5	0.015	40,500	480	40,500	370	33,400	270	30,600	220
		3	0.014	40,000	410	40,000	330	32,800	240	25,600	200
		3.5	0.012	36,000	380	36,000	300	29,400	200	22,920	180
	0.1	4	0.008	30,000	320	30,000	250	21,600	160	19,200	150
		2	0.028	45,000	520	45,000	410	36,000	290	34,000	240
		3	0.016	40,000	410	40,000	330	32,800	240	25,600	200
		4	0.01	30,000	320	30,000	250	21,600	160	19,200	150
		1	0.03	50,000	898	40,000	464	30,000	378	28,000	315
		2	0.023	50,000	898	40,000	464	30,000	378	28,000	315
0.5	0.05	3	0.017	45,000	810	36,000	414	27,000	315	24,500	261
		4	0.017	40,000	820	32,000	378	24,000	279	20,000	234
		5	0.011	28,800	540	19,400	280	18,000	250	15,000	200
		6	0.008	28,800	480	19,400	260	18,000	250	15,000	200
	0.1	1	0.035	50,000	898	40,000	464	30,000	378	28,000	315
		2	0.03	50,000	898	40,000	464	30,000	378	28,000	315
0.8	0.1	3	0.02	45,000	810	36,000	414	27,000	315	24,500	261
		4	0.02	40,000	720	32,000	378	24,000	279	20,000	234
		5	0.013	28,800	540	19,400	280	18,000	250	15,000	200
		6	0.013	28,800	480	19,400	260	18,000	250	15,000	200
	0.2	2	0.035	50,000	1,159	37,830	600	28,200	390	23,000	320
		4	0.024	40,000	830	27,800	440	23,600	280	21,000	230
1	0.1	6	0.015	24,000	490	18,000	300	17,800	240	15,000	210
		8	0.013	24,000	466	18,000	285	17,800	228	15,000	200
		10	0.009	24,000	451	18,000	276	17,800	221	15,000	193
	0.2	4	0.032	48,000	1,102	28,000	518	20,000	320	20,000	288
		6	0.019	38,700	800	25,000	461	18,000	288	18,000	256
		8	0.015	29,025	600	20,000	369	16,200	259	16,200	230
1	0.1	12	0.012	29,025	570	20,000	350	16,200	246	16,200	219
		4	0.056	48,000	1,102	28,000	518	20,000	320	20,000	288
		6	0.032	38,700	800	25,000	461	18,000	288	18,000	256
	0.2	4	0.038	32,400	1,359	27,540	1,039	24,300	815	22,680	666
		6	0.024	26,244	990	22,307	842	19,683	660	18,371	539



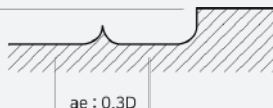
ZSPM4 SERIES

Workpiece	Hardened Steels									
Hardness	~ HRc40		HRc40 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc 60 ~ HRc65	
D X R (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3 X R0.5	9,550	6,500	6,900	4,150	4,550	2,750	2,850	1,150	1,900	610
4 X R0.5	7,950	7,000	5,750	4,600	4,000	3,200	2,550	1,350	1,750	700
6 X R0.5	5,800	7,650	4,100	4,900	2,900	3,500	1,850	1,850	1,350	795
6 X R1.0	5,800	7,650	4,100	4,900	2,900	3,500	1,850	1,850	1,350	795
8 X R1.0	4,350	7,650	3,050	4,900	2,200	3,500	1,400	1,850	995	795
8 X R2.0	4,350	7,650	3,050	4,900	2,200	3,500	1,400	1,850	995	795
10 X R1.0	3,500	7,650	2,450	4,900	1,750	3,500	1,100	1,850	795	795
10 X R2.0	3,500	7,650	2,450	4,900	1,750	3,500	1,100	1,850	795	795
12 X R2.0	2,900	7,650	2,050	4,900	1,450	3,500	925	1,850	665	795
12 X R3.0	2,900	7,650	2,050	4,900	1,450	3,500	925	1,850	665	795

RPM = rev / min FEED = mm / min	ap : 0.2R  ae : 0.5D *ae shouldn't be over max. 0.5D	ap : 0.1R  ae : 0.5D *ae shouldn't be over max. 0.5D

ZSPM4 SERIES ► High Speed Cutting

Workpiece	Hardened Steels									
Hardness	~ HRc40		HRc40 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc 60 ~ HRc65	
D X R (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3 X R0.5	22,000	16,000	17,000	10,000	12,500	8,000	9,500	4,600	6,900	2,500
4 X R0.5	17,000	17,500	13,000	12,000	11,000	9,200	8,000	5,500	5,600	2,900
6 X R0.5	13,500	18,500	10,500	13,800	9,000	11,000	6,400	6,400	4,500	3,600
6 X R1.0	13,500	18,500	10,500	13,800	9,000	11,000	6,400	6,400	4,500	3,600
8 X R1.0	10,000	18,500	8,000	14,000	6,800	11,000	4,800	6,700	3,400	4,100
8 X R2.0	10,000	18,500	8,000	14,000	6,800	11,000	4,800	6,700	3,400	4,100
10 X R1.0	8,000	18,500	6,400	14,000	5,400	11,000	3,800	6,800	2,700	3,800
10 X R2.0	8,000	18,500	6,400	14,000	5,400	11,000	3,800	6,800	2,700	3,800
12 X R2.0	6,600	18,500	5,300	14,000	4,500	11,000	3,200	7,000	2,250	3,600
12 X R3.0	6,600	18,500	5,300	14,000	4,500	11,000	3,200	7,000	2,250	3,600

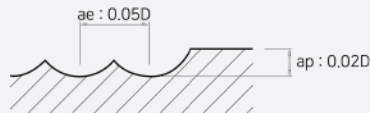
RPM = rev / min FEED = mm / min	ap : 0.1R  ae : 0.5D *ae shouldn't be over max. 0.5D	ap : 0.05R  ae : 0.3D *ae shouldn't be over max. 0.3D

Technical Data

DB702, DB712 SERIES

Workpiece	Hardened Steels Heat Resistant Steels		Hardened Steels									
Hardness	HRc30 ~ HRc40		HRc40 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc60 ~ HRc65		HRc 65 ~ HRc70	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
0.2	50,000	1,200	50,000	1,050	45,000	960	40,000	770	35,000	674	31,500	570
0.3	50,000	1,500	50,000	1,350	45,000	1,200	40,000	965	35,000	840	31,500	700
0.4	50,000	1,900	50,000	1,700	45,000	1,500	40,000	1,200	35,000	1,050	31,500	890
0.5	50,000	2,400	50,000	2,100	45,000	1,900	40,000	1,500	35,000	1,300	31,500	1,100
0.6	50,000	2,900	50,000	2,500	45,000	2,200	40,000	1,800	35,000	1,600	31,500	1,400
0.8	50,000	3,900	50,000	3,300	45,000	3,000	40,000	2,400	35,000	2,100	31,500	1,800
1	50,000	4,800	50,000	4,200	45,000	3,800	40,000	3,000	35,000	2,600	35,000	2,300
1.5	50,000	5,400	48,000	4,500	43,000	4,000	37,000	3,100	33,000	2,700	29,700	2,300
2	49,700	5,700	47,800	4,800	40,000	4,000	35,000	3,150	32,000	2,800	28,500	2,300
3	33,100	6,000	31,800	5,300	26,500	4,000	23,500	3,150	21,000	2,800	19,000	2,300
4	24,900	6,000	23,900	5,300	20,000	4,000	17,500	3,150	16,000	2,800	14,500	2,300
5	18,600	5,800	17,800	4,900	15,000	3,750	13,500	3,050	11,500	2,550	10,500	2,100
6	13,900	4,850	13,400	4,100	11,000	3,100	10,000	2,500	8,800	2,150	8,000	1,750
8	11,100	4,200	10,700	3,500	9,000	2,700	8,000	2,150	7,000	1,850	6,500	1,550
10	9,300	3,700	8,900	3,100	7,500	2,400	6,600	1,900	5,800	1,650	5,300	1,380
12	6,950	2,950	6,680	2,500	5,600	1,900	5,000	1,550	4,400	1,250	4,000	1,050

RPM = rev / min
FEED = mm / min



DB703 SERIES

Workpiece	Hardened Steels Heat Resistant Steels		Hardened Steels									
Hardness	HRc30 ~ HRc40		HRc40 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc60 ~ HRc65		HRc 65 ~ HRc70	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2	57,000	7,100	55,000	6,000	46,000	5,000	40,300	3,900	36,800	3,500	32,800	2,900
2.5	57,000	7,100	55,000	6,000	46,000	5,000	40,300	3,900	36,800	3,500	32,800	2,900
3	38,000	7,500	36,600	6,600	30,500	5,000	27,000	3,900	24,200	3,500	21,900	2,900
4	28,500	7,500	27,500	6,600	23,000	5,000	20,100	3,900	18,400	3,500	16,700	2,900
5	21,500	7,300	20,500	6,100	17,300	4,700	15,500	3,800	13,200	3,200	12,100	2,600
6	16,000	6,100	15,400	5,100	12,700	3,900	11,500	3,100	10,100	2,700	9,200	2,200
8	12,700	5,300	12,300	4,400	10,400	3,400	9,200	2,700	8,100	2,300	7,500	1,900
10	10,700	4,600	10,200	3,900	8,600	3,000	7,600	2,400	6,700	2,100	6,100	1,700
12	8,000	3,700	7,700	3,100	6,400	2,400	5,800	1,900	5,100	1,600	4,600	1,300



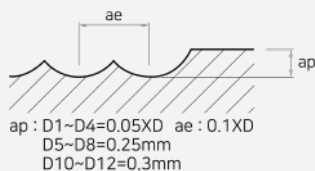
DB734 SERIES

Workpiece	Hardened Steels Heat Resistant Steels		Hardened Steels									
Hardness	HRC30 ~ HRC40		HRC40 ~ HRC50		HRC50 ~ HRC55		HRC55 ~ HRC60		HRC60 ~ HRC65		HRC 65 ~ HRC70	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2	62,100	8,600	59,800	7,200	50,000	6,000	43,800	4,700	40,000	4,200	35,600	3,500
2.5	62,100	8,600	59,800	7,200	50,000	6,000	43,800	4,700	40,000	4,200	35,600	3,500
3	41,400	9,000	39,800	8,000	33,100	6,000	29,400	4,700	26,300	4,200	23,800	3,500
4	31,100	9,000	29,900	8,000	25,000	6,000	21,900	4,700	20,000	4,200	18,100	3,500
5	23,300	8,700	22,300	7,400	18,800	5,600	16,900	4,600	14,400	3,800	13,100	3,200
6	17,400	7,300	16,800	6,200	13,800	4,700	12,500	3,800	11,000	3,200	10,000	2,600
8	13,900	6,300	13,400	5,300	11,300	4,100	10,000	3,200	8,800	2,800	8,100	2,300
10	11,600	5,600	11,100	4,700	9,400	3,600	8,300	2,900	7,300	2,500	6,600	2,100

ZSLNB20 SERIES

Workpiece	Alloy Steels, Heat Resistant Steels			Hardened Steels			Hardened Steels			Copper, Copper alloy		
Hardness	HRC30 ~ HRC45			HRC45 ~ HRC55			HRC55 ~ HRC65			-		
Diameter (mm)	RPM	FEED	Ae (mm)	RPM	FEED	Ae (mm)	RPM	FEED	Ae (mm)	RPM	FEED	Ae (mm)
0.5	34,100 ~ 49,500	600 ~ 870	0.007 ~ 0.028	31,900 ~ 35,200	490 ~ 540	0.005 ~ 0.023	31,900 ~ 35,200	440 ~ 480	0.005 ~ 0.021	49,000 ~ 50,000	1,100 ~ 1,400	0.010 ~ 0.042
0.6	28,600 ~ 40,700	590 ~ 850	0.007 ~ 0.034	26,400 ~ 29,700	480 ~ 540	0.006 ~ 0.028	26,400 ~ 29,700	400 ~ 480	0.006 ~ 0.025	42,000 ~ 50,000	1,100 ~ 1,700	0.011 ~ 0.050
0.8	22,000 ~ 30,800	640 ~ 890	0.016 ~ 0.064	19,800 ~ 22,000	490 ~ 550	0.013 ~ 0.052	19,800 ~ 22,000	440 ~ 500	0.012 ~ 0.048	31,000 ~ 50,000	1,100 ~ 2,250	0.024 ~ 0.096
1	17,600 ~ 24,200	600 ~ 850	0.008 ~ 0.080	15,400 ~ 17,600	470 ~ 540	0.007 ~ 0.065	15,400 ~ 17,600	440 ~ 500	0.006 ~ 0.060	24,000 ~ 49,500	1,100 ~ 2,200	0.012 ~ 0.120
1.2	14,300 ~ 18,700	590 ~ 780	0.024 ~ 0.032	12,000 ~ 14,000	480 ~ 540	0.020 ~ 0.026	12,000 ~ 14,000	420 ~ 480	0.018 ~ 0.024	28,500 ~ 38,500	1,480 ~ 1,950	0.036 ~ 0.048
1.5	11,000 ~ 14,300	580 ~ 760	0.031 ~ 0.048	10,000 ~ 11,500	480 ~ 540	0.025 ~ 0.039	10,000 ~ 11,500	420 ~ 480	0.023 ~ 0.036	17,000 ~ 28,500	1,100 ~ 1,950	0.046 ~ 0.072
2	8,500 ~ 11,000	590 ~ 800	0.024 ~ 0.160	7,900 ~ 8,800	470 ~ 530	0.020 ~ 0.130	7,900 ~ 8,800	440 ~ 480	0.018 ~ 0.120	12,600 ~ 24,000	1,100 ~ 2,150	0.036 ~ 0.240
3	5,700 ~ 8,200	730 ~ 1,000	0.064 ~ 0.24	5,300 ~ 5,800	590 ~ 650	0.052 ~ 0.195	5,300 ~ 5,800	550 ~ 620	0.048 ~ 0.120	11,900 ~ 17,000	1,850 ~ 2,700	0.096 ~ 0.360
4	4,300 ~ 6,200	680 ~ 990	0.080 ~ 0.320	3,950 ~ 4,400	550 ~ 620	0.065 ~ 0.260	3,850 ~ 4,400	530 ~ 570	0.060 ~ 0.240	6,600 ~ 12,500	1,260 ~ 2,500	0.120 ~ 0.480

RPM = rev / min
FEED = mm / min



Technical Data

ZSTNB20, ZSTNB30 SERIES

Workpiece					Carbon Steels, Alloy Steels (180~250HB)		Prehardened Steels (HRC35~45)		Hardened Steels (HRC45~55)		Hardened Steels (HRC55~65)	
Ratio to standard depth of cut					Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%	
Mill Dia (mm)	Diameter (mm)	Neck Length (mm)	Neck Angle (°)	Depth of Cut (mm)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)
0.1	0.2	1	0.4	0.017	40,000	800	28,000	504	26,000	416	26,000	364
		1.5	0.4	0.009	40,000	800	28,000	504	26,000	416	26,000	364
		2	0.9	0.007	32,000	461	22,400	323	20,800	266	20,800	233
		2.5	0.9	0.004	26,000	333	18,200	204	16,900	189	16,900	162
0.15	0.3	2	0.4	0.025	40,000	1,200	28,000	756	26,000	624	26,000	546
		3	0.9	0.013	32,000	691	22,400	484	20,800	399	20,800	349
		4	0.9	0.01	26,000	499	18,200	306	16,900	284	16,900	243
0.2	0.4	2	0.4	0.035	40,000	1,600	28,000	1,008	26,000	832	26,000	728
		3	0.4	0.02	40,000	1,600	28,000	1,008	26,000	832	26,000	728
		4	0.4	0.007	32,000	922	22,400	645	20,800	532	20,800	466
		4	0.9	0.009	32,000	922	22,400	645	20,800	532	20,800	466
		5	0.4	0.006	26,000	666	18,200	408	16,900	379	16,900	324
		5	0.9	0.007	26,000	666	18,200	408	16,900	379	16,900	324
0.25	0.5	4	0.4	0.04	40,000	2,000	28,000	1,260	26,000	1,040	26,000	910
		8	0.9	0.01	26,000	728	18,200	446	16,900	414	16,900	355
		12	0.9	0.005	22,400	627	15,680	384	14,560	357	14,560	306
0.27	0.54	2	0.4	0.05	40,000	2,160	28,000	1,361	26,000	1,123	26,000	983
		4	0.4	0.037	40,000	2,160	28,000	1,361	26,000	1,123	26,000	983
		5	0.4	0.031	40,000	1,512	28,000	1,176	26,000	1,040	26,000	832
		6	0.4	0.025	26,000	1,244	18,200	871	16,900	676	16,900	629
		6.5	0.4	0.02	26,000	1,011	18,200	619	16,900	575	16,900	493
		7	0.4	0.015	26,000	899	18,200	585	16,900	543	16,900	465
0.3	0.6	2	0.4	0.055	40,000	2,400	28,000	1,512	26,000	1,248	26,000	1,092
		4	0.4	0.035	40,000	2,400	28,000	1,512	26,000	1,248	26,000	1,092
		6	0.4	0.018	32,000	1,382	22,400	968	20,800	799	20,800	699
		6	0.9	0.02	32,000	1,382	22,400	968	20,800	799	20,800	699
		8	0.9	0.02	26,000	998	18,200	612	16,900	568	16,900	487
		10	0.4	0.013	26,000	874	18,200	535	16,900	497	16,900	426
		10	0.9	0.015	26,000	874	18,200	535	16,900	497	16,900	426
		12	0.9	0.01	26,000	874	18,200	535	16,900	497	16,900	426
		15	0.4	0.005	22,400	753	15,680	461	14,560	367	14,560	367
		15	0.9	0.006	22,400	753	15,680	461	14,560	367	14,560	367
0.4	0.8	4	0.4	0.062	32,000	2,560	22,400	1,613	20,800	1,331	20,800	1,165
		6	0.4	0.045	32,000	2,560	22,400	1,613	20,800	1,331	20,800	1,165
		8	0.9	0.026	25,600	1,475	17,920	1,032	16,640	852	16,640	745
		12	0.9	0.02	20,800	1,065	14,560	699	13,520	606	13,520	519
		16	0.9	0.018	20,800	932	14,560	612	13,520	530	13,520	454
0.45	0.9	4	0.4	0.063	28,300	2,547	19,810	1,605	18,395	1,324	18,395	1,159
		8	0.4	0.05	28,300	2,547	19,810	1,605	18,395	1,324	18,395	1,159
		12	0.4	0.037	18,400	1,325	12,880	811	11,960	753	11,960	646
		16	0.4	0.024	18,400	1,325	12,880	811	11,960	753	11,960	646
		18	0.4	0.018	18,400	1,325	12,880	811	11,960	753	11,960	646
		20	0.4	0.015	15,850	1,141	11,095	699	10,303	649	10,303	556
		22	0.4	0.012	15,850	1,141	11,095	699	10,303	649	10,303	556



■ ZSTNB20, ZSTNB30 SERIES

Workpiece					Carbon Steels, Alloy Steels (180~250HB)		Prehardened Steels (HRc35~45)		Hardened Steels (HRc45~55)		Hardened Steels (HRc55~65)	
Ratio to standard depth of cut					Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%	
Mill Dia (mm)	Diameter (mm)	Neck Length (mm)	Neck Angle (°)	Depth of Cut (mm)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)
0.45	0.9	24	0.4	0.009	14,150	1,019	9,905	624	9,198	579	9,198	497
0.5	1	6	0.4	0.055	25,600	2,560	17,920	1,613	16,640	1,331	16,640	1,165
		8	0.4	0.055	25,600	2,560	17,920	1,613	16,640	1,331	16,640	1,165
		10	0.4	0.032	20,800	1,872	14,560	1,310	13,520	1,082	13,520	946
		10	0.9	0.035	20,800	1,872	14,560	1,310	13,520	1,082	13,520	946
		15	0.9	0.028	16,640	1,331	11,648	874	10,816	757	10,816	649
		20	0.4	0.018	16,640	1,331	11,648	874	10,816	757	10,816	649
		20	0.9	0.02	16,640	1,331	11,648	874	10,816	757	10,816	649
		25	0.9	0.017	14,560	1,165	10,192	764	9,464	662	9,464	568
		30	0.4	0.015	12,480	874	8,736	568	8,112	487	8,112	406
		30	0.9	0.017	12,480	874	8,736	568	8,112	487	8,112	406
		35	0.9	0.01	10,400	728	7,280	473	6,760	406	6,760	338
		40	0.9	0.009	10,000	700	7,000	455	6,500	390	6,500	325
		50	0.9	0.007	9,500	665	6,650	432	6,175	371	6,175	309
		60	0.9	0.005	9,000	630	6,300	410	5,850	351	5,850	293
		70	0.9	0.003	8,500	595	5,950	387	5,525	332	5,525	276
0.75	1.5	8	0.4	0.07	16,960	2,544	11,872	1,603	11,024	1,323	11,024	1,158
		10	0.4	0.07	16,960	2,544	11,872	1,603	11,024	1,323	11,024	1,158
		12	0.4	0.07	16,960	2,544	11,872	1,603	11,024	1,323	11,024	1,158
		15	0.9	0.045	13,568	1,832	9,498	1,282	8,819	1,058	8,819	926
		20	0.9	0.04	11,024	1,323	7,717	810	7,166	752	7,166	645
		30	0.9	0.028	11,024	1,323	7,717	810	7,166	752	7,166	645
0.9	1.8	4	0.4	0.12	14,200	2,556	9,940	1,610	9,230	1,329	9,230	1,163
		8	0.4	0.1	14,200	2,556	9,940	1,610	9,230	1,329	9,230	1,163
		12	0.4	0.08	14,200	2,556	9,940	1,610	9,230	1,329	9,230	1,163
		16	0.4	0.071	14,200	2,556	9,940	1,610	9,230	1,329	9,230	1,163
		20	0.4	0.062	9,230	1,329	6,461	814	6,000	756	6,000	648
		24	0.4	0.053	9,230	1,329	6,461	814	6,000	756	6,000	648
		28	0.4	0.044	9,230	1,329	6,461	814	6,000	756	6,000	648
		32	0.4	0.036	9,230	1,329	6,461	814	6,000	756	6,000	648
		36	0.4	0.028	9,230	1,329	6,461	814	6,000	756	6,000	648
		38	0.4	0.02	8,000	1,152	5,600	706	5,200	655	5,200	562
		40	0.4	0.015	8,000	1,152	5,600	706	5,200	655	5,200	562
1	2	8	0.4	0.15	15,200	3,040	10,640	1,915	9,880	1,581	9,880	1,383
		12	0.4	0.09	15,200	3,040	10,640	1,915	9,880	1,581	9,880	1,383
		16	0.4	0.09	15,200	3,040	10,640	1,915	9,880	1,581	9,880	1,383
		20	0.4	0.06	12,160	2,189	8,512	1,532	7,904	1,265	7,904	1,107
		20	0.9	0.07	12,160	2,189	8,512	1,532	7,904	1,265	7,904	1,107
		25	0.9	0.07	9,880	1,581	6,916	968	6,442	899	6,422	771
		30	0.4	0.04	9,880	1,581	6,916	968	6,442	899	6,422	771
		30	0.9	0.045	9,880	1,581	6,916	968	6,442	899	6,422	771
		35	0.9	0.045	9,880	1,581	6,916	968	6,442	899	6,422	771
		40	0.4	0.03	9,880	1,581	6,916	968	6,442	899	6,422	771
		40	0.9	0.035	9,880	1,581	6,916	968	6,442	899	6,422	771

Technical Data

ZSTNB20, ZSTNB30 SERIES

Workpiece					Carbon Steels, Alloy Steels (180~250HB)		Prehardened Steels (HRC35~45)		Hardened Steels (HRC45~55)		Hardened Steels (HRC55~65)	
Ratio to standard depth of cut					Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%	
Mill Dia (mm)	Diameter (mm)	Neck Length (mm)	Neck Angle (°)	Depth of Cut (mm)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)
1	2	50	0.9	0.17	8,512	1,192	5,958	775	5,533	664	5,533	553
		60	0.9	0.009	7,235	1,013	5,065	658	4,703	564	4,703	470
		70	0.9	0.005	6,150	861	4,305	560	3,997	480	3,997	400
1.5	3	8	0.4	0.32	12,720	3,816	8,904	2,404	8,268	1,984	8,268	1,736
		16	0.4	0.22	12,720	3,816	8,904	2,404	8,268	1,984	8,268	1,736
		20	0.4	0.15	12,720	3,434	8,904	2,137	8,268	1,736	8,268	1,488
		30	0.4	0.08	10,176	2,748	7,123	1,496	6,614	1,389	6,614	1,191
		30	0.9	0.09	10,176	2,748	7,123	1,496	6,614	1,389	6,614	1,191
		40	0.4	0.06	8,268	1,984	5,788	1,215	5,374	1,129	5,374	967
		40	0.9	0.07	8,268	1,984	5,788	1,215	5,374	1,129	5,374	967
		50	0.9	0.05	8,268	1,984	5,788	1,215	5,374	1,129	5,374	967
		60	0.9	0.03	7,123	1,710	4,986	1,047	4,630	972	4,630	833
		70	0.9	0.02	6,233	1,496	4,363	916	4,051	851	4,051	729
2	4	20	1	0.32	11,900	2,860	9,000	2,050	7,800	1,680	7,800	1,590
		30	1	0.23	11,900	2,570	9,000	1,850	7,800	1,520	7,800	1,430
		40	1	0.14	9,500	1,940	7,200	1,400	6,200	1,140	6,200	1,080
		50	1	0.11	7,800	1,590	5,800	1,120	5,000	920	5,000	870
		60	1	0.07	7,800	1,590	5,800	1,120	5,000	920	5,000	870
2.5	5	30	1	0.34	9,500	2,140	7,200	1,540	6,200	1,260	6,200	1,190
		40	1	0.25	9,500	2,140	7,200	1,540	6,200	1,260	6,200	1,190
		60	1	0.15	6,200	1,320	4,700	950	4,000	770	4,000	720
3	6	30	1	0.45	8,000	2,000	6,000	1,430	5,200	1,170	5,200	1,110
		40	1	0.4	8,000	1,800	6,000	1,280	5,200	1,050	5,200	990
		50	1	0.32	8,000	1,800	6,000	1,280	5,200	1,050	5,200	990
		60	1	0.22	6,400	1,360	4,800	970	4,100	780	4,100	740
		70	1	0.18	5,200	1,110	3,900	790	3,400	650	3,400	610
		80	1	0.14	5,200	1,110	3,900	790	3,400	650	3,400	610
4	8	50	1	0.5	6,000	1,460	4,500	1,040	3,900	850	3,900	810
		60	1	0.43	6,000	1,460	4,500	1,040	3,900	850	3,900	810
		70	1	0.33	6,000	1,460	4,500	1,040	3,900	850	3,900	810
		80	1	0.25	4,800	1,100	3,600	780	3,100	640	3,100	600
5	10	60	1	0.7	4,800	1,300	3,600	920	3,100	750	3,100	710
		75	1	0.5	4,800	1,300	3,600	920	3,100	750	3,100	710

· Please adjust the cutting depth index according to the cutting depth factors of above table.

· For Rib or Slotting machining process which are not easy for chip ejection, please reduce the cutting depth by 20~30% from the above cutting condition.

ex) ZSTNB2040-20-10, HRC 55, Rib processing

Cutting depth : $0.32(\text{standard cutting depth}) \times 0.65 \times 0.8 = 0.17\text{mm}$

· In actual machining, the condition should be adjusted according to the machining shape, purpose and the machine type.

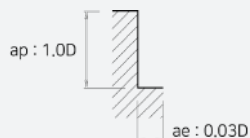
· If RPM of the machine is low, the feed rate should be low in the same ratio as RPM.



ESE702 SERIES ► Side Cutting

Workpiece	Hardened Steels Heat Resistant Steels		Hardened Steels									
Hardness	HRc30 ~ HRc40		HRc40 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc60 ~ HRc65		HRc 65 ~ HRc70	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1	48,000	1,050	38,000	820	25,500	510	20,500	310	16,000	190	12,500	125
2	33,300	1,200	26,000	970	17,500	600	14,500	370	11,000	230	9,500	165
3	21,800	1,200	17,300	970	11,500	600	9,500	370	7,500	230	6,400	165
4	16,700	1,250	13,200	1,000	8,800	625	7,200	385	5,600	240	4,750	170
5	15,700	1,450	12,500	1,150	8,300	710	6,400	410	5,100	260	4,450	190
6	13,100	1,350	10,350	1,100	6,900	690	5,300	400	4,200	255	3,700	185
8	9,880	1,320	7,800	1,030	5,200	635	4,000	365	3,200	235	2,800	170
10	7,800	1,200	6,150	970	4,100	590	3,200	340	2,550	220	2,200	160
12	6,650	1,200	5,250	970	3,500	590	2,650	340	2,100	220	1,860	160
16	4,900	1,050	3,900	840	2,600	520	2,000	300	1,600	190	1,400	140
20	3,900	950	3,100	750	2,050	475	1,600	275	1,300	175	1,100	125

RPM = rev / min
FEED = mm / min



ESE702 SERIES ► Slotting

Workpiece	Hardened Steels Heat Resistant Steels		Hardened Steels									
Hardness	HRc30 ~ HRc40		HRc40 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc60 ~ HRc65		HRc 65 ~ HRc70	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
~0.2	50,000	130	45,000	115	40,000	95	33,000	60	33,000	45	26,400	30
0.3	50,000	190	45,000	140	40,000	115	33,000	70	25,000	50	20,000	35
0.4	50,000	235	45,000	180	40,000	140	33,000	90	25,000	55	20,000	40
0.5	50,000	370	45,000	280	40,000	220	33,000	140	25,000	85	20,000	60
0.6	50,000	470	45,000	360	40,000	285	33,000	160	25,000	105	20,000	75
0.8	50,000	600	40,000	440	30,000	295	25,000	185	19,000	110	15,200	80
0.9	49,000	655	39,000	520	27,800	330	22,700	205	17,500	125	14,000	90
1	48,000	750	38,000	570	25,500	360	20,500	215	16,000	135	12,500	85
2	33,300	850	26,000	680	17,500	420	14,500	260	11,000	160	9,500	115
3	21,800	850	17,300	680	11,500	420	9,500	260	7,500	160	6,400	115
4	16,700	880	13,200	700	8,800	440	7,200	270	5,600	170	4,750	118
5	15,700	1,000	12,500	805	8,300	500	6,400	285	5,100	180	4,450	132
6	13,100	950	10,350	770	6,900	480	5,300	280	4,200	180	3,700	130
8	9,880	930	7,800	720	5,200	445	4,000	255	3,200	165	2,800	120
10	7,800	850	6,150	680	4,100	415	3,200	240	2,550	155	2,200	122
12	6,650	850	5,250	680	3,500	415	2,650	240	2,100	155	1,860	112
16	4,900	730	3,900	580	2,600	365	2,000	210	1,600	135	1,400	95
20	3,900	660	3,100	525	2,050	335	1,600	195	1,300	125	1,100	85

RPM = rev / min
FEED = mm / min

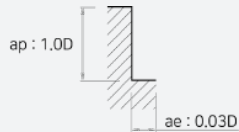


Technical Data

ESE712 SERIES ► Side Cutting

Workpiece	Hardened Steels Heat Resistant Steels		Hardened Steels									
Hardness	HRC30 ~ HRC40		HRC40 ~ HRC50		HRC50 ~ HRC55		HRC55 ~ HRC60		HRC60 ~ HRC65		HRC 65 ~ HRC70	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1	48,000	1,050	38,000	820	25,500	510	20,500	310	16,000	190	12,500	125
2	33,300	1,200	26,000	970	17,500	600	14,500	370	11,000	230	9,500	165
3	21,800	1,200	17,300	970	11,500	600	9,500	370	7,500	230	6,400	165
4	16,700	1,250	13,200	1,000	8,800	625	7,200	385	5,600	240	4,750	170
5	15,700	1,450	12,500	1,150	8,300	710	6,400	410	5,100	260	4,450	190
6	13,100	1,350	10,350	1,100	6,900	690	5,300	400	4,200	255	3,700	185
8	9,880	1,320	7,800	1,030	5,200	635	4,000	365	3,200	235	2,800	170
10	7,800	1,200	6,150	970	4,100	590	3,200	340	2,550	220	2,200	160
12	6,650	1,200	5,250	970	3,500	590	2,650	340	2,100	220	1,860	160
16	4,900	1,050	3,900	840	2,600	520	2,000	300	1,600	190	1,400	140
20	3,900	950	3,100	750	2,050	475	1,600	275	1,300	175	1,100	125

RPM = rev / min
FEED = mm / min



ESE712 SERIES ► Slotting

Workpiece	Hardened Steels Heat Resistant Steels		Hardened Steels									
Hardness	HRC30 ~ HRC40		HRC40 ~ HRC50		HRC50 ~ HRC55		HRC55 ~ HRC60		HRC60 ~ HRC65		HRC 65 ~ HRC70	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
0.2	50,000	130	45,000	115	40,000	95	33,000	60	33,000	45	26,400	30
0.3	50,000	190	45,000	140	40,000	115	33,000	70	25,000	50	20,000	35
0.4	50,000	235	45,000	180	40,000	140	33,000	90	25,000	55	20,000	40
0.5	50,000	370	45,000	280	40,000	220	33,000	140	25,000	85	20,000	60
0.6	50,000	470	45,000	360	40,000	285	30,000	160	25,000	105	20,000	75
0.8	50,000	600	40,000	440	30,000	295	25,000	185	19,000	110	15,200	80
0.9	49,000	655	39,000	520	27,800	330	22,700	205	17,500	125	14,000	90
1	48,000	750	38,000	570	25,500	360	20,500	215	16,000	135	12,500	85
2	33,300	850	26,000	680	17,500	420	14,500	260	11,000	160	9,500	115
3	21,800	850	17,300	680	11,500	420	9,500	260	7,500	160	6,400	115
4	16,700	880	13,200	700	8,800	440	7,200	270	5,600	170	4,750	118
5	15,700	1,000	12,500	805	8,300	500	6,400	285	5,100	180	4,450	132
6	13,100	950	10,350	770	6,900	480	5,300	280	4,200	180	3,700	130
8	9,880	930	7,800	720	5,200	445	4,000	255	3,200	165	2,800	120
10	7,800	850	6,150	680	4,100	415	3,200	240	2,550	155	2,200	112
12	6,650	850	5,250	680	3,500	415	2,650	240	2,100	155	1,860	112
16	4,900	730	3,900	580	2,600	365	2,000	210	1,600	135	1,400	95
20	3,900	660	3,100	525	2,050	335	1,600	195	1,300	125	1,100	85

RPM = rev / min
FEED = mm / min





■ ESE704, ESE714, ESE744 SERIES ► Side Cutting

Workpiece	Hardened Steels Heat Resistant Steels		Hardened Steels									
Hardness	HRc30 ~ HRc40		HRc40 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc60 ~ HRc65		HRc 65 ~ HRc70	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1	48,000	1,480	38,000	1,050	25,500	710	20,500	430	16,000	270	12,500	175
2	33,300	1,750	26,000	1,250	17,500	840	14,500	520	11,000	320	9,500	230
3	21,800	1,750	17,300	1,250	11,500	840	9,500	520	7,500	320	6,400	230
4	16,700	1,800	13,200	1,300	8,800	880	7,200	540	5,600	335	4,750	240
5	15,700	2,000	12,500	1,500	8,300	1,000	6,400	580	5,100	370	4,450	270
6	13,100	1,950	10,350	1,400	6,900	950	5,300	560	4,200	350	3,700	260
8	9,880	1,880	7,800	1,350	5,200	900	4,000	520	3,200	330	2,800	240
10	7,800	1,750	6,150	1,260	4,100	840	3,200	480	2,550	310	2,200	220
12	6,650	1,750	5,250	1,260	3,500	840	2,650	480	2,100	300	1,860	220
16	4,900	1,500	3,900	1,100	2,600	730	2,000	420	1,600	270	1,400	200
20	3,900	1,300	3,100	970	2,050	650	1,600	380	1,300	250	1,100	180

RPM = rev / min
FEED = mm / min

ap : 1.0D
ae : 0.05D

ap : 1.0D
ae : 0.03D

■ ESE716 SERIES ► Side Cutting

Workpiece	Hardened Steels Heat Resistant Steels		Hardened Steels									
Hardness	HRc30 ~ HRc40		HRc40 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc60 ~ HRc65		HRc 65 ~ HRc70	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
6	24,800	5,350	23,500	4,900	16,000	4,900	13,500	3,300	10,500	2,100	8,000	1,450
8	20,000	5,500	19,000	5,000	12,000	4,600	10,000	3,100	8,000	2,000	6,000	1,400
10	16,000	4,900	15,500	4,500	9,500	4,100	8,000	2,900	6,400	1,800	4,800	1,300
12	13,000	4,500	12,500	4,100	8,000	3,800	6,600	2,500	5,300	1,600	4,000	1,150
16	10,000	4,000	9,700	3,700	6,000	3,400	5,000	2,300	4,000	1,250	3,000	870
20	8,000	3,350	7,800	3,400	4,800	3,200	4,000	2,100	3,200	1,020	2,400	690

RPM = rev / min
FEED = mm / min

ap : 1.0D
ae : 0.05D

ap : 1.0D
ae : 0.03D

Technical Data

ESE724 SERIES ► Side Cutting

Workpiece	Hardened Steels Heat Resistant Steels		Hardened Steels									
Hardness	HRC30 ~ HRC40		HRC40 ~ HRC50		HRC50 ~ HRC55		HRC55 ~ HRC60		HRC60 ~ HRC65		HRC 65 ~ HRC70	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1	48,000	1,480	38,000	1,050	25,500	710	20,500	430	16,000	270	12,500	175
2	33,300	1,750	26,000	1,250	17,500	840	14,500	520	11,000	320	9,500	230
3	21,800	1,750	17,300	1,250	11,500	840	9,500	520	7,500	320	6,400	230
4	16,700	1,800	13,200	1,300	8,800	880	7,200	540	5,600	335	4,750	240
5	15,700	2,000	12,500	1,500	8,300	1,000	6,400	580	5,100	370	4,450	270
6	13,100	1,950	10,350	1,400	6,900	950	5,300	560	4,200	350	3,700	260
8	9,880	1,880	7,800	1,350	5,200	900	4,000	520	3,200	330	2,800	240
10	7,800	1,750	6,150	1,260	4,100	840	3,200	480	2,550	310	2,200	220
12	6,650	1,750	5,250	1,260	3,500	840	2,650	480	2,100	300	1,860	220
16	4,900	1,500	3,900	1,100	2,600	730	2,000	420	1,600	270	1,400	200
20	3,900	1,300	3,100	970	2,050	650	1,600	380	1,300	250	1,100	180

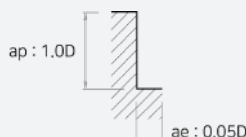
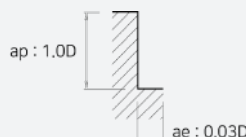
RPM = rev / min
FEED = mm / min




ESE726, ESR736 SERIES

Workpiece	Hardened Steels Heat Resistant Steels		Hardened Steels									
Hardness	HRC30 ~ HRC40		HRC40 ~ HRC50		HRC50 ~ HRC55		HRC55 ~ HRC60		HRC60 ~ HRC65		HRC 65 ~ HRC70	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
6	24,800	5,350	23,500	4,900	16,000	4,900	13,500	3,300	10,500	2,100	8,000	1,450
8	20,000	5,500	19,000	5,000	12,000	4,600	10,000	3,100	8,000	2,000	6,000	1,400
10	16,000	4,900	15,500	4,500	9,500	4,100	8,000	2,900	6,400	1,800	4,800	1,300
12	13,000	4,500	12,500	4,100	8,000	3,800	6,600	2,500	5,300	1,600	4,000	1,150
16	10,000	4,000	9,700	3,700	6,000	3,400	5,000	2,300	4,000	1,250	3,000	870
20	8,000	3,350	7,800	3,400	4,800	3,200	4,000	2,100	3,200	1,020	2,400	690

RPM = rev / min
FEED = mm / min



ESRE712 SERIES ► Side Cutting

Workpiece		Carbon Steels, Alloy Steels (SCM, SNCM, S45C)			Prehardened Steels (NAK, CENA, KP4)			Hardened Steels (SKD, SKT, STAVAX)		
		~ HRc35			HRc35 ~ HRc45			HRc45 ~ HRc55		
Hardness		~ 1100N/mm2			1100 ~ 1500N/mm2			1500 ~ 2000N/mm2		
Strength		~ 1100N/mm2			1100 ~ 1500N/mm2			1500 ~ 2000N/mm2		
Diameter (mm)	Effective Length	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)
0.1	0.3	50,000	315	0.009	46,200	230	0.007	40,600	170	0.005
	0.5	50,000	315	0.006	46,200	230	0.005	40,600	170	0.004
	1	45,000	255	0.002	41,580	185	0.002	36,540	140	0.001
0.2	0.5	38,500	380	0.018	36,300	270	0.014	32,100	200	0.01
	1	38,500	380	0.013	36,300	270	0.01	32,100	200	0.007
	1.5	34,650	310	0.007	32,670	220	0.006	28,890	160	0.004
	2	34,650	310	0.005	32,670	220	0.004	28,890	160	0.003
0.3	1	34,200	390	0.019	32,300	270	0.015	28,500	230	0.011
	1.5	34,200	390	0.019	32,300	270	0.015	25,800	230	0.011
	2	30,780	315	0.011	29,070	220	0.008	25,650	185	0.006
	2.5	30,780	315	0.007	29,070	220	0.005	25,650	185	0.004
	3	30,780	315	0.007	29,070	220	0.005	25,650	185	0.004
	4	27,360	250	0.004	25,840	175	0.003	22,800	145	0.002
	5	20,520	165	0.003	19,380	115	0.002	17,100	95	0.002
0.4	1	27,400	540	0.036	25,800	380	0.028	22,800	280	0.02
	1.5	27,400	540	0.025	25,800	380	0.02	22,800	280	0.014
	2	27,400	540	0.025	25,800	380	0.02	22,800	280	0.014
	2.5	24,660	435	0.014	23,220	310	0.011	20,520	225	0.008
	3	24,660	435	0.014	23,220	310	0.011	20,520	225	0.008
	4	24,660	435	0.009	23,220	310	0.007	20,520	225	0.005
	5	21,920	345	0.009	20,640	245	0.007	18,240	180	0.005
	6	21,920	345	0.005	20,640	245	0.004	18,240	180	0.003
	8	16,440	225	0.004	15,480	160	0.003	13,680	120	0.002
	10	8,220	95	0.004	7,740	70	0.003	6,840	50	0.002
0.5	1	27,400	540	0.045	25,800	425	0.035	22,800	285	0.025
	1.5	27,400	540	0.045	25,800	425	0.035	22,800	285	0.025
	2	27,400	540	0.032	25,800	425	0.025	22,800	285	0.018
	2.5	27,400	540	0.032	25,800	425	0.025	22,800	285	0.018
	3	24,660	435	0.018	23,220	345	0.014	20,520	230	0.01
	4	24,660	435	0.018	23,220	345	0.014	20,520	230	0.01
	5	24,660	435	0.011	23,220	345	0.009	20,520	230	0.006
	6	21,920	345	0.011	20,640	270	0.009	18,240	180	0.006
	8	16,440	225	0.007	15,480	180	0.005	13,680	120	0.004
	10	16,440	225	0.005	15,480	180	0.004	13,680	120	0.003
	12	8,220	95	0.005	7,740	75	0.004	6,840	50	0.003
	14	8,220	95	0.005	7,740	75	0.004	6,840	50	0.003
	16	2,740	25	0.005	2,580	20	0.004	2,280	15	0.003
0.6	2	27,400	775	0.038	25,800	545	0.029	22,800	405	0.021
	3	27,400	775	0.038	25,800	545	0.029	22,800	405	0.021
	4	24,660	630	0.022	23,220	440	0.017	20,520	330	0.012
	5	24,660	630	0.014	23,220	440	0.011	20,520	330	0.008
	6	24,660	630	0.014	23,220	440	0.011	20,520	330	0.008
	8	21,920	495	0.008	20,640	350	0.006	18,240	260	0.005

Technical Data

ESRE712 SERIES ► Side Cutting

Workpiece		Carbon Steels, Alloy Steels (SCM, SNCM, S45C)			Prehardened Steels (NAK, CENA, KP4)			Hardened Steels (SKD, SKT, STAVAX)		
		~ HRC35			HRC35 ~ HRC45			HRC45 ~ HRC55		
Strength		~ 1100N/mm2			1100 ~ 1500N/mm2			1500 ~ 2000N/mm2		
Diameter (mm)	Effective Length	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)
0.6	10	16,440	325	0.005	15,480	230	0.004	13,680	170	0.003
	12	16,440	325	0.005	15,480	230	0.004	13,680	170	0.003
	14	8,220	140	0.005	7,740	100	0.004	6,840	75	0.003
	16	8,220	140	0.005	7,740	100	0.004	6,840	75	0.003
0.7	2	27,400	775	0.063	25,800	545	0.049	22,800	405	0.035
	4	24,660	630	0.025	23,220	440	0.02	20,520	330	0.014
	6	24,660	630	0.016	23,220	440	0.012	20,520	330	0.009
	8	21,920	495	0.016	20,640	350	0.012	18,240	260	0.009
	10	21,920	495	0.009	20,640	350	0.007	18,240	260	0.005
	12	16,440	325	0.009	15,480	230	0.005	13,680	170	0.004
0.8	2	27,400	775	0.072	25,800	605	0.056	22,800	450	0.04
	3	27,400	775	0.05	25,800	605	0.039	22,800	450	0.028
	4	27,400	775	0.05	25,800	605	0.039	22,800	450	0.028
	5	24,660	630	0.029	23,220	490	0.022	20,520	365	0.016
	6	24,660	630	0.029	23,220	490	0.022	20,520	365	0.016
	8	24,660	630	0.018	23,220	490	0.014	20,520	365	0.01
	10	21,920	495	0.018	20,640	385	0.014	18,240	290	0.01
	12	21,920	495	0.011	20,640	385	0.008	18,240	290	0.006
	14	16,440	325	0.007	15,480	255	0.006	13,680	190	0.004
	16	16,440	325	0.007	15,480	255	0.006	13,680	190	0.004
0.9	20	8,220	140	0.007	7,740	110	0.006	6,840	80	0.004
	6	22,140	575	0.032	20,970	440	0.025	18,450	330	0.018
	8	22,140	575	0.02	20,970	440	0.016	18,450	330	0.011
1	10	19,680	455	0.02	18,640	350	0.016	16,400	260	0.011
	2	24,600	1,045	0.09	23,300	890	0.07	20,500	665	0.05
	3	24,600	1,045	0.09	23,300	890	0.07	20,500	665	0.05
	4	24,600	1,045	0.063	23,300	890	0.049	20,500	665	0.035
	5	24,600	1,045	0.063	23,300	890	0.049	20,500	665	0.035
	6	22,140	845	0.036	20,970	720	0.028	18,450	540	0.02
	7	22,140	845	0.036	20,970	720	0.028	18,450	540	0.02
	8	22,140	845	0.036	20,970	720	0.028	18,450	540	0.02
	10	22,140	845	0.023	20,970	720	0.018	18,450	540	0.013
	12	19,680	670	0.023	18,640	570	0.018	16,400	425	0.013
	14	19,680	670	0.014	18,640	570	0.011	16,400	425	0.008
	16	14,760	440	0.014	13,980	375	0.011	12,300	280	0.008
	18	14,760	440	0.009	13,980	375	0.007	12,300	280	0.005
	20	14,760	440	0.009	13,980	375	0.007	12,300	280	0.005
	22	7,380	190	0.009	6,990	160	0.007	6,150	120	0.005
	26	7,380	190	0.009	6,990	160	0.007	6,150	120	0.005
	30	7,380	190	0.009	6,990	160	0.007	6,150	120	0.005
	40	2,460	50	0.009	2,330	45	0.007	2,050	35	0.005
	50	2,460	50	0.006	2,330	45	0.005	2,050	35	0.003
1.2	4	21,900	930	0.076	20,700	720	0.059	18,200	485	0.042



■ ESRE712 SERIES ► Side Cutting

Workpiece		Carbon Steels, Alloy Steels (SCM, SNCM, S45C)			Prehardened Steels (NAK, CENA, KP4)			Hardened Steels (SKD, SKT, STAVAX)		
		~ HRc35			HRc35 ~ HRc45			HRc45 ~ HRc55		
Strength		~ 1100N/mm2			1100 ~ 1500N/mm2			1500 ~ 2000N/mm2		
Diameter (mm)	Effective Length	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)
1.2	6	21,900	930	0.076	20,700	720	0.059	18,200	485	0.042
	8	19,710	755	0.043	18,630	585	0.034	16,380	395	0.024
	10	19,710	755	0.027	18,630	585	0.021	16,380	395	0.015
	12	19,710	755	0.027	18,630	585	0.021	16,380	395	0.015
	14	17,520	595	0.027	16,560	460	0.021	14,560	310	0.015
	16	17,520	595	0.016	16,560	460	0.013	14,560	310	0.009
	20	13,140	390	0.011	12,420	300	0.008	10,920	205	0.006
	26	6,570	165	0.011	6,210	130	0.008	5,460	85	0.006
1.4	30	6,570	165	0.011	6,210	130	0.008	5,460	85	0.006
	6	19,200	815	0.088	18,100	570	0.069	16,000	425	0.049
	8	17,280	660	0.05	16,290	460	0.039	14,400	345	0.028
	10	17,280	660	0.05	16,290	460	0.039	14,400	345	0.028
	14	17,280	660	0.032	16,290	460	0.025	14,400	345	0.018
	16	15,360	520	0.032	14,480	365	0.025	12,800	270	0.018
	20	15,360	520	0.019	14,480	365	0.015	12,800	270	0.011
1.5	4	19,200	905	0.135	18,100	635	0.105	16,000	475	0.075
	5	19,200	905	0.095	18,100	635	0.074	16,000	475	0.053
	6	19,200	905	0.095	18,100	635	0.074	16,000	475	0.053
	7	19,200	905	0.095	18,100	635	0.074	16,000	475	0.053
	8	17,280	735	0.054	16,290	515	0.042	14,400	385	0.03
	10	17,280	735	0.054	16,290	515	0.042	14,400	385	0.03
	12	17,280	735	0.054	16,290	515	0.042	14,400	385	0.03
	14	17,280	735	0.034	16,290	515	0.026	14,400	385	0.019
	16	15,360	580	0.034	14,480	405	0.026	12,800	305	0.019
	18	15,360	580	0.034	14,480	405	0.026	12,800	305	0.019
	20	15,360	580	0.02	14,480	405	0.016	12,800	305	0.011
	22	15,360	580	0.02	14,480	405	0.016	12,800	305	0.011
	26	11,520	380	0.014	10,860	265	0.011	9,600	200	0.008
	30	11,520	380	0.014	10,860	265	0.011	9,600	200	0.008
1.6	8	17,800	840	0.101	16,800	655	0.078	14,800	490	0.056
	10	16,020	680	0.058	15,120	530	0.045	13,320	395	0.032
	12	16,020	680	0.058	15,120	530	0.045	13,320	395	0.032
	16	16,020	680	0.036	15,120	530	0.028	13,320	395	0.02
	20	14,240	540	0.036	13,440	420	0.028	11,840	315	0.02
1.8	8	17,800	840	0.113	16,800	655	0.088	14,800	490	0.063
	10	16,020	680	0.065	15,120	530	0.05	13,320	395	0.036
	12	16,020	680	0.065	15,120	530	0.05	13,320	395	0.036
	16	16,020	680	0.041	15,120	530	0.032	13,320	395	0.023
	20	14,240	540	0.041	13,440	420	0.032	11,840	315	0.023
2	6	14,400	820	0.18	13,600	620	0.14	12,000	475	0.1
	8	14,400	820	0.126	13,600	620	0.098	12,000	475	0.07
	10	14,400	820	0.126	13,600	620	0.098	12,000	475	0.07
	12	12,960	665	0.072	12,240	500	0.056	10,800	385	0.04

Technical Data

ESRE712 SERIES ► Side Cutting

Workpiece		Carbon Steels, Alloy Steels (SCM, SNCM, S45C)			Prehardened Steels (NAK, CENA, KP4)			Hardened Steels (SKD, SKT, STAVAX)		
		~ HRC35			HRC35 ~ HRC45			HRC45 ~ HRC55		
Strength		~ 1100N/mm2			1100 ~ 1500N/mm2			1500 ~ 2000N/mm2		
Diameter (mm)	Effective Length	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)
2	14	12,960	665	0.072	12,240	500	0.056	10,800	385	0.04
	16	12,960	665	0.072	12,240	500	0.056	10,800	385	0.04
	18	12,960	665	0.045	12,240	500	0.035	10,800	385	0.025
	20	12,960	665	0.045	12,240	500	0.035	10,800	385	0.025
	22	11,520	525	0.045	10,880	395	0.035	9,600	305	0.025
	26	11,520	525	0.045	10,880	395	0.035	9,600	305	0.025
	30	11,520	525	0.027	10,880	395	0.021	9,600	305	0.015
	35	8,640	345	0.018	8,160	260	0.014	7,200	200	0.01
	40	8,640	345	0.018	8,160	260	0.014	7,200	200	0.01
	45	4,320	150	0.018	4,080	110	0.014	3,600	85	0.01
	50	4,320	150	0.018	4,080	110	0.014	3,600	85	0.01
	60	4,320	150	0.018	4,080	110	0.014	3,600	85	0.01
2.5	8	12,300	970	0.158	11,600	680	0.123	10,300	510	0.088
	10	12,300	970	0.158	11,600	680	0.123	10,300	510	0.088
	12	12,300	970	0.158	11,600	680	0.123	10,300	510	0.088
	14	11,070	785	0.09	10,440	550	0.07	9,270	415	0.05
	16	11,070	785	0.09	10,440	550	0.07	9,270	415	0.05
	18	11,070	785	0.09	10,440	550	0.07	9,270	415	0.05
	20	11,070	785	0.09	10,440	550	0.07	9,270	415	0.05
	22	11,070	785	0.056	10,440	550	0.044	9,270	415	0.031
	26	9,840	620	0.056	9,280	435	0.044	8,240	325	0.031
	30	9,840	620	0.056	9,280	435	0.044	8,240	325	0.031
	35	9,840	620	0.034	9,280	435	0.026	8,240	325	0.019
	40	7,380	405	0.034	6,960	285	0.026	6,180	215	0.019
	45	7,380	405	0.023	6,960	285	0.018	6,180	215	0.013
	50	7,380	405	0.023	6,960	285	0.018	6,180	215	0.013
3	6	10,900	860	0.27	10,300	605	0.21	6,600	450	0.15
	8	10,900	860	0.27	10,300	605	0.21	6,600	450	0.15
	10	10,900	860	0.189	10,300	605	0.147	6,600	450	0.105
	12	10,900	860	0.189	10,300	605	0.147	6,600	450	0.105
	14	10,900	860	0.189	10,300	605	0.147	6,600	450	0.105
	16	9,810	695	0.108	9,270	490	0.084	5,940	365	0.06
	18	9,810	695	0.108	9,270	490	0.084	5,940	365	0.06
	20	9,810	695	0.108	9,270	490	0.084	5,940	365	0.06
	22	9,810	695	0.108	9,270	490	0.084	5,940	365	0.06
	26	9,810	695	0.068	9,270	490	0.053	5,940	365	0.038
	30	9,810	695	0.068	9,270	490	0.053	5,940	365	0.038
	35	8,720	550	0.068	8,240	385	0.053	5,280	290	0.038
	40	8,720	550	0.041	8,240	385	0.032	5,280	290	0.023
	45	8,720	550	0.041	8,240	385	0.032	5,280	290	0.023
	50	6,540	360	0.027	6,180	255	0.021	3,960	190	0.015
	60	6,540	360	0.027	6,180	255	0.021	3,960	190	0.015
4	8	8,000	1,300	0.36	7,600	1,160	0.28	6,700	770	0.2



■ ESRE712 SERIES ► Side Cutting

Workpiece		Carbon Steels, Alloy Steels (SCM, SNCM, S45C)			Prehardened Steels (NAK, CENA, KP4)			Hardened Steels (SKD, SKT, STAVAX)		
		~ HRC35			HRC35 ~ HRC45			HRC45 ~ HRC55		
Hardness		~ 1100N/mm2			1100 ~ 1500N/mm2			1500 ~ 2000N/mm2		
Strength		~ 1100N/mm2			1100 ~ 1500N/mm2			1500 ~ 2000N/mm2		
Diameter (mm)	Effective Length	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)
4	10	8,000	1,300	0.36	7,600	1,160	0.28	6,700	770	0.2
	12	8,000	1,300	0.36	7,600	1,160	0.28	6,700	770	0.2
	14	8,000	1,300	0.252	7,600	1,160	0.196	6,700	770	0.14
	16	8,000	1,300	0.252	7,600	1,160	0.196	6,700	770	0.14
	18	8,000	1,300	0.252	7,600	1,160	0.196	6,700	770	0.14
	20	8,000	1,300	0.252	7,600	1,160	0.196	6,700	770	0.14
	22	7,200	1,055	0.144	6,840	940	0.112	6,030	625	0.08
	26	7,200	1,055	0.144	6,840	940	0.112	6,030	625	0.08
	30	7,200	1,055	0.144	6,840	940	0.112	6,030	625	0.08
	35	7,200	1,055	0.09	6,840	940	0.07	6,030	625	0.05
	40	7,200	1,055	0.09	6,840	940	0.07	6,030	625	0.05
	45	6,400	830	0.09	6,080	740	0.07	5,360	495	0.05
	50	6,400	830	0.09	6,080	740	0.07	5,360	495	0.05
	60	6,400	830	0.054	6,080	740	0.042	5,360	495	0.03
5	16	6,400	1,155	0.315	6,100	900	0.245	5,400	605	0.175
	20	6,400	1,155	0.315	6,100	900	0.245	5,400	605	0.175
	26	5,760	935	0.18	5,490	730	0.14	4,860	490	0.1
	30	5,760	935	0.18	5,490	730	0.14	4,860	490	0.1
	35	5,760	935	0.18	5,490	730	0.14	4,860	490	0.1
	40	5,760	935	0.18	5,490	730	0.14	4,860	490	0.1
	50	5,760	935	0.113	5,490	730	0.088	4,860	490	0.063
6	60	5,120	740	0.113	4,880	575	0.088	4,320	385	0.063
	15	5,300	1,055	0.54	5,000	820	0.42	4,400	550	0.3
	20	5,300	1,055	0.378	5,000	820	0.294	4,400	550	0.21
	30	5,300	1,055	0.378	5,000	820	0.294	4,400	550	0.21
8	32	4,770	855	0.216	4,500	665	0.168	3,960	445	0.12
	25	4,000	950	0.504	3,800	750	0.392	3,300	500	0.28
	30	4,000	950	0.504	3,800	750	0.392	3,300	500	0.28
10	42	3,600	770	0.288	3,400	605	0.224	2,950	405	0.16
	30	3,200	900	0.9	3,050	680	0.7	2,630	400	0.5
	35	3,200	900	0.63	3,050	680	0.49	2,630	400	0.35
12	45	3,200	900	0.63	3,050	680	0.49	2,630	400	0.35
	35	2,650	800	1.08	2,520	600	0.84	2,180	350	0.6
	40	2,650	800	0.756	2,520	600	0.588	2,180	350	0.42
12	50	2,650	800	0.756	2,520	600	0.588	2,180	350	0.42

RPM = rev / min
FEED = mm / min



Technical Data

ESRE714 SERIES

Workpiece		Carbon Steels, Alloy Steels (SCM, SNCM, S45C)			Prehardened Steels (NAK, CENA, KP4)			Hardened Steels (SKD, SKT, STAVAX)		
		~ HRC35			HRC35 ~ HRC45			HRC45 ~ HRC55		
Hardness		~ 1100N/mm2			1100 ~ 1500N/mm2			1500 ~ 2000N/mm2		
Strength		~ 1100N/mm2			1100 ~ 1500N/mm2			1500 ~ 2000N/mm2		
Diameter (mm)	Effective Length	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)
0.5	1	27,400	756	0.045	25,800	595	0.035	22,800	399	0.025
	2	27,400	756	0.032	25,800	595	0.025	22,800	399	0.018
	3	24,660	609	0.018	23,220	483	0.014	20,520	322	0.01
	4	24,660	609	0.018	23,220	483	0.014	20,520	322	0.01
	5	24,660	609	0.011	23,220	483	0.009	20,520	322	0.006
	6	21,920	483	0.011	20,640	378	0.009	18,240	252	0.006
	8	16,440	315	0.007	15,480	252	0.005	13,680	168	0.004
	10	16,440	315	0.005	15,480	252	0.004	13,680	168	0.003
0.6	1	27,400	1,085	0.038	25,800	763	0.029	22,800	567	0.021
	2	27,400	1,085	0.038	25,800	763	0.029	22,800	567	0.021
	3	27,400	1,085	0.038	25,800	763	0.029	22,800	567	0.021
	4	24,660	882	0.022	23,220	616	0.017	20,520	462	0.012
	5	24,660	882	0.014	23,220	616	0.011	20,520	462	0.008
	6	24,660	882	0.014	23,220	616	0.011	20,520	462	0.008
	8	21,920	693	0.008	20,640	490	0.006	18,240	364	0.005
	10	16,440	455	0.005	15,480	322	0.004	13,680	238	0.003
0.7	2	27,400	1,085	0.063	25,800	763	0.049	22,800	567	0.035
	4	24,660	882	0.025	23,220	616	0.02	20,520	462	0.014
	6	24,660	882	0.016	23,220	616	0.012	20,520	462	0.009
	8	21,920	693	0.016	20,640	490	0.012	18,240	364	0.009
	10	21,920	693	0.009	20,640	490	0.007	18,240	364	0.005
0.8	1	27,400	1,085	0.072	25,800	847	0.056	22,800	630	0.04
	2	27,400	1,085	0.072	25,800	847	0.056	22,800	630	0.04
	3	27,400	1,085	0.05	25,800	847	0.039	22,800	630	0.028
	4	27,400	1,085	0.05	25,800	847	0.039	22,800	630	0.028
	5	24,660	882	0.029	23,220	686	0.022	20,520	511	0.016
	6	24,660	882	0.029	23,220	686	0.022	20,520	511	0.016
	8	24,660	882	0.018	23,220	686	0.014	20,520	511	0.01
	10	21,920	693	0.018	20,640	539	0.014	18,240	406	0.01
	12	21,920	693	0.011	20,640	539	0.008	18,240	406	0.006
	16	16,440	455	0.007	15,480	357	0.006	13,680	266	0.004
1	2	24,600	1,463	0.09	23,300	1,246	0.07	20,500	931	0.05
	3	24,600	1,463	0.09	23,300	1,246	0.07	20,500	931	0.05
	4	24,600	1,463	0.063	23,300	1,246	0.049	20,500	931	0.035
	6	22,140	1,183	0.036	20,970	1,008	0.028	18,450	756	0.02
	8	22,140	1,183	0.036	20,970	1,008	0.028	18,450	756	0.02
	10	22,140	1,183	0.023	20,970	1,008	0.018	18,450	756	0.013
	12	19,680	938	0.023	18,640	798	0.018	16,400	595	0.013
	14	19,680	938	0.014	18,640	798	0.011	16,400	595	0.008
	16	14,760	616	0.014	13,980	525	0.011	12,300	392	0.008
	18	14,760	616	0.009	13,980	525	0.007	12,300	392	0.005
	20	14,760	616	0.009	13,980	525	0.007	12,300	392	0.005



■ ESRE714 SERIES

Workpiece		Carbon Steels, Alloy Steels (SCM, SNCM, S45C)			Prehardened Steels (NAK, CENA, KP4)			Hardened Steels (SKD, SKT, STAVAX)		
		~ HRc35			HRc35 ~ HRc45			HRc45 ~ HRc55		
Hardness		~ 1100N/mm2			1100 ~ 1500N/mm2			1500 ~ 2000N/mm2		
Strength		~ 1100N/mm2			1100 ~ 1500N/mm2			1500 ~ 2000N/mm2		
Diameter (mm)	Effective Length	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)
1.2	4	21,900	1,302	0.076	20,700	1,008	0.059	18,200	679	0.042
	6	21,900	1,302	0.076	20,700	1,008	0.059	18,200	679	0.042
	8	19,710	1,057	0.043	18,630	819	0.034	16,380	553	0.024
	10	19,710	1,057	0.027	18,630	819	0.021	16,380	553	0.015
	12	19,710	1,057	0.027	18,630	819	0.021	16,380	553	0.015
	16	17,520	833	0.016	16,560	644	0.013	14,560	434	0.009
	18	17,520	833	0.016	16,560	644	0.013	14,560	434	0.009
	20	13,140	546	0.011	12,420	420	0.008	10,920	287	0.006
1.4	6	19,200	1,141	0.088	18,100	798	0.069	16,000	595	0.049
	8	17,280	924	0.05	16,290	644	0.039	14,400	483	0.028
	10	17,280	924	0.05	16,290	644	0.039	14,400	483	0.028
	12	17,280	924	0.05	16,290	644	0.039	14,400	483	0.028
	14	17,280	924	0.032	16,290	644	0.025	14,400	483	0.018
	16	15,360	728	0.032	14,480	511	0.025	12,800	378	0.018
1.5	4	19,200	1,267	0.135	18,100	889	0.105	16,000	665	0.075
	6	19,200	1,267	0.095	18,100	889	0.074	16,000	665	0.053
	8	17,280	1,029	0.054	16,290	721	0.042	14,400	539	0.03
	10	17,280	1,029	0.054	16,290	721	0.042	14,400	539	0.03
	12	17,280	1,029	0.054	16,290	721	0.042	14,400	539	0.03
	16	15,360	812	0.034	14,480	567	0.026	12,800	427	0.019
	18	15,360	812	0.034	14,480	567	0.026	12,800	427	0.019
	20	15,360	812	0.02	14,480	567	0.016	12,800	427	0.011
	25	11,520	532	0.014	10,860	371	0.011	9,600	280	0.008
	30	11,520	532	0.014	10,860	371	0.011	9,600	280	0.008
1.6	6	17,800	1,176	0.101	16,800	917	0.078	14,800	686	0.056
	8	17,800	1,176	0.101	16,800	917	0.078	14,800	686	0.056
	10	16,020	952	0.058	15,120	742	0.045	13,320	553	0.032
	12	16,020	952	0.058	15,120	742	0.045	13,320	553	0.032
	14	16,020	952	0.058	15,120	742	0.045	13,320	553	0.032
	16	16,020	952	0.036	15,120	752	0.028	13,320	553	0.02
	18	16,020	952	0.036	15,120	752	0.028	13,320	553	0.02
	20	14,240	756	0.036	13,440	588	0.028	11,840	441	0.02
	25	14,240	756	0.036	13,440	588	0.028	11,840	441	0.02
1.8	6	17,800	1,176	0.113	16,800	917	0.088	14,800	686	0.063
	8	17,800	1,176	0.113	16,800	917	0.088	14,800	686	0.063
	10	16,020	952	0.065	15,120	742	0.05	13,320	553	0.036
	12	16,020	952	0.065	15,120	742	0.05	13,320	553	0.036
	16	16,020	952	0.041	15,120	742	0.032	13,320	553	0.023
	20	14,240	756	0.041	13,440	588	0.032	11,840	441	0.023
	25	14,240	756	0.041	13,440	588	0.032	11,840	441	0.023
2	4	14,400	1,148	0.18	13,600	868	0.14	12,000	665	0.1
	6	14,400	1,148	0.18	13,600	868	0.14	12,000	665	0.1
	8	14,400	1,148	0.126	13,600	868	0.098	12,000	665	0.07

Technical Data

ESRE714 SERIES

Workpiece		Carbon Steels, Alloy Steels (SCM, SNCM, S45C)			Prehardened Steels (NAK, CENA, KP4)			Hardened Steels (SKD, SKT, STAVAX)		
		~ HRC35			HRC35 ~ HRC45			HRC45 ~ HRC55		
Hardness		~ 1100N/mm2			1100 ~ 1500N/mm2			1500 ~ 2000N/mm2		
Strength		~ 1100N/mm2			1100 ~ 1500N/mm2			1500 ~ 2000N/mm2		
Diameter (mm)	Effective Length	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)
2	10	14,400	1,148	0.126	13,600	868	0.098	12,000	665	0.07
	12	12,960	931	0.072	12,240	700	0.056	10,800	539	0.04
	14	12,960	931	0.072	12,240	700	0.056	10,800	539	0.04
	16	12,960	931	0.072	12,240	700	0.056	10,800	539	0.04
	18	12,960	931	0.045	12,240	700	0.035	10,800	539	0.025
	20	12,960	931	0.045	12,240	700	0.035	10,800	539	0.025
	22	11,520	735	0.045	10,880	553	0.035	9,600	427	0.025
	25	11,520	735	0.045	10,880	553	0.035	9,600	427	0.025
	30	11,520	735	0.027	10,880	553	0.021	9,600	427	0.015
2.5	10	12,300	1,358	0.158	11,600	952	0.123	10,300	714	0.088
	12	12,300	1,358	0.158	11,600	952	0.123	10,300	714	0.088
	16	11,070	1,099	0.09	10,440	770	0.07	9,270	581	0.05
	20	11,070	1,099	0.09	10,440	770	0.07	9,270	581	0.05
	25	9,840	868	0.056	9,280	609	0.044	8,240	455	0.031
	30	9,840	868	0.056	9,280	609	0.044	8,240	455	0.031
3	6	10,900	1,204	0.27	10,300	847	0.21	6,600	630	0.15
	8	10,900	1,204	0.27	10,300	847	0.21	6,600	630	0.15
	10	10,900	1,204	0.189	10,300	847	0.147	6,600	630	0.105
	12	10,900	1,204	0.189	10,300	847	0.147	6,600	630	0.105
	16	9,810	973	0.108	9,270	686	0.084	5,940	511	0.06
	20	9,810	973	0.108	9,270	686	0.084	5,940	511	0.06
	25	9,810	973	0.068	9,270	686	0.053	5,940	511	0.038
	30	9,810	973	0.068	9,270	686	0.053	5,940	511	0.038
	35	8,720	770	0.068	8,240	539	0.053	5,280	406	0.038
	40	8,720	770	0.041	8,240	539	0.032	5,280	406	0.023
	45	8,720	770	0.041	8,240	539	0.032	5,280	406	0.023
	50	6,540	504	0.027	6,180	357	0.021	3,960	266	0.015
	60	6,540	504	0.027	6,180	357	0.021	3,960	266	0.015
3.5	12	9,310	1,430	0.236	8,800	1,008	0.183	5,640	750	0.131
	16	8,380	1,158	0.135	7,920	816	0.105	5,070	608	0.075
	20	8,380	1,158	0.135	7,920	816	0.105	5,070	608	0.047
	25	8,380	1,158	0.085	7,920	816	0.066	5,070	608	0.047
	30	8,380	1,158	0.085	7,920	816	0.066	5,070	608	0.047
	35	7,450	916	0.085	7,040	641	0.066	4,510	483	0.047
	40	7,450	916	0.051	7,040	641	0.04	4,510	483	0.028
4	6	8,000	1,820	0.36	7,600	1,624	0.28	6,700	1,078	0.2
	8	8,000	1,820	0.36	7,600	1,624	0.28	6,700	1,078	0.2
	10	8,000	1,820	0.36	7,600	1,624	0.28	6,700	1,078	0.2
	12	8,000	1,820	0.36	7,600	1,624	0.28	6,700	1,078	0.2
	16	8,000	1,820	0.252	7,600	1,624	0.196	6,700	1,078	0.14
	20	8,000	1,820	0.252	7,600	1,624	0.196	6,700	1,078	0.14
	25	7,200	1,477	0.144	6,840	1,316	0.112	6,030	875	0.08
	30	7,200	1,477	0.144	6,840	1,316	0.112	6,030	875	0.08



■ ESRE714 SERIES

Workpiece		Carbon Steels, Alloy Steels (SCM, SNCM, S45C)			Prehardened Steels (NAK, CENA, KP4)			Hardened Steels (SKD, SKT, STAVAX)		
		~ HRc35			HRc35 ~ HRc45			HRc45 ~ HRc55		
Hardness		~ 1100N/mm2			1100 ~ 1500N/mm2			1500 ~ 2000N/mm2		
Strength		~ 1100N/mm2			1100 ~ 1500N/mm2			1500 ~ 2000N/mm2		
Diameter (mm)	Effective Length	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)
4	40	7,200	1,477	0.09	6,840	1,316	0.07	6,030	875	0.05
	45	6,400	1,162	0.09	6,080	1,036	0.07	5,360	693	0.05
	50	6,400	1,162	0.09	6,080	1,036	0.07	5,360	693	0.05
	60	6,400	1,162	0.054	6,080	1,036	0.042	5,360	693	0.03
4.5	12	6,830	2,166	0.45	6,490	1,933	0.35	5,720	1283	0.25
	16	6,830	2,166	0.315	6,490	1,933	0.245	5,720	1283	0.175
	20	6,830	2,166	0.315	6,490	1,933	0.245	5,720	1283	0.175
	25	6,150	1,758	0.18	5,840	1,566	0.14	5,150	1041	0.1
	30	6,150	1,758	0.18	5,840	1,566	0.14	5,150	1041	0.1
	40	6,150	1,758	0.112	5,840	1,566	0.087	5,150	1041	0.062
5	16	6,400	1,617	0.315	6,100	1,260	0.245	5,400	847	0.175
	20	6,400	1,617	0.315	6,100	1,260	0.245	5,400	847	0.175
	25	5,760	1,309	0.18	5,490	1,022	0.14	4,860	686	0.1
	30	5,760	1,309	0.18	5,490	1,022	0.14	4,860	686	0.1
	40	5,760	1,309	0.18	5,490	1,022	0.14	4,860	686	0.1
	50	5,760	1,309	0.113	5,490	1,022	0.088	4,860	686	0.063
	60	5,120	1,036	0.113	4,880	805	0.088	4,320	539	0.063
6	20	5,300	1,477	0.378	5,000	1,148	0.294	4,400	770	0.21
	30	5,300	1,477	0.378	5,000	1,148	0.294	4,400	770	0.21
	40	4,770	1,197	0.216	4,500	931	0.168	3,960	623	0.12
	50	4,770	1,197	0.216	4,500	931	0.168	3,960	623	0.12
	60	4,370	958	0.141	4,171	931	0.11	3,690	623	0.078
8	25	4,000	1,330	0.504	3,800	1,050	0.392	3,300	700	0.28
	40	3,600	1,078	0.288	3,400	847	0.224	2,950	567	0.16
	50	3,600	1,078	0.288	3,400	847	0.224	2,950	567	0.16
10	30	3,200	1,260	0.9	3,050	952	0.7	2,630	560	0.5
	50	3,200	1,260	0.63	3,050	952	0.49	2,630	560	0.35
	60	3,200	1,260	0.63	3,050	952	0.49	2,630	560	0.35
12	40	2,650	1,120	0.756	2,520	840	0.588	2,180	490	0.42
	60	2,360	896	0.472	2,250	672	0.367	1,940	392	0.262
	70	2,360	896	0.472	2,250	672	0.367	1,940	392	0.262

RPM = rev / min
FEED = mm / min

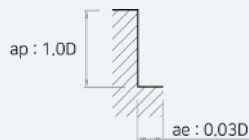


Technical Data

ESXE704, ESXE714. ESXR704 SERIES ► Side Cutting

Workpiece	Hardened Steels Heat Resistant Steels		Hardened Steels							
Hardness	HRc40 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc60 ~ HRc65		HRc 65 ~ HRc70	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
4	17,200	1,690	11,440	1,140	9,360	700	7,280	430	6,170	310
6	13,450	1,820	8,970	1,230	6,890	720	5,460	450	4,810	330
8	9,100	1,750	6,760	1,170	5,200	670	4,160	420	3,640	310
10	8,000	1,630	5,330	1,090	4,160	620	3,320	400	2,860	280
12	6,830	1,630	4,550	1,010	3,450	580	2,730	370	2,420	260

RPM = rev / min
FEED = mm / min



ESLNS20, ESLNS40 SERIES

Workpiece	Alloy Steels, Heat Resistant Steels			Hardened Steels			Hardened Steels			Copper, Copper alloy		
Hardness	HRc30 ~ HRc45			HRc45 ~ HRc55			HRc55 ~ HRc65			-		
Diameter (mm)	RPM	FEED	Ae (mm)	RPM	FEED	Ae (mm)	RPM	FEED	Ae (mm)	RPM	FEED	Ae (mm)
0.4	34,100 ~ 50,000	350 ~ 590	0.005 ~ 0.028	30,500 ~ 35,200	295 ~ 340	0.003 ~ 0.020	18,300 ~ 24,600	120 ~ 200	0.002 ~ 0.012	48,000 ~ 50,000	790 ~ 920	0.008 ~ 0.048
0.5	25,650 ~ 33,000	370 ~ 470	0.006 ~ 0.035	23,750 ~ 26,000	285 ~ 315	0.004 ~ 0.025	14,200 ~ 18,000	115 ~ 130	0.003 ~ 0.015	44,000 ~ 50,000	800 ~ 1,150	0.010 ~ 0.060
0.6	20,900 ~ 35,200	330 ~ 560	0.007 ~ 0.030	19,900 ~ 22,000	260 ~ 290	0.005 ~ 0.021	11,900 ~ 15,500	100 ~ 120	0.003 ~ 0.013	37,500 ~ 50,000	770 ~ 1,250	0.011 ~ 0.051
0.8	16,150 ~ 26,400	360 ~ 590	0.009 ~ 0.040	15,200 ~ 16,700	280 ~ 310	0.006 ~ 0.028	9,000 ~ 11,700	110 ~ 125	0.004 ~ 0.017	28,500 ~ 47,000	770 ~ 1,300	0.015 ~ 0.068
1	12,300 ~ 18,700	350 ~ 540	0.011 ~ 0.028	10,500 ~ 11,500	250 ~ 280	0.008 ~ 0.020	6,300 ~ 8,050	100 ~ 115	0.005 ~ 0.012	22,500 ~ 34,000	810 ~ 1,300	0.018 ~ 0.048
1.2	10,450 ~ 17,600	350 ~ 590	0.025 ~ 0.070	9,100 ~ 10,000	250 ~ 280	0.015 ~ 0.042	5,400 ~ 7,000	100 ~ 115	0.009 ~ 0.026	22,500 ~ 31,500	950 ~ 1,350	0.036 ~ 0.101
1.5	9,100 ~ 17,600	430 ~ 830	0.017 ~ 0.077	7,000 ~ 8,000	250 ~ 280	0.012 ~ 0.055	4,300 ~ 5,500	100 ~ 115	0.007 ~ 0.033	14,500 ~ 25,000	770 ~ 1,320	0.028 ~ 0.132
2	6,350 ~ 10,550	340 ~ 570	0.021 ~ 0.140	6,100 ~ 6,700	270 ~ 300	0.015 ~ 0.100	3,600 ~ 4,700	100 ~ 120	0.009 ~ 0.060	11,500 ~ 18,500	770 ~ 1,250	0.036 ~ 0.240
3	4,300 ~ 7,050	550 ~ 900	0.056 ~ 0.210	3,990 ~ 4,600	445 ~ 515	0.040 ~ 0.150	2,400 ~ 3,200	105 ~ 310	0.024 ~ 0.090	9,000 ~ 13,000	1,400 ~ 2,110	0.096 ~ 0.360
4	3,200 ~ 5,300	400 ~ 675	0.074 ~ 0.280	3,000 ~ 3,400	335 ~ 380	0.053 ~ 0.200	1,800 ~ 2,400	75 ~ 230	0.032 ~ 0.120	6,750 ~ 9,750	1,050 ~ 1,575	0.128 ~ 0.480

RPM = rev / min
FEED = mm / min

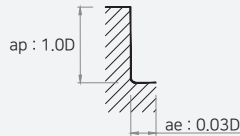




■ ESR702 SERIES ► Side Cutting

Workpiece	Hardened Steels Heat Resistant Steels		Hardened Steels									
Hardness	HRC30 ~ HRC40		HRC40 ~ HRC50		HRC50 ~ HRC55		HRC55 ~ HRC60		HRC60 ~ HRC65		HRC 65 ~ HRC70	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2	33,300	960	26,000	776	17,500	480	14,500	296	11,000	184	9,500	132
3	21,800	960	17,300	776	11,500	480	9,500	296	7,500	184	6,400	132
4	16,700	1,000	13,200	800	8,800	500	7,200	308	5,600	192	4,750	136
5	15,700	1,160	12,500	920	8,300	568	6,400	328	5,100	208	4,450	152
6	13,100	1,080	10,350	880	6,900	552	5,300	320	4,200	204	3,700	148
8	9,880	1,056	7,800	824	5,200	508	4,000	292	3,200	188	2,800	136
10	7,800	960	6,150	776	4,100	472	3,200	272	2,550	176	2,200	128
12	6,650	960	5,250	776	3,500	472	2,650	272	2,100	176	1,860	128
16	4,900	840	3,900	672	2,600	416	2,000	240	1,600	152	1,400	112
20	3,900	760	3,100	600	2,050	380	1,600	220	1,300	140	1,100	100

RPM = rev / min
FEED = mm / min



■ ESR702, ESR732 SERIES ► Slotting

Workpiece	Hardened Steels Heat Resistant Steels		Hardened Steels									
Hardness	HRC30 ~ HRC40		HRC40 ~ HRC50		HRC50 ~ HRC55		HRC55 ~ HRC60		HRC60 ~ HRC65		HRC 65 ~ HRC70	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2	33,300	680	26,000	544	17,500	336	14,500	208	11,000	128	9,500	92
3	21,800	680	17,300	544	11,500	336	9,500	208	7,500	128	6,400	92
4	16,700	704	13,200	560	8,800	352	7,200	216	5,600	136	4,750	94
5	15,700	800	12,500	644	8,300	400	6,400	228	5,100	144	4,450	106
6	13,100	760	10,350	616	6,900	384	5,300	224	4,200	144	3,700	104
8	9,880	744	7,800	576	5,200	356	4,000	204	3,200	132	2,800	96
10	7,800	680	6,150	544	4,100	332	3,200	192	2,550	124	2,200	90
12	6,650	680	5,250	544	3,500	332	2,650	192	2,100	124	1,860	90
16	4,900	584	3,900	464	2,600	292	2,000	168	1,600	108	1,400	78
20	3,900	528	3,100	420	2,050	268	1,600	168	1,300	100	1,100	70

RPM = rev / min
FEED = mm / min

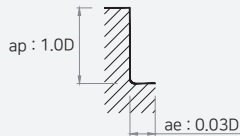


Technical Data

ESR704, ESR714, ERS724, ESR734 SERIES ► Side Cutting

Workpiece	Hardened Steels Heat Resistant Steels		Hardened Steels									
Hardness	HRc30 ~ HRc40		HRc40 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc60 ~ HRc65		HRc 65 ~ HRc70	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3	21,800	1,400	17,300	1,000	11,500	672	9,500	416	7,500	256	6,400	184
4	16,700	1,440	13,200	1,040	8,800	704	7,200	432	5,600	268	4,750	192
5	15,700	1,600	12,500	1,200	8,300	800	6,400	464	5,100	296	4,450	216
6	13,100	1,560	10,350	1,120	6,900	760	5,300	448	4,200	280	3,700	208
8	9,880	1,504	7,800	1,080	5,200	720	4,000	416	3,200	264	2,800	192
10	7,800	1,400	6,150	1,008	4,100	672	3,200	384	2,550	248	2,200	176
12	6,650	1,400	5,250	1,008	3,500	672	2,650	384	2,100	240	1,860	176
16	4,900	1,200	3,900	880	2,600	584	2,000	336	1,600	216	1,400	160
20	3,900	1,040	3,100	776	2,050	520	1,600	304	1,300	200	1,100	144

RPM = rev / min
FEED = mm / min



ESR706 SERIES

Workpiece	Hardened Steels Heat Resistant Steels		Hardened Steels									
Hardness	HRc30 ~ HRc40		HRc40 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc60 ~ HRc65		HRc 65 ~ HRc70	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
6	24,800	5,350	23,500	4,900	16,000	4,900	13,500	3,300	10,500	2,100	8,000	1,450
8	20,000	5,500	19,000	5,000	12,000	4,600	10,000	3,100	8,000	2,000	6,000	1,400
10	16,000	4,900	15,500	4,500	9,500	4,100	8,000	2,900	6,400	1,800	4,800	1,300
12	13,000	4,500	12,500	4,100	8,000	3,800	6,600	2,500	5,300	1,600	4,000	1,150
16	10,000	4,000	9,700	3,700	6,000	3,400	5,000	2,300	4,000	1,250	3,000	870
20	8,000	3,350	7,800	3,400	4,800	3,200	4,000	2,100	3,200	1,020	2,400	690

RPM = rev / min
FEED = mm / min





ESRR712 SERIES

Workpiece				Carbon Steels, Alloy Steels (180~250HB)		Prehardened Steels (HRC35~45)		Hardened Steels (HRC45~55)		Hardened Steels (HRC55~65)	
Ratio to standard depth of cut				Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%	
Mill Dia (mm)	Diameter (mm)	Neck Length (mm)	Depth of Cut (mm)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)
0.2	0.02	0.5	0.016	50,000	258	50,000	205	50,000	180	50,000	160
		1	0.011	50,000	258	50,000	205	50,000	180	50,000	160
		1.5	0.007	42,000	202	36,700	176	36,700	162	36,700	147
	0.05	0.5	0.02	50,000	258	50,000	205	50,000	180	50,000	160
		1	0.014	50,000	258	50,000	205	50,000	180	50,000	160
		1.5	0.008	50,000	240	45,900	202	45,900	170	45,900	153
0.3	0.02	1	0.016	50,000	585	50,000	456	50,000	336	50,000	320
		2	0.011	45,000	530	45,000	420	45,000	300	45,000	290
		3	0.007	35,000	412	35,000	326	30,000	200	30,000	194
	0.05	1	0.021	50,000	585	50,000	456	50,000	336	50,000	320
		2	0.012	45,000	530	45,000	420	45,000	300	45,000	290
		3	0.008	35,000	412	35,000	326	30,000	200	30,000	194
0.4	0.02	1	0.016	50,000	580	50,000	461	40,000	320	36,000	270
		2	0.013	45,000	520	45,000	410	36,000	290	34,000	240
		3	0.01	40,000	410	40,000	330	32,800	240	25,600	200
		4	0.007	30,000	320	30,000	250	21,600	160	19,200	150
	0.05	1	0.025	50,000	580	50,000	461	40,000	320	36,000	270
		2	0.016	45,000	520	45,000	410	36,000	290	34,000	240
		3	0.014	40,000	410	40,000	330	32,800	240	25,600	200
		4	0.008	30,000	320	30,000	250	21,600	160	19,200	150
	0.1	1	0.033	50,000	580	50,000	461	40,000	320	36,000	270
		1.5	0.03	50,000	580	50,000	461	40,000	320	36,000	270
		2	0.028	45,000	520	45,000	410	36,000	290	34,000	240
		3	0.016	40,000	410	40,000	330	32,800	240	25,600	200
		4	0.01	30,000	320	30,000	250	21,600	160	19,200	150
0.5	0.02	1	0.016	50,000	898	40,000	464	30,000	378	28,000	315
		1.5	0.014	50,000	898	40,000	464	30,000	378	28,000	315
		2	0.013	50,000	898	40,000	464	30,000	378	28,000	315
		2.5	0.011	45,000	810	36,000	414	27,000	315	24,500	261
		3	0.01	45,000	810	36,000	414	27,000	315	24,500	261
		4	0.008	40,000	720	32,000	378	24,000	279	20,000	234
		5	0.007	40,000	720	32,000	378	24,000	279	20,000	234
		6	0.006	28,800	480	19,400	260	18,000	250	15,000	200
	0.05	8	0.005	28,800	480	19,400	260	18,000	250	15,000	200
		10	0.004	28,800	480	19,400	260	18,000	250	15,000	200
		1	0.03	50,000	898	40,000	464	30,000	378	28,000	315
		1.5	0.026	50,000	898	40,000	464	30,000	378	28,000	315
		2	0.023	50,000	898	40,000	464	30,000	378	28,000	315
		2.5	0.02	45,000	810	36,000	414	27,000	315	24,500	261
		3	0.017	45,000	810	36,000	414	27,000	315	24,500	261
		4	0.017	40,000	720	32,000	378	24,000	279	20,000	234
		5	0.011	28,800	540	19,400	280	18,000	250	15,000	200
		6	0.008	28,800	480	19,400	260	18,000	250	15,000	200
		8	0.007	28,800	480	19,400	260	18,000	250	15,000	200

Technical Data

ESRR712 SERIES

Workpiece				Carbon Steels, Alloy Steels (180~250HB)		Prehardened Steels (HRC35~45)		Hardened Steels (HRC45~55)		Hardened Steels (HRC55~65)	
Ratio to standard depth of cut				Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%	
Mill Dia (mm)	Diameter (mm)	Neck Length (mm)	Depth of Cut (mm)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)
0.5	0.05	10	0.006	28,800	480	19,400	260	18,000	250	15,000	200
	0.1	1	0.035	50,000	898	40,000	464	30,000	378	28,000	315
		1.5	0.032	50,000	898	40,000	464	30,000	378	28,000	315
		2	0.03	50,000	898	40,000	464	30,000	378	28,000	315
		2.5	0.025	45,000	810	36,000	414	27,000	315	24,500	261
		3	0.02	45,000	810	36,000	414	27,000	315	24,500	261
		4	0.02	40,000	720	32,000	378	24,000	279	20,000	234
		5	0.013	28,800	540	19,400	280	18,000	250	15,000	200
		6	0.013	28,800	480	19,400	260	18,000	250	15,000	200
		8	0.01	28,800	480	19,400	260	18,000	250	15,000	200
		10	0.08	28,800	480	19,400	260	18,000	250	15,000	200
0.6	0.02	2	0.016	50,000	1,159	37,830	600	28,200	390	23,000	320
		3	0.014	40,000	830	27,800	440	23,600	280	21,000	230
		4	0.013	40,000	830	27,800	440	23,600	280	21,000	230
		6	0.01	24,000	490	18,000	300	17,800	240	15,000	210
		8	0.008	24,000	466	18,000	285	17,800	228	15,000	200
		10	0.007	24,000	451	18,000	276	17,800	221	15,000	193
		12	0.006	24,000	451	18,000	276	17,800	221	15,000	193
	0.05	2	0.028	50,000	1,159	37,830	600	28,200	390	23,000	320
		3	0.023	40,000	830	27,800	440	23,600	280	21,000	230
		4	0.019	40,000	830	27,800	440	23,600	280	21,000	230
		6	0.012	24,000	490	18,000	300	17,800	240	15,000	210
		8	0.01	24,000	466	18,000	285	17,800	228	15,000	200
		10	0.007	24,000	451	18,000	276	17,800	221	15,000	193
		12	0.006	24,000	451	18,000	276	17,800	221	15,000	193
	0.1	2	0.035	50,000	1,159	37,830	600	28,200	390	23,000	320
		3	0.03	40,000	830	27,800	440	23,600	280	21,000	230
		4	0.024	40,000	830	27,800	440	23,600	280	21,000	230
		6	0.015	24,000	490	18,000	300	17,800	240	15,000	210
		8	0.013	24,000	466	18,000	285	17,800	228	15,000	200
		10	0.009	24,000	451	18,000	276	17,800	221	15,000	193
		12	0.007	24,000	451	18,000	276	17,800	221	15,000	193
0.7	0.1	2	0.042	49,200	1,054	34,190	558	29,030	355	25,830	292
		4	0.029	40,000	830	27,800	440	23,600	280	21,000	230
		6	0.018	24,000	490	18,000	300	17,800	240	15,000	210
		8	0.015	24,000	490	18,000	300	17,800	240	15,000	210
		10	0.012	24,000	490	18,000	300	17,800	240	15,000	210
0.8	0.02	2	0.016	48,000	1,378	28,000	647	20,000	400	20,000	360
		4	0.016	48,000	1,102	28,000	518	20,000	320	20,000	288
		6	0.013	38,700	800	25,000	461	18,000	288	18,000	256
		8	0.011	29,025	600	20,000	369	16,200	259	16,200	230
		10	0.01	29,025	570	20,000	350	16,200	246	16,200	219
		12	0.09	29,025	570	20,000	350	16,200	246	16,200	219
	0.05	2	0.038	48,000	1,378	28,000	647	20,000	400	20,000	360



■ ESRR712 SERIES

Workpiece				Carbon Steels, Alloy Steels (180~250HB)		Prehardened Steels (HRc35~45)		Hardened Steels (HRc45~55)		Hardened Steels (HRc55~65)	
Ratio to standard depth of cut				Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%	
Mill Dia (mm)	Diameter (mm)	Neck Length (mm)	Depth of Cut (mm)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)
0.8	0.05	4	0.026	48,000	1,102	28,000	518	20,000	320	20,000	288
		6	0.015	38,700	800	25,000	461	18,000	288	18,000	256
		8	0.012	29,025	600	20,000	369	16,200	259	16,200	230
		10	0.011	29,025	570	20,000	350	16,200	246	16,200	219
		12	0.01	29,025	570	20,000	350	16,200	246	16,200	219
	0.1	2	0.047	48,000	1,378	28,000	647	20,000	400	20,000	360
		4	0.032	48,000	1,102	28,000	518	20,000	320	20,000	288
		6	0.019	38,700	800	25,000	461	18,000	288	18,000	256
		8	0.015	29,025	600	20,000	369	16,200	259	16,200	230
		10	0.013	29,025	570	20,000	350	16,200	246	16,200	219
		12	0.012	29,025	570	20,000	350	16,200	246	16,200	219
	0.2	2	0.081	48,000	1,378	28,000	647	20,000	400	20,000	360
		4	0.056	48,000	1,102	28,000	518	20,000	320	20,000	288
		6	0.032	38,700	800	25,000	461	18,000	288	18,000	256
		8	0.018	29,025	600	20,000	369	16,200	259	16,200	230
		10	0.016	29,025	570	20,000	350	16,200	246	16,200	219
		12	0.015	29,025	570	20,000	350	16,200	246	16,200	219
1	0.02	4	0.013	32,400	1,359	27,540	1,039	24,300	815	22,680	666
		6	0.01	26,244	990	22,307	842	19,683	660	18,371	539
		8	0.008	23,328	880	19,829	748	17,496	587	16,330	479
		10	0.006	20,412	770	17,350	655	15,309	514	14,288	419
		12	0.005	18,144	609	15,422	453	13,608	399	12,701	320
		14	0.004	18,144	533	15,422	420	13,608	342	12,701	266
		16	0.004	18,144	533	15,422	420	13,608	342	12,701	266
		20	0.003	13,608	399	11,567	315	10,206	257	9,526	200
	0.05	4	0.027	32,400	1,359	28,917	1,128	24,300	815	22,680	666
		6	0.017	26,244	990	24,538	928	19,683	660	18,371	539
		8	0.016	23,328	880	19,829	748	17,496	587	16,330	479
		10	0.011	20,412	770	17,350	655	15,309	514	14,288	419
		12	0.01	18,144	609	15,422	453	13,608	399	12,701	320
		14	0.008	18,144	533	15,422	420	13,608	342	12,701	266
		16	0.006	18,144	533	15,422	420	13,608	342	12,701	266
		20	0.004	13,608	399	11,567	315	10,206	257	9,526	200
	0.1	4	0.038	32,400	1,359	27,540	1,039	24,300	815	22,680	666
		6	0.024	26,244	990	22,307	842	19,683	660	18,371	539
		8	0.024	23,328	880	19,829	748	17,496	587	16,330	479
		10	0.015	20,412	770	17,350	655	15,309	514	14,288	419
		12	0.015	18,144	609	15,422	453	13,608	399	12,701	320
		14	0.012	18,144	533	15,422	420	13,608	342	12,701	266
		16	0.009	18,144	533	15,422	420	13,608	342	12,701	266
		20	0.006	13,608	399	11,567	315	10,206	257	9,526	200
	0.2	4	0.07	32,400	1,359	27,540	1,039	24,300	815	22,680	666
		6	0.04	26,244	990	22,307	842	19,683	660	18,371	539
		8	0.04	23,328	880	19,829	748	17,496	587	16,330	479

Technical Data

ESRR712 SERIES

Workpiece				Carbon Steels, Alloy Steels (180~250HB)		Prehardened Steels (HRC35~45)		Hardened Steels (HRC45~55)		Hardened Steels (HRC55~65)	
Ratio to standard depth of cut				Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%	
Mill Dia (mm)	Diameter (mm)	Neck Length (mm)	Depth of Cut (mm)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)
1	0.2	10	0.025	20,412	770	17,350	655	15,309	514	14,288	419
		12	0.025	18,144	609	15,422	453	13,608	399	12,701	320
		14	0.02	18,144	533	15,422	420	13,608	342	12,701	266
		16	0.015	18,144	533	15,422	420	13,608	342	12,701	266
		20	0.01	13,608	399	11,567	315	10,206	257	9,526	200
	0.3	4	0.07	32,400	1,359	27,540	1,039	24,300	815	22,680	666
		6	0.04	26,244	990	22,307	842	19,683	660	18,371	539
		8	0.04	23,328	880	19,829	748	17,496	587	16,330	479
		10	0.025	20,412	770	17,350	655	15,309	514	14,288	419
		12	0.025	18,144	609	15,422	453	13,608	399	12,701	320
		14	0.02	18,144	533	15,422	420	13,608	342	12,701	266
		16	0.015	18,144	533	15,422	420	13,608	342	12,701	266
		20	0.01	13,608	399	11,567	315	10,206	257	9,526	200
1.2	0.02	4	0.013	28,868	1,154	24,538	928	21,651	727	20,208	594
		6	0.01	28,868	1,154	24,538	928	21,651	727	20,208	594
		8	0.008	24,640	962	20,944	791	18,480	620	17,248	506
		10	0.006	20,412	770	17,350	655	15,309	514	14,288	419
		12	0.005	19,278	652	16,386	554	14,458	428	13,494	342
		14	0.004	18,144	533	15,422	453	13,608	342	12,701	266
		16	0.004	18,144	533	15,422	453	13,608	342	12,701	266
		20	0.003	13,608	399	11,567	315	10,206	257	9,526	200
	0.05	4	0.027	28,868	1,154	24,538	928	21,651	727	20,208	594
		6	0.017	28,868	1,154	24,538	928	21,651	727	20,208	594
		8	0.016	24,640	962	20,944	791	18,480	620	17,248	506
		10	0.011	20,412	770	17,350	655	15,309	514	14,288	419
		12	0.01	19,278	652	16,386	554	14,458	428	13,494	342
		14	0.008	18,144	533	15,422	453	13,608	342	12,701	266
		16	0.006	18,144	533	15,422	453	13,608	342	12,701	266
		20	0.004	13,608	399	11,567	315	10,206	257	9,526	200
	0.1	4	0.03	28,868	1,154	24,538	928	21,651	727	20,208	594
		6	0.03	28,868	1,154	24,538	928	21,651	727	20,208	594
		8	0.022	24,640	962	20,944	791	18,480	620	17,248	506
		10	0.015	20,412	770	17,350	655	15,309	514	14,288	419
		12	0.012	19,278	652	16,386	554	14,458	428	13,494	342
		14	0.01	18,144	533	15,422	453	13,608	342	12,701	266
		16	0.01	18,144	533	15,422	453	13,608	342	12,701	266
		20	0.006	13,608	399	11,567	315	10,206	257	9,526	200
	0.2	4	0.05	28,868	1,154	24,538	928	21,651	727	20,208	594
		6	0.05	28,868	1,154	24,538	928	21,651	727	20,208	594
		8	0.037	24,640	962	20,944	791	18,480	620	17,248	506
		10	0.025	20,412	770	17,350	655	15,309	514	14,288	419
		12	0.02	19,278	651	16,386	554	14,458	428	13,494	342
		14	0.016	18,144	533	15,422	453	13,608	342	12,701	266
		16	0.016	18,144	533	15,422	453	13,608	342	12,701	266



ESRR712 SERIES

Workpiece				Carbon Steels, Alloy Steels (180~250HB)		Prehardened Steels (HRc35~45)		Hardened Steels (HRc45~55)		Hardened Steels (HRc55~65)	
Ratio to standard depth of cut				Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%	
Mill Dia (mm)	Diameter (mm)	Neck Length (mm)	Depth of Cut (mm)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)
1.2	0.2	20	0.01	13,608	399	11,567	315	10,206	257	9,526	200
	0.3	4	0.05	28,868	1,154	24,538	928	21,651	727	20,208	594
		6	0.05	28,868	1,154	24,538	928	21,651	727	20,208	594
		8	0.037	24,640	962	20,944	791	18,480	620	17,248	506
		10	0.025	20,412	770	17,350	655	15,309	514	14,288	419
		12	0.02	19,278	651	16,386	554	14,458	428	13,494	342
		14	0.016	18,144	533	15,422	453	13,608	342	12,701	266
		16	0.016	18,144	533	15,422	453	13,608	342	12,701	266
		20	0.01	13,608	399	11,567	315	10,206	257	9,526	200
1.5	0.02	4	0.013	24,930	1,130	20,956	947	18,711	752	17,364	611
		6	0.01	23,779	1,074	20,382	921	17,834	716	16,560	582
		8	0.008	22,680	1,027	19,278	873	17,010	685	15,876	559
		10	0.006	20,412	924	17,350	785	15,309	616	14,288	503
		12	0.005	18,144	822	15,422	698	13,608	548	12,701	447
		14	0.004	14,112	568	11,995	423	10,584	373	9,878	298
		16	0.004	14,112	568	11,995	423	10,584	373	9,878	298
		20	0.003	14,112	568	11,995	423	10,584	373	9,878	298
	0.05	4	0.027	24,930	1,130	20,956	947	18,711	752	17,364	611
		6	0.017	23,779	1,074	20,382	921	17,834	716	16,560	582
		8	0.016	22,680	1,027	19,278	873	17,010	685	15,876	559
		10	0.011	20,412	924	17,350	785	15,309	616	14,288	503
		12	0.01	18,144	822	15,422	698	13,608	548	12,701	447
		14	0.008	14,112	568	11,995	423	10,584	373	9,878	298
		16	0.006	14,112	568	11,995	423	10,584	373	9,878	298
		20	0.004	14,112	568	11,995	423	10,584	373	9,878	298
	0.1	4	0.042	24,930	1,130	20,956	947	18,711	752	17,364	611
		6	0.04	23,779	1,074	20,382	921	17,834	716	16,560	582
		8	0.036	22,680	1,027	19,278	873	17,010	685	15,876	559
		10	0.036	20,412	924	17,350	785	15,309	616	14,288	503
		12	0.036	18,144	822	15,422	698	13,608	548	12,701	447
		14	0.023	14,112	568	11,995	423	10,584	373	9,878	298
		16	0.023	14,112	568	11,995	423	10,584	373	9,878	298
		20	0.018	14,112	568	11,995	423	10,584	373	9,878	298
	0.2	4	0.07	24,930	1,130	20,956	868	18,711	678	17,364	556
		6	0.065	23,779	1,074	20,382	921	17,834	716	16,560	582
		8	0.06	22,680	1,027	19,278	873	17,010	685	15,876	559
		10	0.06	20,412	924	17,350	785	15,309	616	14,288	503
		12	0.06	18,144	822	15,422	698	13,608	548	12,701	447
		14	0.038	14,112	568	11,995	423	10,584	373	9,878	298
		16	0.038	14,112	568	11,995	423	10,584	373	9,878	298
		20	0.03	14,112	568	11,995	423	10,584	373	9,878	298
	0.3	4	0.07	24,930	1,130	20,956	868	18,711	678	17,364	556
		6	0.065	23,779	1,074	20,382	921	17,834	716	16,560	582
		8	0.06	22,680	1,027	19,278	873	17,010	685	15,876	559

Technical Data

ESRR712 SERIES

Workpiece				Carbon Steels, Alloy Steels (180~250HB)		Prehardened Steels (HRC35~45)		Hardened Steels (HRC45~55)		Hardened Steels (HRC55~65)	
Ratio to standard depth of cut				Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%	
Mill Dia (mm)	Diameter (mm)	Neck Length (mm)	Depth of Cut (mm)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)
1.5	0.3	10	0.06	20,412	924	17,350	785	15,309	616	14,288	503
		12	0.06	18,144	822	15,422	698	13,608	548	12,701	447
		14	0.038	14,112	568	11,995	423	10,584	373	9,878	298
		16	0.038	14,112	568	11,995	423	10,584	373	9,878	298
		20	0.03	14,112	568	11,995	423	10,584	373	9,878	298
	0.5	4	0.085	24,930	1,130	20,956	868	18,711	678	17,364	556
		6	0.08	23,779	1,074	20,382	921	17,834	716	16,560	582
		8	0.07	22,680	1,027	19,278	873	17,010	685	15,876	559
		10	0.067	20,412	924	17,350	785	15,309	616	14,288	503
		12	0.065	18,144	822	15,422	698	13,608	548	12,701	447
		14	0.045	14,112	568	11,995	423	10,584	373	9,878	298
		16	0.045	14,112	568	11,995	423	10,584	373	9,878	298
		20	0.035	14,112	568	11,995	423	10,584	373	9,878	298
2	0.02	6	0.013	20,790	1,635	17,672	1,389	15,593	981	14,553	801
		8	0.01	18,900	1,486	16,065	1,263	14,175	892	13,230	728
		10	0.008	17,104	1,284	14,539	1,092	12,828	807	11,973	659
		12	0.006	15,309	1,083	13,013	921	11,482	722	10,716	590
		14	0.005	14,458	1,023	12,290	869	10,844	682	10,121	557
		16	0.004	13,608	963	11,567	818	10,206	642	9,526	524
		20	0.004	11,907	843	10,121	716	8,930	562	8,335	459
		25	0.003	11,907	757	10,121	643	8,930	505	8,335	411
	0.05	6	0.027	20,790	1,635	17,672	1,389	15,593	981	14,553	801
		8	0.017	18,900	1,486	16,065	1,263	14,175	892	13,230	728
		10	0.016	17,104	1,284	14,539	1,092	12,828	807	11,973	659
		12	0.011	15,309	1,083	13,013	921	11,482	722	10,716	590
		14	0.01	14,458	1,023	12,290	869	10,844	682	10,121	557
		16	0.008	13,608	963	11,567	818	10,206	642	9,526	524
		20	0.006	11,907	843	10,121	716	8,930	562	8,335	459
		25	0.004	11,907	757	10,121	643	8,930	505	8,335	411
	0.1	6	0.07	20,790	1,635	17,672	1,389	15,593	981	14,553	801
		8	0.055	18,900	1,486	16,065	1,263	14,175	892	13,230	728
		10	0.042	17,104	1,284	14,539	1,092	12,828	807	11,973	659
		12	0.03	15,309	1,083	13,013	921	11,482	722	10,716	590
		14	0.03	14,458	1,023	12,290	869	10,844	682	10,121	557
		16	0.03	13,608	963	11,567	818	10,206	642	9,526	524
		20	0.025	11,907	843	10,121	716	8,930	562	8,335	459
		25	0.015	11,907	757	10,121	643	8,930	505	8,335	411
	0.2	30	0.01	11,312	719	9,615	611	8,484	480	7,918	391
		6	0.08	20,790	1,635	17,672	1,389	15,593	981	14,553	801
		8	0.07	18,900	1,486	16,065	1,263	14,175	892	13,230	728
		10	0.055	17,104	1,284	14,539	1,092	12,828	807	11,973	659
		12	0.04	15,309	1,083	13,013	921	11,482	722	10,716	590
		14	0.04	14,458	1,023	12,290	869	10,844	682	10,121	557
		16	0.04	13,608	963	11,567	818	10,206	642	9,526	524



■ ESRR712 SERIES

Workpiece				Carbon Steels, Alloy Steels (180~250HB)		Prehardened Steels (HRC35~45)		Hardened Steels (HRC45~55)		Hardened Steels (HRC55~65)	
Ratio to standard depth of cut				Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%	
Mill Dia (mm)	Diameter (mm)	Neck Length (mm)	Depth of Cut (mm)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)
2	0.2	20	0.035	11,907	843	10,121	716	8,930	562	8,335	459
		25	0.025	11,907	757	10,121	643	8,930	505	8,335	411
		30	0.017	11,312	719	9,615	611	8,484	480	7,918	391
	0.3	6	0.11	20,790	1,635	17,672	1,389	15,593	981	14,553	801
		8	0.09	18,900	1,486	16,065	1,263	14,175	892	13,230	728
		10	0.075	17,104	1,284	14,539	1,092	12,828	807	11,973	659
		12	0.06	15,309	1,083	13,013	921	11,482	722	10,716	590
		14	0.06	14,458	1,023	12,290	869	10,844	682	10,121	557
		16	0.06	13,608	963	11,567	818	10,206	642	9,526	524
		20	0.037	11,907	843	10,121	716	8,930	562	8,335	459
		25	0.03	11,907	757	10,121	643	8,930	505	8,335	411
		30	0.021	11,312	719	9,615	611	8,484	480	7,918	391
	0.5	6	0.17	20,790	1,635	17,672	1,389	15,593	981	14,553	801
		8	0.14	18,900	1,486	16,065	1,263	14,175	892	13,230	728
		10	0.11	17,104	1,284	14,539	1,143	12,828	807	11,973	659
		12	0.08	15,309	1,083	13,013	1,023	11,482	722	10,716	590
		14	0.08	14,458	1,023	12,290	920	1,084	682	10,121	557
		16	0.08	13,608	963	11,567	818	10,206	642	9,526	524
		20	0.05	11,907	843	10,121	716	8,930	562	8,335	459
		25	0.05	11,907	757	10,121	643	8,930	505	8,335	411
		30	0.03	11,312	719	9,615	611	8,484	480	7,918	391
2.5	0.1	10	0.055	18,900	1,486	16,065	1,263	14,175	892	13,230	728
		16	0.042	16,254	1,224	13,816	1,040	12,190	767	11,378	626
		20	0.03	13,608	963	11,567	818	10,206	642	9,526	524
		25	0.022	12,757	860	10,844	730	9,568	573	8,930	467
		30	0.015	11,907	757	10,121	643	8,930	505	8,335	411
	0.2	10	0.07	18,900	1,486	16,065	1,263	14,175	892	13,230	728
		16	0.055	16,254	1,224	1,386	1,040	12,190	767	11,378	626
		20	0.04	13,608	963	11,567	818	10,206	642	9,526	524
	0.3	10	0.09	18,900	1,486	16,065	1,263	14,175	892	13,230	728
		16	0.075	16,254	1,224	1,386	1,040	12,190	767	11,378	626
		20	0.06	13,608	963	11,567	818	10,206	642	9,526	524
	0.5	10	0.14	18,900	1,486	16,065	1,263	14,175	892	13,230	728
		16	0.11	16,254	1,224	1,386	1,040	12,190	767	11,378	626
		20	0.08	13,608	963	11,567	818	10,206	642	9,526	524
3	0.1	10	0.06	14,400	1,415	12,240	1,203	10,800	849	10,080	693
		12	0.05	14,400	1,415	12,240	1,203	10,800	849	10,080	693
		16	0.035	14,400	1,415	12,240	1,203	10,800	849	10,080	693
		20	0.035	11,664	1,146	9,914	974	8,748	687	8,165	561
		25	0.031	10,368	973	8,812	827	7,776	583	7,257	477
		30	0.027	9,072	801	7,711	681	6,804	480	6,350	393
		35	0.02	9,072	801	7,711	681	6,804	480	6,350	393
		40	0.015	9,072	801	7,711	681	6,804	480	6,350	393
	0.2	10	0.08	14,400	1,415	12,240	1,203	10,800	849	10,080	693

Technical Data

ESRR712 SERIES

Workpiece				Carbon Steels, Alloy Steels (180~250HB)		Prehardened Steels (HRC35~45)		Hardened Steels (HRC45~55)		Hardened Steels (HRC55~65)	
Ratio to standard depth of cut				Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%	
Mill Dia (mm)	Diameter (mm)	Neck Length (mm)	Depth of Cut (mm)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)
3	0.2	12	0.07	14,400	1,415	12,240	1,203	10,800	849	10,080	693
		16	0.05	14,400	1,415	12,240	1,203	10,800	849	10,080	693
		20	0.05	11,664	1,146	9,914	974	8,748	687	8,165	561
		25	0.045	10,368	973	8,812	827	7,776	583	7,257	477
		30	0.04	9,072	801	7,711	681	6,804	480	6,350	393
		35	0.035	9,072	801	7,711	681	6,804	480	6,350	393
		40	0.03	9,072	801	7,711	681	6,804	480	6,350	393
	0.3	10	0.115	14,400	1,415	12,240	1,203	10,800	849	10,080	693
		12	0.1	14,400	1,415	12,240	1,203	10,800	849	10,080	693
		16	0.075	14,400	1,415	12,240	1,203	10,800	849	10,080	693
		20	0.075	11,664	1,146	9,914	974	8,748	687	8,165	561
		25	0.067	10,368	973	8,812	827	7,776	583	7,257	477
		30	0.06	9,072	801	7,711	681	6,804	480	6,350	393
		35	0.05	9,072	801	7,711	681	6,804	480	6,350	393
		40	0.04	9,072	801	7,711	681	6,804	480	6,350	393
	0.5	10	0.155	14,400	1,415	12,240	1,203	10,800	849	10,080	693
		12	0.13	14,400	1,415	12,240	1,203	10,800	849	10,080	693
		16	0.1	14,400	1,415	12,240	1,203	10,800	849	10,080	693
		20	0.1	11,664	1,146	9,914	974	8,748	687	8,165	561
		25	0.09	10,368	973	8,812	827	7,776	583	7,257	477
		30	0.08	9,072	801	7,711	681	6,804	480	6,350	393
		35	0.065	9,072	801	7,711	681	6,804	480	6,350	393
		40	0.05	9,072	801	7,711	681	6,804	480	6,350	393
	1	10	0.175	14,400	1,415	12,240	1,203	10,800	849	10,080	693
		12	0.15	14,400	1,415	12,240	1,203	10,800	849	10,080	693
		16	0.12	14,400	1,415	12,240	1,203	10,800	849	10,080	693
		20	0.11	11,664	1,146	9,914	974	8,748	687	8,165	561
		25	0.1	10,368	973	8,812	827	7,776	583	7,257	477
		30	0.09	9,072	801	7,711	681	6,804	480	6,350	393
		35	0.075	9,072	801	7,711	681	6,804	480	6,350	393
		40	0.06	9,072	801	7,711	681	6,804	480	6,350	393
4	0.1	12	0.065	11,213	1,950	9,531	1,658	8,410	1,170	7,849	956
		16	0.06	10,255	1,783	8,697	1,512	7,599	1,057	6,684	814
		20	0.055	10,255	1,783	8,697	1,512	7,599	1,057	6,684	814
		25	0.05	10,255	1,783	7,782	1,293	6,545	872	5,904	687
		30	0.045	10,255	1,783	6,867	1,075	5,491	688	5,124	561
		35	0.04	10,255	1,783	6,867	1,075	5,491	688	5,124	561
		40	0.035	10,255	1,783	6,867	1,075	5,491	688	5,124	561
	0.2	12	0.14	11,213	1,950	9,531	1,658	8,410	1,170	7,849	956
		16	0.13	10,255	1,783	8,697	1,512	7,599	1,057	6,684	814
		20	0.11	10,255	1,783	8,697	1,512	7,599	1,057	6,684	814
		25	0.105	10,255	1,783	7,782	1,293	6,545	872	5,904	687
		30	0.1	10,255	1,783	6,867	1,075	5,491	688	5,124	561
		35	0.08	10,255	1,783	6,867	1,075	5,491	688	5,124	561
		40	0.07	10,255	1,783	6,867	1,075	5,491	688	5,124	561



■ ESRR712 SERIES

Workpiece				Carbon Steels, Alloy Steels (180~250HB)		Prehardened Steels (HRc35~45)		Hardened Steels (HRc45~55)		Hardened Steels (HRc55~65)	
Ratio to standard depth of cut				Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%	
Mill Dia (mm)	Diameter (mm)	Neck Length (mm)	Depth of Cut (mm)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)
4	0.2	40	0.07	9,247	1,429	6,225	901	5,217	602	4,621	459
		12	0.22	11,213	1,950	9,531	1,658	8,410	1,170	7,849	956
	0.3	16	0.2	10,255	1,783	8,697	1,512	7,599	1,057	6,684	814
		20	0.18	10,255	1,783	8,697	1,512	7,599	1,057	6,684	814
		25	0.17	10,255	1,783	7,782	1,293	6,545	872	5,904	687
		30	0.16	10,255	1,783	6,867	1,075	5,491	688	5,124	561
		35	0.14	10,255	1,783	6,867	1,075	5,491	688	5,124	561
		40	0.13	9,247	1,429	6,225	901	5,217	602	4,621	459
	0.5	12	0.35	11,213	1,950	9,531	1,658	8,410	1,170	7,849	956
		16	0.25	10,255	1,783	8,697	1,512	7,599	1,057	6,684	814
		20	0.2	10,255	1,783	8,697	1,512	7,599	1,057	6,684	814
		25	0.175	10,255	1,783	7,782	1,293	6,545	872	5,904	687
		30	0.15	10,255	1,783	6,867	1,075	5,491	688	5,124	5
		35	0.1	10,255	1,783	6,867	1,075	5,491	688	5,124	561
		40	0.075	9,247	1,429	6,225	901	5,217	602	4,621	459
	1	12	0.4	11,213	1,950	9,531	1,658	8,410	1,170	7,849	956
		16	0.29	10,255	1,783	8,697	1,512	7,599	1,057	6,684	814
		20	0.23	10,255	1,783	8,697	1,512	7,599	1,057	6,684	814
		25	0.2	10,255	1,783	7,782	1,293	6,545	872	5,904	687
		30	0.17	10,255	1,783	6,867	1,075	5,491	688	5,124	561
		35	0.12	10,255	1,783	6,867	1,075	5,491	688	5,124	561
		40	0.09	9,247	1,429	6,225	901	5,217	602	4,621	459
5	0.2	15	0.16	9,154	1,990	7,781	1,692	6,866	1,194	6,408	975
		25	0.152	8,513	1,813	7,236	1,541	6,385	1,088	5,959	888
		30	0.145	7,872	1,637	6,691	1,391	5,904	982	5,510	802
		40	0.13	6,590	1,284	5,602	1,091	4,943	770	4,613	629
	0.5	15	0.35	9,154	1,990	7,781	1,692	6,866	1,194	6,408	975
		25	0.296	8,513	1,813	7,236	1,541	6,385	1,088	5,959	888
		30	0.24	7,872	1,637	6,691	1,391	5,904	982	5,510	802
		40	0.135	6,590	1,284	5,602	1,091	4,943	770	4,613	629
	1	15	0.4	9,154	1,990	7,781	1,692	6,866	1,194	6,408	975
		25	0.337	8,513	1,813	7,236	1,541	6,385	1,088	5,959	888
		30	0.275	7,872	1,637	6,691	1,391	5,904	982	5,510	802
		40	0.15	6,590	1,284	5,602	1,091	4,943	770	4,613	629
6	0.1	20	0.065	7,630	1,991	6,486	1,692	5,722	1,194	5,342	975
		40	0.05	6,486	1,523	5,513	1,294	4,865	914	4,540	746
	0.2	20	0.14	7,630	1,991	6,486	1,692	5,722	1,194	5,342	975
		40	0.11	6,486	1,523	5,513	1,294	4,865	914	4,540	746
	0.3	20	0.22	7,630	1,991	6,486	1,692	5,722	1,194	5,342	975
		40	0.18	6,486	1,523	5,513	1,294	4,865	914	4,540	746
	0.5	20	0.35	7,630	1,991	6,486	1,692	5,722	1,194	5,342	975
		40	0.24	6,486	1,523	5,513	1,294	4,865	914	4,540	746
	1	20	0.4	7,630	1,991	6,486	1,692	5,722	1,194	5,342	975
		40	0.28	6,486	1,523	5,513	1,294	4,865	914	4,540	746

Technical Data

ESRR712 SERIES

Workpiece				Carbon Steels, Alloy Steels (180~250HB)		Prehardened Steels (HRC35~45)		Hardened Steels (HRC45~55)		Hardened Steels (HRC55~65)	
Ratio to standard depth of cut				Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%	
Mill Dia (mm)	Diameter (mm)	Neck Length (mm)	Depth of Cut (mm)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)
6	1.5	20	0.45	7,630	1,991	6,486	1,692	5,722	1,194	5,342	975
		40	0.3	6,486	1,523	5,513	1,294	4,865	914	4,540	746
8	0.2	22	0.35	5,730	1,900	4,524	1,483	3,016	914	2,320	584
	0.3	22	0.5	5,730	1,900	4,524	1,483	3,016	914	2,320	584
	0.5	22	0.6	5,730	1,900	4,524	1,483	3,016	914	2,320	584
	1	22	0.7	5,730	1,900	4,524	1,483	3,016	914	2,320	584
	1.5	22	0.8	5,730	1,900	4,524	1,483	3,016	914	2,320	584
10	0.2	24	0.4	4,524	1,728	3,567	1,396	2,378	849	1,856	544
	0.3	24	0.5	4,524	1,728	3,567	1,396	2,378	849	1,856	544
	0.5	24	0.6	4,524	1,728	3,567	1,396	2,378	849	1,856	544
	1	24	0.7	4,524	1,728	3,567	1,396	2,378	849	1,856	544
	1.5	24	0.8	4,524	1,728	3,567	1,396	2,378	849	1,856	544
	2	24	0.9	4,524	1,728	3,567	1,396	2,378	849	1,856	544
12	0.2	26	0.5	3,857	1,728	3,045	1,396	2,030	849	1,537	544
	0.3	26	0.6	3,857	1,728	3,045	1,396	2,030	849	1,537	544
	0.5	26	0.7	3,857	1,728	3,045	1,396	2,030	849	1,537	544
	1	26	0.8	3,857	1,728	3,045	1,396	2,030	849	1,537	544
	1.5	26	0.9	3,857	1,728	3,045	1,396	2,030	849	1,537	544
	2	26	1	3,857	1,728	3,045	1,396	2,030	849	1,537	544
	3	26	1	3,857	1,728	3,045	1,396	2,030	849	1,537	544
16	0.5	35	2	2,842	1,512	2,262	1,209	1,508	748	1,160	480
	1	35	2	2,842	453	2,262	362	1,508	224	1,160	480

· The above recommendation table may differ from the actual situation, adjust it according to the machine condition, processing type and purpose.

· In the case of low RPM, reduce the feed rate at the same rate.



■ ESRR714 SERIES

Workpiece				Carbon Steels, Alloy Steels (180~250HB)		Prehardened Steels (HRc35~45)		Hardened Steels (HRc45~55)		Hardened Steels (HRc55~65)	
Ratio to standard depth of cut				Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%	
Mill Dia (mm)	Diameter (mm)	Neck Length (mm)	Depth of Cut (mm)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)
0.5	0.05	2	0.023	50,000	1,257	40,000	649	30,000	529	28,000	441
		4	0.017	40,000	1,008	32,000	529	24,000	390	20,000	327
		6	0.008	28,800	672	19,400	364	18,000	350	15,000	280
		8	0.007	28,800	672	19,400	364	18,000	350	15,000	280
	0.1	2	0.03	50,000	1,257	40,000	649	30,000	529	28,000	441
		4	0.02	40,000	1,008	32,000	529	24,000	390	20,000	327
		6	0.013	28,800	672	19,400	364	18,000	350	15,000	280
		8	0.01	28,800	672	19,400	364	18,000	350	15,000	280
0.6	0.05	2	0.028	50,000	1,622	37,830	840	28,200	546	23,000	448
		4	0.019	40,000	1,162	27,800	616	23,600	392	21,000	322
		6	0.012	24,000	686	18,000	420	17,800	336	15,000	294
		8	0.01	24,000	652	18,000	399	17,800	319	15,000	280
	0.1	2	0.035	50,000	1,622	37,830	840	28,200	546	23,000	448
		4	0.024	40,000	1,162	27,800	616	23,600	392	21,000	322
		6	0.015	24,000	686	18,000	420	17,800	336	15,000	294
		8	0.013	24,000	652	18,000	399	17,800	319	15,000	280
0.7	0.05	2	0.028	49,200	1,475	34,190	781	29,030	497	25,830	408
		4	0.019	40,000	1,162	27,800	616	23,600	392	21,000	322
		6	0.012	24,000	686	18,000	420	17,800	336	15,000	294
		8	0.01	24,000	686	18,000	420	17,800	336	15,000	294
	0.1	2	0.042	49,200	1,475	34,190	781	29,030	497	25,830	408
		4	0.029	40,000	1,162	27,800	616	23,600	392	21,000	322
		6	0.018	24,000	686	18,000	420	17,800	336	15,000	294
		8	0.015	24,000	686	18,000	420	17,800	336	15,000	294
0.8	0.02	2	0.016	48,000	1,929	28,000	905	20,000	560	360	504
		4	0.016	48,000	1,542	28,000	725	20,000	448	288	403
		6	0.013	38,700	1,120	25,000	645	18,000	403	256	358
		8	0.011	29,025	840	20,000	516	16,200	362	230	322
		10	0.01	29,025	798	20,000	490	16,200	344	219	306
		12	0.09	29,025	798	20,000	490	16,200	344	219	306
	0.05	2	0.038	48,000	1,929	28,000	905	20,000	560	360	504
		4	0.026	48,000	1,542	28,000	725	20,000	448	288	403
		6	0.015	38,700	1,120	25,000	645	18,000	403	256	358
		8	0.012	29,025	840	20,000	516	16,200	362	230	322
		10	0.011	29,025	798	20,000	490	16,200	344	219	306
		12	0.01	29,025	798	20,000	490	16,200	344	219	306
	0.1	2	0.047	48,000	1,929	28,000	905	20,000	560	360	504
		4	0.032	48,000	1,542	28,000	725	20,000	448	288	403
		6	0.019	38,700	1,120	25,000	645	18,000	403	256	358
		8	0.015	29,025	840	20,000	516	16,200	362	230	322
		10	0.013	29,025	798	20,000	490	16,200	344	219	306
		12	0.012	29,025	798	20,000	490	16,200	344	219	306
1	0.02	4	0.013	32,400	1,902	27,540	1,454	24,300	1,141	22,680	932
		6	0.01	26,244	1,386	22,307	1,178	19,683	924	18,371	754

Technical Data

ESRR714 SERIES

Workpiece				Carbon Steels, Alloy Steels (180~250HB)		Prehardened Steels (HRC35~45)		Hardened Steels (HRC45~55)		Hardened Steels (HRC55~65)	
Ratio to standard depth of cut				Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%	
Mill Dia (mm)	Diameter (mm)	Neck Length (mm)	Depth of Cut (mm)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)
1	0.02	8	0.008	23,328	1,232	19,829	1,047	17,496	821	16,330	670
		10	0.006	20,412	1,078	17,350	917	15,309	719	14,288	586
		12	0.005	18,144	852	15,422	634	13,608	558	12,701	448
		14	0.004	18,144	746	15,422	588	13,608	478	12,701	372
		16	0.004	18,144	746	15,422	588	13,608	478	12,701	372
		20	0.003	13,608	558	11,567	441	10,206	359	9,526	280
	0.05	3	0.027	32,400	1,902	27,540	1,454	24,300	1,141	22,680	932
		4	0.027	32,400	1,902	27,540	1,454	24,300	1,141	22,680	932
		6	0.017	26,244	1,386	22,307	1,178	19,683	924	18,371	754
		8	0.016	23,328	1,232	19,829	1,047	17,496	821	16,330	670
		10	0.011	20,412	1,078	17,350	917	15,309	719	14,288	586
		12	0.01	18,144	852	15,422	634	13,608	558	12,701	448
		14	0.008	18,144	746	15,422	588	13,608	478	12,701	372
		16	0.006	18,144	746	15,422	588	13,608	478	12,701	372
		20	0.004	13,608	558	11,567	441	10,206	359	9,526	280
	0.1	3	0.038	32,400	1,902	27,540	1,454	24,300	1,141	22,680	932
		4	0.038	32,400	1,902	27,540	1,454	24,300	1,141	22,680	932
		6	0.024	26,244	1,386	22,307	1,178	19,683	924	18,371	754
		8	0.024	23,328	1,232	19,829	1,047	17,496	821	16,330	670
		10	0.015	20,412	1,078	17,350	917	15,309	719	14,288	586
		12	0.015	18,144	852	15,422	634	13,608	558	12,701	448
		14	0.012	18,144	746	15,422	588	13,608	478	12,701	372
		16	0.009	18,144	746	15,422	588	13,608	478	12,701	372
		20	0.006	13,608	558	11,567	441	10,206	359	9,526	280
	0.2	3	0.07	32,400	1,902	27,540	1,454	24,300	1,141	22,680	932
		4	0.07	32,400	1,902	27,540	1,454	24,300	1,141	22,680	932
		6	0.04	26,244	1,386	22,307	1,178	19,683	924	18,371	754
		8	0.04	23,328	1,232	19,829	1,047	17,496	821	16,330	670
		10	0.025	20,412	1,078	17,350	917	15,309	719	14,288	586
		12	0.025	18,144	852	15,422	634	13,608	558	12,701	448
		14	0.02	18,144	746	15,422	588	13,608	478	12,701	372
		16	0.015	18,144	746	15,422	588	13,608	478	12,701	372
		20	0.01	13,608	558	11,567	441	10,206	359	9,526	280
	0.3	3	0.07	32,400	1,902	27,540	1,454	24,300	1,141	22,680	932
		4	0.07	32,400	1,902	27,540	1,454	24,300	1,141	22,680	932
		6	0.04	26,244	1,386	22,307	1,178	19,683	924	18,371	754
		8	0.04	23,328	1,232	19,829	1,047	17,496	821	16,330	670
		10	0.025	20,412	1,078	17,350	917	15,309	719	14,288	586
		12	0.025	18,144	852	15,422	634	13,608	558	12,701	448
		14	0.02	18,144	746	15,422	588	13,608	478	12,701	372
		16	0.015	18,144	746	15,422	588	13,608	478	12,701	372
		20	0.01	13,608	558	11,567	441	10,206	359	9,526	280
1.2	0.02	4	0.013	28,868	1,615	24,538	1,299	21,651	1,017	20,208	831
		6	0.01	28,868	1,615	24,538	1,299	21,651	1,017	20,208	831



■ ESRR714 SERIES

Workpiece				Carbon Steels, Alloy Steels (180~250HB)		Prehardened Steels (HRc35~45)		Hardened Steels (HRc45~55)		Hardened Steels (HRc55~65)	
Ratio to standard depth of cut				Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%	
Mill Dia (mm)	Diameter (mm)	Neck Length (mm)	Depth of Cut (mm)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)
1.2	0.02	8	0.008	24,640	1,346	20,944	1,107	18,480	868	17,248	708
		10	0.006	20,412	1,078	17,350	917	15,309	719	14,288	586
		12	0.005	19,278	912	16,386	775	14,458	599	13,494	478
		14	0.004	18,144	746	15,422	634	13,608	478	12,701	372
		16	0.004	18,144	746	15,422	634	13,608	478	12,701	372
		20	0.003	13,608	558	11,567	441	10,206	359	9,526	280
	0.05	3	0.027	28,868	1,615	24,538	1,299	21,651	1,017	20,208	831
		4	0.027	28,868	1,615	24,538	1,299	21,651	1,017	20,208	831
		6	0.017	28,868	1,615	24,538	1,299	21,651	1,017	20,208	831
		8	0.016	24,640	1,346	20,944	1,107	18,480	868	17,248	708
		10	0.011	20,412	1,078	17,350	917	15,309	719	14,288	586
		12	0.01	19,278	912	16,386	775	14,458	599	13,494	478
		14	0.008	18,144	746	15,422	634	13,608	478	12,701	372
		16	0.006	18,144	746	15,422	634	13,608	478	12,701	372
		20	0.004	13,608	558	11,567	441	10,206	359	9,526	280
	0.1	3	0.03	28,868	1,615	24,538	1,299	21,651	1,017	20,208	831
		4	0.03	28,868	1,615	24,538	1,299	21,651	1,017	20,208	831
		6	0.03	28,868	1,615	24,538	1,299	21,651	1,017	20,208	831
		8	0.022	24,640	1,346	20,944	1,107	18,480	868	17,248	708
		10	0.015	20,412	1,078	17,350	917	15,309	719	14,288	586
		12	0.012	19,278	912	16,386	775	14,458	599	13,494	478
		14	0.01	18,144	746	15,422	634	13,608	478	12,701	372
		16	0.01	18,144	746	15,422	634	13,608	478	12,701	372
		20	0.006	13,608	558	11,567	441	10,206	359	9,526	280
	0.2	3	0.05	28,868	1,615	24,538	1,299	21,651	1,017	20,208	831
		4	0.05	28,868	1,615	24,538	1,299	21,651	1,017	20,208	831
		6	0.05	28,868	1,615	24,538	1,299	21,651	1,017	20,208	831
		8	0.037	24,640	1,346	20,944	1,107	18,480	868	17,248	708
		10	0.025	20,412	1,078	17,350	917	15,309	719	14,288	586
		12	0.02	19,278	912	16,386	775	14,458	599	13,494	478
		14	0.016	18,144	746	15,422	634	13,608	478	12,701	372
		16	0.016	18,144	746	15,422	634	13,608	478	12,701	372
		20	0.01	13,608	558	11,567	441	10,206	359	9,526	280
	0.3	3	0.05	28,868	1,615	24,538	1,299	21,651	1,017	20,208	831
		4	0.05	28,868	1,615	24,538	1,299	21,651	1,017	20,208	831
		6	0.05	28,868	1,615	24,538	1,299	21,651	1,017	20,208	831
		8	0.037	24,640	1,346	20,944	1,107	18,480	868	17,248	708
		10	0.025	20,412	1,078	17,350	917	15,309	719	14,288	586
		12	0.02	19,278	912	16,386	775	14,458	599	13,494	478
		16	0.016	18,144	746	15,422	634	13,608	478	12,701	372
		20	0.01	13,608	558	11,567	441	10,206	359	9,526	280
1.5	0.02	6	0.01	23,779	1,503	20,382	1,325	17,834	1,052	16,560	855
		8	0.008	22,680	1,437	19,278	1,289	17,010	1,002	15,876	814
		10	0.006	20,412	1,293	17,350	1,222	15,309	959	14,288	782

Technical Data

ESRR714 SERIES

Workpiece				Carbon Steels, Alloy Steels (180~250HB)		Prehardened Steels (HRC35~45)		Hardened Steels (HRC45~55)		Hardened Steels (HRC55~65)	
Ratio to standard depth of cut				Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%	
Mill Dia (mm)	Diameter (mm)	Neck Length (mm)	Depth of Cut (mm)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)
1.5	0.02	8	0.008	24,640	1,346	20,944	1,107	18,480	868	17,248	708
		10	0.006	20,412	1,078	17,350	917	15,309	719	14,288	586
		12	0.005	19,278	912	16,386	775	14,458	599	13,494	478
		14	0.004	18,144	746	15,422	634	13,608	478	12,701	372
		16	0.004	18,144	746	15,422	634	13,608	478	12,701	372
		20	0.003	13,608	558	11,567	441	10,206	359	9,526	280
	0.05	3	0.027	28,868	1,615	24,538	1,299	21,651	1,017	20,208	831
		4	0.027	28,868	1,615	24,538	1,299	21,651	1,017	20,208	831
		6	0.017	28,868	1,615	24,538	1,299	21,651	1,017	20,208	831
		8	0.016	24,640	1,346	20,944	1,107	18,480	868	17,248	708
		10	0.011	20,412	1,078	17,350	917	15,309	719	14,288	586
		12	0.01	19,278	912	16,386	775	14,458	599	13,494	478
		14	0.008	18,144	746	15,422	634	13,608	478	12,701	372
		16	0.006	18,144	746	15,422	634	13,608	478	12,701	372
		20	0.004	13,608	558	11,567	441	10,206	359	9,526	280
	0.1	3	0.03	28,868	1,615	24,538	1,299	21,651	1,017	20,208	831
		4	0.03	28,868	1,615	24,538	1,299	21,651	1,017	20,208	831
		6	0.03	28,868	1,615	24,538	1,299	21,651	1,017	20,208	831
		8	0.022	24,640	1,346	20,944	1,107	18,480	868	17,248	708
		10	0.015	20,412	1,078	17,350	917	15,309	719	14,288	586
		12	0.012	19,278	912	16,386	775	14,458	599	13,494	478
		14	0.01	18,144	746	15,422	634	13,608	478	12,701	372
		16	0.01	18,144	746	15,422	634	13,608	478	12,701	372
		20	0.006	13,608	558	11,567	441	10,206	359	9,526	280
	0.2	3	0.05	28,868	1,615	24,538	1,299	21,651	1,017	20,208	831
		4	0.05	28,868	1,615	24,538	1,299	21,651	1,017	20,208	831
		6	0.05	28,868	1,615	24,538	1,299	21,651	1,017	20,208	831
		8	0.037	24,640	1,346	20,944	1,107	18,480	868	17,248	708
		10	0.025	20,412	1,078	17,350	917	15,309	719	14,288	586
		12	0.02	19,278	912	16,386	775	14,458	599	13,494	478
		14	0.016	18,144	746	15,422	634	13,608	478	12,701	372
		16	0.016	18,144	746	15,422	634	13,608	478	12,701	372
		20	0.01	13,608	558	11,567	441	10,206	359	9,526	280
	0.3	3	0.05	28,868	1,615	24,538	1,299	21,651	1,017	20,208	831
		4	0.05	28,868	1,615	24,538	1,299	21,651	1,017	20,208	831
		6	0.05	28,868	1,615	24,538	1,299	21,651	1,017	20,208	831
		8	0.037	24,640	1,346	20,944	1,107	18,480	868	17,248	708
		10	0.025	20,412	1,078	17,350	917	15,309	719	14,288	586
		12	0.02	19,278	912	16,386	775	14,458	599	13,494	478
		16	0.016	18,144	746	15,422	634	13,608	478	12,701	372
		20	0.01	13,608	558	11,567	441	10,206	359	9,526	280
1.5	0.02	6	0.01	23,779	1,503	20,382	1,325	17,834	1,052	16,560	855
		8	0.008	22,680	1,437	19,278	1,289	17,010	1,002	15,876	814
		10	0.006	20,412	1,293	17,350	1,222	15,309	959	14,288	782



ESRR714 SERIES

Workpiece				Carbon Steels, Alloy Steels (180~250HB)		Prehardened Steels (HRc35~45)		Hardened Steels (HRc45~55)		Hardened Steels (HRc55~65)	
Ratio to standard depth of cut				Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%	
Mill Dia (mm)	Diameter (mm)	Neck Length (mm)	Depth of Cut (mm)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)
1.5	0.02	12	0.005	18,144	1,150	15,422	1,099	13,608	862	12,701	704
		14	0.004	14,112	795	11,995	977	10,584	767	9,878	625
		16	0.004	14,112	795	11,995	592	10,584	522	9,878	417
		20	0.003	14,112	795	11,995	592	10,584	522	9,878	417
		22	0.003	14,112	795	11,995	592	10,584	522	9,878	417
	0.05	4	0.027	24,930	1,582	20,956	1,325	18,711	1,052	17,364	855
		6	0.017	23,779	1,503	20,382	1,325	17,834	1,052	16,560	855
		8	0.016	22,680	1,437	19,278	1,289	17,010	1,002	15,876	814
		10	0.011	20,412	1,293	17,350	1,222	15,309	959	14,288	782
		12	0.01	18,144	1,150	15,422	1,099	13,608	862	12,701	704
		14	0.008	14,112	795	11,995	977	10,584	767	9,878	625
		16	0.006	14,112	795	11,995	592	10,584	522	9,878	417
		20	0.004	14,112	795	11,995	592	10,584	522	9,878	417
		22	0.004	14,112	795	11,995	592	10,584	522	9,878	417
		26	0.003	14,112	795	11,995	592	10,584	522	9,878	417
	0.1	4	0.042	24,930	1,582	20,956	1,325	18,711	1,052	17,364	855
		6	0.04	23,779	1,503	20,382	1,325	17,834	1,052	16,560	855
		8	0.036	22,680	1,437	19,278	1,289	17,010	1,002	15,876	814
		10	0.036	20,412	1,293	17,350	1,222	15,309	959	14,288	782
		12	0.036	18,144	1,150	15,422	1,099	13,608	862	12,701	704
		14	0.023	14,112	795	11,995	977	10,584	767	9,878	625
		16	0.023	14,112	795	11,995	592	10,584	522	9,878	417
		20	0.018	14,112	795	11,995	592	10,584	522	9,878	417
		22	0.015	14,112	795	11,995	592	10,584	522	9,878	417
		26	0.01	14,112	795	11,995	592	10,584	522	9,878	417
	0.2	4	0.07	24,930	1,582	20,956	1,325	18,711	1,052	17,364	855
		6	0.065	23,779	1,503	20,382	1,325	17,834	1,052	16,560	855
		8	0.06	22,680	1,437	19,278	1,289	17,010	1,002	15,876	814
		10	0.06	20,412	1,293	17,350	1,222	15,309	959	14,288	782
		12	0.06	18,144	1,150	15,422	1,099	13,608	862	12,701	704
		14	0.038	14,112	795	11,995	977	10,584	767	9,878	625
		16	0.038	14,112	795	11,995	592	10,584	522	9,878	417
		20	0.03	14,112	795	11,995	592	10,584	522	9,878	417
		22	0.025	14,112	795	11,995	592	10,584	522	9,878	417
		25	0.02	14,112	795	11,995	592	10,584	522	9,878	417
	0.3	4	0.07	24,930	1,582	20,956	1,325	18,711	1,052	17,364	855
		6	0.065	23,779	1,503	20,382	1,325	17,834	1,052	16,560	855
		8	0.06	22,680	1,437	19,278	1,289	17,010	1,002	15,876	814
		10	0.06	20,412	1,293	17,350	1,222	15,309	959	14,288	782
		12	0.06	18,144	1,150	15,422	1,099	13,608	862	12,701	704
		14	0.038	14,112	795	11,995	977	10,584	767	9,878	625
		16	0.038	14,112	795	11,995	592	10,584	522	9,878	417
		20	0.03	14,112	795	11,995	592	10,584	522	9,878	417
		22	0.025	14,112	795	11,995	592	10,584	522	9,878	417

Technical Data

ESRR714 SERIES

Workpiece				Carbon Steels, Alloy Steels (180~250HB)		Prehardened Steels (HRc35~45)		Hardened Steels (HRc45~55)		Hardened Steels (HRc55~65)	
Ratio to standard depth of cut				Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%	
Mill Dia (mm)	Diameter (mm)	Neck Length (mm)	Depth of Cut (mm)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)
1.5	0.3	25	0.02	14,112	795	11,995	592	10,584	522	9,878	417
	0.5	4	0.085	24,930	1,582	20,956	1,325	18,711	1,052	17,364	855
		6	0.08	23,779	1,503	20,382	1,325	17,834	1,052	16,560	855
		8	0.07	22,680	1,437	19,278	1,289	17,010	1,002	15,876	814
		10	0.067	20,412	1,293	17,350	1,222	15,309	959	14,288	782
		12	0.065	18,144	1,150	15,422	1,099	13,608	862	12,701	704
		14	0.045	14,112	795	11,995	977	10,584	767	9,878	625
		16	0.045	14,112	795	11,995	592	10,584	522	9,878	417
		20	0.035	14,112	795	11,995	592	10,584	522	9,878	417
		22	0.03	14,112	795	11,995	592	10,584	522	9,878	417
		25	0.025	14,112	795	11,995	592	10,584	522	9,878	417
2	0.02	6	0.013	20,790	2,289	17,672	1,944	15,593	1,373	14,553	1,121
		8	0.01	18,900	2,080	16,065	1,768	14,175	1,248	13,230	1,019
		10	0.008	17,104	1,797	14,539	1,528	12,828	1,129	11,973	922
		12	0.006	15,309	1,516	13,013	1,289	11,482	1,010	10,716	826
		14	0.005	14,458	1,432	12,290	1,216	10,844	954	10,121	779
		16	0.004	13,608	1,348	11,567	1,145	10,206	898	9,526	733
		20	0.004	11,907	1,180	10,121	1,002	8,930	786	8,335	642
		25	0.003	11,907	1,059	10,121	900	8,930	707	8,335	575
		30	0.003	11,312	1,006	9,615	855	8,484	672	7,918	547
	0.05	6	0.027	20,790	2,289	17,672	1,944	15,593	1,373	14,553	1,121
		8	0.017	18,900	2,080	16,065	1,768	14,175	1,248	13,230	1,019
		10	0.016	17,104	1,797	14,539	1,528	12,828	1,129	11,973	922
		12	0.011	15,309	1,516	13,013	1,289	11,482	1,010	10,716	826
		14	0.01	14,458	1,432	12,290	1,216	10,844	954	10,121	779
		16	0.008	13,608	1,348	11,567	1,145	10,206	898	9,526	733
		20	0.006	11,907	1,180	10,121	1,002	8,930	786	8,335	642
		25	0.004	11,907	1,059	10,121	900	8,930	707	8,335	575
		30	0.003	11,312	1,006	9,615	855	8,484	672	7,918	547
	0.1	6	0.07	20,790	2,289	17,672	1,944	15,593	1,373	14,553	1,121
		8	0.055	18,900	2,080	16,065	1,768	14,175	1,248	13,230	1,019
		10	0.042	17,104	1,797	14,539	1,528	12,828	1,129	11,973	922
		12	0.03	15,309	1,516	13,013	1,289	11,482	1,010	10,716	826
		14	0.03	14,458	1,432	12,290	1,216	10,844	954	10,121	779
		16	0.03	13,608	1,348	11,567	1,145	10,206	898	9,526	733
		20	0.025	11,907	1,180	10,121	1,002	8,930	786	8,335	642
		22	0.02	11,907	1,059	10,121	900	8,930	707	8,335	575
		25	0.015	11,907	1,059	10,121	900	8,930	707	8,335	575
		30	0.01	11,312	1,006	9,615	855	8,484	672	7,918	547
	0.2	6	0.08	20,790	2,289	17,672	1,944	15,593	1,373	14,553	1,121
		8	0.07	18,900	2,080	16,065	1,768	14,175	1,248	13,230	1,019
		10	0.055	17,104	1,797	14,539	1,528	12,828	1,129	11,973	922
		12	0.04	15,309	1,516	13,013	1,289	11,482	1,010	10,716	826
		14	0.04	14,458	1,432	12,290	1,216	10,844	954	10,121	779



■ ESRR714 SERIES

Workpiece				Carbon Steels, Alloy Steels (180~250HB)		Prehardened Steels (HRc35~45)		Hardened Steels (HRc45~55)		Hardened Steels (HRc55~65)	
Ratio to standard depth of cut				Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%	
Mill Dia (mm)	Diameter (mm)	Neck Length (mm)	Depth of Cut (mm)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)
2	0.2	16	0.04	13,608	1,348	11,567	1,145	10,206	898	9,526	733
		20	0.035	11,907	1,180	10,121	1,002	8,930	786	8,335	642
		22	0.03	11,907	1,059	10,121	900	8,930	707	8,335	575
		25	0.025	11,907	1,059	10,121	900	8,930	707	8,335	575
		30	0.017	11,312	1,006	9,615	855	8,484	672	7,918	547
	0.3	6	0.11	20,790	2,289	17,672	1,944	15,593	1,373	14,553	1,121
		8	0.09	18,900	2,080	16,065	1,768	14,175	1,248	13,230	1,019
		10	0.075	17,104	1,797	14,539	1,528	12,828	1,129	11,973	922
		12	0.06	15,309	1,516	13,013	1,289	11,482	1,010	10,716	826
		14	0.06	14,458	1,432	12,290	1,216	10,844	954	10,121	779
		16	0.06	13,608	1,348	11,567	1,145	10,206	898	9,526	733
		20	0.037	11,907	1,180	10,121	1,002	8,930	786	8,335	642
		22	0.033	11,907	1,059	10,121	900	8,930	707	8,335	575
		25	0.03	11,907	1,059	10,121	900	8,930	707	8,335	575
		30	0.021	11,312	1,006	9,615	855	8,484	672	7,918	547
	0.5	6	0.17	20,790	2,289	17,672	1,944	15,593	1,373	14,553	1,121
		8	0.14	18,900	2,080	16,065	1,768	14,175	1,248	13,230	1,019
		10	0.11	17,104	1,797	14,539	1,528	12,828	1,129	11,973	922
		12	0.08	15,309	1,516	13,013	1,289	11,482	1,010	10,716	826
		14	0.08	14,458	1,432	12,290	1,216	10,844	954	10,121	779
		16	0.08	13,608	1,348	11,567	1,145	10,206	898	9,526	733
		20	0.05	11,907	1,180	10,121	1,002	8,930	786	8,335	642
		22	0.05	11,907	1,059	10,121	900	8,930	707	8,335	575
		25	0.05	11,907	1,059	10,121	900	8,930	707	8,335	575
		30	0.03	11,312	1,006	9,615	855	8,484	672	7,918	547
2.5	0.1	8	0.06	18,900	2,080	16,065	1,768	14,175	1,248	13,230	1,019
		10	0.055	18,900	2,080	16,065	1,768	14,175	1,248	13,230	1,019
		12	0.051	18,018	1,958	15,315	1,664	13,513	1,190	12,613	1,019
		14	0.046	17,136	1,835	14,566	1,560	12,852	1,132	11,995	971
		16	0.042	16,254	1,713	13,816	1,456	12,190	1,073	11,378	876
		20	0.03	13,608	1,348	11,567	1,145	10,206	898	9,526	733
		25	0.022	12,757	1,204	10,844	1,022	9,568	802	8,930	653
		30	0.015	11,907	1,059	10,121	900	8,930	707	8,335	575
	0.2	8	0.08	18,900	2,080	16,065	1,768	14,175	1,248	13,230	1,019
		10	0.07	18,900	2,080	16,065	1,768	14,175	1,248	13,230	1,019
		12	0.06	18,018	1,958	15,315	1,664	13,513	1,190	12,613	1,019
		14	0.05	17,136	1,835	14,566	1,560	12,852	1,132	11,995	971
		16	0.055	16,254	1,713	13,816	1,456	12,190	1,073	11,378	876
		20	0.04	13,608	1,348	11,567	1,145	10,206	898	9,526	733
		25	0.03	12,757	1,204	10,844	1,022	9,568	802	8,930	653
		30	0.02	11,907	1,059	10,121	900	8,930	707	8,335	575
	0.3	8	0.1	18,900	2,080	16,065	1,768	14,175	1,248	13,230	1,019
		10	0.09	18,900	2,080	16,065	1,768	14,175	1,248	13,230	1,019
		12	0.085	18,018	1,958	15,315	1,664	13,513	1,190	12,613	1,019

Technical Data

ESRR714 SERIES

Workpiece				Carbon Steels, Alloy Steels (180~250HB)		Prehardened Steels (HRC35~45)		Hardened Steels (HRC45~55)		Hardened Steels (HRC55~65)	
Ratio to standard depth of cut				Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%	
Mill Dia (mm)	Diameter (mm)	Neck Length (mm)	Depth of Cut (mm)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)
2.5	0.3	14	0.08	17,136	1,835	14,566	1,560	12,852	1,132	11,995	971
		16	0.075	16,254	1,713	13,816	1,456	12,190	1,073	11,378	876
		20	0.06	13,608	1,348	11,567	1,145	10,206	898	9,526	733
		25	0.065	12,757	1,204	10,844	1,022	9,568	802	8,930	653
		30	0.06	11,907	1,059	10,121	900	8,930	707	8,335	575
	0.5	8	0.15	18,900	2,080	16,065	1,768	14,175	1,248	13,230	1,019
		10	0.14	18,900	2,080	16,065	1,768	14,175	1,248	13,230	1,019
		12	0.13	18,018	1,958	15,315	1,664	13,513	1,190	12,613	1,019
		14	0.12	17,136	1,835	14,566	1,560	12,852	1,132	11,995	971
		16	0.11	16,254	1,713	13,816	1,456	12,190	1,073	11,378	876
		20	0.08	13,608	1,348	11,567	1,145	10,206	898	9,526	733
		25	0.07	12,757	1,204	10,844	1,022	9,568	802	8,930	653
		30	0.05	11,907	1,059	10,121	900	8,930	707	8,335	575
3	0.1	8	0.07	14,400	1,981	12,240	1,684	10,800	1,188	10,080	970
		10	0.06	14,400	1,981	12,240	1,684	10,800	1,188	10,080	970
		12	0.05	14,400	1,981	12,240	1,684	10,800	1,188	10,080	970
		14	0.047	14,400	1,981	12,240	1,684	10,800	1,188	10,080	970
		16	0.035	14,400	1,981	12,240	1,684	10,800	1,188	10,080	970
		20	0.035	11,664	1,604	9,914	1,363	8,748	961	8,165	785
		25	0.031	10,368	1,362	8,812.5	1,158	7,776	816	7,257.5	667
		30	0.027	9,072	1,121	7,711	953	6,804	672	6,350	550
		35	0.02	9,072	1,121	7,711	953	6,804	672	6,350	550
		40	0.015	8,164	897	6,939	762	6,123	537	5,715	440
		45	0.01	7,258	672	6,169	572	5,443	403	5,080	330
	0.2	8	0.09	14,400	1,981	12,240	1,684	10,800	1,188	10,080	970
		10	0.08	14,400	1,981	12,240	1,684	10,800	1,188	10,080	970
		12	0.07	14,400	1,981	12,240	1,684	10,800	1,188	10,080	970
		14	0.06	14,400	1,981	12,240	1,684	10,800	1,188	10,080	970
		16	0.05	14,400	1,981	12,240	1,684	10,800	1,188	10,080	970
		20	0.05	11,664	1,604	9,914	1,363	8,748	961	8,165	785
		25	0.045	10,368	1,362	8,812.5	1,158	7,776	816	7,257.5	667
		30	0.04	9,072	1,121	7,711	953	6,804	672	6,350	550
		35	0.035	9,072	1,121	7,711	953	6,804	672	6,350	550
		40	0.03	8,164	897	6,939	762	6,123	537	5,715	440
		45	0.025	7,258	672	6,169	572	5,443	403	5,080	330
	0.3	8	0.13	14,400	1,981	12,240	1,684	10,800	1,188	10,080	970
		10	0.115	14,400	1,981	12,240	1,684	10,800	1,188	10,080	970
		12	0.1	14,400	1,981	12,240	1,684	10,800	1,188	10,080	970
		14	0.085	14,400	1,981	12,240	1,684	10,800	1,188	10,080	970
		16	0.075	14,400	1,981	12,240	1,684	10,800	1,188	10,080	970
		20	0.075	11,664	1,604	9,914	1,363	8,748	961	8,165	785
		25	0.0675	10,368	1,362	8,812.5	1,158	7,776	816	7,257.5	667
		30	0.06	9,072	1,121	7,711	953	6,804	672	6,350	550
		35	0.05	9,072	1,121	7,711	953	6,804	672	6,350	550



■ ESRR714 SERIES

Workpiece				Carbon Steels, Alloy Steels (180~250HB)		Prehardened Steels (HRc35~45)		Hardened Steels (HRc45~55)		Hardened Steels (HRc55~65)	
Ratio to standard depth of cut				Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%	
Mill Dia (mm)	Diameter (mm)	Neck Length (mm)	Depth of Cut (mm)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)
3	0.3	40	0.04	8,164	897	6,939	762	6,123	537	5,715	440
		45	0.03	7,258	672	6,169	572	5,443	403	5,080	330
	0.5	8	0.18	14,400	1,981	12,240	1,684	10,800	1,188	10,080	970
		10	0.155	14,400	1,981	12,240	1,684	10,800	1,188	10,080	970
		12	0.13	14,400	1,981	12,240	1,684	10,800	1,188	10,080	970
		14	0.12	14,400	1,981	12,240	1,684	10,800	1,188	10,080	970
		16	0.1	14,400	1,981	12,240	1,684	10,800	1,188	10,080	970
		20	0.1	11,664	1,604	9,914	1,363	8,748	961	8,165	785
		25	0.09	10,368	1,362	8812.5	1,158	7,776	816	7257.5	667
		30	0.08	9,072	1,121	7,711	953	6,804	672	6,350	550
		35	0.065	9,072	1,121	7,711	953	6,804	672	6,350	550
		40	0.05	8,164	897	6,939	762	6,123	537	5,715	440
		45	0.04	7,258	672	6,169	572	5,443	403	5,080	330
		50	0.03	6,532	538	5,552	457	4,899	322	4,572	264
	1	8	0.2	14,400	1,981	12,240	1,684	10,800	1,188	10,080	970
		10	0.175	14,400	1,981	12,240	1,684	10,800	1,188	10,080	970
		12	0.15	14,400	1,981	12,240	1,684	10,800	1,188	10,080	970
		14	0.13	14,400	1,981	12,240	1,684	10,800	1,188	10,080	970
		16	0.12	14,400	1,981	12,240	1,684	10,800	1,188	10,080	970
		20	0.11	11,664	1,604	9,914	1,363	8,748	961	8,165	785
		25	0.1	10,368	1,362	8812.5	1,158	7,776	816	7257.5	667
		30	0.09	9,072	1,121	7,711	953	6,804	672	6,350	550
		35	0.075	9,072	1,121	7,711	953	6,804	672	6,350	550
		40	0.06	8,164	897	6,939	762	6,123	537	5,715	440
		45	0.045	7,258	672	6,169	572	5,443	403	5,080	330
		50	0.03	6,532	538	5,552	457	4,899	322	4,572	264
4	0.1	10	0.072	11,213	2,730	9,531	2,321	8,410	1,638	7,849	1,338
		12	0.065	11,213	2,730	9,531	2,321	8,410	1,638	7,849	1,338
		13	0.062	10,734	2,613	9,114	2,219	8,004	1,558	7,266	1,239
		16	0.06	10,255	2,496	8,697	2,116	7,599	1,479	6,684	1,139
		20	0.055	10,255	2,496	8,697	2,116	7,599	1,479	6,884	1,139
		25	0.05	10,255	2,496	7,782	1,810	6,545	1,221	5,904	962
		30	0.045	10,255	2,496	6,867	1,505	5,491	963	5,124	785
		35	0.04	10,255	2,496	6,867	1,505	5,491	963	5,124	785
		40	0.035	9,247	2,000	6,225	1,262	5,217	842	4,621	643
		45	0.03	8,240	1,505	5,584	1,019	4,944	722	4,119	501
		50	0.02	7,398	1,200	4,980	757	4,174	505	3,697	385
	0.2	10	0.15	11,213	2,730	9,531	2,321	8,410	1,638	7,849	1,338
		12	0.14	11,213	2,730	9,531	2,321	8,410	1,638	7,849	1,338
		13	0.135	10,734	2,613	9,114	2,219	8,004	1,558	7,266	1,239
		16	0.13	10,255	2,496	8,697	2,116	7,599	1,479	6,684	1,139
		20	0.11	10,255	2,496	8,697	2,116	7,599	1,479	6,884	1,139
		25	0.105	10,255	2,496	7,782	1,810	6,545	1,221	5,904	962
		30	0.1	10,255	2,496	6,867	1,505	5,491	963	5,124	785

Technical Data

ESRR714 SERIES

Workpiece				Carbon Steels, Alloy Steels (180~250HB)		Prehardened Steels (HRC35~45)		Hardened Steels (HRC45~55)		Hardened Steels (HRC55~65)	
Ratio to standard depth of cut				Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%	
Mill Dia (mm)	Diameter (mm)	Neck Length (mm)	Depth of Cut (mm)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)
4	0.2	35	0.08	10,255	2,496	6,867	1,505	5,491	963	5,124	785
		40	0.07	9,247	2,000	6,225	1,262	5,217	842	4,621	643
		45	0.06	8,240	1,505	5,584	1,019	4,944	722	4,119	501
		50	0.05	7,398	1,200	4,980	757	4,174	505	3,697	385
	0.3	10	0.23	11,213	2,730	9,531	2,321	8,410	1,638	7,849	1,338
		12	0.22	11,213	2,730	9,531	2,321	8,410	1,638	7,849	1,338
		13	0.21	10,734	2,613	9,114	2,219	8,004	1,558	7,266	1,239
		16	0.2	10,255	2,496	8,697	2,116	7,599	1,479	6,684	1,139
		20	0.18	10,255	2,496	8,697	2,116	7,599	1,479	6,884	1,139
		25	0.17	10,255	2,496	7,782	1,810	6,545	1,221	5,904	962
		30	0.16	10,255	2,496	6,867	1,505	5,491	963	5,124	785
		35	0.14	10,255	2,496	6,867	1,505	5,491	963	5,124	785
		40	0.13	9,247	2,000	6,225	1,262	5,217	842	4,621	643
		45	0.12	8,240	1,505	5,584	1,019	4,944	722	4,119	501
		50	0.11	7,398	1,200	4,980	757	4,174	505	3,697	385
	0.5	10	0.4	11,213	2,730	9,531	2,321	8,410	1,638	7,849	1,338
		12	0.35	11,213	2,730	9,531	2,321	8,410	1,638	7,849	1,338
		13	0.3	10,734	2,613	9,114	2,219	8,004	1,558	7,266	1,239
		16	0.25	10,255	2,496	8,697	2,116	7,599	1,479	6,684	1,139
		20	0.2	10,255	2,496	8,697	2,116	7,599	1,479	6,884	1,139
		25	0.175	10,255	2,496	7,782	1,810	6,545	1,221	5,904	962
		30	0.15	10,255	2,496	6,867	1,505	5,491	963	5,124	785
		35	0.1	10,255	2,496	6,867	1,505	5,491	963	5,124	785
		40	0.075	9,247	2,000	6,225	1,262	5,217	842	4,621	643
		45	0.05	8,240	1,505	5,584	1,019	4,944	722	4,119	501
		50	0.04	7,398	1,200	4,980	757	4,174	505	3,697	385
		55	0.03	6,592	9,903	4,467	611	3,955	433	3,295	300
	1	10	0.5	11,213	2,730	9,531	2,321	8,410	1,638	7,849	1,338
		12	0.4	11,213	2,730	9,531	2,321	8,410	1,638	7,849	1,338
		13	0.35	10,734	2,613	9,114	2,219	8,004	1,558	7,266	1,239
		16	0.29	10,255	2,496	8,697	2,116	7,599	1,479	6,684	1,139
		20	0.23	10,255	2,496	8,697	2,116	7,599	1,479	6,884	1,139
		25	0.2	10,255	2,496	7,782	1,810	6,545	1,221	5,904	962
		30	0.17	10,255	2,496	6,867	1,505	5,491	963	5,124	785
		35	0.12	10,255	2,496	6,867	1,505	5,491	963	5,124	785
		40	0.09	9,247	2,000	6,225	1,262	5,217	842	4,621	643
		45	0.06	8,240	1,505	5,584	1,019	4,944	722	4,119	501
		50	0.05	7,398	1,200	4,980	757	4,174	505	3,697	385
		55	0.04	6,592	9,903	4,467	611	3,955	433	3,295	300
5	0.1	16	0.08	9,154	2,786	7,781	2,368	6,866	1,671	6,408	1,365
		30	0.07	7,872	2,291	6,691	1,948	5,904	1,374	5,510	1,122
		40	0.06	6,590	1,797	5,602	1,527	4,943	1,078	4,613	880
	0.2	16	0.16	9,154	2,786	7,781	2,368	6,866	1,671	6,408	1,365
		30	0.145	7,872	2,291	6,691	1,948	5,904	1,374	5,510	1,122



ESRR714 SERIES

Workpiece				Carbon Steels, Alloy Steels (180~250HB)		Prehardened Steels (HRc35~45)		Hardened Steels (HRc45~55)		Hardened Steels (HRc55~65)	
Ratio to standard depth of cut				Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%	
Mill Dia (mm)	Diameter (mm)	Neck Length (mm)	Depth of Cut (mm)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)
5	0.2	40	0.13	6,590	1,797	5,602	1,527	4,943	1,078	4,613	880
	0.3	16	0.24	9,154	2,786	7,781	2,368	6,866	1,671	6,408	1,365
		30	0.22	7,872	2,291	6,691	1,948	5,904	1,374	5,510	1,122
		40	0.2	6,590	1,797	5,602	1,527	4,943	1,078	4,613	880
	0.5	16	0.35	9,154	2,786	7,781	2,368	6,866	1,671	6,408	1,365
		30	0.296	7,872	2,291	6,691	1,948	5,904	1,374	5,510	1,122
		40	0.135	6,590	1,797	5,602	1,527	4,943	1,078	4,613	880
		50	0.12	5,272	1,078	4,482	916	3,954	646	3,690	528
		60	0.1	4,218	647	3,585	549	3,164	388	2,952	317
	1	16	0.4	9,154	2,786	7,781	2,368	6,866	1,671	6,408	1,365
		30	0.275	7,872	2,291	6,691	1,948	5,904	1,374	5,510	1,122
		40	0.15	6,590	1,797	5,602	1,527	4,943	1,078	4,613	880
		50	0.13	5,272	1,078	4,482	916	3,954	646	3,690	528
		60	0.11	4,218	647	3,585	549	3,164	388	2,952	317
	1.5	15	0.45	9,154	2,786	7,781	2,368	6,866	1,671	6,408	1,365
	2	15	0.5	9,154	2,786	7,781	2,368	6,866	1,671	6,408	1,365
6	0.1	20	0.065	7,630	2,787	6,486	2,368	5,722	1,671	5,432	1,365
		40	0.05	6,486	2,132	5,513	1,811	4,865	1,279	4,540	1,044
		50	0.04	5,491	1,470	4,668	1,248	4,118	872	3,844	711
	0.2	20	0.14	7,630	2,787	6,486	2,368	5,722	1,671	5,432	1,365
		40	0.11	6,486	2,132	5,513	1,811	4,865	1,279	4,540	1,044
		50	0.08	5,491	1,470	4,668	1,248	4,118	872	3,844	711
	0.3	20	0.22	7,630	2,787	6,486	2,368	5,722	1,671	5,432	1,365
		30	0.2	7,630	2,787	6,486	2,368	5,722	1,671	5,432	1,365
		40	0.18	6,486	2,132	5,513	1,811	4,865	1,279	4,540	1,044
		50	0.14	5,491	1,470	4,668	1,248	4,118	872	3,844	711
		60	0.1	5,491	1,470	4,668	1,248	4,118	872	3,844	711
	0.5	20	0.35	7,630	2,787	6,486	2,368	5,722	1,671	5,432	1,365
		30	0.29	7,630	2,787	6,486	2,368	5,722	1,671	5,432	1,365
		40	0.24	6,486	2,132	5,513	1,811	4,865	1,279	4,540	1,044
		50	0.165	5,491	1,470	4,668	1,248	4,118	872	3,844	711
		60	0.1	5,491	1,470	4,668	1,248	4,118	872	3,844	711
	1	20	0.4	7,630	2,787	6,486	2,368	5,722	1,671	5,432	1,365
		30	0.35	7,630	2,787	6,486	2,368	5,722	1,671	5,432	1,365
		40	0.28	6,486	2,132	5,513	1,811	4,865	1,279	4,540	1,044
		50	0.2	5,491	1,470	4,668	1,248	4,118	872	3,844	711
		60	0.15	5,491	1,470	4,668	1,248	4,118	872	3,844	711
	1.5	20	0.45	7,630	2,787	6,486	2,368	5,722	1,671	5,432	1,365
		40	0.4	6,486	2,132	5,513	1,811	4,865	1,279	4,540	1,044
		50	0.3	5,491	1,470	4,668	1,248	4,118	872	3,844	711
	2	20	0.5	7,630	2,787	6,486	2,368	5,722	1,671	5,432	1,365
		30	0.4	7,630	2,787	6,486	2,368	5,722	1,671	5,432	1,365
		40	0.3	6,486	2,132	5,513	1,811	4,865	1,279	4,540	1,044
		50	0.2	5,491	1,470	4,668	1,248	4,118	872	3,844	711
		60	0.1	5,491	1,470	4,668	1,248	4,118	872	3,844	711
8	0.1	25	0.35	5,730	2,660	4,524	2,076	3,016	1,279	2,320	817

Technical Data

ESRR714 SERIES

Workpiece				Carbon Steels, Alloy Steels (180~250HB)		Prehardened Steels (HRC35~45)		Hardened Steels (HRC45~55)		Hardened Steels (HRC55~65)	
Ratio to standard depth of cut				Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%	
Mill Dia (mm)	Diameter (mm)	Neck Length (mm)	Depth of Cut (mm)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)
8	0.2	22	0.5	5,730	2,660	4,524	2,076	3,016	1,279	2,320	817
		40	0.25	5,730	2,660	4,524	2,076	3,016	1,279	2,320	817
	0.3	22	0.6	5,730	2,660	4,524	2,076	3,016	1,279	2,320	817
		40	0.3	5,730	2,660	4,524	2,076	3,016	1,279	2,320	817
	0.5	22	0.7	5,730	2,660	4,524	2,076	3,016	1,279	2,320	817
		35	0.5	5,730	2,660	4,524	2,076	3,016	1,279	2,320	817
		40	0.35	5,730	2,660	4,524	2,076	3,016	1,279	2,320	817
		50	0.3	4,584	1,596	3,619	1,245	2,413	767	1,856	490
		60	0.25	4,584	1,596	3,619	1,245	2,413	767	1,856	490
	1	22	0.8	5,730	2,660	4,524	2,076	3,016	1,279	2,320	817
		35	0.6	5,730	2,660	4,524	2,076	3,016	1,279	2,320	817
		40	0.4	5,730	2,660	4,524	2,076	3,016	1,279	2,320	817
		50	0.4	4,584	1,596	3,619	1,245	2,413	767	1,856	490
		60	0.3	4,584	1,596	3,619	1,245	2,413	767	1,856	490
	1.2	22	0.9	5,730	2,660	4,524	2,076	3,016	1,279	2,320	817
		40	0.45	5,730	2,660	4,524	2,076	3,016	1,279	2,320	817
	2	22	1	5,730	2,660	4,524	2,076	3,016	1,279	2,320	817
		40	0.5	5,730	2,660	4,524	2,076	3,016	1,279	2,320	817
		50	0.4	4,584	1,596	3,619	1,245	2,413	767	1,856	490
10	0.1	30	0.4	4,524	2,419	3,567	1,954	2,378	1,188	1,856	761
		24	0.5	4,524	2,419	3,567	1,954	2,378	1,188	1,856	761
	0.2	40	0.25	4,524	2,419	3,567	1,954	2,378	1,188	1,856	761
		24	0.6	4,524	2,419	3,567	1,954	2,378	1,188	1,856	761
	0.3	40	0.3	4,524	2,419	3,567	1,954	2,378	1,188	1,856	761
		24	0.7	4,524	2,419	3,567	1,954	2,378	1,188	1,856	761
		40	0.4	4,524	2,419	3,567	1,954	2,378	1,188	1,856	761
		50	0.3	3,619	1,451	2,854	1,172	1,902	713	1,485	456
		60	0.2	3,619	1,451	2,854	1,172	1,902	713	1,485	456
	0.5	24	0.8	4,524	2,419	3,567	1,954	2,378	1,188	1,856	761
		40	0.5	4,524	2,419	3,567	1,954	2,378	1,188	1,856	761
		50	0.4	3,619	1,451	2,854	1,172	1,902	713	1,485	456
		60	0.3	3,619	1,451	2,854	1,172	1,902	713	1,485	456
	1	24	0.9	4,524	2,419	3,567	1,954	2,378	1,188	1,856	761
		40	0.55	4,524	2,419	3,567	1,954	2,378	1,188	1,856	761
	1.5	24	1	4,524	2,419	3,567	1,954	2,378	1,188	1,856	761
		40	0.5	3,619	1,451	2,854	1,172	1,902	713	1,485	456
		50	0.4	2,895	870	2,283	703	1,522	427	1,188	274
	2	24	0.7	3,857	2,419	3,045	1,954	2,030	1,188	1,537	761
12	2.5	24	1.1	4,524	2,419	3,567	1,954	2,378	1,188	1,856	761
	0.2	32	0.5	3,857	2,419	3,045	1,954	2,030	1,188	1,537	761
		26	0.6	3,857	2,419	3,045	1,954	2,030	1,188	1,537	761
	0.3	45	0.3	3,857	2,419	3,045	1,954	2,030	1,188	1,537	761
		26	0.7	3,857	2,419	3,045	1,954	2,030	1,188	1,537	761
	0.5	40	0.4	3,857	2,419	3,045	1,954	2,030	1,188	1,537	761
		60	0.3	3,086	1,451	2,436	1,172	1,624	713	1,230	456



■ ESRR714 SERIES

Workpiece				Carbon Steels, Alloy Steels (180~250HB)		Prehardened Steels (HRc35~45)		Hardened Steels (HRc45~55)		Hardened Steels (HRc55~65)	
Ratio to standard depth of cut				Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%	
Mill Dia (mm)	Diameter (mm)	Neck Length (mm)	Depth of Cut (mm)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)
12	1	26	0.8	3,857	2,419	3,045	1,954	2,030	1,188	1,537	761
		40	0.5	3,857	2,419	3,045	1,954	2,030	1,188	1,537	761
		60	0.3	3,086	1,451	2,436	1,172	1,624	713	1,230	456
	1.5	26	0.9	3,857	2,419	3,045	1,954	2,030	1,188	1,537	761
		40	0.5	3,857	2,419	3,045	1,954	2,030	1,188	1,537	761
	2	26	1	3,857	2,419	3,045	1,954	2,030	1,188	1,537	761
		40	0.5	3,857	2,419	3,045	1,954	2,030	1,188	1,537	761
	3	26	1	3,857	2,419	3,045	1,954	2,030	1,188	1,537	761
16	0.5	35	2	2,842	2,116	2,262	1,692	1,508	1,047	1,160	672
		50	1	2,842	2,116	2,262	1,692	1,508	1,047	1,160	672
	1	35	2	2,842	2,116	2,262	1,692	1,508	1,047	1,160	672
		50	1	2,842	2,116	2,262	1,692	1,508	1,047	1,160	672
20	0.5	40	2	2,262	1,915	1,798	1,512	1,189	957	928	616
		55	1	2,262	1,915	1,798	1,512	1,189	957	928	616
	1	40	2	2,262	1,915	1,798	1,512	1,189	957	928	616
		55	1	2,262	1,915	1,798	1,512	1,189	957	928	616

- The above recommendation table may differ from the actual situation, adjust it according to the machine condition, processing type and purpose.
- In the case of low RPM, reduce the feed rate at the same rate.

Technical Data

ESLNR20 SERIES

Workpiece				Carbon Steels, Alloy Steels (180~250HB)		Prehardened Steels (HRc35~45)		Hardened Steels (HRc45~55)		Hardened Steels (HRc55~65)			
Ratio to standard depth of cut				Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%			
Mill Dia (mm)	Diameter (mm)	Neck Length (mm)	Depth of Cut (mm)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)		
0.2	0.05	0.5	0.02	50,000	258	50,000	205	50,000	180	50,000	160		
		1	0.014	50,000	258	50,000	205	50,000	180	50,000	160		
		1.5	0.008	50,000	240	45,900	202	45,900	170	45,900	153		
		2	0.008	42,000	202	36,700	176	36,700	162	36,700	147		
0.3	0.05	1	0.021	50,000	585	50,000	456	50,000	336	50,000	320		
		1.5	0.016	50,000	585	45,000	456	45,000	336	45,000	320		
		2	0.012	45,000	530	45,000	420	45,000	300	45,000	290		
		2.5	0.01	40,000	471	40,000	373	40,000	267	40,000	258		
		3	0.008	35,000	412	35,000	326	30,000	200	30,000	194		
0.4	0.05	1	0.025	50,000	580	50,000	461	40,000	320	36,000	270		
		1.5	0.02	50,000	580	50,000	461	40,000	320	36,000	270		
		2	0.016	45,000	520	45,000	410	36,000	290	34,000	240		
		2.5	0.015	40,500	480	40,500	370	33,400	270	30,600	220		
		3	0.014	40,000	410	40,000	330	32,800	240	25,600	200		
		3.5	0.012	36,000	380	36,000	300	29,400	200	22,920	180		
		4	0.008	30,000	320	30,000	250	21,600	160	19,200	150		
	0.1	2	0.028	45,000	520	45,000	410	36,000	290	34,000	240		
		3	0.016	40,000	410	40,000	330	32,800	240	25,600	200		
		4	0.01	30,000	320	30,000	250	21,600	160	19,200	150		
		0.5	0.05	1	0.03	50,000	898	40,000	464	30,000	378	28,000	315
				2	0.023	50,000	898	40,000	464	30,000	378	28,000	315
3	0.017			45,000	810	36,000	414	27,000	315	24,500	261		
4	0.017			40,000	820	32,000	378	24,000	279	20,000	234		
5	0.011			28,800	540	19,400	280	18,000	250	15,000	200		
6	0.008			28,800	480	19,400	260	18,000	250	15,000	200		
0.1	0.1	1	0.035	50,000	898	40,000	464	30,000	378	28,000	315		
		2	0.03	50,000	898	40,000	464	30,000	378	28,000	315		
		3	0.02	45,000	810	36,000	414	27,000	315	24,500	261		
		4	0.02	40,000	720	32,000	378	24,000	279	20,000	234		
		5	0.013	28,800	540	19,400	280	18,000	250	15,000	200		
		6	0.013	28,800	480	19,400	260	18,000	250	15,000	200		
0.6	0.1	2	0.035	50,000	1,159	37,830	600	28,200	390	23,000	320		
		4	0.024	40,000	830	27,800	440	23,600	280	21,000	230		
		6	0.015	24,000	490	18,000	300	17,800	240	15,000	210		
		8	0.013	24,000	466	18,000	285	17,800	228	15,000	200		
		10	0.009	24,000	451	18,000	276	17,800	221	15,000	193		
2	0.2	6	0.08	20,790	1,635	17,672	1,389	15,593	981	14,553	801		
		8	0.07	18,900	1,486	16,065	1,263	14,175	892	13,230	728		
		12	0.04	15,309	1,083	13,013	921	11,482	722	10,716	590		
		16	0.04	13,608	963	11,567	818	10,206	642	9,526	524		
		20	0.035	11,907	843	10,121	716	8,930	562	8,335	459		
		25	0.025	11,907	843	10,121	716	8,930	562	8,335	459		
		30	0.017	11,312	800	9,615	680	8,484	534	7,918	436		
	0.3	8	0.09	18,900	1,651	16,065	1,403	14,175	991	13,230	809		



ESLNR20 SERIES

Workpiece				Carbon Steels, Alloy Steels (180~250HB)		Prehardened Steels (HRc35~45)		Hardened Steels (HRc45~55)		Hardened Steels (HRc55~65)	
Ratio to standard depth of cut				Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%	
Mill Dia (mm)	Diameter (mm)	Neck Length (mm)	Depth of Cut (mm)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)
2	0.3	16	0.06	13,608	1,070	11,567	909	10,206	713	9,526	583
		20	0.037	11,907	936	10,121	796	8,930	624	8,335	510
	0.5	6	0.017	20,709	1,635	17,672	1,389	15,593	981	14,553	801
		8	0.014	18,900	1,651	16,065	1,403	14,175	991	13,230	809
		12	0.08	15,309	1,204	13,013	1,023	11,482	802	10,716	655
		16	0.08	13,608	1,070	11,567	909	10,206	713	9,526	583
		20	0.05	11,907	936	10,121	796	8,930	624	8,335	510
		25	0.05	11,907	936	10,121	796	8,930	624	8,335	510
		30	0.03	11,312	889	9,615	756	8,484	593	7,918	484
	0.8	8	0.2	18,900	1,651	16,065	1,403	14,175	991	13,230	809
		16	0.1	13,608	1,070	11,567	909	10,206	713	9,526	583
		20	0.06	11,907	936	10,121	796	8,930	624	8,335	510
3	0.2	8	0.09	14,400	1,415	12,240	1,203	10,800	849	10,080	693
		12	0.07	14,400	1,415	12,240	1,203	10,800	849	10,080	693
		16	0.05	14,400	1,415	12,240	1,203	10,800	849	10,080	693
		20	0.05	11,664	1,146	9,914	974	8,748	764	8,165	624
		30	0.04	9,072	1,146	7,711	974	6,804	764	6,350	624
		35	0.035	9,072	1,146	7,711	974	6,804	764	6,350	624
	0.3	8	0.13	14,400	1,572	12,240	1,337	10,800	943	10,080	771
		16	0.075	14,400	1,572	12,240	1,337	10,800	943	10,080	771
		20	0.075	11,664	1,274	9,914	1,083	8,748	849	8,165	693
		30	0.06	9,072	1,274	7,711	1,083	6,804	849	6,350	693
	0.5	8	0.18	14,400	1,572	12,240	1,337	10,800	943	10,080	771
		12	0.13	14,400	1,572	12,240	1,337	10,800	943	10,080	771
		16	0.1	14,400	1,572	12,240	1,337	10,800	943	10,080	771
		20	0.1	11,664	1,274	9,914	1,083	8,748	849	8,165	693
		30	0.08	9,072	1,274	7,711	1,083	6,804	849	6,350	693
		35	0.065	9,072	1,274	7,711	1,083	6,804	849	6,350	693
0.8	0.1	4	0.032	48,000	1,102	28,000	518	20,000	320	20,000	288
		6	0.019	38,700	800	25,000	461	18,000	288	18,000	256
		8	0.015	29,025	600	20,000	369	16,200	259	16,200	230
		12	0.012	29,025	570	20,000	350	16,200	246	16,200	219
	0.2	4	0.056	48,000	1,102	28,000	518	20,000	320	20,000	288
		6	0.032	38,700	800	25,000	461	18,000	288	18,000	256
1	0.1	4	0.038	32,400	1,359	27,540	1,039	24,300	815	22,680	666
		6	0.024	26,244	990	22,307	842	19,683	660	18,371	539
		8	0.024	23,328	880	19,829	748	17,496	587	16,330	479
		10	0.015	20,412	770	17,350	655	15,309	514	14,288	419
		12	0.015	18,144	609	15,422	453	13,608	399	12,701	320
		16	0.009	18,144	533	15,422	420	13,608	342	12,701	266
		20	0.006	13,608	399	11,567	315	10,206	257	9,526	200
	0.2	4	0.07	32,400	1,359	27,540	1,039	24,300	815	22,680	666
		6	0.04	26,244	990	22,307	842	19,683	660	18,371	539
		8	0.04	23,328	880	19,829	748	17,496	587	16,330	479

Technical Data

ESLNR20 SERIES

Workpiece				Carbon Steels, Alloy Steels (180~250HB)		Prehardened Steels (HRC35~45)		Hardened Steels (HRC45~55)		Hardened Steels (HRC55~65)	
Ratio to standard depth of cut				Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%	
Mill Dia (mm)	Diameter (mm)	Neck Length (mm)	Depth of Cut (mm)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)
1	0.2	10	0.025	20,412	770	17,350	655	15,309	514	14,288	419
		12	0.025	18,144	609	15,422	453	13,608	399	12,701	320
		16	0.015	18,144	533	15,422	420	13,608	342	12,701	266
		20	0.01	13,608	399	11,567	315	10,206	257	9,526	200
	0.3	6	0.04	26,244	990	22,307	842	19,683	660	18,371	539
		10	0.025	20,412	770	17,350	655	15,309	514	14,288	419
		16	0.015	18,144	533	15,422	420	13,608	342	12,701	266
		20	0.01	13,608	399	11,567	315	10,206	257	9,526	200
1.5	0.1	4	0.042	24,930	1,130	20,956	868	18,711	678	17,364	556
		8	0.036	22,680	1,027	19,278	873	17,010	685	15,876	559
		12	0.036	18,144	822	15,422	698	13,608	548	12,701	447
		15	0.023	14,112	568	11,995	423	10,584	373	9,878	298
		20	0.018	14,112	568	11,995	423	10,584	373	9,878	298
	0.2	4	0.07	24,930	1,130	20,956	868	18,711	678	17,364	556
		8	0.06	22,680	1,027	19,278	873	17,010	685	15,876	559
		12	0.06	18,144	822	15,422	698	13,608	548	12,701	447
		15	0.038	14,112	568	11,995	423	10,584	373	9,878	298
		20	0.03	14,112	568	11,995	423	10,584	373	9,878	298
	0.3	8	0.06	22,680	1,027	19,278	873	17,010	685	15,876	559
		15	0.038	14,112	568	11,995	423	10,584	373	9,878	298
		20	0.03	14,112	568	11,995	423	10,584	373	9,878	298

RPM = rev / min
FEED = mm / min



- The above recommendation table may differ from the actual situation, adjust it according to the machine condition, processing type and purpose.
- In the case of low RPM, reduce the feed rate at the same rate.



ESTNR20 SERIES

Workpiece				Carbon Steels, Alloy Steels (180~250HB)		Prehardened Steels (HRc35~45)		Hardened Steels (HRc45~55)		Hardened Steels (HRc55~65)	
Ratio to standard depth of cut				Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%	
Mill Dia (mm)	Diameter (mm)	Neck Length (mm)	Depth of Cut (mm)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)
0.2	0.05	2	0.007	39,660	887	33,660	754	29,700	591	27,720	483
0.4	0.05	4	0.009	30,096	899	25,582	764	22,572	599	21,067	489
		5	0.007	26,752	710	22,739	528	20,064	466	18,726	373
	0.1	4	0.009	31,680	946	26,928	804	23,760	631	22,176	515
		5	0.007	28,160	747	23,936	556	21,120	490	19,712	392
0.5	0.1	5	0.013	30,413	1,090	25,851	753	22,810	562	21,289	453
		8	0.008	24,330	678	20,681	468	18,248	350	17,031	282
		10	0.007	18,248	509	15,511	351	13,686	262	12,773	211
0.6	0.1	12	0.01	20,377	791	17,320	546	15,282	408	14,264	329
		15	0.006	16,727	649	14,218	448	12,545	335	11,709	270
0.8	0.2	6	0.045	31,680	1,084	26,928	921	23,760	723	22,176	590
		12	0.02	28,160	943	23,936	695	21,120	613	19,712	490
1	0.2	8	0.04	28,512	1,463	24,235	1,244	21,384	976	19,958	797
		10	0.035	28,512	1,596	24,235	1,357	21,384	1,064	19,958	869
		15	0.028	25,344	1,261	21,542	938	19,008	828	17,741	662
		20	0.02	19,008	828	16,157	653	14,256	532	13,306	414
		25	0.017	15,840	690	13,464	544	11,880	443	11,088	345
		30	0.017	15,840	690	13,464	544	11,880	443	11,088	345
		35	0.01	15,840	690	13,464	544	11,880	443	11,088	345
	0.3	8	0.04	28,512	1,463	24,235	1,244	21,384	976	19,958	797
		15	0.028	25,344	1,261	21,542	938	19,008	828	17,741	662
		25	0.017	15,840	690	13,464	544	11,880	443	11,088	345
		30	0.017	15,840	690	13,464	544	11,880	443	11,088	345
	0.2	10	0.05	21,683	1,079	18,431	803	16,262	708	15,178	567
		15	0.045	19,712	981	16,755	730	14,784	644	13,798	515
		20	0.042	17,347	863	14,745	642	13,010	567	12,143	453
		25	0.032	14,784	644	12,566	508	11,088	414	10,349	322
		30	0.028	12,320	536	10,472	423	9,240	345	8,624	268
	0.3	10	0.05	21,683	1,079	18,431	803	16,262	708	15,178	567
		20	0.042	17,347	863	14,745	642	13,010	567	12,143	453
		25	0.032	14,784	644	12,566	508	11,088	414	10,349	322
		30	0.028	12,320	536	10,472	423	9,240	345	8,624	268
2	0.2	30	0.045	13,440	1,254	11,424	933	10,080	823	9,408	658
		40	0.035	10,080	823	8,568	650	7,560	529	7,056	412
		50	0.017	8,400	686	7,140	541	6,300	441	5,880	343
	0.3	12	0.088	22,680	1,814	19,278	1,427	17,010	1,191	15,876	1,048
		20	0.054	18,144	1,452	15,422	1,141	13,608	953	12,701	838
		30	0.045	13,440	1,393	11,424	1,036	10,080	914	9,408	732
		40	0.035	10,080	914	8,568	722	7,560	588	7,056	457
		50	0.017	8,400	762	7,140	601	6,300	490	5,880	381
	0.5	8	0.17	22,680	1,814	19,278	1,427	17,010	1,191	15,876	1,048
		12	0.088	22,680	1,814	19,278	1,427	17,010	1,191	15,876	1,048
		16	0.088	19,278	1,542	16,386	1,213	14,459	1,012	13,495	891
		20	0.054	18,114	1,452	15,422	1,141	13,608	953	12,701	838

Technical Data

ESTNR20 SERIES

Workpiece				Carbon Steels, Alloy Steels (180~250HB)		Prehardened Steels (HRC35~45)		Hardened Steels (HRC45~55)		Hardened Steels (HRC55~65)	
Ratio to standard depth of cut				Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%	
Mill Dia (mm)	Diameter (mm)	Neck Length (mm)	Depth of Cut (mm)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)
2	0.5	25	0.054	15,876	1,270	13,495	999	11,907	833	11,113	733
		30	0.045	13,440	1,393	11,424	1,036	10,080	914	9,408	732
		40	0.035	10,080	914	8,568	722	7,560	588	7,056	457
		50	0.017	8,400	762	7,140	601	6,300	490	5,880	381
3	0.2	40	0.07	10,240	956	8,704	711	7,680	627	7,168	502
		50	0.05	7,680	627	6,528	495	5,760	403	5,376	314
		60	0.03	6,400	523	5,440	412	4,800	336	4,480	261
	0.3	40	0.07	10,240	1,062	8,704	790	7,680	697	7,168	557
		50	0.05	7,680	697	6,528	550	5,760	448	5,376	348
		60	0.03	6,400	581	5,440	458	4,800	373	4,480	290
	0.5	40	0.07	10,240	1,062	8,704	790	7,680	697	7,168	557
		50	0.05	7,680	697	6,528	550	5,760	448	5,376	348
		60	0.03	6,400	581	5,440	458	4,800	373	4,480	290

RPM = rev / min
FEED = mm / min

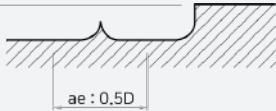
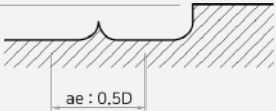


- The above recommendation table may differ from the actual situation, adjust it according to the machine condition, processing type and purpose.
- In the case of low RPM, reduce the feed rate at the same rate.



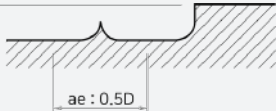
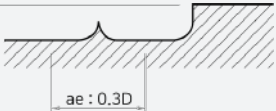
ESPM4 SERIES ► Side Cutting

Workpiece	Hardened Steels									
Hardness	~ HRc40		HRc40 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc 60 ~ HRc65	
D X R (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3 X R0.5	9,550	6,500	6,900	4,150	4,550	2,750	2,850	1,150	1,900	610
4 X R0.5	7,950	7,000	5,750	4,600	4,000	3,200	2,550	1,350	1,750	700
6 X R0.5	5,800	7,650	4,100	4,900	2,900	3,500	1,850	1,850	1,350	795
6 X R1.0	5,800	7,650	4,100	4,900	2,900	3,500	1,850	1,850	1,350	795
8 X R1.0	4,350	7,650	3,050	4,900	2,200	3,500	1,400	1,850	995	795
8 X R2.0	4,350	7,650	3,050	4,900	2,200	3,500	1,400	1,850	995	795
10 X R1.0	3,500	7,650	2,450	4,900	1,750	3,500	1,100	1,850	795	795
10 X R2.0	3,500	7,650	2,450	4,900	1,750	3,500	1,100	1,850	795	795
12 X R2.0	2,900	7,650	2,050	4,900	1,450	3,500	925	1,850	665	795
12 X R3.0	2,900	7,650	2,050	4,900	1,450	3,500	925	1,850	665	795

RPM = rev / min FEED = mm / min	$ap : 0.2R$  $ae : 0.5D$ *ae shouldn't be over max. 0.5D	$ap : 0.1R$  $ae : 0.5D$ *ae shouldn't be over max. 0.3D

ESPM4 SERIES ► High Speed Cutting

Workpiece	Hardened Steels									
Hardness	~ HRc40		HRc40 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc 60 ~ HRc65	
D X R (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3 X R0.5	22,000	16,000	17,000	10,000	12,500	8,000	9,500	4,600	6,900	2,500
4 X R0.5	17,000	17,500	13,000	12,000	11,000	9,200	8,000	5,500	5,600	2,900
6 X R0.5	13,500	18,500	10,500	13,800	9,000	11,000	6,400	6,400	4,500	3,600
6 X R1.0	13,500	18,500	10,500	13,800	9,000	11,000	6,400	6,400	4,500	3,600
8 X R1.0	10,000	18,500	8,000	14,000	6,800	11,000	4,800	6,700	3,400	4,100
8 X R2.0	10,000	18,500	8,000	14,000	6,800	11,000	4,800	6,700	3,400	4,100
10 X R1.0	8,000	18,500	6,400	14,000	5,400	11,000	3,800	6,800	2,700	3,800
10 X R2.0	8,000	18,500	6,400	14,000	5,400	11,000	3,800	6,800	2,700	3,800
12 X R2.0	6,600	18,500	5,300	14,000	4,500	11,000	3,200	7,000	2,250	3,600
12 X R3.0	6,600	18,500	5,300	14,000	4,500	11,000	3,200	7,000	2,250	3,600

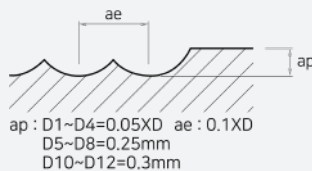
RPM = rev / min FEED = mm / min	$ap : 0.1R$  $ae : 0.5D$ *ae shouldn't be over max. 0.5D	$ap : 0.05R$  $ae : 0.3D$ *ae shouldn't be over max. 0.3D

Technical Data

■ ESB702, ESB712 SERIES

Workpiece	Hardened Steels Heat Resistant Steels		Hardened Steels									
Hardness	HRc30 ~ HRc40		HRc40 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc60 ~ HRc65		HRc 65 ~ HRc70	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
~0.2	50,000	1,200	50,000	1,050	45,000	960	40,000	770	35,000	674	31,500	570
0.3	50,000	1,500	50,000	1,350	45,000	1,200	40,000	765	35,000	840	31,500	700
0.4	50,000	1,900	50,000	1,700	45,000	1,500	40,000	1,200	35,000	1,050	31,500	1,100
0.5	50,000	2,400	50,000	2,100	45,000	1,900	40,000	1,500	35,000	1,300	31,500	1,100
0.6	50,000	2,900	50,000	2,500	45,000	2,200	40,000	1,800	35,000	1,600	31,500	1,400
0.8	50,000	3,900	50,000	3,300	45,000	3,000	40,000	2,400	35,000	1,600	31,500	1,800
1	50,000	4,800	50,000	4,200	45,000	3,800	40,000	3,000	35,000	2,600	35,000	2,300
1.5	50,000	5,400	48,000	4,500	43,000	4,000	23,000	3,100	33,000	2,700	29,700	2,300
2	49,700	5,700	47,800	4,800	40,000	4,000	35,000	3,150	32,000	2,800	28,500	2,300
3	33,100	6,000	31,800	5,300	26,500	4,000	23,500	3,150	21,000	2,800	19,000	2,300
4	24,900	6,000	23,900	5,300	20,000	4,000	17,500	3,150	16,000	2,800	14,500	2,300
5	18.6	5,800	17,800	4,900	15,000	3,750	13,500	3,050	11,500	2,550	10,500	2,100
6	13,900	4,850	13,400	4,100	11,000	3,100	10,000	2,500	8,800	2,150	8,000	1,750
8	11,100	4,200	10,700	3,500	9,000	2,700	8,000	2,150	7,000	1,850	6,500	1,550
10	9,300	3,700	8,900	3,100	7,500	2,400	6,600	1,900	5,800	1,650	5,300	1,380
12	6,950	2,950	6,680	2,500	5,600	1,900	5,000	1,550	4,400	1,250	4,000	1,050

RPM = rev / min
FEED = mm / min

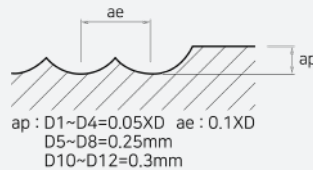




■ ESB703 SERIES

Workpiece	Hardened Steels Heat Resistant Steels		Hardened Steels									
Hardness	HRC30 ~ HRC40		HRC40 ~ HRC50		HRC50 ~ HRC55		HRC55 ~ HRC60		HRC60 ~ HRC65		HRC 65 ~ HRC70	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2	57,000	7,100	55,000	6,000	46,000	5,000	40,300	3,900	36,800	3,500	32,800	2,900
2.5	57,000	7,100	55,000	6,000	46,000	5,000	40,300	3,900	36,800	3,500	32,800	2,900
3	38,000	7,500	36,600	6,600	30,500	5,000	27,000	3,900	24,200	3,500	21,900	2,900
4	28,500	7,500	27,500	6,600	23,000	5,000	20,100	3,900	18,400	3,500	16,700	2,900
5	21,500	7,300	20,500	6,100	17,300	4,700	15,500	3,800	13,200	3,200	12,100	2,600
6	16,000	6,100	15,400	5,100	12,700	3,900	11,500	3,100	10,100	2,700	9,200	2,200
8	12,700	5,300	12,300	4,400	10,400	3,400	9,200	2,700	8,100	2,300	7,500	1,900
10	10,700	4,600	10,200	3,900	8,600	3,000	7,600	2,400	6,700	2,100	6,100	1,700
12	8,000	3,700	7,700	3,100	6,400	2,400	5,800	1,900	5,100	1,600	4,600	1,300

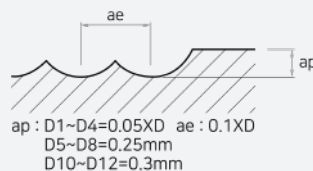
RPM = rev / min
FEED = mm / min



■ ESB734 SERIES

Workpiece	Hardened Steels Heat Resistant Steels		Hardened Steels									
Hardness	HRC30 ~ HRC40		HRC40 ~ HRC50		HRC50 ~ HRC55		HRC55 ~ HRC60		HRC60 ~ HRC65		HRC 65 ~ HRC70	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2	62,100	8,600	59,800	7,200	50,000	6,000	43,800	4,700	40,000	4,200	35,600	3,500
2.5	62,100	8,600	59,800	7,200	50,000	6,000	43,800	4,700	40,000	4,200	35,600	3,500
3	41,400	9,000	39,800	8,000	33,100	6,000	29,400	4,700	26,300	4,200	23,800	3,500
4	31,100	9,000	29,900	8,000	25,000	6,000	21,900	4,700	20,000	4,200	18,100	3,500
5	23,300	8,700	22,300	7,400	18,800	5,600	16,900	4,600	14,400	3,800	13,100	3,200
6	17,400	7,300	16,800	6,200	13,800	4,700	12,500	3,800	11,000	3,200	10,000	2,600
8	13,900	6,300	13,400	5,300	11,300	4,100	10,000	3,200	8,800	2,800	8,100	2,300
10	11,600	5,600	11,100	4,700	9,400	3,600	8,300	2,900	7,300	2,500	6,600	2,100

RPM = rev / min
FEED = mm / min



Technical Data

ESRB712 SERIES

Workpiece		Alloy Steels, Carbon Steels (SCM, SNCM, S45C)			Prehardened Steels (NAK, CENA, KP4)			Hardened Steels (SKD, SKT, STAVAX)		
		~ HRC35			HRC35 ~ HRC45			HRC45 ~ HRC55		
Hardness		~ 1100N/mm2			1100 ~ 1500N/mm2			1500 ~ 2000N/mm2		
Strength		~ 1100N/mm2			1100 ~ 1500N/mm2			1500 ~ 2000N/mm2		
Diameter (mm)	Effective Length	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)
0.1	0.3	50,000	240	0.009	50,000	215	0.007	50,000	190	0.005
	0.5	50,000	240	0.006	50,000	215	0.005	50,000	190	0.004
	1	45,000	195	0.002	45,000	175	0.002	45,000	155	0.001
0.2	0.5	50,000	335	0.018	50,000	310	0.014	43,200	260	0.01
	1	50,000	335	0.013	50,000	310	0.01	43,200	260	0.007
	1.5	45,000	270	0.007	45,000	250	0.006	38,880	210	0.004
	2	45,000	270	0.005	45,000	250	0.004	38,880	210	0.003
	3	45,000	270	0.003	45,000	250	0.003	38,880	210	0.002
0.3	1	50,000	475	0.019	50,000	430	0.015	42,800	365	0.011
	1.5	50,000	475	0.019	50,000	430	0.015	42,800	365	0.011
	2	45,000	385	0.011	45,000	350	0.008	38,520	295	0.006
	2.5	45,000	385	0.007	45,000	350	0.005	38,520	295	0.004
	3	45,000	385	0.007	45,000	350	0.005	38,520	295	0.004
	4	40,000	305	0.004	40,000	275	0.003	34,240	235	0.002
	5	30,000	200	0.003	30,000	180	0.002	25,680	155	0.002
0.4	1	41,000	490	0.036	38,800	425	0.028	34,200	340	0.02
	1.5	41,000	490	0.025	38,800	425	0.02	34,200	340	0.014
	2	41,000	490	0.025	38,800	425	0.02	34,200	340	0.014
	2.5	36,900	395	0.014	34,920	345	0.011	30,780	275	0.008
	3	36,900	395	0.014	34,920	345	0.011	30,780	275	0.008
	4	36,900	395	0.009	34,920	345	0.007	30,780	275	0.005
	5	32,800	315	0.009	31,040	270	0.007	27,360	220	0.005
	6	32,800	315	0.005	31,040	270	0.004	27,360	220	0.003
	8	24,600	205	0.004	23,280	180	0.003	20,520	145	0.002
0.5	10	12,300	90	0.004	11,640	75	0.003	10,260	60	0.002
	1	34,200	685	0.045	32,300	580	0.035	28,500	515	0.025
	1.5	34,200	685	0.045	32,300	580	0.035	28,500	515	0.025
	2	34,200	685	0.032	32,300	580	0.025	28,500	515	0.018
	2.5	34,200	685	0.032	32,300	580	0.025	28,500	515	0.018
	3	30,780	555	0.018	29,070	470	0.014	25,650	415	0.01
	4	30,780	555	0.018	29,070	470	0.014	25,650	415	0.01
	5	30,780	555	0.011	29,070	470	0.009	25,650	415	0.006
	6	27,360	440	0.011	25,840	370	0.009	22,800	330	0.006
	8	20,520	290	0.007	19,380	245	0.005	17,100	215	0.004
	10	20,520	290	0.005	19,380	245	0.004	17,100	215	0.003
	12	10,260	125	0.005	9,690	105	0.004	8,550	95	0.003
0.6	14	10,260	125	0.005	9,690	105	0.004	8,550	95	0.003
	16	3,420	35	0.005	3,230	30	0.004	2,850	25	0.003
	1	34,200	1,025	0.038	32,300	840	0.029	28,500	685	0.021
	2	34,200	1,025	0.038	32,300	840	0.029	28,500	685	0.021
	3	34,200	1,025	0.038	32,300	840	0.029	28,500	685	0.021
	4	30,780	830	0.022	29,070	680	0.017	25,650	555	0.012
	5	30,780	830	0.014	29,070	680	0.011	25,650	555	0.008



■ ESRB712 SERIES

Workpiece		Alloy Steels, Carbon Steels (SCM, SNCM, S45C)			Prehardened Steels (NAK, CENA, KP4)			Hardened Steels (SKD, SKT, STAVAX)		
		~ HRc35			HRc35 ~ HRc45			HRc45 ~ HRc55		
Strength		~ 1100N/mm2			1100 ~ 1500N/mm2			1500 ~ 2000N/mm2		
Diameter (mm)	Effective Length	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)
0.6	6	30,780	830	0.014	29,070	680	0.011	25,650	555	0.008
	8	27,360	655	0.008	25,840	540	0.006	22,800	440	0.005
	10	20,520	430	0.005	19,380	355	0.004	17,100	290	0.003
	12	20,520	430	0.005	19,380	355	0.004	17,100	290	0.003
	14	10,260	185	0.005	9,690	150	0.004	8,550	125	0.003
	16	10,260	185	0.005	9,690	150	0.004	8,550	125	0.003
0.7	2	34,200	1,130	0.063	32,300	930	0.049	28,500	765	0.035
	4	30,780	915	0.025	29,070	755	0.02	25,650	620	0.014
	6	30,780	915	0.016	29,070	755	0.012	25,650	620	0.009
	8	27,360	725	0.016	25,840	595	0.012	22,800	490	0.009
	10	27,360	725	0.009	25,840	595	0.007	22,800	490	0.005
	12	20,520	475	0.006	19,380	390	0.005	17,100	320	0.004
0.8	2	34,200	1,230	0.072	32,300	1,035	0.056	28,500	855	0.04
	3	34,200	1,230	0.05	32,300	1,035	0.039	28,500	855	0.028
	4	34,200	1,230	0.05	32,300	1,035	0.039	28,500	855	0.028
	5	30,780	995	0.029	29,070	840	0.022	25,650	695	0.016
	6	30,780	995	0.029	29,070	840	0.022	25,650	695	0.016
	8	30,780	995	0.018	29,070	840	0.014	25,650	695	0.01
	10	27,360	785	0.018	25,840	660	0.014	22,800	545	0.01
	12	27,360	785	0.011	25,840	660	0.008	22,800	545	0.006
	14	20,520	515	0.007	19,380	435	0.006	17,100	360	0.004
	16	20,520	515	0.007	19,380	435	0.006	17,100	360	0.004
	20	10,260	220	0.007	9,690	185	0.006	8,550	155	0.004
0.9	4	29,250	1,120	0.032	27,630	935	0.025	24,390	775	0.018
	6	29,250	1,120	0.032	27,630	935	0.025	24,390	775	0.018
	8	29,250	1,120	0.02	27,630	935	0.016	24,390	775	0.011
	10	26,000	885	0.02	24,560	740	0.016	21,680	610	0.011
1	2	30,800	1,540	0.09	29,100	1,310	0.07	25,700	1,075	0.05
	3	30,800	1,540	0.09	29,100	1,310	0.07	25,700	1,075	0.05
	4	30,800	1,540	0.063	29,100	1,310	0.049	25,700	1,075	0.035
	5	30,800	1,540	0.063	29,100	1,310	0.049	25,700	1,075	0.035
	6	27,720	1,245	0.036	26,190	1,060	0.028	23,130	870	0.02
	7	27,720	1,245	0.036	26,190	1,060	0.028	23,130	870	0.02
	8	27,720	1,245	0.036	26,190	1,060	0.028	23,130	870	0.02
	10	27,720	1,245	0.023	26,190	1,060	0.018	23,130	870	0.013
	12	24,640	985	0.023	23,280	840	0.018	20,560	690	0.013
	14	24,640	985	0.014	23,280	840	0.011	20,560	690	0.008
	16	18,480	645	0.014	17,460	550	0.011	15,420	450	0.008
	18	18,480	645	0.009	17,460	550	0.007	15,420	450	0.005
	20	18,480	645	0.009	17,460	550	0.007	15,420	450	0.005
	22	9,240	275	0.009	8,730	235	0.007	7,710	195	0.005
	26	9,240	275	0.009	8,730	235	0.007	7,710	195	0.005
	30	9,240	275	0.009	8,730	235	0.007	7,710	195	0.005

Technical Data

ESRB712 SERIES

Workpiece		Alloy Steels, Carbon Steels (SCM, SNCM, S45C)			Prehardened Steels (NAK, CENA, KP4)			Hardened Steels (SKD, SKT, STAVAX)		
		~ HRC35			HRC35 ~ HRC45			HRC45 ~ HRC55		
Hardness		~ 1100N/mm2			1100 ~ 1500N/mm2			1500 ~ 2000N/mm2		
Strength		~ 1100N/mm2			1100 ~ 1500N/mm2			1500 ~ 2000N/mm2		
Diameter (mm)	Effective Length	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)
1	40	3,080	75	0.009	2,910	65	0.007	2,570	55	0.005
	50	3,080	75	0.006	2,910	65	0.005	2,570	55	0.003
1.2	4	26,300	1,375	0.076	24,800	1,150	0.059	21,900	950	0.042
	6	26,300	1,375	0.076	24,800	1,150	0.059	21,900	950	0.042
	8	23,670	1,115	0.043	22,320	930	0.034	19,710	770	0.024
	10	23,670	1,115	0.027	22,320	930	0.021	19,710	770	0.015
	12	23,670	1,115	0.027	22,320	930	0.021	19,710	770	0.015
	16	21,040	880	0.016	19,840	735	0.013	17,520	610	0.009
	20	15,780	580	0.011	14,880	485	0.008	13,140	400	0.006
	26	7,890	245	0.011	7,440	205	0.008	6,570	170	0.006
1.4	6	21,500	1,295	0.088	20,300	1,100	0.069	18,000	935	0.049
	8	19,350	1,050	0.05	18,270	890	0.039	16,200	755	0.028
	10	19,350	1,050	0.05	18,270	890	0.039	16,200	755	0.028
	16	17,200	830	0.032	16,240	705	0.025	14,400	600	0.018
1.5	4	23,900	1,580	0.135	22,600	1,355	0.105	20,000	1,075	0.075
	5	23,900	1,580	0.095	22,600	1,355	0.074	20,000	1,075	0.053
	6	23,900	1,580	0.095	22,600	1,355	0.074	20,000	1,075	0.053
	7	23,900	1,580	0.095	22,600	1,355	0.074	20,000	1,075	0.053
	8	21,510	1,280	0.054	20,340	1,100	0.042	18,000	870	0.03
	10	21,510	1,280	0.054	20,340	1,100	0.042	18,000	870	0.03
	12	21,510	1,280	0.054	20,340	1,100	0.042	18,000	870	0.03
	14	21,510	1,280	0.034	20,340	1,100	0.026	18,000	870	0.019
	16	19,120	1,010	0.034	18,080	865	0.026	16,000	690	0.019
	18	19,120	1,010	0.034	18,080	865	0.026	16,000	690	0.019
	20	19,120	1,010	0.02	18,080	865	0.016	16,000	690	0.011
	22	19,120	1,010	0.02	18,080	865	0.016	16,000	690	0.011
	26	14,340	665	0.014	13,560	570	0.011	12,000	450	0.008
	30	14,340	665	0.014	13,560	570	0.011	12,000	450	0.008
	35	7,170	285	0.01	6,780	245	0.008	6,000	195	0.005
	40	7,170	285	0.01	6,780	245	0.008	6,000	195	0.005
1.6	4	22,200	1,555	0.101	21,000	1,300	0.078	18,500	1,110	0.056
	6	22,200	1,555	0.101	21,000	1,300	0.078	18,500	1,110	0.056
	8	22,200	1,555	0.101	21,000	1,300	0.078	18,500	1,110	0.056
	10	19,980	1,260	0.058	18,900	1,055	0.045	16,650	900	0.032
	12	19,980	1,260	0.058	18,900	1,055	0.045	16,650	900	0.032
	16	19,980	1,260	0.036	18,900	1,055	0.028	16,650	900	0.02
	20	17,760	995	0.036	16,800	830	0.028	14,800	710	0.02
1.8	4	22,200	1,780	0.113	21,000	1,470	0.088	18,500	1,225	0.063
	6	22,200	1,780	0.113	21,000	1,470	0.088	18,500	1,225	0.063
	8	22,200	1,780	0.113	21,000	1,470	0.088	18,500	1,225	0.063
	10	19,980	1,440	0.065	18,900	1,190	0.05	16,650	990	0.036
	12	19,980	1,440	0.065	18,900	1,190	0.05	16,650	990	0.036
	16	19,980	1,440	0.041	18,900	1,190	0.032	16,650	990	0.023



■ ESRB712 SERIES

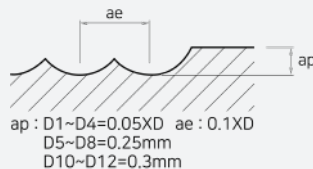
Workpiece		Alloy Steels, Carbon Steels (SCM, SNCM, S45C)			Prehardened Steels (NAK, CENA, KP4)			Hardened Steels (SKD, SKT, STAVAX)		
		~ HRc35			HRc35 ~ HRc45			HRc45 ~ HRc55		
Strength		~ 1100N/mm2			1100 ~ 1500N/mm2			1500 ~ 2000N/mm2		
Diameter (mm)	Effective Length	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)
1.8	20	17,760	1,140	0.041	16,800	940	0.032	14,800	785	0.023
2	6	18,000	1,795	0.18	17,000	1,525	0.14	15,000	1,285	0.1
	8	18,000	1,795	0.126	17,000	1,525	0.098	15,000	1,285	0.07
	10	18,000	1,795	0.126	17,000	1,525	0.098	15,000	1,285	0.07
	12	16,200	1,455	0.072	15,300	1,235	0.056	13,500	1,040	0.04
	14	16,200	1,455	0.072	15,300	1,235	0.056	13,500	1,040	0.04
	16	16,200	1,455	0.072	15,300	1,235	0.056	13,500	1,040	0.04
	18	16,200	1,455	0.045	15,300	1,235	0.035	13,500	1,040	0.025
	20	16,200	1,455	0.045	15,300	1,235	0.035	13,500	1,040	0.025
	22	14,400	1,150	0.045	13,600	975	0.035	12,000	820	0.025
	26	14,400	1,150	0.045	13,600	975	0.035	12,000	820	0.025
	30	14,400	1,150	0.027	13,600	975	0.021	12,000	820	0.015
	35	10,800	755	0.018	10,200	640	0.014	9,000	540	0.01
	40	10,800	755	0.018	10,200	640	0.014	9,000	540	0.01
	45	5,400	325	0.018	5,100	275	0.014	4,500	230	0.01
	50	5,400	325	0.018	5,100	275	0.014	4,500	230	0.01
	60	5,400	325	0.018	5,100	275	0.014	4,500	230	0.01
2.5	8	15,800	1,925	0.158	14,900	1,605	0.123	13,200	1,305	0.088
	10	15,800	1,925	0.158	14,900	1,605	0.123	13,200	1,305	0.088
	12	15,800	1,925	0.158	14,900	1,605	0.123	13,200	1,305	0.088
	16	14,220	1,560	0.09	13,410	1,300	0.07	11,880	1,055	0.05
	20	14,220	1,560	0.09	13,410	1,300	0.07	11,880	1,055	0.05
	22	14,220	1,560	0.056	13,410	1,300	0.044	11,880	1,055	0.031
	26	12,640	1,230	0.056	11,920	1,025	0.044	10,560	835	0.031
	30	12,640	1,230	0.056	11,920	1,025	0.044	10,560	835	0.031
	35	12,640	1,230	0.034	11,920	1,025	0.026	10,560	835	0.019
	40	9,480	810	0.034	8,940	675	0.026	7,920	550	0.019
	45	9,480	810	0.023	8,940	675	0.018	7,920	550	0.013
	50	9,480	810	0.023	8,940	675	0.018	7,920	550	0.013
3	6	13,700	2,050	0.27	12,900	1,730	0.21	11,400	1,435	0.15
	8	13,700	2,050	0.27	12,900	1,730	0.21	11,400	1,435	0.15
	10	13,700	2,050	0.189	12,900	1,730	0.147	11,400	1,435	0.105
	12	13,700	2,050	0.189	12,900	1,730	0.147	11,400	1,435	0.105
	14	13,700	2,050	0.189	12,900	1,730	0.147	11,400	1,435	0.105
	16	12,330	1,660	0.108	11,610	1,400	0.084	10,260	1,160	0.06
	18	12,330	1,660	0.108	11,610	1,400	0.084	10,260	1,160	0.06
	20	12,330	1,660	0.108	11,610	1,400	0.084	10,260	1,160	0.06
	22	12,330	1,660	0.108	11,610	1,400	0.084	10,260	1,160	0.06
	26	12,330	1,660	0.068	11,610	1,400	0.053	10,260	1,160	0.038
	30	12,330	1,660	0.068	11,610	1,400	0.053	10,260	1,160	0.038
	35	10,960	1,310	0.068	10,320	1,105	0.053	9,120	920	0.038
	40	10,960	1,310	0.041	10,320	1,105	0.032	9,120	920	0.023
	45	10,960	1,310	0.041	10,320	1,105	0.032	9,120	920	0.023

Technical Data

ESRB712 SERIES

Workpiece		Alloy Steels, Carbon Steels (SCM, SNCM, S45C)			Prehardened Steels (NAK, CENA, KP4)			Hardened Steels (SKD, SKT, STAVAX)		
		~ HRC35			HRC35 ~ HRC45			HRC45 ~ HRC55		
Hardness		~ 1100N/mm2			1100 ~ 1500N/mm2			1500 ~ 2000N/mm2		
Strength		~ 1100N/mm2			1100 ~ 1500N/mm2			1500 ~ 2000N/mm2		
Diameter (mm)	Effective Length	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)
3	50	8,220	860	0.027	7,740	725	0.021	6,840	605	0.015
	60	8,220	860	0.027	7,740	725	0.021	6,840	605	0.015
4	8	9,800	1,965	0.36	9,300	1,670	0.28	8,200	1,395	0.2
	10	9,800	1,965	0.36	9,300	1,670	0.28	8,200	1,395	0.2
	12	9,800	1,965	0.36	9,300	1,670	0.28	8,200	1,395	0.2
	14	9,800	1,965	0.252	9,300	1,670	0.196	8,200	1,395	0.14
	16	9,800	1,965	0.252	9,300	1,670	0.196	8,200	1,395	0.14
	18	9,800	1,965	0.252	9,300	1,670	0.196	8,200	1,395	0.14
	20	9,800	1,965	0.252	9,300	1,670	0.196	8,200	1,395	0.14
	22	8,820	1,590	0.144	8,370	1,355	0.112	7,380	1,130	0.08
	26	8,820	1,590	0.144	8,370	1,355	0.112	7,380	1,130	0.08
	30	8,820	1,590	0.144	8,370	1,355	0.112	7,380	1,130	0.08
	35	8,820	1,590	0.09	8,370	1,355	0.07	7,380	1,130	0.05
	40	8,820	1,590	0.09	8,370	1,355	0.07	7,380	1,130	0.05
	45	7,840	1,260	0.09	7,440	1,070	0.07	6,560	895	0.05
	50	7,840	1,260	0.09	7,440	1,070	0.07	6,560	895	0.05
	60	7,840	1,260	0.054	7,440	1,070	0.042	6,560	895	0.03
5	15	7,700	1,845	0.315	7,300	1,455	0.245	6,400	1,285	0.175
	20	7,700	1,845	0.315	7,300	1,455	0.245	6,400	1,285	0.175
	26	6,930	1,495	0.18	6,570	1,180	0.14	5,760	1,040	0.1
	30	6,930	1,495	0.18	6,570	1,180	0.14	5,760	1,040	0.1
	35	6,930	1,495	0.18	6,570	1,180	0.14	5,760	1,040	0.1
	40	6,930	1,495	0.18	6,570	1,180	0.14	5,760	1,040	0.1
	50	6,930	1,495	0.113	6,570	1,180	0.088	5,760	1,040	0.063
	60	6,160	1,180	0.113	5,840	930	0.088	5,120	820	0.063
6	20	6,500	1,900	0.378	6,200	1,600	0.294	5,500	1,330	0.21
	30	6,500	1,900	0.378	6,200	1,600	0.294	5,500	1,330	0.21
8	25	4,850	1,800	0.504	4,600	1,500	0.392	4,000	1,280	0.28
	30	4,850	1,800	0.504	4,600	1,500	0.392	4,000	1,280	0.28
10	30	3,850	1,650	0.9	3,680	1,400	0.7	3,200	1,200	0.5
	40	3,850	1,650	0.63	3,680	1,400	0.49	3,200	1,200	0.35
12	32	3,200	1,520	1.08	3,050	1,300	0.84	2,650	1,100	0.6
	45	3,200	1,520	0.756	3,050	1,300	0.588	2,650	1,100	0.42

RPM = rev / min
FEED = mm / min

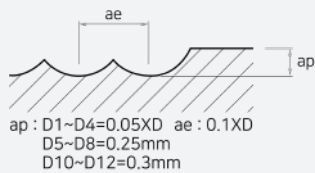




ESLNB20 SERIES

Workpiece	Alloy Steels Heat Resistant Steels			Hardened Steels			Hardened Steels			Copper, Copper alloy		
Hardness	HRc30 ~ HRc45			HRc45 ~ HRc55			HRc55 ~ HRc65			-		
Diameter (mm)	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)
0.5	34,100 ~ 49,500	600 ~ 870	0.007 ~ 0.028	31,900 ~ 35,200	490 ~ 540	0.005 ~ 0.023	31,900 ~ 35,200	440 ~ 480	0.005 ~ 0.021	49,000 ~ 50,000	1,100 ~ 1,400	0.010 ~ 0.042
0.6	28,600 ~ 40,700	590 ~ 850	0.007 ~ 0.034	26,400 ~ 29,700	480 ~ 540	0.006 ~ 0.028	26,400 ~ 29,700	400 ~ 480	0.006 ~ 0.025	42,000 ~ 50,000	1,100 ~ 1,700	0.011 ~ 0.050
0.8	22,000 ~ 30,800	640 ~ 890	0.016 ~ 0.064	19,800 ~ 22,000	490 ~ 550	0.013 ~ 0.052	19,800 ~ 22,000	440 ~ 500	0.012 ~ 0.048	31,000 ~ 50,000	1,100 ~ 2,250	0.024 ~ 0.096
1	17,600 ~ 24,200	600 ~ 850	0.008 ~ 0.080	15,400 ~ 17,600	470 ~ 540	0.007 ~ 0.065	15,400 ~ 17,600	440 ~ 500	0.006 ~ 0.060	24,000 ~ 49,500	1,100 ~ 2,200	0.012 ~ 0.120
1.2	14,300 ~ 18,700	590 ~ 780	0.024 ~ 0.032	12,000 ~ 14,000	480 ~ 540	0.020 ~ 0.026	12,000 ~ 14,000	420 ~ 480	0.018 ~ 0.024	28,500 ~ 38,500	1,480 ~ 1,950	0.036 ~ 0.048
1.5	11,000 ~ 14,300	580 ~ 760	0.031 ~ 0.048	10,000 ~ 11,500	480 ~ 540	0.025 ~ 0.039	10,000 ~ 11,500	420 ~ 480	0.023 ~ 0.036	17,000 ~ 28,500	1,100 ~ 1,950	0.046 ~ 0.072
2	8,500 ~ 11,000	590 ~ 800	0.024 ~ 0.160	7,900 ~ 8,800	470 ~ 530	0.020 ~ 0.130	7,900 ~ 8,800	440 ~ 480	0.018 ~ 0.120	12,600 ~ 24,000	1,100 ~ 2,150	0.036 ~ 0.240
3	5,700 ~ 8,200	730 ~ 1,000	0.064 ~ 0.24	5,300 ~ 5,800	590 ~ 650	0.052 ~ 0.195	5,300 ~ 5,800	550 ~ 620	0.048 ~ 0.120	11,900 ~ 17,000	1,850 ~ 2,700	0.096 ~ 0.360
4	4,300 ~ 6,200	680 ~ 990	0.080 ~ 0.320	3,950 ~ 4,400	550 ~ 620	0.065 ~ 0.260	3,850 ~ 4,400	530 ~ 570	0.060 ~ 0.240	6,600 ~ 12,500	1,260 ~ 2,500	0.120 ~ 0.480

RPM = rev / min
FEED = mm / min



Technical Data

ESTNB20 SERIES

Workpiece					Carbon Steels, Alloy Steels (180~250HB)		Prehardened Steels (HRC35~45)		Hardened Steels (HRC45~55)		Hardened Steels (HRC55~65)	
Ratio to standard depth of cut					Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%	
Mill Dia (mm)	Diameter (mm)	Neck Length (mm)	Neck Angle (°)	Depth of Cut (mm)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)
0.4	0.8	4	0.4	0.062	32,000	2,560	22,400	1,613	20,800	1,331	20,800	1,165
		6	0.4	0.045	32,000	2,560	22,400	1,613	20,800	1,331	20,800	1,165
		8	0.9	0.026	25,600	1,475	17,920	1,032	16,640	852	16,640	745
		12	0.9	0.02	20,800	1,065	14,560	699	13,520	606	13,520	519
		16	0.9	0.018	20,800	932	14,560	612	13,520	530	13,520	454
0.45	0.9	4	0.4	0.063	28,300	2,547	19,810	1,605	18,395	1,324	18,395	1,159
		8	0.4	0.05	28,300	2,547	19,810	1,605	18,395	1,324	18,395	1,159
		12	0.4	0.037	18,400	1,325	12,880	811	11,960	753	11,960	646
		16	0.4	0.024	18,400	1,325	12,880	811	11,960	753	11,960	646
		18	0.4	0.018	18,400	1,325	12,880	811	11,960	753	11,960	646
		20	0.4	0.015	15,850	1,141	11,095	699	10,303	649	10,303	556
		22	0.4	0.012	15,850	1,141	11,095	699	10,303	649	10,303	556
		24	0.4	0.009	14,150	1,019	9,905	624	9,198	579	9,198	497
0.5	1	6	0.4	0.055	25,600	2,560	17,920	1,613	16,640	1,331	16,640	1,165
		8	0.4	0.055	25,600	2,560	17,920	1,613	16,640	1,331	16,640	1,165
		10	0.4	0.032	20,800	1,872	14,560	1,310	13,520	1,082	13,520	946
		10	0.9	0.035	20,800	1,872	14,560	1,310	13,520	1,082	13,520	946
		15	0.9	0.028	16,640	1,331	11,648	874	10,816	757	10,816	649
		20	0.4	0.018	16,640	1,331	11,648	874	10,816	757	10,816	649
		20	0.9	0.02	16,640	1,331	11,648	874	10,816	757	10,816	649
		25	0.9	0.017	14,560	1,165	10,192	764	9,464	662	9,464	568
		30	0.4	0.015	12,480	874	8,736	568	8,112	487	8,112	406
		30	0.9	0.017	12,480	874	8,736	568	8,112	487	8,112	406
		35	0.9	0.01	10,400	728	7,280	473	6,760	406	6,760	338
		40	0.9	0.009	10,000	700	7,000	455	6,500	390	6,500	325
		50	0.9	0.007	9,500	665	6,650	432	6,175	371	6,175	309
		60	0.9	0.005	9,000	630	6,300	410	5,850	351	5,850	293
		70	0.9	0.003	8,500	595	5,950	387	5,525	332	5,525	276
0.75	1.5	8	0.4	0.07	16,960	2,544	11,872	1,603	11,024	1,323	11,024	1,158
		10	0.4	0.07	16,960	2,544	11,872	1,603	11,024	1,323	11,024	1,158
		12	0.4	0.07	16,960	2,544	11,872	1,603	11,024	1,323	11,024	1,158
		15	0.9	0.045	13,568	1,832	9,498	1,282	8,819	1,058	8,819	926
		20	0.9	0.04	11,024	1,323	7,717	810	7,166	752	7,166	645
		30	0.9	0.028	11,024	1,323	7,717	810	7,166	752	7,166	645
0.9	1.8	4	0.4	0.12	14,200	2,556	9,940	1,610	9,230	1,329	9,230	1,163
		8	0.4	0.1	14,200	2,556	9,940	1,610	9,230	1,329	9,230	1,163
		12	0.4	0.08	14,200	2,556	9,940	1,610	9,230	1,329	9,230	1,163
		16	0.4	0.071	14,200	2,556	9,940	1,610	9,230	1,329	9,230	1,163
		20	0.4	0.062	9,230	1,329	6,461	814	6,000	756	6,000	648
		24	0.4	0.053	9,230	1,329	6,461	814	6,000	756	6,000	648
		28	0.4	0.044	9,230	1,329	6,461	814	6,000	756	6,000	648
		32	0.4	0.036	9,230	1,329	6,461	814	6,000	756	6,000	648
		36	0.4	0.028	9,230	1,329	6,461	814	6,000	756	6,000	648
		38	0.4	0.02	8,000	1,152	5,600	706	5,200	655	5,200	562



ESTNB20 SERIES

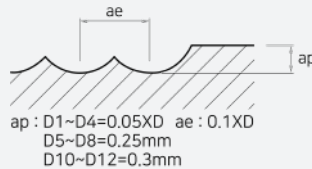
Workpiece					Carbon Steels, Alloy Steels (180~250HB)		Prehardened Steels (HRc35~45)		Hardened Steels (HRc45~55)		Hardened Steels (HRc55~65)	
Ratio to standard depth of cut					Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%	
Mill Dia (mm)	Diameter (mm)	Neck Length (mm)	Neck Angle (°)	Depth of Cut (mm)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)
0.9	1.8	40	0.4	0.015	8,000	1,152	5,600	706	5,200	655	5,200	562
1	2	8	0.4	0.15	15,200	3,040	10,640	1,915	9,880	1,581	9,880	1,383
		12	0.4	0.09	15,200	3,040	10,640	1,915	9,880	1,581	9,880	1,383
		16	0.4	0.09	15,200	3,040	10,640	1,915	9,880	1,581	9,880	1,383
		20	0.4	0.06	12,160	2,189	8,512	1,532	7,904	1,265	7,904	1,107
		20	0.9	0.07	12,160	2,189	8,512	1,532	7,904	1,265	7,904	1,107
		25	0.9	0.07	9,880	1,581	6,916	968	6,442	899	6,422	771
		30	0.4	0.04	9,880	1,581	6,916	968	6,442	899	6,422	771
		30	0.9	0.045	9,880	1,581	6,916	968	6,442	899	6,422	771
		35	0.9	0.045	9,880	1,581	6,916	968	6,442	899	6,422	771
		40	0.4	0.03	9,880	1,581	6,916	968	6,442	899	6,422	771
		40	0.9	0.035	9,880	1,581	6,916	968	6,442	899	6,422	771
		50	0.9	0.17	8,512	1,192	5,958	775	5,533	664	5,533	553
1.5	3	60	0.9	0.009	7,235	1,013	5,065	658	4,703	564	4,703	470
		70	0.9	0.005	6,150	861	4,305	560	3,997	480	3,997	400
		8	0.4	0.32	12,720	3,816	8,904	2,404	8,268	1,984	8,268	1,736
		16	0.4	0.22	12,720	3,816	8,904	2,404	8,268	1,984	8,268	1,736
		20	0.4	0.15	12,720	3,434	8,904	2,137	8,268	1,736	8,268	1,488
		30	0.4	0.08	10,176	2,748	7,123	1,496	6,614	1,389	6,614	1,191
		30	0.9	0.09	10,176	2,748	7,123	1,496	6,614	1,389	6,614	1,191
		40	0.4	0.06	8,268	1,984	5,788	1,215	5,374	1,129	5,374	967
		40	0.9	0.07	8,268	1,984	5,788	1,215	5,374	1,129	5,374	967
2	4	50	0.9	0.05	8,268	1,984	5,788	1,215	5,374	1,129	5,374	967
		60	0.9	0.03	7,123	1,710	4,986	1,047	4,630	972	4,630	833
		70	0.9	0.02	6,233	1,496	4,363	916	4,051	851	4,051	729
		20	1	0.32	11,900	2,860	9,000	2,050	7,800	1,680	7,800	1,590
		30	1	0.23	11,900	2,570	9,000	1,850	7,800	1,520	7,800	1,430
2.5	5	40	1	0.14	9,500	1,940	7,200	1,400	6,200	1,140	6,200	1,080
		50	1	0.11	7,800	1,590	5,800	1,120	5,000	920	5,000	870
		60	1	0.07	7,800	1,590	5,800	1,120	5,000	920	5,000	870
		30	1	0.34	9,500	2,140	7,200	1,540	6,200	1,260	6,200	1,190
3	6	40	1	0.25	9,500	2,140	7,200	1,540	6,200	1,260	6,200	1,190
		60	1	0.15	6,200	1,320	4,700	950	4,000	770	4,000	720
		30	1	0.45	8,000	2,000	6,000	1,430	5,200	1,170	5,200	1,110
		40	1	0.4	8,000	1,800	6,000	1,280	5,200	1,050	5,200	990
		50	1	0.32	8,000	1,800	6,000	1,280	5,200	1,050	5,200	990
		60	1	0.22	6,400	1,360	4,800	970	4,100	780	4,100	740
4	8	70	1	0.18	5,200	1,110	3,900	790	3,400	650	3,400	610
		80	1	0.14	5,200	1,110	3,900	790	3,400	650	3,400	610
		50	1	0.5	6,000	1,460	4,500	1,040	3,900	850	3,900	810
		60	1	0.43	6,000	1,460	4,500	1,040	3,900	850	3,900	810
		70	1	0.33	6,000	1,460	4,500	1,040	3,900	850	3,900	810
5	10	80	1	0.25	4,800	1,100	3,600	780	3,100	640	3,100	600
		60	1	0.7	4,800	1,300	3,600	920	3,100	750	3,100	710

Technical Data

ESTNB20 SERIES

Workpiece					Carbon Steels, Alloy Steels (180~250HB)		Prehardened Steels (HRc35~45)		Hardened Steels (HRc45~55)		Hardened Steels (HRc55~65)	
Ratio to standard depth of cut					Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%	
Mill Dia (mm)	Diameter (mm)	Neck Length (mm)	Neck Angle (°)	Depth of Cut (mm)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)
5	10	75	1	0.5	4,800	1,300	3,600	920	3,100	750	3,100	710

RPM = rev / min
FEED = mm / min



· Please try to use 20~30% slow down than recommendation when chips are not evacuated well -Rib machining, slotting, etc.

ex)ESTNB2040-20-10, HRc 55, Rib machining

ap : 0.32(ap from chart) X 0.65(constant value) X 0.8 = 0.17mm

· The above recommendation table may differ from the actual situation, adjust it according to the machine condition, processing type and purpose.

· In the case of low RPM, reduce the feed rate at the same rate.

ESTNB30 SERIES

Workpiece					Carbon Steels, Alloy Steels (180~250HB)		Prehardened Steels (HRc35~45)		Hardened Steels (HRc45~55)		Hardened Steels (HRc55~65)	
Ratio to standard depth of cut					Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%	
Mill Dia (mm)	Diameter (mm)	Neck Length (mm)	Neck Angle (°)	Depth of Cut (mm)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)
0.1	0.2	1	0.4	0.017	40,000	800	28,000	504	26,000	416	26,000	364
		1.5	0.4	0.009	40,000	800	28,000	504	26,000	416	26,000	364
		2	0.9	0.007	32,000	461	22,400	323	20,800	266	20,800	233
		2.5	0.9	0.004	26,000	333	18,200	204	16,900	189	16,900	162
0.15	0.3	2	0.4	0.025	40,000	1,200	28,000	756	26,000	624	26,000	546
		3	0.9	0.013	32,000	691	22,400	484	20,800	399	20,800	349
		4	0.9	0.01	26,000	499	18,200	306	16,900	284	16,900	243
0.2	0.4	2	0.4	0.035	40,000	1,600	28,000	1,008	26,000	832	26,000	728
		3	0.4	0.02	40,000	1,600	28,000	1,008	26,000	832	26,000	728
		4	0.4	0.007	32,000	922	22,400	645	20,800	532	20,800	466
		4	0.9	0.009	32,000	922	22,400	645	20,800	532	20,800	466
		5	0.4	0.006	26,000	666	18,200	408	16,900	379	16,900	324
		5	0.9	0.007	26,000	666	18,200	408	16,900	379	16,900	324
0.25	0.5	4	0.4	0.04	40,000	2,000	28,000	1,260	26,000	1,040	26,000	910
		8	0.9	0.01	26,000	728	18,200	446	16,900	414	16,900	355
		12	0.9	0.005	22,400	627	15,680	384	14,560	357	14,560	306
0.27	0.54	2	0.4	0.05	40,000	2,160	28,000	1,361	26,000	1,123	26,000	983
		4	0.4	0.037	40,000	2,160	28,000	1,361	26,000	1,123	26,000	983
		5	0.4	0.031	40,000	1,512	28,000	1,176	26,000	1,040	26,000	832
		6	0.4	0.025	26,000	1,244	18,200	871	16,900	676	16,900	629



ESTNB30 SERIES

Workpiece					Carbon Steels, Alloy Steels (180~250HB)		Prehardened Steels (HRc35~45)		Hardened Steels (HRc45~55)		Hardened Steels (HRc55~65)	
Ratio to standard depth of cut					Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%	
Mill Dia (mm)	Diameter (mm)	Neck Length (mm)	Neck Angle (°)	Depth of Cut (mm)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)
0.27	0.54	6.5	0.4	0.02	26,000	1,011	18,200	619	16,900	575	16,900	493
		7	0.4	0.015	26,000	899	18,200	585	16,900	543	16,900	465
0.3	0.6	2	0.4	0.055	40,000	2,400	28,000	1,512	26,000	1,248	26,000	1,092
		4	0.4	0.035	40,000	2,400	28,000	1,512	26,000	1,248	26,000	1,092
		6	0.4	0.018	32,000	1,382	22,400	968	20,800	799	20,800	699
		6	0.9	0.02	32,000	1,382	22,400	968	20,800	799	20,800	699
		8	0.9	0.02	26,000	998	18,200	612	16,900	568	16,900	487
		10	0.4	0.013	26,000	874	18,200	535	16,900	497	16,900	426
		10	0.9	0.015	26,000	874	18,200	535	16,900	497	16,900	426
		12	0.9	0.01	26,000	874	18,200	535	16,900	497	16,900	426
		15	0.4	0.005	22,400	753	15,680	461	14,560	367	14,560	367
		15	0.9	0.006	22,400	753	15,680	461	14,560	367	14,560	367
0.4	0.8	4	0.4	0.062	32,000	2,560	22,400	1,613	20,800	1,331	20,800	1,165
		6	0.4	0.045	32,000	2,560	22,400	1,613	20,800	1,331	20,800	1,165
		8	0.9	0.026	25,600	1,475	17,920	1,032	16,640	852	16,640	745
		12	0.9	0.02	20,800	1,065	14,560	699	13,520	606	13,520	519
		16	0.9	0.018	20,800	932	14,560	612	13,520	530	13,520	454
0.45	0.9	4	0.4	0.063	28,300	2,547	19,810	1,605	18,395	1,324	18,395	1,159
		8	0.4	0.05	28,300	2,547	19,810	1,605	18,395	1,324	18,395	1,159
		12	0.4	0.037	18,400	1,325	12,880	811	11,960	753	11,960	646
		16	0.4	0.024	18,400	1,325	12,880	811	11,960	753	11,960	646
		18	0.4	0.018	18,400	1,325	12,880	811	11,960	753	11,960	646
		20	0.4	0.015	15,850	1,141	11,095	699	10,303	649	10,303	556
		22	0.4	0.012	15,850	1,141	11,095	699	10,303	649	10,303	556
		24	0.4	0.009	14,150	1,019	9,905	624	9,198	579	9,198	497
0.5	1	6	0.4	0.055	25,600	2,560	17,920	1,613	16,640	1,331	16,640	1,165
		8	0.4	0.055	25,600	2,560	17,920	1,613	16,640	1,331	16,640	1,165
		10	0.4	0.032	20,800	1,872	14,560	1,310	13,520	1,082	13,520	946
		10	0.9	0.035	20,800	1,872	14,560	1,310	13,520	1,082	13,520	946
		15	0.9	0.028	16,640	1,331	11,648	874	10,816	757	10,816	649
		20	0.4	0.018	16,640	1,331	11,648	874	10,816	757	10,816	649
		20	0.9	0.02	16,640	1,331	11,648	874	10,816	757	10,816	649
		25	0.9	0.017	14,560	1,165	10,192	764	9,464	662	9,464	568
		30	0.4	0.015	12,480	874	8,736	568	8,112	487	8,112	406
		30	0.9	0.017	12,480	874	8,736	568	8,112	487	8,112	406
		35	0.9	0.01	10,400	728	7,280	473	6,760	406	6,760	338
		40	0.9	0.009	10,000	700	7,000	455	6,500	390	6,500	325
		50	0.9	0.007	9,500	665	6,650	432	6,175	371	6,175	309
		60	0.9	0.005	9,000	630	6,300	410	5,850	351	5,850	293
		70	0.9	0.003	8,500	595	5,950	387	5,525	332	5,525	276
0.75	1.5	8	0.4	0.07	16,960	2,544	11,872	1,603	11,024	1,323	11,024	1,158
		10	0.4	0.07	16,960	2,544	11,872	1,603	11,024	1,323	11,024	1,158
		12	0.4	0.07	16,960	2,544	11,872	1,603	11,024	1,323	11,024	1,158
		15	0.9	0.045	13,568	1,832	9,498	1,282	8,819	1,058	8,819	926

Technical Data

ESTNB30 SERIES

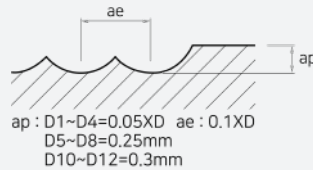
Workpiece					Carbon Steels, Alloy Steels (180~250HB)		Prehardened Steels (HRC35~45)		Hardened Steels (HRC45~55)		Hardened Steels (HRC55~65)	
Ratio to standard depth of cut					Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%	
Mill Dia (mm)	Diameter (mm)	Neck Length (mm)	Neck Angle (°)	Depth of Cut (mm)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)
0.75	1.5	20	0.9	0.04	11,024	1,323	7,717	810	7,166	752	7,166	645
		30	0.9	0.028	11,024	1,323	7,717	810	7,166	752	7,166	645
0.9	1.8	4	0.4	0.12	14,200	2,556	9,940	1,610	9,230	1,329	9,230	1,163
		8	0.4	0.1	14,200	2,556	9,940	1,610	9,230	1,329	9,230	1,163
		12	0.4	0.08	14,200	2,556	9,940	1,610	9,230	1,329	9,230	1,163
		16	0.4	0.071	14,200	2,556	9,940	1,610	9,230	1,329	9,230	1,163
		20	0.4	0.062	9,230	1,329	6,461	814	6,000	756	6,000	648
		24	0.4	0.053	9,230	1,329	6,461	814	6,000	756	6,000	648
		28	0.4	0.044	9,230	1,329	6,461	814	6,000	756	6,000	648
		32	0.4	0.036	9,230	1,329	6,461	814	6,000	756	6,000	648
		36	0.4	0.028	9,230	1,329	6,461	814	6,000	756	6,000	648
		38	0.4	0.02	8,000	1,152	5,600	706	5,200	655	5,200	562
		40	0.4	0.015	8,000	1,152	5,600	706	5,200	655	5,200	562
1	2	8	0.4	0.15	15,200	3,040	10,640	1,915	9,880	1,581	9,880	1,383
		12	0.4	0.09	15,200	3,040	10,640	1,915	9,880	1,581	9,880	1,383
		16	0.4	0.09	15,200	3,040	10,640	1,915	9,880	1,581	9,880	1,383
		20	0.4	0.06	12,160	2,189	8,512	1,532	7,904	1,265	7,904	1,107
		20	0.9	0.07	12,160	2,189	8,512	1,532	7,904	1,265	7,904	1,107
		25	0.9	0.07	9,880	1,581	6,916	968	6,442	899	6,422	771
		30	0.4	0.04	9,880	1,581	6,916	968	6,442	899	6,422	771
		30	0.9	0.045	9,880	1,581	6,916	968	6,442	899	6,422	771
		35	0.9	0.045	9,880	1,581	6,916	968	6,442	899	6,422	771
		40	0.4	0.03	9,880	1,581	6,916	968	6,442	899	6,422	771
		40	0.9	0.035	9,880	1,581	6,916	968	6,442	899	6,422	771
		50	0.9	0.17	8,512	1,192	5,958	775	5,533	664	5,533	553
		60	0.9	0.009	7,235	1,013	5,065	658	4,703	564	4,703	470
		70	0.9	0.005	6,150	861	4,305	560	3,997	480	3,997	400
1.5	3	8	0.4	0.32	12,720	3,816	8,904	2,404	8,268	1,984	8,268	1,736
		16	0.4	0.22	12,720	3,816	8,904	2,404	8,268	1,984	8,268	1,736
		20	0.4	0.15	12,720	3,434	8,904	2,137	8,268	1,736	8,268	1,488
		30	0.4	0.08	10,176	2,748	7,123	1,496	6,614	1,389	6,614	1,191
		30	0.9	0.09	10,176	2,748	7,123	1,496	6,614	1,389	6,614	1,191
		40	0.4	0.06	8,268	1,984	5,788	1,215	5,374	1,129	5,374	967
		40	0.9	0.07	8,268	1,984	5,788	1,215	5,374	1,129	5,374	967
		50	0.9	0.05	8,268	1,984	5,788	1,215	5,374	1,129	5,374	967
		60	0.9	0.03	7,123	1,710	4,986	1,047	4,630	972	4,630	833
		70	0.9	0.02	6,233	1,496	4,363	916	4,051	851	4,051	729
2	4	20	1	0.32	11,900	2,860	9,000	2,050	7,800	1,680	7,800	1,590
		30	1	0.23	11,900	2,570	9,000	1,850	7,800	1,520	7,800	1,430
		40	1	0.14	9,500	1,940	7,200	1,400	6,200	1,140	6,200	1,080
		50	1	0.11	7,800	1,590	5,800	1,120	5,000	920	5,000	870
		60	1	0.07	7,800	1,590	5,800	1,120	5,000	920	5,000	870
2.5	5	30	1	0.34	9,500	2,140	7,200	1,540	6,200	1,260	6,200	1,190
		40	1	0.25	9,500	2,140	7,200	1,540	6,200	1,260	6,200	1,190



ESTNB30 SERIES

Workpiece					Carbon Steels, Alloy Steels (180~250HB)		Prehardened Steels (HRc35~45)		Hardened Steels (HRc45~55)		Hardened Steels (HRc55~65)	
Ratio to standard depth of cut					Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%		Depth of Cut X 100%	
Mill Dia (mm)	Diameter (mm)	Neck Length (mm)	Neck Angle (°)	Depth of Cut (mm)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)
2.5	5	60	1	0.15	6,200	1,320	4,700	950	4,000	770	4,000	720
3	6	30	1	0.45	8,000	2,000	6,000	1,430	5,200	1,170	5,200	1,110
		40	1	0.4	8,000	1,800	6,000	1,280	5,200	1,050	5,200	990
		50	1	0.32	8,000	1,800	6,000	1,280	5,200	1,050	5,200	990
		60	1	0.22	6,400	1,360	4,800	970	4,100	780	4,100	740
		70	1	0.18	5,200	1,110	3,900	790	3,400	650	3,400	610
		80	1	0.14	5,200	1,110	3,900	790	3,400	650	3,400	610
4	8	50	1	0.5	6,000	1,460	4,500	1,040	3,900	850	3,900	810
		60	1	0.43	6,000	1,460	4,500	1,040	3,900	850	3,900	810
		70	1	0.33	6,000	1,460	4,500	1,040	3,900	850	3,900	810
		80	1	0.25	4,800	1,100	3,600	780	3,100	640	3,100	600
5	10	60	1	0.7	4,800	1,300	3,600	920	3,100	750	3,100	710
		75	1	0.5	4,800	1,300	3,600	920	3,100	750	3,100	710

RPM = rev / min
FEED = mm / min



- Please try to use 20-30% slow down than recommendation when chips are not evacuated well -Rib machining, slotting, etc.
ex)ESTNB3040-20-10, HRc 55, Rib machining
 $ap : 0.32(ap \text{ from chart}) \times 0.65(\text{constant value}) \times 0.8 = 0.17\text{mm}$
- The above recommendation table may differ from the actual situation, adjust it according to the machine condition, processing type and purpose.
- In the case of low RPM, reduce the feed rate at the same rate.

Technical Data

UE502, UXE502 SERIES

Workpiece	Alloy Steels, Carbon Steels (SCM, SNCM, S45C)		Prehardened Steels (NAK, CENA, KP4)		Stainless Steels (SUS)		Hardened Steels (SKD, SKT, STAVAX)	
Hardness	~ HRC35		HRC35 ~ HRC45		-		HRC45 ~ HRC55	
Strength	~ 1100N/mm2		1100 ~ 1500N/mm2		-		1500 ~ 2000N/mm2	
Diameter (mm)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)	n (min-1)	Vf (mm/min)
2	11,560	190	7,560	120	6,300	90	5,040	35
3	8,920	210	5,560	140	4,620	120	3,360	40
4	7,560	300	4,620	180	3,880	150	2,940	40
5	6,300	320	3,780	190	3,160	160	2,320	50
6	5,560	350	3,360	220	2,840	180	2,000	55
8	4,200	380	2,520	200	2,100	180	1,680	75
10	3,260	330	2,000	160	1,680	160	1,360	60
12	2,740	280	1,680	130	1,360	130	1,160	55
16	2,200	220	1,360	110	1,060	110	900	40
20	1,680	170	1,060	80	840	80	680	30
25	1,360	130	840	70	680	60	540	20

RPM = rev / min
FEED = mm / min



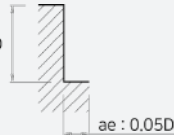


■ UE504,UXE504 SERIES

Workpiece	Alloy Steels, Carbon Steels (SCM, SNCM, S45C)		Prehardened Steels (NAK, CENA, KP4)		Stainless Steels (SUS)		Hardened Steels (SKD, SKT, STAVAX)	
Hardness	~ HRC35		HRC35 ~ HRC45		-		HRC45 ~ HRC55	
Strength	~ 1100N/mm ²		1100 ~ 1500N/mm ²		-		1500 ~ 2000N/mm ²	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2	11,560	280	7,560	170	6,300	140	5,040	50
3	8,920	320	5,560	200	4,620	170	3,360	60
4	7,560	570	4,620	350	3,880	280	2,940	60
5	6,300	600	3,780	360	3,160	300	2,320	70
6	5,560	660	3,360	410	2,840	330	2,000	80
8	4,200	710	2,520	380	2,100	350	1,680	110
10	3,260	610	2,000	300	1,680	300	1,360	90
12	2,740	520	1,680	250	1,360	240	1,160	80
16	2,200	410	1,360	200	1,100	300	900	60
20	1,680	320	1,060	160	840	150	680	40
25	1,360	250	840	130	680	120	540	30

RPM = rev / min
FEED = mm / min

ap : 1.0D



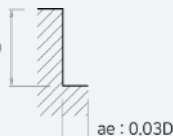
ae : 0.05D

■ UE504H SERIES

Workpiece	Alloy Steels, Carbon Steels (SCM, SNCM, S45C)		Prehardened Steels (NAK, CENA, KP4)		Hardened Steels (SKD, SKT, STAVAX)	
Hardness	~ HRC35		HRC35 ~ HRC45		HRC45 ~ HRC55	
Strength	~ 1100N/mm ²		1100 ~ 1500N/mm ²		1500 ~ 2000N/mm ²	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED
1	45,000	750	37,000	560	23,000	300
2	23,500	800	18,000	540	12,000	360
3	15,750	810	12,600	580	8,280	380
4	12,150	830	9,540	600	6,345	400
6	9,450	900	7,470	640	4,950	440
8	7,110	860	5,625	620	3,780	410
10	5,580	800	4,410	570	2,925	380
12	4,770	800	3,780	570	2,520	380
16	3,600	810	2,900	570	2,000	400
20	3,000	810	2,300	570	1,600	400

RPM = rev / min
FEED = mm / min

ap : 1.0D

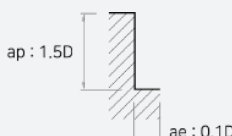
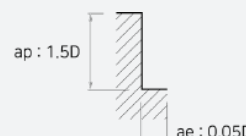
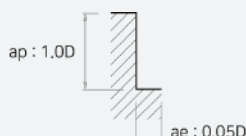


ae : 0.03D

Technical Data

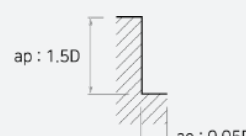
UE506 SERIES ► General Cutting

Workpiece	Alloy Steels, Carbon Steels (SCM, SNCM, S45C)		Prehardened Steels (NAK, CENA, KP4)		Hardened Steels (SKD, SKT, STAVAX)	
Hardness	~ HRC35		HRC35 ~ HRC45		HRC45 ~ HRC55	
Strength	~ 1100N/mm ²		1100 ~ 1500N/mm ²		1500 ~ 2000N/mm ²	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED
6	5,560	2,000	3,880	1,370	1,580	210
8	4,200	2,000	2,940	1,370	1,160	210
10	3,360	2,000	2,320	1,370	1,000	210
12	2,840	1,680	2,000	1,160	840	180
16	2,100	1,260	1,480	880	640	130
20	1,680	1,010	1,160	690	500	110
25	1,500	900	1,100	600	430	90

RPM = rev / min FEED = mm / min 		

UE506 SERIES ► High Speed Cutting

Workpiece	Alloy Steels, Carbon Steels (SCM, SNCM, S45C)		Hardened Steels (SKD, SKT, STAVAX)	
Hardness	~ HRC35		HRC45 ~ HRC55	
Strength	~ 1100N/mm ²		1500 ~ 2000N/mm ²	
Diameter (mm)	RPM	FEED	RPM	FEED
6	16,800	6,090	8,400	3,050
8	12,600	6,090	6,300	3,050
10	9,980	5,990	5,040	3,050
12	8,400	5,040	4,200	2,520
16	6,300	3,780	3,160	1,890
20	5,040	3,050	2,520	1,470
25	4,500	2,700	2,200	1,300

RPM = rev / min FEED = mm / min 	



UE512 SERIES

Workpiece		Alloy Steels, Carbon Steels (SCM, SNCM, S45C)			Prehardened Steels (NAK, CENA, KP4)			Hardened Steels (SKD, SKT, STAVAX)		
Hardness		~ HRc35			HRc35 ~ HRc45			HRc45 ~ HRc55		
Strength		~ 1100N/mm2			1100 ~ 1500N/mm2			1500 ~ 2000N/mm2		
Diameter (mm)	Effective Length	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)
0.1	0.3	50,000	315	0.009	46,200	230	0.007	40,600	170	0.005
	0.5	50,000	315	0.006	46,200	230	0.005	40,600	170	0.004
	1	45,000	255	0.002	41,580	185	0.002	36,540	140	0.001
0.2	0.5	38,500	380	0.018	36,300	270	0.014	32,100	200	0.01
	1	38,500	380	0.013	36,300	270	0.010	32,100	200	0.007
	1.5	34,650	310	0.007	32,670	220	0.006	28,890	160	0.004
	2	34,650	310	0.005	32,670	220	0.004	28,890	160	0.003
0.3	1	34,200	390	0.019	32,300	270	0.015	28,500	230	0.011
	1.5	34,200	390	0.019	32,300	270	0.015	25,800	230	0.011
	2	30,780	315	0.011	29,070	220	0.008	25,650	185	0.006
	2.5	30,780	315	0.007	29,070	220	0.005	25,650	185	0.004
	3	30,780	315	0.007	29,070	220	0.005	25,650	185	0.004
	4	27,360	250	0.004	25,840	175	0.003	22,800	145	0.002
	5	20,520	165	0.003	19,380	115	0.002	17,100	95	0.002
0.4	1	27,400	540	0.036	25,800	380	0.028	22,800	280	0.02
	1.5	27,400	540	0.025	25,800	380	0.020	22,800	280	0.014
	2	27,400	540	0.025	25,800	380	0.020	22,800	280	0.014
	2.5	24,660	435	0.014	23,220	310	0.011	20,520	225	0.008
	3	24,660	435	0.014	23,220	310	0.011	20,520	225	0.008
	4	24,660	435	0.009	23,220	310	0.007	20,520	225	0.005
	5	21,920	345	0.009	20,640	245	0.007	18,240	180	0.005
	6	21,920	345	0.005	20,640	245	0.004	18,240	180	0.003
	8	16,440	225	0.004	15,480	160	0.003	13,680	120	0.002
	10	8,220	95	0.004	7,740	70	0.003	6,840	50	0.002
0.5	1	27,400	540	0.045	25,800	425	0.035	22,800	285	0.025
	1.5	27,400	540	0.045	25,800	425	0.035	22,800	285	0.025
	2	27,400	540	0.032	25,800	425	0.025	22,800	285	0.018
	2.5	27,400	540	0.032	25,800	425	0.025	22,800	285	0.018
	3	24,660	435	0.018	23,220	345	0.014	20,520	230	0.01
	4	24,660	435	0.018	23,220	345	0.014	20,520	230	0.01
	5	24,660	435	0.011	23,220	345	0.009	20,520	230	0.006
	6	21,920	345	0.011	20,640	270	0.009	18,240	180	0.006
	8	16,440	225	0.007	15,480	180	0.005	13,680	120	0.004
	10	16,440	225	0.005	15,480	180	0.004	13,680	120	0.003
	12	8,220	95	0.005	7,740	75	0.004	6,840	50	0.003
	14	8,220	95	0.005	7,740	75	0.004	6,840	50	0.003
	16	2,740	25	0.005	2,580	20	0.004	2,280	15	0.003
0.6	2	27,400	775	0.038	25,800	545	0.029	22,800	405	0.021
	3	27,400	775	0.038	25,800	545	0.029	22,800	405	0.021
	4	24,660	630	0.022	23,220	440	0.017	20,520	330	0.012
	5	24,660	630	0.014	23,220	440	0.011	20,520	330	0.008
	6	24,660	630	0.014	23,220	440	0.011	20,520	330	0.008
	8	21,920	495	0.008	20,640	350	0.006	18,240	260	0.005

Technical Data

UE512 SERIES

Workpiece		Alloy Steels, Carbon Steels (SCM, SNCM, S45C)			Prehardened Steels (NAK, CENA, KP4)			Hardened Steels (SKD, SKT, STAVAX)		
Hardness		~ HRC35			HRC35 ~ HRC45			HRC45 ~ HRC55		
Strength		~ 1100N/mm2			1100 ~ 1500N/mm2			1500 ~ 2000N/mm2		
Diameter (mm)	Effective Length	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)
0.6	10	16,440	325	0.005	15,480	230	0.004	13,680	170	0.003
	12	16,440	325	0.005	15,480	230	0.004	13,680	170	0.003
	14	8,220	140	0.005	7,740	100	0.004	6,840	75	0.003
	16	8,220	140	0.005	7,740	100	0.004	6,840	75	0.003
0.7	2	27,400	775	0.063	25,800	545	0.049	22,800	405	0.035
	4	24,660	630	0.025	23,220	440	0.020	20,520	330	0.014
	6	24,660	630	0.016	23,220	440	0.012	20,520	330	0.009
	8	21,920	495	0.016	20,640	350	0.012	18,240	260	0.009
	10	21,920	495	0.009	20,640	350	0.007	18,240	260	0.005
	12	16,440	325	0.009	15,480	230	0.005	13,680	170	0.004
0.8	2	27,400	775	0.072	25,800	605	0.056	22,800	450	0.040
	3	27,400	775	0.050	25,800	605	0.039	22,800	450	0.028
	4	27,400	775	0.050	25,800	605	0.039	22,800	450	0.028
	5	24,660	630	0.029	23,220	490	0.022	20,520	365	0.016
	6	24,660	630	0.029	23,220	490	0.022	20,520	365	0.016
	8	24,660	630	0.018	23,220	490	0.014	20,520	365	0.010
	10	21,920	495	0.018	20,640	385	0.014	18,240	290	0.01
	12	21,920	495	0.011	20,640	385	0.008	18,240	290	0.006
	14	16,440	325	0.007	15,480	255	0.006	13,680	190	0.004
	16	16,440	325	0.007	15,480	255	0.006	13,680	190	0.004
0.9	6	22,140	575	0.032	20,970	440	0.025	18,450	330	0.018
	8	22,140	575	0.020	20,970	440	0.016	18,450	330	0.011
	10	19,680	455	0.020	18,640	350	0.016	16,400	260	0.011
1.0	2	24,600	1,045	0.090	23,300	890	0.070	20,500	665	0.050
	3	24,600	1,045	0.090	23,300	890	0.070	20,500	665	0.050
	4	24,600	1,045	0.063	23,300	890	0.049	20,500	665	0.035
	5	24,600	1,045	0.063	23,300	890	0.049	20,500	665	0.035
	6	22,140	845	0.036	20,970	720	0.028	18,450	540	0.020
	7	22,140	845	0.036	20,970	720	0.028	18,450	540	0.020
	8	22,140	845	0.036	20,970	720	0.028	18,450	540	0.020
	10	22,140	845	0.023	20,970	720	0.018	18,450	540	0.013
	12	19,680	670	0.023	18,640	570	0.018	16,400	425	0.013
	14	19,680	670	0.014	18,640	570	0.011	16,400	425	0.008
	16	14,760	440	0.014	13,980	375	0.011	12,300	280	0.008
	18	14,760	440	0.009	13,980	375	0.007	12,300	280	0.005
	20	14,760	440	0.009	13,980	375	0.007	12,300	280	0.005
	22	7,380	190	0.009	6,990	160	0.007	6,150	120	0.005
	26	7,380	190	0.009	6,990	160	0.007	6,150	120	0.005
	30	7,380	190	0.009	6,990	160	0.007	6,150	120	0.005
	40	2,460	50	0.009	2,330	45	0.007	2,050	35	0.005
	50	2,460	50	0.006	2,330	45	0.005	2,050	35	0.003
1.2	4	21,900	930	0.076	20,700	720	0.059	18,200	485	0.042



UE512 SERIES

Workpiece		Alloy Steels, Carbon Steels (SCM, SNCM, S45C)			Prehardened Steels (NAK, CENA, KP4)			Hardened Steels (SKD, SKT, STAVAX)		
Hardness		~ HRc35			HRc35 ~ HRc45			HRc45 ~ HRc55		
Strength		~ 1100N/mm2			1100 ~ 1500N/mm2			1500 ~ 2000N/mm2		
Diameter (mm)	Effective Length	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)
1.2	6	21,900	930	0.076	20,700	720	0.059	18,200	485	0.042
	8	19,710	755	0.043	18,630	585	0.034	16,380	395	0.024
	10	19,710	755	0.027	18,630	585	0.021	16,380	395	0.015
	12	19,710	755	0.027	18,630	585	0.021	16,380	395	0.015
	14	17,520	595	0.027	16,560	460	0.021	14,560	310	0.015
	16	17,520	595	0.016	16,560	460	0.013	14,560	310	0.009
	20	13,140	390	0.011	12,420	300	0.008	10,920	205	0.006
	26	6,570	165	0.011	6,210	130	0.008	5,460	85	0.006
	30	6,570	165	0.011	6,210	130	0.008	5,460	85	0.006
1.4	6	19,200	815	0.088	18,100	570	0.069	16,000	425	0.049
	8	17,280	660	0.050	16,290	460	0.039	14,400	345	0.028
	10	17,280	660	0.050	16,290	460	0.039	14,400	345	0.028
	14	17,280	660	0.032	16,290	460	0.025	14,400	345	0.018
	16	15,360	520	0.032	14,480	365	0.025	12,800	270	0.018
	20	15,360	520	0.019	14,480	365	0.015	12,800	270	0.011
1.5	4	19,200	905	0.135	18,100	635	0.105	16,000	475	0.075
	5	19,200	905	0.095	18,100	635	0.074	16,000	475	0.053
	6	19,200	905	0.095	18,100	635	0.074	16,000	475	0.053
	7	19,200	905	0.095	18,100	635	0.074	16,000	475	0.053
	8	17,280	735	0.054	16,290	515	0.042	14,400	385	0.030
	10	17,280	735	0.054	16,290	515	0.042	14,400	385	0.03
	12	17,280	735	0.054	16,290	515	0.042	14,400	385	0.030
	14	17,280	735	0.034	16,290	515	0.026	14,400	385	0.019
	16	15,360	580	0.034	14,480	405	0.026	12,800	305	0.019
	18	15,360	580	0.034	14,480	405	0.026	12,800	305	0.019
	20	15,360	580	0.020	14,480	405	0.016	12,800	305	0.011
	22	15,360	580	0.020	14,480	405	0.016	12,800	305	0.011
	26	11,520	380	0.014	10,860	265	0.011	9,600	200	0.008
	30	11,520	380	0.014	10,860	265	0.011	9,600	200	0.008
1.6	8	17,800	840	0.101	16,800	655	0.078	14,800	490	0.056
	10	16,020	680	0.058	15,120	530	0.045	13,320	395	0.032
	12	16,020	680	0.058	15,120	530	0.045	13,320	395	0.032
	16	16,020	680	0.036	15,120	530	0.028	13,320	395	0.020
	20	14,240	540	0.036	13,440	420	0.028	11,840	315	0.020
1.8	8	17,800	840	0.113	16,800	655	0.088	14,800	490	0.063
	10	16,020	680	0.065	15,120	530	0.050	13,320	395	0.036
	12	16,020	680	0.065	15,120	530	0.050	13,320	395	0.036
	16	16,020	680	0.041	15,120	530	0.032	13,320	395	0.023
	20	14,240	540	0.041	13,440	420	0.032	11,840	315	0.023
2.0	6	14,400	820	0.180	13,600	620	0.140	12,000	475	0.100
	8	14,400	820	0.126	13,600	620	0.098	12,000	475	0.070
	10	14,400	820	0.126	13,600	620	0.098	12,000	475	0.070
	12	12,960	665	0.072	12,240	500	0.056	10,800	385	0.040

Technical Data

UE512 SERIES

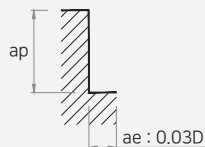
Workpiece		Alloy Steels, Carbon Steels (SCM, SNCM, S45C)			Prehardened Steels (NAK, CENA, KP4)			Hardened Steels (SKD, SKT, STAVAX)		
Hardness		~ HRC35			HRC35 ~ HRC45			HRC45 ~ HRC55		
Strength		~ 1100N/mm2			1100 ~ 1500N/mm2			1500 ~ 2000N/mm2		
Diameter (mm)	Effective Length	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)
2.0	14	12,960	665	0.072	12,240	500	0.056	10,800	385	0.040
	16	12,960	665	0.072	12,240	500	0.056	10,800	385	0.040
	18	12,960	665	0.045	12,240	500	0.035	10,800	385	0.025
	20	12,960	665	0.045	12,240	500	0.035	10,800	385	0.025
	22	11,520	525	0.045	10,880	395	0.035	9,600	305	0.025
	26	11,520	525	0.045	10,880	395	0.035	9,600	305	0.025
	30	11,520	525	0.027	10,880	395	0.021	9,600	305	0.015
	35	8,640	345	0.018	8,160	260	0.014	7,200	200	0.010
	40	8,640	345	0.018	8,160	260	0.014	7,200	200	0.010
	45	4,320	150	0.018	4,080	110	0.014	3,600	85	0.010
	50	4,320	150	0.018	4,080	110	0.014	3,600	85	0.010
	60	4,320	150	0.018	4,080	110	0.014	3,600	85	0.010
2.5	8	12,300	970	0.158	11,600	680	0.123	10,300	510	0.088
	10	12,300	970	0.158	11,600	680	0.123	10,300	510	0.088
	12	12,300	970	0.158	11,600	680	0.123	10,300	510	0.088
	14	11,070	785	0.090	10,440	550	0.070	9,270	415	0.050
	16	11,070	785	0.090	10,440	550	0.070	9,270	415	0.050
	18	11,070	785	0.090	10,440	550	0.070	9,270	415	0.050
	20	11,070	785	0.090	10,440	550	0.070	9,270	415	0.050
	22	11,070	785	0.056	10,440	550	0.044	9,270	415	0.031
	26	9,840	620	0.056	9,280	435	0.044	8,240	325	0.031
	30	9,840	620	0.056	9,280	435	0.044	8,240	325	0.031
	35	9,840	620	0.034	9,280	435	0.026	8,240	325	0.019
	40	7,380	405	0.034	6,960	285	0.026	6,180	215	0.019
	45	7,380	405	0.023	6,960	285	0.018	6,180	215	0.013
	50	7,380	405	0.023	6,960	285	0.018	6,180	215	0.013
3.0	6	10,900	860	0.270	10,300	605	0.210	6,600	450	0.150
	8	10,900	860	0.270	10,300	605	0.210	6,600	450	0.150
	10	10,900	860	0.189	10,300	605	0.147	6,600	450	0.105
	12	10,900	860	0.189	10,300	605	0.147	6,600	450	0.105
	14	10,900	860	0.189	10,300	605	0.147	6,600	450	0.105
	16	9,810	695	0.108	9,270	490	0.084	5,940	365	0.060
	18	9,810	695	0.108	9,270	490	0.084	5,940	365	0.060
	20	9,810	695	0.108	9,270	490	0.084	5,940	365	0.060
	22	9,810	695	0.108	9,270	490	0.084	5,940	365	0.060
	26	9,810	695	0.068	9,270	490	0.053	5,940	365	0.038
	30	9,810	695	0.068	9,270	490	0.053	5,940	365	0.038
	35	8,720	550	0.068	8,240	385	0.053	5,280	290	0.038
	40	8,720	550	0.041	8,240	385	0.032	5,280	290	0.023
	45	8,720	550	0.041	8,240	385	0.032	5,280	290	0.023
	50	6,540	360	0.027	6,180	255	0.021	3,960	190	0.015
	60	6,540	360	0.027	6,180	255	0.021	3,960	190	0.015
4.0	8	8,000	1,300	0.360	7,600	1,160	0.280	6,700	770	0.200



UE512 SERIES

Workpiece		Alloy Steels, Carbon Steels (SCM, SNCM, S45C)			Prehardened Steels (NAK, CENA, KP4)			Hardened Steels (SKD, SKT, STAVAX)		
Hardness		~ HRc35			HRc35 ~ HRc45			HRc45 ~ HRc55		
Strength		~ 1100N/mm2			1100 ~ 1500N/mm2			1500 ~ 2000N/mm2		
Diameter (mm)	Effective Length	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)
4.0	10	8,000	1,300	0.360	7,600	1,160	0.280	6,700	770	0.200
	12	8,000	1,300	0.360	7,600	1,160	0.280	6,700	770	0.200
	14	8,000	1,300	0.252	7,600	1,160	0.196	6,700	770	0.140
	16	8,000	1,300	0.252	7,600	1,160	0.196	6,700	770	0.140
	18	8,000	1,300	0.252	7,600	1,160	0.196	6,700	770	0.140
	20	8,000	1,300	0.252	7,600	1,160	0.196	6,700	770	0.140
	22	7,200	1,055	0.144	6,840	940	0.112	6,030	625	0.080
	26	7,200	1,055	0.144	6,840	940	0.112	6,030	625	0.080
	30	7,200	1,055	0.144	6,840	940	0.112	6,030	625	0.080
	35	7,200	1,055	0.090	6,840	940	0.070	6,030	625	0.050
	40	7,200	1,055	0.090	6,840	940	0.070	6,030	625	0.050
	45	6,400	830	0.090	6,080	740	0.070	5,360	495	0.050
	50	6,400	830	0.090	6,080	740	0.070	5,360	495	0.050
	60	6,400	830	0.054	6,080	740	0.042	5,360	495	0.030
5.0	16	6,400	1,155	0.315	6,100	900	0.245	5,400	605	0.175
	20	6,400	1,155	0.315	6,100	900	0.245	5,400	605	0.175
	26	5,760	935	0.180	5,490	730	0.140	4,860	490	0.100
	30	5,760	935	0.180	5,490	730	0.140	4,860	490	0.100
	35	5,760	935	0.180	5,490	730	0.140	4,860	490	0.100
	40	5,760	935	0.180	5,490	730	0.140	4,860	490	0.100
	50	5,760	935	0.113	5,490	730	0.088	4,860	490	0.063
	60	5,120	740	0.113	4,880	575	0.088	4,320	385	0.063
6.0	15	5,300	1,055	0.540	5,000	820	0.420	4,400	550	0.300
	20	5,300	1,055	0.378	5,000	820	0.294	4,400	550	0.210
	30	5,300	1,055	0.378	5,000	820	0.294	4,400	550	0.210
	32	4,770	855	0.216	4,500	665	0.168	3,960	445	0.120
8.0	25	4,000	950	0.504	3,800	750	0.392	3,300	500	0.280
	30	4,000	950	0.504	3,800	750	0.392	3,300	500	0.280
	42	3,600	770	0.288	3,400	605	0.224	2,950	405	0.160
10	30	3,200	900	0.900	3,050	680	0.700	2,630	400	0.500
	35	3,200	900	0.630	3,050	680	0.490	2,630	400	0.350
	45	3,200	900	0.630	3,050	680	0.490	2,630	400	0.350
12	35	2,650	800	1.080	2,520	600	0.840	2,180	350	0.600
	40	2,650	800	0.756	2,520	600	0.588	2,180	350	0.420
	50	2,650	800	0.756	2,520	600	0.588	2,180	350	0.420

RPM = rev / min
FEED = mm / min



Technical Data

UE514 SERIES

Workpiece	Alloy Steels, Carbon Steels (SCM, SNCM, S45C)		Prehardened Steels (NAK, CENA, KP4)		Stainless Steels (SUS)		Hardened Steels (SKD, SKT, STAVAX)	
Hardness	~ HRC35		HRC35 ~ HRC45		-		HRC45 ~ HRC55	
Strength	~ 1100N/mm2		1100 ~ 1500N/mm2		-		1500 ~ 2000N/mm2	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1.0	22,000	310	13,500	180	10,750	140	8,500	50
1.5	17,000	320	10,700	190	8,500	150	6,500	50
2.0	13,900	330	9,070	200	7,560	165	6,000	60
2.5	12,000	350	7,600	220	6,000	180	4,500	60
3.0	10,700	380	6,670	240	5,110	200	4,030	70
4.0	9,070	680	5,540	420	4,650	330	3,530	70
5.0	7,560	720	4,530	430	3,800	360	2,780	85
6.0	6,670	790	4,030	490	3,400	390	2,400	95
8.0	5,040	850	3,020	450	2,520	420	2,010	130
10	3,910	730	2,400	360	2,010	360	1,630	105
12	3,300	620	2,010	300	1,630	280	1,400	95

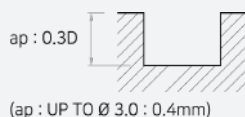
RPM = rev / min
FEED = mm / min



UE522 SERIES

Workpiece	Alloy Steels, Carbon Steels (SCM, SNCM, S45C)		Prehardened Steels (NAK, CENA, KP4)		Hardened Steels (SKD, SKT, STAVAX)	
Hardness	~ HRC35		HRC35 ~ HRC45		HRC45 ~ HRC55	
Strength	~ 1100N/mm2		1100 ~ 1500N/mm2		1500 ~ 2000N/mm2	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED
2	6,300	60	5,040	50	3,150	25
3	4,410	70	3,570	60	2,200	30
4	3,570	85	2,840	70	1,790	35
5	3,050	105	2,420	85	1,580	40
6	2,630	125	2,100	105	1,370	50
8	2,000	135	1,580	105	1,050	50
10	1,680	135	1,370	105	840	50
12	1,370	105	1,160	95	700	40
16	1,160	95	890	75	560	35
20	840	70	680	50	420	25

RPM = rev / min
FEED = mm / min





UE524 SERIES

Workpiece	Alloy Steels, Carbon Steels (SCM, SNCM, S45C)		Prehardened Steels (NAK, CENA, KP4)		Hardened Steels (SKD, SKT, STAVAX)	
Hardness	~ HRC35		HRC35 ~ HRC45		HRC45 ~ HRC55	
Strength	~ 1100N/mm ²		1100 ~ 1500N/mm ²		1500 ~ 2000N/mm ²	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED
2	6,300	100	5,040	80	3,150	45
3	4,410	115	3,570	100	2,200	55
4	3,570	140	2,840	115	1,790	60
5	3,050	180	2,420	140	1,580	70
6	2,630	215	2,100	180	1,370	90
8	2,000	230	1,580	180	1,050	90
10	1,680	230	1,370	180	840	90
12	1,370	180	1,160	160	700	70
16	1,160	160	890	125	560	60
20	840	115	680	90	420	45

RPM = rev / min FEED = mm / min 	

ULE504 SERIES ► General Cutting

Workpiece	NON-Alloy Steels, Alloy Steels, Cast Iron		Hardened Steels				Stainless Steels	
Hardness	~ HRC30		HRC30 ~ HRC45		HRC45 ~ HRC55		-	
Strength	~ 1000N/mm ²		1000 ~ 1500N/mm ²		1500 ~ 2000N/mm ²		-	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2	12,100	320	7,900	195	2,700	47	6,600	160
3	9,400	370	5,840	230	2,000	58	4,850	195
4	7,900	655	4,850	405	1,500	58	4,070	320
5	6,600	690	3,970	415	1,300	58	3,320	345
6	5,830	760	3,530	470	1,150	58	2,980	380
8	4,410	815	2,650	435	880	58	2,200	405
10	3,420	700	2,100	345	720	46	1,760	345
12	2,880	600	1,760	290	590	46	1,430	275
16	2,310	470	1,430	230	460	29	1,150	230
20	1,760	370	1,110	185	340	29	880	175
25	1,430	290	880	150	270	23	715	140

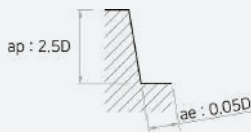
RPM = rev / min FEED = mm / min 	

Technical Data

UTE502 SERIES

Workpiece	Alloy Steels, Carbon Steels (SCM, SNCM, S45C)		Prehardened Steels (NAK, CENA, KP4)	
Hardness	~ HRC35		HRC35 ~ HRC45	
Strength	~ 1100N/mm2		1100 ~ 1500N/mm2	
Diameter (mm)	RPM	FEED	RPM	FEED
0.3	45,000	135	35,000	105
0.4	36,000	144	27,900	113
0.6	25,200	144	18,900	113
0.8	18,000	144	13,950	108
1	14,850	149	11,250	113
2	7,560	153	5,670	113
3	3,969	108	3,213	90
4	3,213	126	2,556	104
6	2,367	189	1,890	153
8	1,800	225	1,422	162
10	1,440	225	1,170	167

RPM = rev / min
FEED = mm / min



UTE504 SERIES

Workpiece	Alloy Steels, Carbon Steels (SCM, SNCM, S45C)		Prehardened Steels (NAK, CENA, KP4)	
Hardness	~ HRC35		HRC35 ~ HRC45	
Strength	~ 1100N/mm2		1100 ~ 1500N/mm2	
Diameter (mm)	RPM	FEED	RPM	FEED
3	3,969	216	3,213	180
4	3,213	252	2,556	207
6	2,367	378	1,890	306
8	1,800	450	1,422	324
10	1,440	450	1,170	333

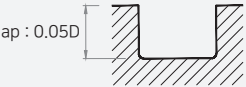
RPM = rev / min
FEED = mm / min





UR502 SERIES

Workpiece	Alloy Steels, Carbon Steels (SCM, SNCM, S45C)		Prehardened Steels (NAK, CENA, KP4)		Hardened Steels (SKD, SKT, STAVAX)	
Hardness	~ HRC35		HRC35 ~ HRC45		HRC45 ~ HRC55	
Strength	~ 1100N/mm ²		1100 ~ 1500N/mm ²		1500 ~ 2000N/mm ²	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED
0.2	44,000	145	28,800	60	17,600	40
0.3	41,000	170	27,000	70	16,500	45
0.4	41,000	170	27,000	70	16,500	45
0.5	36,000	190	23,400	80	14,300	50
0.6	30,000	210	19,800	90	12,100	55
0.8	30,000	210	19,800	90	12,100	55
1	27,600	240	18,000	100	11,000	60
1.5	22,000	250	13,500	110	8,500	60
2	18,000	260	11,560	120	7,200	70
2.5	15,000	270	9,500	130	6,100	70
3	13,240	280	8,560	140	5,280	70
4	10,720	340	6,820	170	4,300	80
5	9,160	420	5,800	200	3,800	100
6	7,900	500	5,040	250	3,280	120
8	6,000	540	3,800	250	2,520	120
10	5,040	540	3,280	250	2,020	120
12	4,120	420	2,780	230	1,680	100
16	3,100	360	2,100	170	1,280	80
20	2,520	280	1,640	120	1,000	60

RPM = rev / min FEED = mm / min ap : 0.2D 	ap : 0.05D 

Technical Data

UR512,UR504 SERIES

Workpiece	Alloy Steels, Carbon Steels (SCM, SNCM, S45C)		Prehardened Steels (NAK, CENA, KP4)		Hardened Steels (SKD, SKT, STAVAX)	
Hardness	~ HRC35		HRC35 ~ HRC45		HRC45 ~ HRC55	
Strength	~ 1100N/mm2		1100 ~ 1500N/mm2		1500 ~ 2000N/mm2	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED
3	4,410	115	3,570	100	2,200	55
4	3,570	140	2,840	115	1,790	60
5	3,050	180	2,420	140	1,580	70
6	2,630	215	2,100	180	1,370	85
8	2,000	230	1,580	180	1,050	85
10	1,680	230	1,370	180	840	85
12	1,370	180	1,160	160	700	70
16	1,160	160	890	125	560	60
20	840	115	680	90	420	45

RPM = rev / min
FEED = mm / min

UR506 SERIES

Workpiece	Alloy Steels, Carbon Steels (SCM, SNCM, S45C)		Prehardened Steels (NAK, CENA, KP4)		Hardened Steels (SKD, SKT, STAVAX)	
Hardness	~ HRC35		HRC35 ~ HRC45		HRC45 ~ HRC55	
Strength	~ 1100N/mm2		1100 ~ 1500N/mm2		1500 ~ 2000N/mm2	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED
6	14,880	3,210	14,100	2,940	9,600	2,940
8	12,000	3,300	11,400	3,000	7,200	2,760
10	9,600	2,940	9,300	2,700	5,700	2,460
12	7,800	2,700	7,500	2,460	4,800	2,280
16	6,000	2,400	5,820	2,220	3,600	2,040
20	4,800	2,010	4,680	2,040	2,880	1,920

RPM = rev / min
FEED = mm / min



UR542 SERIES

Workpiece	Alloy Steels, Carbon Steels (SCM, SNCM, S45C)		Prehardened Steels (NAK, CENA, KP4)		Hardened Steels (SKD, SKT, STAVAX)	
Hardness	~ HRC35		HRC35 ~ HRC45		HRC45 ~ HRC55	
Strength	~ 1100N/mm ²		1100 ~ 1500N/mm ²		1500 ~ 2000N/mm ²	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED
0.2	50,000	170	34,500	75	21,150	45
0.3	50,000	200	32,000	85	20,000	50
0.4	50,000	200	32,000	85	20,000	50
0.5	43,000	220	28,000	95	17,100	60
0.6	36,400	250	24,000	110	14,500	65
0.8	36,400	250	24,000	110	14,500	65
1	33,100	280	21,600	120	13,200	70
1.5	26,400	300	16,200	130	10,200	70
2	21,600	310	13,800	140	8,640	80
2.5	18,000	320	11,400	150	7,320	80
3	15,900	330	10,300	160	6,300	80
4	12,800	400	8,200	200	5,150	95
5	11,000	500	7,000	240	4,560	120
6	9,500	600	6,000	300	3,930	140
8	7,200	640	4,550	300	3,020	140
10	6,000	640	4,000	300	2,420	140
12	5,000	500	3,340	270	2,000	120
16	3,720	450	2,520	210	1,540	95
20	3,000	330	1,950	140	1,200	70

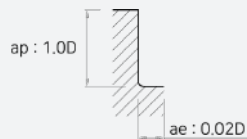
RPM = rev / min FEED = mm / min ap : 0.2D	ap : 0.05D

Technical Data

UR544, UXR514 SERIES

Workpiece	Alloy Steels, Carbon Steels (SCM, SNCM, S45C)		Prehardened Steels (NAK, CENA, KP4)		Hardened Steels (SKD, SKT, STAVAX)	
Hardness	~ HRC35		HRC35 ~ HRC45		HRC45 ~ HRC55	
Strength	~ 1100N/mm2		1100 ~ 1500N/mm2		1500 ~ 2000N/mm2	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED
1	33,100	360	21,600	260	13,200	140
1.5	26,400	370	16,200	270	10,200	140
2	21,600	380	13,800	280	8,640	150
2.5	18,000	390	11,400	300	7,320	150
3	15,900	400	10,300	310	6,300	150
4	12,800	500	8,200	360	5,150	160
5	11,000	510	7,000	430	4,560	200
6	9,500	510	6,000	430	3,930	200
8	7,200	550	4,550	430	3,020	200
10	6,000	550	4,000	430	2,420	200
12	5,000	430	3,340	380	2,000	160
16	3,720	330	2,520	280	1,540	135
20	3,000	270	1,950	210	1,200	100

RPM = rev / min
FEED = mm / min



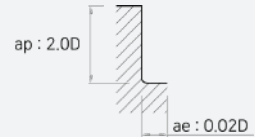
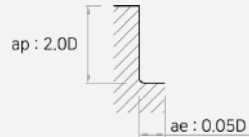
UXR504 SERIES

Workpiece	Alloy Steels, Carbon Steels (SCM, SNCM, S45C)		Prehardened Steels (NAK, CENA, KP4)		Hardened Steels (SKD, SKT, STAVAX)	
Hardness	~ HRC35		HRC35 ~ HRC45		HRC45 ~ HRC55	
Strength	~ 1100N/mm2		1100 ~ 1500N/mm2		1500 ~ 2000N/mm2	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED
1	27,600	300	18,000	220	11,000	120
1.5	22,000	310	13,500	230	8,500	120
2	18,000	320	11,560	240	7,200	130
2.5	15,000	330	9,500	250	6,100	130
3	13,240	340	8,560	260	5,280	130
4	10,720	420	6,820	300	4,300	140
5	9,160	430	5,800	360	3,800	170
6	7,900	430	5,040	360	3,280	170
8	6,000	460	3,800	360	2,520	170
10	5,040	460	3,280	360	2,020	170
12	4,120	360	2,780	320	1,680	140
16	3,100	280	2,100	230	1,280	115
20	2,520	230	1,640	180	1,000	90
20	840	115	680	90	420	45



■ UXR504 SERIES

RPM = rev / min
FEED = mm / min



■ UDR503 SERIES ► General Cutting

Workpiece	Alloy Steels, Carbon Steels (SCM, SNCM, S45C)		Prehardened Steels (NAK, CENA, KP4)		Hardened Steels (SKD, SKT, STAVAX)	
Hardness	~ HRc35		HRc35 ~ HRc45		HRc45 ~ HRc55	
Strength	~ 1100N/mm2		1100 ~ 1500N/mm2		1500 ~ 2000N/mm2	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED
6.0	5,100	3,500	5,500	3,750	3,850	2,700
8.0	3,800	3,400	4,150	3,700	2,850	2,550
10	3,800	3,750	3,600	3,500	2,700	2,700
12	3,200	4,200	3,250	4,250	2,250	2,300
16	2,400	3,100	2,250	2,900	1,700	1,750
20	1,900	2,500	1,800	2,350	1,350	1,400

RPM = rev / min
FEED = mm / min



■ UDR503 SERIES ► General Cutting

Workpiece	Alloy Steels, Carbon Steels (SCM, SNCM, S45C)		Prehardened Steels (NAK, CENA, KP4)		Hardened Steels (SKD, SKT, STAVAX)	
Hardness	~ HRc35		HRc35 ~ HRc45		HRc45 ~ HRc55	
Strength	~ 1100N/mm2		1100 ~ 1500N/mm2		1500 ~ 2000N/mm2	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED
6.0	8,300	5,700	7,650	5,250	6,400	4,550
8.0	6,200	5,550	5,750	5,100	5,250	4,700
10	5,750	5,650	5,000	4,900	4,200	4,250
12	4,800	6,300	4,150	5,450	3,500	3,650
16	3,600	4,700	3,100	4,050	2,650	2,700
20	2,900	3,750	2,500	3,250	2,100	2,150

RPM = rev / min
FEED = mm / min

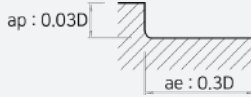


Technical Data

USPM4 SERIES

Workpiece	Alloy Steels, Carbon Steels (SCM, SNCM, S45C)		Prehardened Steels (NAK, CENA, KP4)		Hardened Steels (SKD, SKT, STAVAX)	
Hardness	~ HRC35		HRC35 ~ HRC45		HRC45 ~ HRC55	
Strength	~ 1100N/mm2		1100 ~ 1500N/mm2		1500 ~ 2000N/mm2	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED
1	49,000	7,650	40,000	6,500	35,000	5,750
1.5	37,000	8,550	30,000	7,200	27,000	6,400
2	29,700	9,000	24,300	7,560	21,600	6,750
3	19,800	9,900	16,200	8,100	14,400	7,650
4	15,300	10,800	12,600	8,550	10,800	7,920
6	9,900	11,700	8,100	9,900	7,200	8,640
8	7,380	11,700	6,300	9,900	5,400	8,640
10	5,850	10,800	4,950	9,000	4,320	8,550
12	4,950	10,800	4,140	9,000	3,690	8,100
16	3,690	9,000	3,060	7,920	2,700	7,020
20	2,970	7,200	2,430	6,300	2,160	5,670

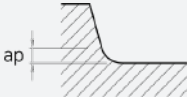
RPM = rev / min
FEED = mm / min

UTR504 SERIES

Workpiece	Alloy Steels, Carbon Steels (SCM, SNCM, S45C)			Prehardened Steels (NAK, CENA, KP4)			Hardened Steels (SKD, SKT, STAVAX)		
Hardness	~ HRC35			HRC35 ~ HRC45			HRC45 ~ HRC55		
Strength	~ 1100N/mm2			1100 ~ 1500N/mm2			1500 ~ 2000N/mm2		
Diameter (mm)	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)
0.4	40,000	630	0.008~0.016	32,000	450	0.008~0.012	22,000	270	0.004~0.008
0.6	30,000	630	0.012~0.024	23,000	450	0.012~0.018	15,000	270	0.006~0.012
0.8	22,500	630	0.016~0.032	17,000	450	0.016~0.024	11,500	270	0.008~0.016
1	18,000	630	0.020~0.040	13,500	450	0.020~0.030	9,000	270	0.010~0.020
1.2	14,400	630	0.025~0.050	11,700	450	0.025~0.040	7,200	270	0.012~0.025
1.5	11,700	630	0.030~0.060	9,000	450	0.030~0.050	5,850	270	0.015~0.030
2	9,000	630	0.040~0.080	7,200	450	0.040~0.060	4,500	270	0.020~0.040

RPM = rev / min
FEED = mm / min

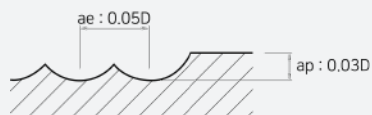




UB502, UB502-P SERIES

Workpiece	Alloy Steels, Carbon Steels (SCM, SNCM, S45C)		Prehardened Steels (NAK, CENA, KP4)		Hardened Steels (SKD, SKT, STAVAX)	
Hardness	~ HRC35		HRC35 ~ HRC45		HRC45 ~ HRC55	
Strength	~ 1100N/mm ²		1100 ~ 1500N/mm ²		1500 ~ 2000N/mm ²	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED
0.1	40,000	550	40,000	500	33,000	400
0.2	30,000	720	30,000	630	27,000	575
0.3	30,000	900	30,000	810	27,000	720
0.4	30,000	1,140	30,000	1,020	27,000	900
0.5	30,000	1,440	30,000	1,260	27,000	1,140
0.6	30,000	1,740	30,000	1,500	27,000	1,320
0.8	30,000	2,340	30,000	1,980	27,000	1,800
1	30,000	2,880	30,000	2,520	27,000	2,280
1.2	30,000	3,060	28,800	2,580	25,800	2,310
1.5	30,000	3,240	28,800	2,700	25,800	2,400
2	29,820	3,420	28,680	2,880	24,000	2,400
3	19,860	3,600	19,080	3,180	15,900	2,400
4	14,940	3,600	14,340	3,180	12,000	2,400
5	11,160	3,480	10,680	2,940	9,000	2,250
6	8,340	2,910	8,040	2,460	6,600	1,860
8	6,660	2,520	6,420	2,100	5,400	1,620
10	5,580	2,220	5,340	1,860	4,500	1,440
12	4,170	1,770	4,008	1,500	3,360	1,140
16	3,340	1,590	3,210	1,320	2,700	1,020
20	2,670	1,410	2,580	1,170	2,160	900
25	2,130	1,150	2,060	950	1,730	730

RPM = rev / min
FEED = mm / min

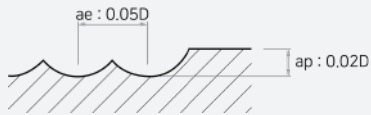


Technical Data

UB503 SERIES

Workpiece	Alloy Steels, Carbon Steels (SCM, SNCM, S45C)		Prehardened Steels (NAK, CENA, KP4)		Hardened Steels (SKD, SKT, STAVAX)	
Hardness	~ HRC35		HRC35 ~ HRC45		HRC45 ~ HRC55	
Strength	~ 1100N/mm2		1100 ~ 1500N/mm2		1500 ~ 2000N/mm2	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED
3	13,500	1,700	13,200	1,620	12,500	860
4	10,600	1,700	10,300	1,620	9,800	860
5	9,400	1,650	9,050	1,570	8,600	860
6	8,600	1,750	8,250	1,670	7,850	865
8	7,000	1,550	6,700	1,460	6,350	890
10	6,050	1,450	5,800	1,360	5,450	870
12	5,450	1,420	5,200	1,330	4,900	785
16	4,300	1,200	4,000	1,100	3,700	650
20	3,600	1,050	3,200	900	3,000	550

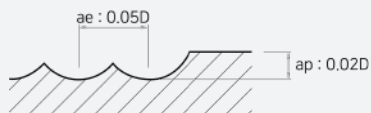
RPM = rev / min
FEED = mm / min



UB504 SERIES

Workpiece	Alloy Steels, Carbon Steels (SCM, SNCM, S45C)		Prehardened Steels (NAK, CENA, KP4)		Hardened Steels (SKD, SKT, STAVAX)	
Hardness	~ HRC35		HRC35 ~ HRC45		HRC45 ~ HRC55	
Strength	~ 1100N/mm2		1100 ~ 1500N/mm2		1500 ~ 2000N/mm2	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED
1	48,000	3,300	35,000	2,350	32,000	2,200
1.5	38,400	4,100	28,000	2,900	25,600	2,700
2	31,680	4,600	23,100	3,300	21,000	3,100
3	24,000	5,430	17,500	3,880	16,000	3,650
4	20,130	5,430	14,880	3,880	14,220	3,650
5	16,780	5,430	12,400	3,690	11,670	3,470
6	15,200	6,220	12,200	4,500	11,100	3,830
8	11,300	5,250	9,200	3,980	8,320	3,350
10	9,100	4,590	7,350	3,450	6,660	2,870
12	7,590	4,260	6,130	3,190	5,530	2,400

RPM = rev / min
FEED = mm / min





UB512, UB512 S6 SERIES

Workpiece		Alloy Steels, Carbon Steels (SCM, SNCM, S45C)			Prehardened Steels (NAK, CENA, KP4)			Hardened Steels (SKD, SKT, STAVAX)		
Hardness		~ HRC35			HRC35 ~ HRC45			HRC45 ~ HRC55		
Strength		~ 1100N/mm2			1100 ~ 1500N/mm2			1500 ~ 2000N/mm2		
Diameter (mm)	Effective Length	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)
0.1	0.2	50,000	240	0.009	50,000	215	0.007	50,000	190	0.005
	0.3	50,000	240	0.009	50,000	215	0.007	50,000	190	0.005
	0.5	50,000	240	0.006	50,000	215	0.005	50,000	190	0.004
	1	45,000	195	0.002	45,000	175	0.002	45,000	155	0.001
0.2	0.5	50,000	335	0.018	50,000	310	0.014	43,200	260	0.010
	1	50,000	335	0.013	50,000	310	0.010	43,200	260	0.007
	1.5	45,000	270	0.007	45,000	250	0.006	38,880	210	0.004
	2	45,000	270	0.005	45,000	250	0.004	38,880	210	0.003
	3	45,000	270	0.003	45,000	250	0.003	38,880	210	0.002
0.3	1	50,000	475	0.019	50,000	430	0.015	42,800	365	0.011
	1.5	50,000	475	0.019	50,000	430	0.015	42,800	365	0.011
	2	45,000	385	0.011	45,000	350	0.008	38,520	295	0.006
	2.5	45,000	385	0.007	45,000	350	0.005	38,520	295	0.004
	3	45,000	385	0.007	45,000	350	0.005	38,520	295	0.004
	4	40,000	305	0.004	40,000	275	0.003	34,240	235	0.002
	5	30,000	200	0.003	30,000	180	0.002	25,680	155	0.002
0.4	1	41,000	490	0.036	38,800	425	0.028	34,200	340	0.020
	1.5	41,000	490	0.025	38,800	425	0.020	34,200	340	0.014
	2	41,000	490	0.025	38,800	425	0.020	34,200	340	0.014
	2.5	36,900	395	0.014	34,920	345	0.011	30,780	275	0.008
	3	36,900	395	0.014	34,920	345	0.011	30,780	275	0.008
	4	36,900	395	0.009	34,920	345	0.007	30,780	275	0.005
	5	32,800	315	0.009	31,040	270	0.007	27,360	220	0.005
	6	32,800	315	0.005	31,040	270	0.004	27,360	220	0.003
	8	24,600	205	0.004	23,280	180	0.003	20,520	145	0.002
	10	12,300	90	0.004	11,640	75	0.003	10,260	60	0.002
0.5	1	34,200	685	0.045	32,300	580	0.035	28,500	515	0.025
	1.5	34,200	685	0.045	32,300	580	0.035	28,500	515	0.025
	2	34,200	685	0.032	32,300	580	0.025	28,500	515	0.018
	2.5	34,200	685	0.032	32,300	580	0.025	28,500	515	0.018
	3	30,780	555	0.018	29,070	470	0.014	25,650	415	0.010
	4	30,780	555	0.018	29,070	470	0.014	25,650	415	0.010
	5	30,780	555	0.011	29,070	470	0.009	25,650	415	0.006
	6	27,360	440	0.011	25,840	370	0.009	22,800	330	0.006
	8	20,520	290	0.007	19,380	245	0.005	17,100	215	0.004
	10	20,520	290	0.005	19,380	245	0.004	17,100	215	0.003
	12	10,260	125	0.005	9,690	105	0.004	8,550	95	0.003
	14	10,260	125	0.005	9,690	105	0.004	8,550	95	0.003
	16	3,420	35	0.005	3,230	30	0.004	2,850	25	0.003
0.6	1	34,200	1,025	0.038	32,300	840	0.029	28,500	685	0.021
	2	34,200	1,025	0.038	32,300	840	0.029	28,500	685	0.021
	3	34,200	1,025	0.038	32,300	840	0.029	28,500	685	0.021
	4	30,780	830	0.022	29,070	680	0.017	25,650	555	0.012

Technical Data

UB512,UB512 S6 SERIES

Workpiece		Alloy Steels, Carbon Steels (SCM, SNCM, S45C)			Prehardened Steels (NAK, CENA, KP4)			Hardened Steels (SKD, SKT, STAVAX)		
Hardness		~ HRC35			HRC35 ~ HRC45			HRC45 ~ HRC55		
Strength		~ 1100N/mm2			1100 ~ 1500N/mm2			1500 ~ 2000N/mm2		
Diameter (mm)	Effective Length	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)
0.6	5	30,780	830	0.014	29,070	680	0.011	25,650	555	0.008
	6	30,780	830	0.014	29,070	680	0.011	25,650	555	0.008
	8	27,360	655	0.008	25,840	540	0.006	22,800	440	0.005
	10	20,520	430	0.005	19,380	355	0.004	17,100	290	0.003
	12	20,520	430	0.005	19,380	355	0.004	17,100	290	0.003
	14	10,260	185	0.005	9,690	150	0.004	8,550	125	0.003
	16	10,260	185	0.005	9,690	150	0.004	8,550	125	0.003
0.7	2	34,200	1,130	0.063	32,300	930	0.049	28,500	765	0.035
	4	30,780	915	0.025	29,070	755	0.020	25,650	620	0.014
	6	30,780	915	0.016	29,070	755	0.012	25,650	620	0.009
	8	27,360	725	0.016	25,840	595	0.012	22,800	490	0.009
	10	27,360	725	0.009	25,840	595	0.007	22,800	490	0.005
	12	20,520	475	0.006	19,380	390	0.005	17,100	320	0.004
0.8	2	34,200	1,230	0.072	32,300	1,035	0.056	28,500	855	0.040
	3	34,200	1,230	0.050	32,300	1,035	0.039	28,500	855	0.028
	4	34,200	1,230	0.050	32,300	1,035	0.039	28,500	855	0.028
	5	30,780	995	0.029	29,070	840	0.022	25,650	695	0.016
	6	30,780	995	0.029	29,070	840	0.022	25,650	695	0.016
	8	30,780	995	0.018	29,070	840	0.014	25,650	695	0.010
	10	27,360	785	0.018	25,840	660	0.014	22,800	545	0.010
	12	27,360	785	0.011	25,840	660	0.008	22,800	545	0.006
	14	20,520	515	0.007	19,380	435	0.006	17,100	360	0.004
	16	20,520	515	0.007	19,380	435	0.006	17,100	360	0.004
	20	10,260	220	0.007	9,690	185	0.006	8,550	155	0.004
0.9	4	29,250	1,120	0.032	27,630	935	0.025	24,390	775	0.018
	6	29,250	1,120	0.032	27,630	935	0.025	24,390	775	0.018
	8	29,250	1,120	0.020	27,630	935	0.016	24,390	775	0.011
	10	26,000	885	0.020	24,560	740	0.016	21,680	610	0.011
1.0	2	30,800	1,540	0.090	29,100	1,310	0.070	25,700	1,075	0.050
	3	30,800	1,540	0.090	29,100	1,310	0.070	25,700	1,075	0.050
	4	30,800	1,540	0.063	29,100	1,310	0.049	25,700	1,075	0.035
	5	30,800	1,540	0.063	29,100	1,310	0.049	25,700	1,075	0.035
	6	27,720	1,245	0.036	26,190	1,060	0.028	23,130	870	0.020
	7	27,720	1,245	0.036	26,190	1,060	0.028	23,130	870	0.020
	8	27,720	1,245	0.036	26,190	1,060	0.028	23,130	870	0.020
	10	27,720	1,245	0.023	26,190	1,060	0.018	23,130	870	0.013
	12	24,640	985	0.023	23,280	840	0.018	20,560	690	0.013
	14	24,640	985	0.014	23,280	840	0.011	20,560	690	0.008
	16	18,480	645	0.014	17,460	550	0.011	15,420	450	0.008
	18	18,480	645	0.009	17,460	550	0.007	15,420	450	0.005
	20	18,480	645	0.009	17,460	550	0.007	15,420	450	0.005
	22	9,240	275	0.009	8,730	235	0.007	7,710	195	0.005
	26	9,240	275	0.009	8,730	235	0.007	7,710	195	0.005



UB512,UB512 S6 SERIES

Workpiece		Alloy Steels, Carbon Steels (SCM, SNCM, S45C)			Prehardened Steels (NAK, CENA, KP4)			Hardened Steels (SKD, SKT, STAVAX)		
Hardness		~ HRc35			HRc35 ~ HRc45			HRc45 ~ HRc55		
Strength		~ 1100N/mm2			1100 ~ 1500N/mm2			1500 ~ 2000N/mm2		
Diameter (mm)	Effective Length	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)
1.0	30	9,240	275	0.009	8,730	235	0.007	7,710	195	0.005
	40	3,080	75	0.009	2,910	65	0.007	2,570	55	0.005
	50	3,080	75	0.006	2,910	65	0.005	2,570	55	0.003
1.2	4	26,300	1,375	0.076	24,800	1,150	0.059	21,900	950	0.042
	6	26,300	1,375	0.076	24,800	1,150	0.059	21,900	950	0.042
	8	23,670	1,115	0.043	22,320	930	0.034	19,710	770	0.024
	10	23,670	1,115	0.027	22,320	930	0.021	19,710	770	0.015
	12	23,670	1,115	0.027	22,320	930	0.021	19,710	770	0.015
	16	21,040	880	0.016	19,840	735	0.013	17,520	610	0.009
	20	15,780	580	0.011	14,880	485	0.008	13,140	400	0.006
	26	7,890	245	0.011	7,440	205	0.008	6,570	170	0.006
1.4	6	21,500	1,295	0.088	20,300	1,100	0.069	18,000	935	0.049
	8	19,350	1,050	0.050	18,270	890	0.039	16,200	755	0.028
	10	19,350	1,050	0.050	18,270	890	0.039	16,200	755	0.028
	16	17,200	830	0.032	16,240	705	0.025	14,400	600	0.018
1.5	4	23,900	1,580	0.135	22,600	1,355	0.105	20,000	1,075	0.075
	5	23,900	1,580	0.095	22,600	1,355	0.074	20,000	1,075	0.053
	6	23,900	1,580	0.095	22,600	1,355	0.074	20,000	1,075	0.053
	7	23,900	1,580	0.095	22,600	1,355	0.074	20,000	1,075	0.053
	8	21,510	1,280	0.054	20,340	1,100	0.042	18,000	870	0.030
	10	21,510	1,280	0.054	20,340	1,100	0.042	18,000	870	0.03
	12	21,510	1,280	0.054	20,340	1,100	0.042	18,000	870	0.030
	14	21,510	1,280	0.034	20,340	1,100	0.026	18,000	870	0.019
	16	19,120	1,010	0.034	18,080	865	0.026	16,000	690	0.019
	18	19,120	1,010	0.034	18,080	865	0.026	16,000	690	0.019
	20	19,120	1,010	0.020	18,080	865	0.016	16,000	690	0.011
	22	19,120	1,010	0.020	18,080	865	0.016	16,000	690	0.011
	26	14,340	665	0.014	13,560	570	0.011	12,000	450	0.008
	30	14,340	665	0.014	13,560	570	0.011	12,000	450	0.008
	35	7,170	285	0.010	6,780	245	0.008	6,000	195	0.005
	40	7,170	285	0.010	6,780	245	0.008	6,000	195	0.005
1.6	4	22,200	1,555	0.101	21,000	1,300	0.078	18,500	1,110	0.056
	6	22,200	1,555	0.101	21,000	1,300	0.078	18,500	1,110	0.056
	8	22,200	1,555	0.101	21,000	1,300	0.078	18,500	1,110	0.056
	10	19,980	1,260	0.058	18,900	1,055	0.045	16,650	900	0.032
	12	19,980	1,260	0.058	18,900	1,055	0.045	16,650	900	0.032
	16	19,980	1,260	0.036	18,900	1,055	0.028	16,650	900	0.020
	20	17,760	995	0.036	16,800	830	0.028	14,800	710	0.020
1.8	4	22,200	1,780	0.113	21,000	1,470	0.088	18,500	1,225	0.063
	6	22,200	1,780	0.113	21,000	1,470	0.088	18,500	1,225	0.063
	8	22,200	1,780	0.113	21,000	1,470	0.088	18,500	1,225	0.063
	10	19,980	1,440	0.065	18,900	1,190	0.050	16,650	990	0.036
	12	19,980	1,440	0.065	18,900	1,190	0.050	16,650	990	0.036

Technical Data

UB512,UB512 S6 SERIES

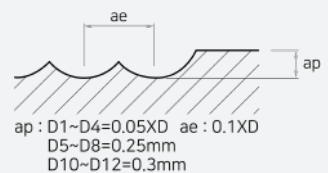
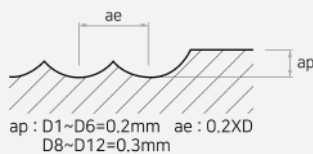
Workpiece		Alloy Steels, Carbon Steels (SCM, SNCM, S45C)			Prehardened Steels (NAK, CENA, KP4)			Hardened Steels (SKD, SKT, STAVAX)		
Hardness		~ HRC35			HRC35 ~ HRC45			HRC45 ~ HRC55		
Strength		~ 1100N/mm2			1100 ~ 1500N/mm2			1500 ~ 2000N/mm2		
Diameter (mm)	Effective Length	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)
1.8	16	19,980	1,440	0.041	18,900	1,190	0.032	16,650	990	0.023
	20	17,760	1,140	0.041	16,800	940	0.032	14,800	785	0.023
2.0	6	18,000	1,795	0.18	17,000	1,525	0.140	15,000	1,285	0.100
	8	18,000	1,795	0.126	17,000	1,525	0.098	15,000	1,285	0.070
	10	18,000	1,795	0.126	17,000	1,525	0.098	15,000	1,285	0.070
	12	16,200	1,455	0.072	15,300	1,235	0.056	13,500	1,040	0.040
	14	16,200	1,455	0.072	15,300	1,235	0.056	13,500	1,040	0.040
	16	16,200	1,455	0.072	15,300	1,235	0.056	13,500	1,040	0.040
	18	16,200	1,455	0.045	15,300	1,235	0.035	13,500	1,040	0.025
	20	16,200	1,455	0.045	15,300	1,235	0.035	13,500	1,040	0.025
	22	14,400	1,150	0.045	13,600	975	0.035	12,000	820	0.025
	26	14,400	1,150	0.045	13,600	975	0.035	12,000	820	0.025
	30	14,400	1,150	0.027	13,600	975	0.021	12,000	820	0.015
	35	10,800	755	0.018	10,200	640	0.014	9,000	540	0.010
	40	10,800	755	0.018	10,200	640	0.014	9,000	540	0.010
	45	5,400	325	0.018	5,100	275	0.014	4,500	230	0.010
	50	5,400	325	0.018	5,100	275	0.014	4,500	230	0.010
	60	5,400	325	0.018	5,100	275	0.014	4,500	230	0.010
2.5	8	15,800	1,925	0.158	14,900	1,605	0.123	13,200	1,305	0.088
	10	15,800	1,925	0.158	14,900	1,605	0.123	13,200	1,305	0.088
	12	15,800	1,925	0.158	14,900	1,605	0.123	13,200	1,305	0.088
	16	14,220	1,560	0.090	13,410	1,300	0.070	11,880	1,055	0.050
	20	14,220	1,560	0.090	13,410	1,300	0.070	11,880	1,055	0.050
	22	14,220	1,560	0.056	13,410	1,300	0.044	11,880	1,055	0.031
	26	12,640	1,230	0.056	11,920	1,025	0.044	10,560	835	0.031
	30	12,640	1,230	0.056	11,920	1,025	0.044	10,560	835	0.031
	35	12,640	1,230	0.034	11,920	1,025	0.026	10,560	835	0.019
	40	9,480	810	0.034	8,940	675	0.026	7,920	550	0.019
	45	9,480	810	0.023	8,940	675	0.018	7,920	550	0.013
	50	9,480	810	0.023	8,940	675	0.018	7,920	550	0.013
3.0	6	13,700	2,050	0.270	12,900	1,730	0.21	11,400	1,435	0.150
	8	13,700	2,050	0.270	12,900	1,730	0.21	11,400	1,435	0.150
	10	13,700	2,050	0.189	12,900	1,730	0.147	11,400	1,435	0.105
	12	13,700	2,050	0.189	12,900	1,730	0.147	11,400	1,435	0.105
	14	13,700	2,050	0.189	12,900	1,730	0.147	11,400	1,435	0.105
	16	12,330	1,660	0.108	11,610	1,400	0.084	10,260	1,160	0.060
	18	12,330	1,660	0.108	11,610	1,400	0.084	10,260	1,160	0.060
	20	12,330	1,660	0.108	11,610	1,400	0.084	10,260	1,160	0.060
	22	12,330	1,660	0.108	11,610	1,400	0.084	10,260	1,160	0.060
	26	12,330	1,660	0.068	11,610	1,400	0.053	10,260	1,160	0.038
	30	12,330	1,660	0.068	11,610	1,400	0.053	10,260	1,160	0.038
	35	10,960	1,310	0.068	10,320	1,105	0.053	9,120	920	0.038
	40	10,960	1,310	0.041	10,320	1,105	0.032	9,120	920	0.023



UB512,UB512 S6 SERIES

Workpiece		Alloy Steels, Carbon Steels (SCM, SNCM, S45C)			Prehardened Steels (NAK, CENA, KP4)			Hardened Steels (SKD, SKT, STAVAX)		
Hardness		~ HRC35			HRC35 ~ HRC45			HRC45 ~ HRC55		
Strength		~ 1100N/mm2			1100 ~ 1500N/mm2			1500 ~ 2000N/mm2		
Diameter (mm)	Effective Length	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)	RPM	FEED	Ap (mm)
3.0	45	10,960	1,310	0.041	10,320	1,105	0.032	9,120	920	0.023
	50	8,220	860	0.027	7,740	725	0.021	6,840	605	0.015
	60	8,220	860	0.027	7,740	725	0.021	6,840	605	0.015
4.0	8	9,800	1,965	0.360	9,300	1,670	0.28	8,200	1,395	0.200
	10	9,800	1,965	0.360	9,300	1,670	0.28	8,200	1,395	0.200
	12	9,800	1,965	0.360	9,300	1,670	0.28	8,200	1,395	0.200
	14	9,800	1,965	0.252	9,300	1,670	0.196	8,200	1,395	0.140
	16	9,800	1,965	0.252	9,300	1,670	0.196	8,200	1,395	0.140
	18	9,800	1,965	0.252	9,300	1,670	0.196	8,200	1,395	0.140
	20	9,800	1,965	0.252	9,300	1,670	0.196	8,200	1,395	0.140
	22	8,820	1,590	0.144	8,370	1,355	0.112	7,380	1,130	0.080
	26	8,820	1,590	0.144	8,370	1,355	0.112	7,380	1,130	0.080
	30	8,820	1,590	0.144	8,370	1,355	0.112	7,380	1,130	0.080
	35	8,820	1,590	0.090	8,370	1,355	0.07	7,380	1,130	0.050
	40	8,820	1,590	0.090	8,370	1,355	0.07	7,380	1,130	0.050
	45	7,840	1,260	0.090	7,440	1,070	0.07	6,560	895	0.050
	50	7,840	1,260	0.090	7,440	1,070	0.07	6,560	895	0.050
	60	7,840	1,260	0.054	7,440	1,070	0.042	6,560	895	0.030
5.0	15	7,700	1,845	0.315	7,300	1,455	0.245	6,400	1,285	0.175
	20	7,700	1,845	0.315	7,300	1,455	0.245	6,400	1,285	0.175
	26	6,930	1,495	0.180	6,570	1,180	0.14	5,760	1,040	0.100
	30	6,930	1,495	0.180	6,570	1,180	0.14	5,760	1,040	0.100
	35	6,930	1,495	0.180	6,570	1,180	0.14	5,760	1,040	0.100
	40	6,930	1,495	0.180	6,570	1,180	0.14	5,760	1,040	0.100
	50	6,930	1,495	0.113	6,570	1,180	0.088	5,760	1,040	0.063
	60	6,160	1,180	0.113	5,840	930	0.088	5,120	820	0.063
6.0	20	6,500	1,900	0.378	6,200	1,600	0.294	5,500	1,330	0.210
	30	6,500	1,900	0.378	6,200	1,600	0.294	5,500	1,330	0.210
8.0	25	4,850	1,800	0.504	4,600	1,500	0.392	4,000	1,280	0.280
	30	4,850	1,800	0.504	4,600	1,500	0.392	4,000	1,280	0.280
10.0	30	3,850	1,650	0.900	3,680	1,400	0.7	3,200	1,200	0.500
	40	3,850	1,650	0.630	3,680	1,400	0.49	3,200	1,200	0.350
12.0	32	3,200	1,520	1.080	3,050	1,300	0.84	2,650	1,100	0.600
	45	3,200	1,520	0.756	3,050	1,300	0.588	2,650	1,100	0.420

RPM = rev / min
FEED = mm / min

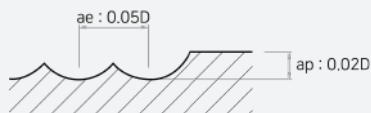


Technical Data

UB532 SERIES

Workpiece	Alloy Steels, Carbon Steels (SCM, SNCM, S45C)		Prehardened Steels (NAK, CENA, KP4)		Hardened Steels (SKD, SKT, STAVAX)	
Hardness	~ HRC35		HRC35 ~ HRC45		HRC45 ~ HRC55	
Strength	~ 1100N/mm2		1100 ~ 1500N/mm2		1500 ~ 2000N/mm2	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED
3	35,000	2,800	33,000	2,600	12,000	900
4	26,000	2,300	25,000	2,200	9,000	800
5	21,000	2,100	20,000	2,000	7,000	700
6	17,000	1,900	16,000	1,800	6,000	650
8	13,000	1,700	12,000	1,600	4,500	550
10	10,500	1,450	10,000	1,400	3,500	500
12	9,000	1,400	8,000	1,300	3,000	450

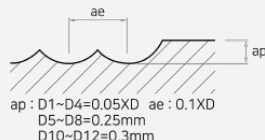
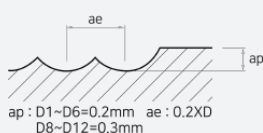
RPM = rev / min
FEED = mm / min



UB542 SERIES ► General Cutting

Workpiece	Alloy Steels, Carbon Steels (SCM, SNCM, S45C)		Prehardened Steels (NAK, CENA, KP4)		Hardened Steels (SKD, SKT, STAVAX)	
Hardness	~ HRC35		HRC35 ~ HRC45		HRC45 ~ HRC55	
Strength	~ 1100N/mm2		1100 ~ 1500N/mm2		1500 ~ 2000N/mm2	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED
0.1	16,500	80	25,500	185	25,500	160
0.2	16,500	90	25,500	220	25,500	200
0.3	15,300	112	24,000	260	24,000	220
0.4	15,300	112	24,000	260	24,000	220
0.5	13,300	128	20,800	300	20,800	250
0.6	11,200	144	17,600	330	17,600	280
0.8	11,200	144	17,600	330	17,600	280
1.0	10,180	160	16,000	370	16,000	320
1.5	9,500	220	13,000	500	12,800	400
2.0	9,250	260	11,500	640	11,300	590
3.0	8,000	370	10,200	880	9,800	850
4.0	6,720	420	8,500	880	8,200	850
5.0	5,840	460	7,500	880	7,200	850
6.0	5,500	660	6,900	920	6,500	880
8.0	4,600	740	5,600	840	5,300	800
10	4,070	820	4,850	800	4,650	770
12	3,700	890	4,350	800	4,150	770

RPM = rev / min
FEED = mm / min





■ UTB502 SERIES

Workpiece	Alloy Steels, Carbon Steels (SCM, SNCM, S45C)		Prehardened Steels (NAK, CENA, KP4)	
Hardness	~ HRc35		HRc35 ~ HRc45	
Strength	~ 1100N/mm2		1100 ~ 1500N/mm2	
Diameter (mm)	RPM	FEED	RPM	FEED
0.4	36,000	144	27,900	113
0.6	25,200	144	18,900	113
0.8	18,000	144	13,950	108
1	14,850	149	11,250	113
2	7,560	153	5,670	113
3	3,969	108	3,213	90
4	3,213	126	2,556	104

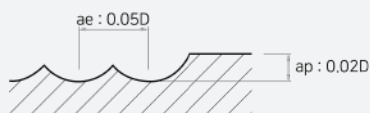
RPM = rev / min
FEED = mm / min



■ USB502 SERIES

Workpiece	Alloy Steels, Carbon Steels (SCM, SNCM, S45C)		Prehardened Steels (NAK, CENA, KP4)		Hardened Steels (SKD, SKT, STAVAX)	
Hardness	~ HRc35		HRc35 ~ HRc45		HRc45 ~ HRc55	
Strength	~ 1100N/mm2		1100 ~ 1500N/mm2		1500 ~ 2000N/mm2	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED
3	13,500	1,700	13,200	1,620	12,500	860
4	10,600	1,700	10,300	1,620	9,800	860
5	9,400	1,650	9,050	1,570	8,600	860
6	8,600	1,750	8,250	1,670	7,850	865
8	7,000	1,550	6,700	1,460	6,350	890
10	6,050	1,450	5,800	1,360	5,450	870
12	5,450	1,420	5,200	1,330	4,900	785
16	4,300	1,200	4,000	1,100	3,700	650
20	3,600	1,050	3,200	900	3,000	550

RPM = rev / min
FEED = mm / min

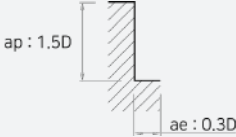
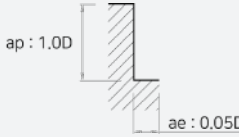


Technical Data

UF50 SERIES

Workpiece	Non ferrous Steel Alloy Steels, Cast Iron		Alloy Steels, Heat Resistant Steels		Stainless Steel		Heat Treatment Steel			
Hardness	~ HRc30		HRc30 ~ HRc38		HRc38 ~ HRc45		HRc45 ~ HRc55		HRc55 ~ HRc65	
Strength	~ 1000N/mm2		1000 ~ 1200N/mm2		1200 ~ 1400N/mm2		1400 ~ 2000N/mm2		2000N/mm2 ~	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
6	15,600	2,320	12,400	840	8,400	570	3,400	260	2,400	190
8	11,600	2,320	9,200	840	6,300	570	2,400	240	1,800	180
10	9,200	2,320	7,600	840	5,100	570	2,000	290	1,300	190
12	8,000	2,400	6,000	800	4,200	570	1,680	260	1,200	190
14	6,800	2,400	5,200	840	3,600	570	1,400	200	900	130
16	6,000	2,400	4,800	760	3,300	510	1,200	160	800	110
18	5,200	2,320	4,400	720	2,700	420	1,100	150	700	100
20	4,800	2,160	3,600	560	2,400	360	1,000	150	660	100
25	4,300	2,150	3,200	620	2,160	410	900	160	600	100

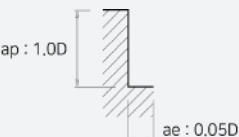
RPM = rev / min
FEED = mm / min

UF51 SERIES

Workpiece	Alloy Steels, Carbon Steels (SCM, SNCM, S45C)		Prehardened Steels (NAK, CENA, KP4)		Hardened Steels (SKD, SKT, STAVAX)	
Hardness	~ HRc35		HRc35 ~ HRc45		HRc45 ~ HRc55	
Strength	~ 1100N/mm2		1100 ~ 1500N/mm2		1500 ~ 2000N/mm2	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED
6	12,400	840	8,400	570	3,400	260
8	9,200	840	6,300	570	2,400	240
10	7,600	840	5,100	570	2,000	290
12	6,000	800	4,200	570	1,680	260
14	5,200	840	3,600	570	1,400	200
16	4,800	760	3,300	510	1,200	160
18	4,400	720	2,700	420	1,100	150
20	3,600	560	2,400	360	1,000	150
25	3,200	620	2,160	410	900	160

RPM = rev / min
FEED = mm / min



UF51-H SERIES

Workpiece	Alloy Steels, Carbon Steels (SCM, S45C, S50C)		Alloy Steels, Carbon Steels, Prehardened Steels (SCM, SKD, NAK, KP4)		Alloy Steels, Carbon Steels (SCM, S45C, S50C)		Alloy Steels, Carbon Steels, Prehardened Steels (SCM, SKD, NAK, KP4)	
Hardness	~ HRC25		HRC25 ~ HRC40		~ HRC25		HRC25 ~ HRC40	
Strength	-		-		-		-	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
6	12,000	1,550	10,600	1,100	15,800	2,570	14,300	1,850
8	9,000	1,650	8,100	1,180	11,900	2,700	10,700	1,950
10	7,200	1,650	6,400	1,180	9,500	2,700	8,500	1,950
12	6,000	1,540	5,400	1,140	8,000	2,570	7,100	1,850
16	4,500	1,500	4,100	1,050	6,000	2,450	5,400	1,750
20	3,600	1,330	3,200	900	4,800	2,140	4,300	1,500

RPM = rev / min FEED = mm / min ap : 1.0D	 ap : 0.8D	 ap : 1.0D ae : 0.5D	 ap : 1.0D ae : 0.35D

TX202, TX222, TX302 SERIES

Workpiece	NON-Alloy Steels, Alloy Steels, Cast Iron		Alloy Steels, Heat Resistant Steels		Stainless Steels		Cast Iron		Aluminum Alloys		Copper, Brass, nonferrous Metals	
Hardness	~ HRC30		HRC30 ~ HRC45		-		-		-		-	
Strength	~ 1000N/mm ²		1000 ~ 1500N/mm ²		-		-		-		-	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1	14,300	105	8,500	65	7,150	50	18,700	205	44,000	330	24,700	200
1.5	9,350	150	5,550	85	5,600	80	12,100	205	27,500	385	20,300	300
2	7,850	160	5,150	100	4,300	80	9,350	220	22,000	460	16,500	340
3	6,100	180	3,800	120	3,150	100	6,050	220	15,400	460	11,000	340
4	5,150	255	3,150	155	2,650	130	4,600	220	11,000	460	8,800	340
5	4,300	270	2,550	160	2,150	135	3,650	220	9,150	460	6,800	340
6	3,800	300	2,300	190	1,950	155	2,950	255	7,600	485	5,700	375
8	2,850	325	1,700	170	1,450	155	2,200	275	5,700	485	4,400	375
10	2,200	280	1,350	135	1,150	135	1,850	285	4,600	485	3,400	375
12	1,850	240	1,150	110	950	110	1,450	295	3,750	485	2,850	375
14	1,700	215	1,050	100	850	100	1,300	310	3,300	485	2,400	375
16	1,500	185	950	95	700	95	1,100	320	2,850	485	2,200	375
20	1,150	145	700	70	550	70	900	340	2,200	485	1,700	375

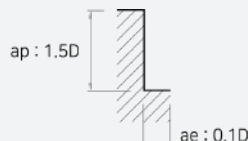
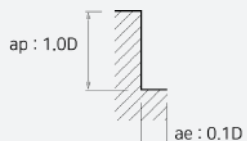
RPM = rev / min FEED = mm / min ap : 0.5D (ap : UP TO Ø 3.0 : 0.2D)	 ap : 1.0D

Technical Data

TX204, TX224, TX304 SERIES

Workpiece	NON-Alloy Steels, Alloy Steels, Cast Iron		Alloy Steels, Heat Resistant Steels		Stainless Steels		Cast Iron		Aluminum Alloys		Copper, Brass, nonferrous Metals	
Hardness	~ HRC30		HRC30 ~ HRC45		-		-		-		-	
Strength	~ 1000N/mm2		1000 ~ 1500N/mm2		-		-		-		-	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1	17,600	150	10,250	85	8,650	75	18,700	620	44,000	1,050	24,700	605
1.5	11,800	215	7,050	115	7,050	120	12,100	620	27,500	1,160	20,300	910
2	9,850	240	6,450	145	5,350	120	9,350	640	22,000	1,320	16,500	1,035
3	7,600	270	4,750	170	3,950	145	6,050	640	15,400	1,320	11,000	1,035
4	6,450	485	3,950	300	3,300	240	4,600	640	11,000	1,320	8,800	1,035
5	5,350	510	3,200	305	2,700	255	3,650	640	9,150	1,320	6,800	1,035
6	4,750	560	2,850	350	2,400	280	2,950	770	7,600	1,430	5,700	1,100
8	3,550	605	2,150	325	1,800	300	2,200	815	5,700	1,430	4,400	1,100
10	2,750	520	1,700	255	1,450	255	1,850	860	4,600	1,430	3,400	1,100
12	2,350	440	1,450	215	1,150	205	1,450	900	3,750	1,430	2,850	1,100
14	2,100	395	1,300	195	1,050	190	1,300	945	3,300	1,430	2,400	1,100
16	1,850	350	1,150	170	950	170	1,100	970	2,850	1,430	2,200	1,100
20	1,450	270	900	135	700	130	900	1,035	2,200	1,430	1,700	1,100

RPM = rev / min
FEED = mm / min



* The FEED for long & extra long types, should be reduced by around 30~40%.



TX304H SERIES

Workpiece	NON-Alloy Steels, Alloy Steels, Cast Iron		Alloy Steels, Heat Resistant Steels		Stainless Steels		Cast Iron		Aluminum Alloys		Copper, Brass, nonferrous Metals	
Hardness	~ HRC30		HRC30 ~ HRC45		-		-		-		-	
Strength	~ 1000N/mm ²		1000 ~ 1500N/mm ²		-		-		-		-	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1	17,600	150	10,250	85	8,650	75	18,700	620	44,000	1,050	24,700	605
1.5	11,800	215	7,050	115	7,050	120	12,100	620	27,500	1,160	20,300	910
2	9,850	240	6,450	145	5,350	120	9,350	640	22,000	1,320	16,500	1,035
3	7,600	270	4,750	170	3,950	145	6,050	640	15,400	1,320	11,000	1,035
4	6,450	485	3,950	300	3,300	240	4,600	640	11,000	1,320	8,800	1,035
5	5,350	510	3,200	305	2,700	255	3,650	640	9,150	1,320	6,800	1,035
6	4,750	560	2,850	350	2,400	280	2,950	770	7,600	1,430	5,700	1,100
8	3,550	605	2,150	325	1,800	300	2,200	815	5,700	1,430	4,400	1,100
10	2,750	520	1,700	255	1,450	255	1,850	860	4,600	1,430	3,400	1,100
12	2,350	440	1,450	215	1,150	205	1,450	900	3,750	1,430	2,850	1,100
14	2,100	395	1,300	195	1,080	190	1,300	945	3,300	1,430	2,400	1,100
16	1,850	350	1,150	170	950	170	1,100	970	2,850	1,430	2,200	1,100
20	1,450	270	900	135	700	130	900	1,035	2,200	1,430	1,700	1,100

RPM = rev / min FEED = mm / min ap : 1.0D ae : 0.1D	ap : 1.5D ae : 0.1D

Technical Data

ZE302, ZE322 SERIES ► General Cutting

Workpiece	Alloy Steels, Heat Resistant Steels		Hardened Steels		Stainless Steels	
Hardness	HRc30 ~ HRc40		HRc40 ~ HRc50		-	
Strength	1000 ~ 1250N/mm2		1250 ~ 1750N/mm2		-	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED
2	9,700	220	6,350	135	5,300	105
3	7,500	240	4,670	160	3,880	135
4	6,350	345	3,880	205	3,250	175
5	5,300	370	3,170	220	2,650	185
6	4,670	405	2,830	255	2,380	205
8	3,530	435	2,120	230	1,760	205
10	2,730	380	1,680	185	1,420	185
12	2,310	320	1,420	150	1,140	150
16	1,850	255	1,140	125	890	125
20	1,420	195	890	90	705	90
25	1,150	150	705	80	580	70

RPM = rev / min
FEED = mm / min

ap : 0.5D

(ap : UP TO Ø 3.0 : 0.2D)

ap : 0.05D

ZE302, ZE322 SERIES ► High Speed Cutting

Workpiece	Alloy Steels, Heat Resistant Steels		Hardened Steels		Stainless Steels	
Hardness	HRc30 ~ HRc40		HRc40 ~ HRc50		-	
Strength	1000 ~ 1250N/mm2		1250 ~ 1750N/mm2		-	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED
2	18,000	665	11,800	415	8,700	175
3	11,000	655	6,800	435	5,600	185
4	10,300	725	6,300	430	4,300	185
5	9,350	715	5,570	420	3,700	185
6	8,200	750	4,930	470	3,250	185
8	6,300	770	3,780	410	2,470	185
10	4,830	750	2,940	360	2,000	160
12	4,100	750	2,520	345	1,680	160
16	3,260	715	2,000	355	1,890	150
20	2,520	665	1,580	310	1,680	150
25	2,000	635	1,260	340	1,570	150

RPM = rev / min
FEED = mm / min

ap : 0.5D

(ap : UP TO Ø 3.0 : 0.2D)

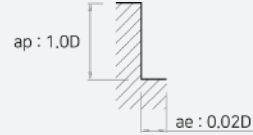
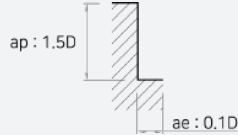
ap : 0.05D



ZE304, ZE324 SERIES ► General Cutting

Workpiece	Alloy Steels, Heat Resistant Steels		Hardened Steels				Stainless Steels	
Hardness	HRC30 ~ HRC40		HRC40 ~ HRC50		HRC40 ~ HRC55		-	
Strength	1000 ~ 1250N/mm2		1250 ~ 1750N/mm2		1750 ~ 2000N/mm2		-	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2	12,100	320	7,900	195	2,700	47	6,600	160
3	9,400	370	5,840	230	2,000	58	4,850	195
4	7,900	655	4,850	405	1,500	58	4,070	320
5	6,600	690	3,970	415	1,300	58	3,320	345
6	5,830	760	3,530	470	1,150	58	2,980	380
8	4,410	815	2,650	435	880	58	2,200	405
10	3,420	700	2,100	345	720	46	1,760	345
12	2,880	600	1,760	290	590	46	1,430	275
16	2,310	470	1,430	230	460	29	1,150	230
20	1,760	370	1,110	185	340	29	880	175
25	1,430	290	880	150	270	23	715	140

RPM = rev / min
FEED = mm / min

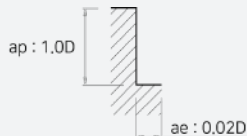


* Please reduce cutting speed around 20~30% from the above table or ZE524 & ZE324 series.

ZE304, ZE324 SERIES ► High Speed Cutting

Workpiece	Alloy Steels, Heat Resistant Steels		Hardened Steels				Stainless Steels	
Hardness	HRC30 ~ HRC40		HRC40 ~ HRC50		HRC40 ~ HRC55		-	
Strength	1000 ~ 1250N/mm2		1250 ~ 1750N/mm2		1750 ~ 2000N/mm2		-	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2	31,400	1,230	23,500	520	12,600	275	21,600	465
3	19,300	1,210	13,600	735	8,900	390	13,500	660
4	18,100	1,330	12,600	865	7,090	465	11,800	775
5	16,400	1,310	11,100	1,010	6,040	530	10,300	910
6	14,400	1,380	9,900	1,100	5,300	580	9,100	990
8	11,000	1,430	7,600	1,090	3,990	575	6,900	980
10	8,500	1,380	5,880	1,110	3,150	580	5,420	1,000
12	7,200	1,380	5,040	1,090	2,620	575	4,600	985
16	5,700	1,320	3,990	1,010	2,000	535	3,590	910
20	4,400	1,270	3,150	930	1,580	490	2,840	840
25	3,500	1,170	2,520	755	1,260	390	2,270	680

RPM = rev / min
FEED = mm / min



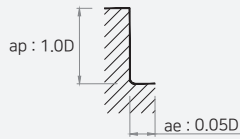
* Please reduce cutting speed around 20~30% from the above table or ZE524 & ZE324 series.

Technical Data

ZR304H, ZR324H SERIES

Workpiece	NON-Alloy Steels, Alloy Steels, Cast Iron		Alloy Steels, Heat Resistant Steels		Hardened Steels	
Hardness	~ HRC30		HRC30 ~ HRC45		HRC45 ~ HRC50	
Strength	~ 1000N/mm ²		1000 ~ 1500N/mm ²		1500 ~ 2000N/mm ²	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED
6	7,000	910	4,200	560	3,000	140
8	5,300	980	3,200	530	2,500	190
10	4,100	840	2,500	410	2,050	165
12	3,500	730	2,100	340	1,700	140

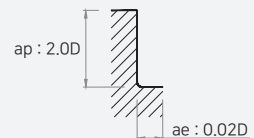
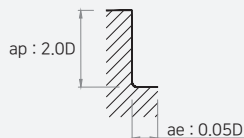
RPM = rev / min
FEED = mm / min



ZR322 SERIES ► Side Cutting

Workpiece	NON-Alloy Steels, Alloy Steels, Cast Iron		Alloy Steels, Heat Resistant Steels		Hardened Steels	
Hardness	~ HRC30		HRC30 ~ HRC45		HRC45 ~ HRC50	
Strength	~ 1000N/mm ²		1000 ~ 1500N/mm ²		1500 ~ 2000N/mm ²	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED
3	6,950	195	4,500	150	3,300	100
4	5,600	240	3,600	170	2,700	105
5	4,800	250	3,050	210	2,350	125
6	4,150	250	2,650	210	2,050	125
8	3,150	265	2,000	210	1,600	125
10	2,150	265	1,700	210	1,250	125
12	1,800	210	1,500	185	1,050	105
16	1,800	185	1,100	140	840	90
20	1,300	130	860	105	625	65

RPM = rev / min
FEED = mm / min





ZR322 SERIES ► Slotting

Workpiece	NON-Alloy Steels, Alloy Steels, Cast Iron		Alloy Steels, Heat Resistant Steels		Hardened Steels	
Hardness	~ HRc30		HRc30 ~ HRc45		HRc45 ~ HRc50	
Strength	~ 1000N/mm ²		1000 ~ 1500N/mm ²		1500 ~ 2000N/mm ²	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED
3	6,950	160	4,500	80	3,300	55
4	5,600	195	3,600	100	2,700	60
5	4,800	240	3,050	115	2,350	75
6	4,150	290	2,650	145	2,050	90
8	3,150	210	2,000	145	1,600	90
10	2,150	250	1,700	140	1,250	90
12	1,800	200	1,500	135	1,050	75
16	1,800	215	1,100	100	840	60
20	1,300	160	860	70	625	45

RPM = rev / min
FEED = mm / min

ZR324 SERIES

Workpiece	NON-Alloy Steels, Alloy Steels, Cast Iron		Alloy Steels, Heat Resistant Steels		Hardened Steels	
Hardness	~ HRc30		HRc30 ~ HRc45		HRc45 ~ HRc50	
Strength	~ 1000N/mm ²		1000 ~ 1500N/mm ²		1500 ~ 2000N/mm ²	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED
3	6,950	195	4,500	150	3,300	100
4	5,600	240	3,600	170	2,700	105
5	4,800	250	3,050	210	2,350	125
6	4,150	250	2,650	210	2,050	125
8	3,150	265	2,000	210	1,600	125
10	2,150	265	1,700	210	1,250	125
12	1,800	210	1,500	185	1,050	105
16	1,880	185	1,100	140	840	90
20	1,300	130	860	105	625	65

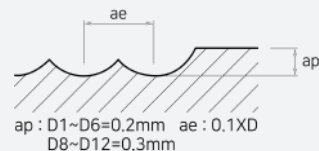
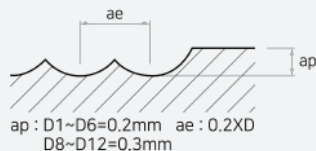
RPM = rev / min
FEED = mm / min

Technical Data

DB312, DB342 SERIES ► General Cutting

Workpiece	NON-Alloy Steels, Alloy Steels, Cast Iron		Alloy Steels, Heat Resistant Steels		Hardened Steels	
Hardness	~ HRC30		HRC30 ~ HRC45		HRC45 ~ HRC50	
Strength	~ 1000N/mm ²		1000 ~ 1500N/mm ²		1500 ~ 2000N/mm ²	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED
1	16,500	290	13,300	230	6,100	105
1.5	16,500	405	12,700	310	5,590	140
2	15,100	865	11,200	565	4,900	175
2.5	15,100	865	11,200	565	4,900	175
3	13,800	780	10,500	530	4,750	175
4	11,000	850	8,800	610	4,410	205
5	9,600	945	7,600	665	3,860	205
6	8,900	1,150	7,200	955	3,340	220
8	7,500	1,500	6,050	1,060	2,590	255
10	6,700	1,750	5,300	1,170	2,140	260
12	6,150	2,000	4,900	1,280	1,840	280
16	5,000	1,950	3,900	1,220	1,420	280
20	4,350	1,900	3,400	1,200	1,170	290

RPM = rev / min
FEED = mm / min



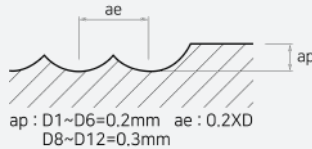
* Please reduce cutting speed around 20~30% from the above table or DB522 series.



■ DB312, DB342 SERIES ► High Speed Cutting

Workpiece	NON-Alloy Steels, Alloy Steels, Cast Iron		Alloy Steels, Heat Resistant Steels	
Hardness	~ HRc45		HRc30 ~ HRc40	
Strength	~ 1000N/mm ²		1500 ~ 2000N/mm ²	
Diameter (mm)	RPM	FEED	RPM	FEED
1	26,000	1,500	26,000	920
1.5	24,000	1,600	24,000	990
2	22,000	1,700	22,000	1,080
2.5	22,000	2,000	20,000	1,130
3	22,000	2,300	17,800	1,200
4	22,000	3,350	14,300	1,300
5	22,000	4,150	12,600	1,380
6	22,000	4,600	11,000	1,440
8	17,500	4,600	8,800	1,440
10	14,700	4,450	7,350	1,380
12	12,800	4,450	6,400	1,330
16	10,000	4,000	5,000	1,150
20	8,350	3,650	4,150	1,060

RPM = rev / min
FEED = mm / min



* Please reduce cutting speed around 20~30% from the above table or DB522 series.

Technical Data

■ TXB202, TXB222, TXB232, TXB302 SERIES

Workpiece	Carbon Steels, Alloy Steels, Tool Steels				Hardened Steels		Cast Iron		Aluminum Alloys	
Hardness	~ HRC30		HRC30 ~ HRC45		HRC45 ~ HRC55		-		-	
Strength	~ 1000N/mm2		1000 ~ 1500N/mm2		1500 ~ 2000N/mm2		-		-	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2	12,350	640	9,150	415	4,000	125	10,500	220	30,800	395
3	11,400	575	8,550	390	3,800	125	7,050	230	20,500	395
4	8,950	630	7,150	450	3,600	150	5,150	285	15,400	395
5	7,800	700	6,200	490	3,100	150	4,150	330	12,100	470
6	7,250	870	5,900	705	2,700	160	3,400	360	10,300	470
8	6,100	1,090	4,900	785	2,050	190	2,500	460	7,900	540
10	5,450	1,330	4,350	870	1,750	190	2,050	460	6,150	540
12	4,990	1,500	3,950	950	1,500	210	1,750	460	5,150	630
14	4,530	1,495	3,600	925	1,300	210	1,400	460	4,300	630
16	4,085	1,470	3,200	905	1,150	210	1,300	460	3,850	540
18	3,800	1,425	3,000	890	1,050	210	1,100	460	3,400	540
20	3,550	1,425	2,800	885	950	210	1,050	420	2,950	540

RPM = rev / min
FEED = mm / min

* Please reduce cutting speed 30~40% from the above table when using long and extra long type

■ TXB204, TXB304 SERIES

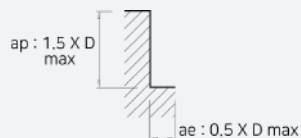
Workpiece	Carbon Steels, Alloy Steels, Tool Steels				Hardened Steels		Cast Iron		Aluminum Alloys	
Hardness	~ HRC30		HRC30 ~ HRC45		HRC45 ~ HRC55		-		-	
Strength	~ 1000N/mm2		1000 ~ 1500N/mm2		1500 ~ 2000N/mm2		-		-	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2	15,400	1,000	11,400	600	5,000	200	13,100	300	38,500	600
3	14,300	900	10,700	600	4,800	200	8,800	300	25,600	600
4	11,200	900	8,900	700	4,500	200	6,400	400	19,300	600
5	9,800	1,100	7,800	700	3,900	200	5,200	500	15,100	700
6	9,100	1,300	7,400	1,100	3,400	200	4,300	500	12,900	700
8	7,600	1,600	6,100	1,200	2,600	300	3,100	700	9,900	800
10	6,800	2,000	5,400	1,300	2,200	300	2,600	700	7,700	800
12	6,200	2,300	4,900	1,400	1,900	300	2,200	700	6,400	900
14	5,700	2,200	4,500	1,400	1,600	300	1,800	700	5,400	900
16	5,100	2,200	4,000	1,400	1,400	300	1,600	700	4,800	800
18	4,800	2,100	3,800	1,300	1,300	300	1,400	700	4,300	800
20	4,400	2,100	3,500	1,300	1,200	300	1,300	600	3,700	800



X-STAR SERIES

Workpiece	Low Carbon Steels		Low Carbon Steels		Med Alloy Steels		Mold&Die Steels		Grey Cast Iron		Cast Iron-Ductile	
Hardness	~ HB175		~ HB275		~ HB275		~ HB275		~ HB200		~ HB300	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3	16,500	335	13,585	276	11,320	230	5,820	118	15,360	300	7,765	158
4	12,340	326	10,190	326	8,520	340	4,380	175	11,550	462	5,810	232
5	9,895	502	8,150	413	6,790	345	3,490	177	9,215	468	4,655	236
6	8,250	586	6,795	483	5,660	403	2,910	207	7,680	546	3,880	276
8	6,185	754	5,095	620	4,245	517	2,185	266	5,760	702	2,910	354
10	4,950	955	4,075	786	3,395	656	1,745	337	4,610	889	2,330	449
12	4,125	963	3,395	793	2,830	661	1,455	340	3,840	897	1,940	453
14	3,535	890	2,910	733	2,425	592	1,250	314	3,290	829	1,665	419
16	3,095	817	2,545	672	2,125	561	1,090	288	2,880	761	1,455	384
18	2,750	809	2,265	667	1,885	556	970	285	2,560	754	1,295	381
20	2,475	804	2,040	662	1,700	552	875	283	2,305	749	1,165	378
25	1,975	631	1,630	521	1,360	435	700	230	1,850	600	930	300

RPM = rev / min
FEED = mm / min



Workpiece	Cast Iron Malleable		Stainless 300 Series		Stainless 400 Series		Stainless PH Series		Titanium Alloys		Heat Resistant Steels	
Hardness	~ HB300		~ HB275		~ HB185		~ HB325		~ HB295		~ HB300	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3	4,850	95	9,705	175	13,585	250	8,085	125	9,705	225	2,590	50
4	3,660	146	7,245	290	10,190	407	6,050	242	7,245	290	1,910	76
5	2,910	147	5,820	300	8,150	430	4,850	250	5,820	355	1,550	75
6	2,425	173	4,850	355	6,795	560	4,045	300	4,850	405	1,295	75
8	1,820	221	3,640	405	5,095	635	3,030	355	3,640	455	970	100
10	1,455	280	2,910	405	4,075	635	2,425	355	2,910	455	775	100
12	1,215	283	2,425	405	3,395	635	2,020	355	2,425	455	645	100
14	1,040	262	2,080	405	2,910	635	1,735	355	2,080	455	555	100
16	910	240	1,820	405	2,545	635	1,515	355	1,820	455	485	100
18	810	238	1,615	380	2,265	560	1,350	300	1,615	405	430	100
20	730	236	1,455	380	2,040	560	1,215	300	1,455	405	390	100
25	585	187	1,160	370	1,630	560	970	300	1,160	405	305	73

RPM = rev / min
FEED = mm / min



Technical Data

X-STAR SERIES ► General Cutting

Workpiece	Hardened Steels	
Hardness	HRc30 ~ HRc45	
Diameter (mm)	RPM	FEED
3	6,900	552
4	5,175	414
5	4,140	331
6	3,450	414
8	2,588	414
10	2,070	414
12	1,725	414
14	1,479	414
16	1,294	414
18	1,150	368
20	1,035	414
25	828	397

RPM = rev / min
FEED = mm / min



X-STAR SERIES ► Side Cutting

Workpiece	Hardened Steels	
Hardness	HRc30 ~ HRc45	
Diameter (mm)	RPM	FEED
3	8,493	679
4	6,369	510
5	5,096	611
6	4,246	849
8	3,185	764
10	2,548	713
12	2,123	764
14	1,820	728
16	1,592	701
18	1,415	679
20	1,274	662
25	1,019	611

RPM = rev / min
FEED = mm / min





■ X-STAR SERIES ► High Speed Cutting

Workpiece	Hardened Steels	
Hardness	HRC30 ~ HRC45	
Diameter (mm)	RPM	FEED
3	18,047	2,166
4	13,535	1,624
5	10,828	1,732
6	9,023	2,166
8	6,768	1,895
10	5,414	1,732
12	4,512	1,985
14	3,867	1,856
16	3,384	1,895
18	3,008	1,805
20	2,707	1,841
25	2,166	1,646

RPM = rev / min
FEED = mm / min



Technical Data

SE502 SERIES ▶ Slotting

Workpiece	Carbon Steels, Alloy Steels, Tool Steels				Stainless Steels 300 Series		Stainless Steels 400 Series	
Hardness	~ HRc30		HRc30 ~ HRc40					
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1	13,000	220	9,800	160	21,000	170	29,600	100
1.2	12,500	210	9,000	150	17,500	140	24,000	100
1.5	12,000	200	8,300	140	14,000	110	19,600	100
2	11,560	190	7,560	120	10,500	85	14,800	100
2.5	10,240	200	6,560	130	8,500	70	11,600	105
3	8,920	210	5,560	140	8,000	65	11,200	90
4	7,560	300	4,620	180	7,500	75	10,500	80
5	6,300	320	3,780	190	6,000	80	8,400	105
6	5,560	350	3,360	220	5,000	80	7,000	120
8	4,200	380	2,520	200	3,750	90	5,200	150
10	3,260	330	2,000	160	3,000	90	4,200	195
12	2,740	280	1,680	130	2,500	95	3,500	200
14	2,470	250	1,520	120	2,150	100	3,000	180
16	2,200	220	1,360	110	1,880	105	2,600	165
18	1,940	195	1,210	95	1,670	110	2,300	160
20	1,680	170	1,060	80	1,500	115	2,100	160

RPM = rev / min
FEED = mm / min

ap : 0.5D



(ap : UP TO Ø 3.0 : 0.2D)

ap : 0.2D





SE503 SERIES ► Slotting

Workpiece	Carbon Steels, Alloy Steels, Tool Steels						Cast Iron		Stainless Steels		Copper Alloy		Titanium Alloys		Inconel	
Hardness	~ HRC20		HRC20 ~ HRC30		HRC30 ~ HRC45		RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED										
1	30,000	1,000	23,000	800	16,500	450	20,000	500	16,500	350	25,000	360	16,500	380	6,500	100
1.5	20,000	1,000	15,500	800	11,000	450	13,000	500	11,000	350	16,500	360	11,000	380	4,500	100
2	15,000	1,000	11,500	800	8,200	450	10,000	500	8,400	350	12,500	360	8,200	380	3,500	100
2.5	12,000	1,000	9,400	800	7,500	450	8,000	500	6,500	350	10,000	360	6,500	380	2,600	100
3	10,080	950	7,750	740	5,550	395	6,700	520	5,550	350	8,300	360	5,550	395	2,200	100
4	7,550	1,400	5,850	1,100	4,200	595	5,050	550	4,200	320	6,200	400	4,200	595	1,650	105
5	6,000	1,500	4,700	1,200	3,300	650	4,000	600	3,300	350	5,000	420	3,300	600	1,400	120
6	5,050	1,650	3,850	1,250	2,800	700	3,350	660	2,800	370	4,100	440	2,800	700	1,150	130
8	3,750	1,700	2,950	1,330	2,100	710	2,500	665	2,100	375	3,100	500	2,100	710	850	120
10	3,050	1,650	2,300	1,250	1,650	665	2,000	630	1,350	355	2,500	530	1,650	665	650	120
12	2,500	1,500	2,000	1,200	1,350	605	1,650	570	1,350	320	2,000	550	1,350	605	555	110
14	2,150	1,550	1,700	1,200	1,200	605	1,450	580	1,200	250	1,700	600	1,200	605	500	110
16	1,850	1,600	1,450	1,250	1,000	650	1,250	600	1,000	200	1,500	650	1,000	610	400	115
18	1,650	1,650	1,300	1,300	920	700	1,100	620	900	150	1,300	700	900	615	350	120
20	1,500	1,700	1,150	1,350	840	750	1,000	640	800	100	1,200	750	800	620	320	125

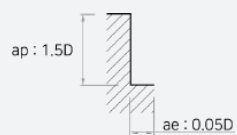
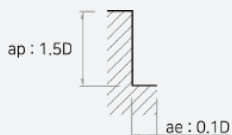
RPM = rev / min FEED = mm / min	ap : 0.5D 	ap : 0.2D 

Technical Data

SE503 SERIES ► Side Cutting

Workpiece	Carbon Steels, Alloy Steels, Tool Steels						Cast Iron		Stainless Steels		Copper Alloy		Titanium Alloys		Inconel	
Hardness	~ HRc20		HRc20 ~ HRc30		HRc30 ~ HRc45											
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1	30,000	1,130	23,000	904	16,500	510	20,000	565	16,500	395	25,000	405	16,500	430	6,500	115
1.5	20,000	1,130	15,500	904	11,000	510	13,000	565	11,000	395	16,500	405	11,000	430	4,500	115
2	15,000	1,130	11,500	904	8,200	510	10,000	565	8,400	395	12,500	405	8,200	430	3,500	115
2.5	12,000	1,130	9,400	904	7,500	510	8,000	565	6,500	395	10,000	405	6,500	430	2,600	115
3	10,080	1,080	7,750	850	5,550	450	6,700	605	5,550	365	8,300	390	5,550	450	2,200	110
4	7,550	1,630	5,850	1,260	4,200	680	5,050	630	4,200	365	6,200	440	4,200	680	1,650	125
5	6,000	1,695	4,700	1,355	3,300	735	4,000	680	3,300	395	5,000	475	3,300	680	1,400	135
6	5,050	1,910	3,850	1,470	2,800	810	3,350	755	2,800	430	4,100	490	2,800	810	1,150	150
8	3,750	1,950	2,950	1,500	2,100	810	2,500	770	2,100	430	3,100	550	2,100	810	850	140
10	3,050	1,890	2,300	1,400	1,650	775	2,000	720	1,350	415	2,500	570	1,650	775	650	140
12	2,500	1,700	2,000	1,340	1,350	700	1,650	665	1,350	365	2,000	620	1,350	700	555	125
14	2,150	1,750	1,700	1,355	1,200	685	1,450	655	1,200	280	1,700	680	1,200	685	500	125
16	1,850	1,805	1,450	1,410	1,000	735	1,250	680	1,000	225	1,500	735	1,000	690	400	130
18	1,650	1,865	1,300	1,470	920	790	1,100	700	900	170	1,300	790	900	695	350	135
20	1,500	1,920	1,150	1,525	840	845	1,000	725	800	115	1,200	850	800	700	320	140

RPM = rev / min
FEED = mm / min





SE504, SR504 SERIES ► Side Cutting

Workpiece	Alloy Steels, Cast Iron		Stainless Steels 300 Series		Stainless Steels 400 Series		Titanium		Inconel	
Hardness	~ HB230									
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1	40,500	300	20,000	250	28,000	160	23,925	225	9,330	60
1.5	27,000	300	13,000	180	18,500	160	15,730	185	6,135	50
2	20,300	300	10,000	150	14,000	160	12,010	165	4,685	45
2.5	16,200	300	8,000	120	11,000	165	9,490	155	3,700	40
3	13,500	275	6,690	105	9,350	145	8,045	135	3,135	35
4	10,100	370	5,050	135	7,000	185	6,005	195	2,340	50
5	8,090	410	4,050	165	5,600	230	4,815	360	1,875	60
6	6,750	480	3,350	190	4,700	265	4,030	415	1,570	70
8	5,050	620	2,500	250	3,500	340	3,000	545	1,170	95
10	4,050	780	2,050	320	2,800	430	2,430	695	945	120
12	3,370	750	1,680	310	2,350	435	2,010	685	780	115
14	2,890	670	1,400	280	2,000	405	1,700	820	715	150
16	2,500	630	1,250	265	1,750	370	1,500	950	600	180
18	2,250	630	1,100	260	1,550	365	1,320	1,245	515	250
20	2,000	620	1,000	260	1,400	365	1,200	1,875	480	390

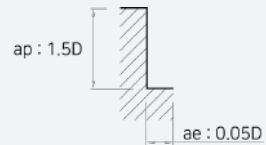
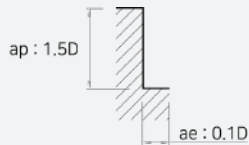
RPM = rev / min FEED = mm / min	ap : 1.0D 	ap : 0.2D 

Technical Data

SE504, SR504 SERIES ► Side Cutting

Workpiece	Alloy Steels, Cast Iron		Stainless Steels 300 Series		Stainless Steels 400 Series		Titanium		Inconel	
Hardness	~ HB230									
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1	40,500	335	20,000	280	28,000	180	23,925	260	9,570	65
1.5	27,000	335	13,000	200	18,500	180	15,730	215	6,290	55
2	20,300	335	10,000	170	14,000	180	12,010	195	4,805	50
2.5	16,200	335	8,000	135	11,000	185	9,490	180	3,795	45
3	13,500	310	6,690	115	9,350	160	8,045	155	3,215	40
4	10,100	415	5,050	150	7,000	205	6,000	335	2,520	60
5	8,090	460	4,050	185	5,600	260	4,815	410	2,020	75
6	6,750	540	3,350	215	4,700	295	4,030	470	1,690	85
8	5,050	700	2,500	280	3,500	380	3,000	620	1,260	110
10	4,050	880	2,050	360	2,800	485	2,430	790	1,020	145
12	3,370	845	1,680	350	2,350	490	2,010	780	845	140
14	2,890	755	1,400	315	2,000	455	1,700	925	715	170
16	2,500	710	1,250	295	1,750	415	1,500	1,075	600	205
18	2,250	710	1,100	290	1,550	410	1,320	1,410	515	275
20	2,000	700	1,000	290	1,400	410	1,200	2,120	480	430

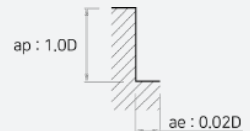
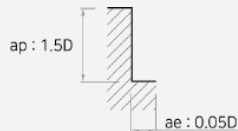
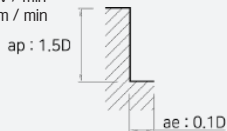
RPM = rev / min
FEED = mm / min



SE506 SERIES ► Side Cutting - Normal Speed

Workpiece	Carbon Steels, Alloy Steels, Tool Steels				Stainless Steels, Titanium Alloy		Inconel	
Hardness	~ HRc30		HRc30 ~ HRc40					
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
6	5,560	2,000	3,880	1,370	3,370	1,100	1,350	280
8	4,200	2,000	2,940	1,370	2,490	1,100	1,000	280
10	3,360	2,000	2,320	1,370	1,920	1,100	440	280
12	2,840	1,680	2,000	1,160	1,610	1,000	400	250
16	2,100	1,260	1,480	880	1,160	770	310	190
20	1,680	1,010	1,160	690	900	620	250	155

RPM = rev / min
FEED = mm / min





SE506 SERIES ► Side Cutting - High Speed

Workpiece	Carbon Steels, Alloy Steels, Tool Steels				Stainless Steels, Titanium Alloy		Inconel	
Hardness	~ HRC30		HRC30 ~ HRC40					
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
6	22,200	8,000	16,800	6,090	13,400	4,400	5,400	1,100
8	16,800	8,000	12,600	6,090	9,900	4,400	4,000	1,100
10	13,400	8,000	9,988	5,990	7,600	4,400	1,700	1,100
12	11,350	6,720	8,400	5,040	6,400	4,000	1,600	1,000
16	8,400	5,040	6,300	3,780	4,600	3,000	1,200	760
20	6,700	4,040	5,040	3,050	3,600	2,400	1,000	620

RPM = rev / min
FEED = mm / min

ap : 1.5D

ae : 0.1D

ap : 1.5D

ae : 0.05D

SR505 SERIES ► Side Cutting

Workpiece	Alloy Steels, Tool Steels HRc30~45		Stainless Steels, Titanium		Inconel	
Hardness	HRc30~45		Stainless Steels, Titanium		Inconel	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED
6	6,400	640	4,000	500	3,200	240
8	4,800	720	3,000	450	2,400	240
10	3,900	780	2,400	480	2,000	250
12	3,200	800	2,000	500	1,600	240
16	2,400	720	1,500	450	1,200	240
20	2,000	600	1,200	360	1,000	250

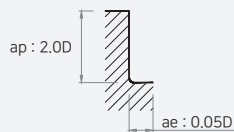
RPM = rev / min
FEED = mm / min

Technical Data

SR507 SERIES ► Side Cutting

Workpiece	Alloy Steels, Tool Steels HRC30~45		Stainless Steels, Titanium		Inconel	
Hardness						
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED
6	6,400	890	4,000	700	3,200	330
8	4,800	1,000	3,000	630	2,400	330
10	3,900	1,090	2,400	670	2,000	350
12	3,200	1,120	2,000	700	1,600	330
16	2,400	1,000	1,500	630	1,200	330
20	2,000	840	1,200	500	1,000	350

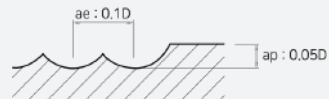
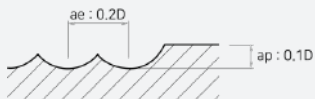
RPM = rev / min
FEED = mm / min



SB502 SERIES

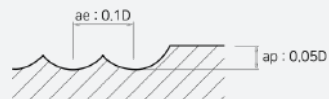
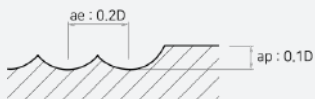
Workpiece	Carbon Steel, Cast Iron		Alloy Steels, Prehardened Steels		Heat Treated Steels			
Hardness	150 ~ 250HB		25 ~ 35HRc		35 ~ 45HRc		45 ~ 55HRc	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2	19,100	770	12,800	370	10,200	270	8,900	190
4	10,800	1,100	7,200	550	5,700	400	5,000	280
6	7,700	1,300	5,200	660	4,100	480	3,600	330
8	6,000	1,400	4,000	700	3,200	510	2,800	360
10	4,800	1,400	3,200	700	2,600	520	2,300	370
12	4,000	1,400	2,700	710	2,200	530	1,900	370

RPM = rev / min
FEED = mm / min



Workpiece	Stainless Steels 300 Series				Ni Alloy, Ti Alloy			
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2	8,900	210	6,400	120	10,200	270	8,900	190
4	5,000	310	3,600	180	5,700	400	5,000	280
6	3,600	380	2,600	210	4,100	480	3,600	330
8	2,800	400	2,000	230	3,200	510	2,800	360
10	2,300	410	1,600	230	2,600	520	2,300	370
12	1,900	410	1,400	240	2,200	530	1,900	370

RPM = rev / min
FEED = mm / min

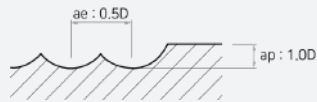




SB504 SERIES

Workpiece	Alloy Steels,, Cast Iron		Stainless Steels 300 Series, Titanium		Stainless Steels 400 Series	
Hardness	~ HB230					
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED
3	13,500	275	6,690	105	9,350	145
4	10,100	370	5,050	135	7,000	185
5	8,090	410	4,050	165	5,600	230
6	6,750	480	3,350	190	4,700	265
8	5,050	620	2,500	250	3,500	340
10	4,050	780	2,050	320	2,800	430
12	3,370	750	1,680	310	2,350	435
16	2,530	700	1,250	300	1,750	395
20	2,030	680	1,000	290	1,400	370

RPM = rev / min
FEED = mm / min



SF51H SERIES ► Slotting

Workpiece	Stainless Steels, Titanium alloys (SUS304, SUS316, Ti6A)	
Diameter (mm)	RPM	FEED
3	5,000	380
4	4,800	350
5	4,700	350
6	4,400	340
7	3,800	340
8	3,300	340
9	3,000	340
10	2,700	330
12	2,200	330
14	2,000	310
16	1,750	300
20	1,300	210

RPM = rev / min
FEED = mm / min



Technical Data

AWE311 SERIES ▶ Slotting

Workpiece	Acrylic		Aluminium	
Diameter (mm)	RPM	FEED	RPM	FEED
1	32,000	2,000	23,000	1,300
2	32,000	2,200	23,000	1,500
3	25,000	2,400	18,000	1,700
4	20,000	2,400	15,000	1,800
5	15,000	2,200	12,000	1,800
6	13,500	2,300	10,000	1,800
8	10,000	2,400	7,800	1,900
10	8,000	2,400	6,000	2,000
12	7,000	2,200	5,000	1,900

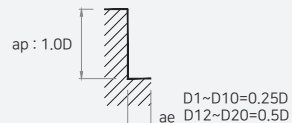
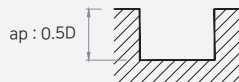
RPM = rev / min
FEED = mm / min



AWE312 SERIES

Processing method	Slotting		Side Cutting	
Workpiece	Aluminium, NON Ferrous Metals		Aluminium, NON Ferrous Metals	
Diameter (mm)	RPM	FEED	RPM	FEED
1	16,870	505	16,870	845
1.2	16,450	510	16,450	850
1.5	13,150	525	13,150	790
2	11,300	565	11,300	790
2.5	10,565	635	10,565	845
3	10,000	700	10,000	900
4	10,000	900	10,000	1,100
5	10,000	1,000	10,000	1,300
6	10,000	1,200	10,000	1,500
7	8,850	1,240	8,850	1,505
8	8,000	1,400	8,000	1,800
10	8,000	1,700	8,000	2,100
12	8,000	2,100	8,000	2,600
14	6,000	1,800	6,000	2,200
16	6,000	1,900	6,000	2,400
18	4,000	1,400	4,000	1,800
20	4,000	1,600	4,000	1,900

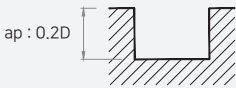
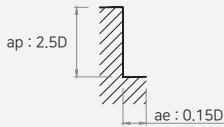
RPM = rev / min
FEED = mm / min





■ AWE313, AWE323 SERIES

Processing method	Slotting		Side Cutting	
Workpiece	Aluminium, NON Ferrous Metals		Aluminium, NON Ferrous Metals	
Diameter (mm)	RPM	FEED	RPM	FEED
1	17,000	550	17,000	900
1.2	16,000	550	16,000	850
1.5	13,000	500	13,000	850
2	10,000	400	10,000	640
2.5	8,000	380	8,000	520
3	7,000	350	7,000	455
3.5	7,000	350	7,000	550
4	7,000	441	7,000	546
4.5	7,000	500	7,000	600
5	7,000	504	7,000	651
5.5	7,000	605	7,000	700
6	7,000	606	7,000	756
7	6,000	700	6,000	820
8	5,600	700	5,600	861
9	5,600	800	5,600	900
10	5,600	854	5,600	1,050
12	5,600	1,050	5,600	822
14	4,200	903	4,200	1,106
16	4,200	945	4,200	1,211
18	2,800	700	2,800	910
20	2,800	805	2,800	956

RPM = rev / min FEED = mm / min ap : 0.2D 	ap : 2.5D  ae : 0.15D

Technical Data

AWR312 SERIES

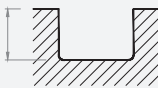
Processing method	Slotting		Side Cutting	
Workpiece	Aluminium, NON Ferrous Metals		Aluminium, NON Ferrous Metals	
Diameter (mm)	RPM	FEED	RPM	FEED
1	16,870	505	16,870	845
1.5	13,150	525	13,150	790
2	11,300	565	11,300	790
2.5	10,565	635	10,565	845
3	10,000	700	10,000	900
4	10,000	900	10,000	1,100
5	10,000	1,000	10,000	1,300
6	10,000	1,200	10,000	1,500
8	8,000	1,400	8,000	1,800
10	8,000	1,700	8,000	2,100
12	8,000	2,100	8,000	2,600
14	6,000	1,800	6,000	2,200
16	6,000	1,900	6,000	2,400
18	4,000	1,400	4,000	1,800
20	4,000	1,600	4,000	1,900

RPM = rev / min FEED = mm / min ap : 0.5D 	ap : 1.0D  D1~D10=0.25D D12~D20=0.5D



AWR313 SERIES

Processing method	Slotting		Side Cutting	
Workpiece	Aluminium, NON Ferrous Metals		Aluminium, NON Ferrous Metals	
Diameter (mm)	RPM	FEED	RPM	FEED
1	17,000	550	17,000	900
1.5	13,000	500	13,000	850
2	10,000	400	10,000	640
2.5	8,000	380	8,000	520
3	10,000	350	10,000	650
4	10,000	630	10,000	780
5	10,000	720	10,000	930
6	10,000	865	10,000	1,080
8	8,000	1,000	8,000	1,230
10	8,000	1,220	8,000	1,500
12	8,000	1,500	8,000	1,260
14	6,000	1,290	6,000	1,580
16	6,000	1,350	6,000	1,730
18	4,000	1,000	4,000	1,300
20	4,000	1,150	4,000	1,365

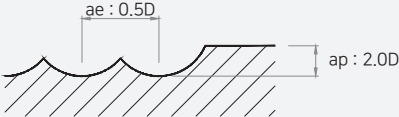
RPM = rev / min FEED = mm / min ap : 0.5D 	ap : 1.0D  D1~D10=0.25D D12~D20=0.5D

Technical Data

AWB312 SERIES ► Slotting

Workpiece	Aluminium, NON Ferrous Metals	
Diameter (mm)	RPM	FEED
6	18,000	1,750
8	14,000	2,000
10	14,000	2,350
12	14,000	3,000
16	11,000	2,700
20	8,000	2,200

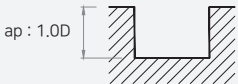
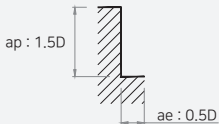
RPM = rev / min
 FEED = mm / min



AWN513 SERIES

Processing method	Slotting		Side Cutting	
Workpiece	Aluminium, NON Ferrous Metals		Aluminium, NON Ferrous Metals	
Diameter (mm)	RPM	FEED	RPM	FEED
3	51,778	3,946	64,723	4,932
4	38,834	4,893	48,542	6,116
5	31,067	5,499	38,834	6,874
6	25,889	5,918	32,362	7,398
8	19,417	5,534	24,271	6,917
10	15,534	5,326	19,417	6,658
12	12,945	5,918	16,181	7,398
16	9,708	4,883	12,136	6,103
20	7,767	4,439	9,708	5,548

RPM = rev / min
 FEED = mm / min

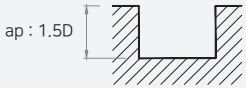
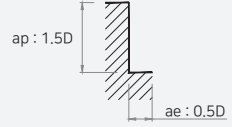





AWF513 SERIES

Processing method	Slotting		Side Cutting	
Workpiece	Aluminium, NON Ferrous Metals		Aluminium, NON Ferrous Metals	
Diameter (mm)	RPM	FEED	RPM	FEED
4	15,000	7,000	20,000	9,000
5	12,000	6,000	16,000	8,000
6	10,500	5,300	13,500	6,800
8	8,000	4,000	10,500	5,300
10	6,500	3,500	8,500	4,300
12	5,250	2,500	6,800	3,400
14	4,500	2,200	5,800	2,900
16	4,000	2,000	5,200	2,600
18	3,550	1,770	4,700	2,350
20	3,200	1,600	4,200	2,100

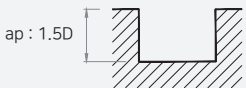
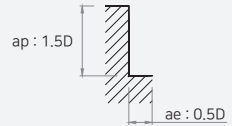
RPM = rev / min
FEED = mm / min

AWF583 SERIES

Processing method	Slotting		Side Cutting	
Workpiece	Aluminium, NON Ferrous Metals		Aluminium, NON Ferrous Metals	
Diameter (mm)	RPM	FEED	RPM	FEED
4	15,000	7,000	20,000	9,000
5	12,000	6,000	16,000	8,000
6	10,500	5,300	13,500	6,800
8	8,000	4,000	10,500	5,300
10	6,500	3,500	8,500	4,300
12	5,250	2,500	6,800	3,400
14	4,500	2,200	5,800	2,900
16	4,000	2,000	5,200	2,600
18	3,550	1,770	4,700	2,350
20	3,200	1,600	4,200	2,100

RPM = rev / min
FEED = mm / min

Technical Data

E302, E322, EL422 SERIES

Processing method	Side Cutting				Slotting			
	Depth of Cut : 1.5D, Width : 0.1D				Depth of Cut : 0.5D, Width : 0.1D			
Workpiece	Carbon Steels, Alloy Steels, Tool Steels		Alloy Steels, Tool Steels		Carbon Steels, Alloy Steels, Tool Steels		Alloy Steels, Tool Steels	
Hardness	~ HB225		HB225 ~ HB325		~ HB225		HB225 ~ HB325	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1	5,300	60	4,300	50	4,300	40	3,500	20
2	4,500	80	3,800	60	3,800	50	3,100	30
3	3,700	80	3,200	60	3,200	50	2,650	30
4	2,750	110	2,400	60	2,400	50	2,000	30
6	1,850	110	1,600	60	1,600	50	1,320	30
8	1,400	110	1,200	90	1,200	60	1,000	40
10	1,100	110	950	90	950	60	800	40
12	930	110	800	90	800	60	660	40
16	700	110	600	90	600	60	500	40
20	560	110	480	90	480	60	400	40
25	450	110	380	90	380	60	320	40

* Please reduce cutting speed around 20~30% from the above table or E322, E422 series.

E304, E324 SERIES

Processing method	Side Cutting				Slotting			
	Depth of Cut : 1.5D, Width : 0.1D				Depth of Cut : 0.5D, Width : 0.1D			
Workpiece	Carbon Steels, Alloy Steels, Tool Steels		Alloy Steels, Tool Steels		Carbon Steels, Alloy Steels, Tool Steels		Alloy Steels, Tool Steels	
Hardness	~ HB225		HB225 ~ HB325		~ HB225		HB225 ~ HB325	
Diameter (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1	5,300	60	4,300	50	4,300	40	3,500	20
2	4,500	80	3,800	60	3,800	50	3,100	30
3	3,700	80	3,200	60	3,200	50	2,650	30
4	2,750	110	2,400	60	2,400	50	2,000	30
6	1,850	110	1,600	60	1,600	50	1,320	30
8	1,400	110	1,200	90	1,200	60	1,000	40
10	1,100	110	950	90	950	60	800	40
12	930	110	800	90	800	60	660	40
16	700	110	600	90	600	60	500	40
20	560	110	480	90	480	60	400	40
25	450	110	380	90	380	60	320	40

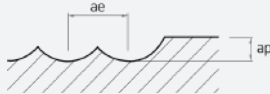
* Please reduce cutting speed around 20~30% from the above table or E324 series.



B302, BL422 SERIES

Workpiece	Carbon Steels, Alloy Steels, Tool Steels		Alloy Steels, Tool Steels	
Hardness	~ HB225		HB225 ~ HB325	
Diameter (mm)	RPM	FEED	RPM	FEED
R0.5	31,800	572	27,900	502
R1	31,800	1,910	27,900	1,670
R2	15,900	1,910	13,900	1,670
R3	10,600	1,910	9,280	1,670
R4	7,960	1,910	6,960	1,670
R5	6,370	1,780	5,570	1,560
R6	5,310	1,590	4,640	1,390
R8	4,000	1,300	3,500	1,050
R10	3,200	1,000	2,800	840
R12.5	2,400	800	2,100	650

RPM = rev / min
FEED = mm / min



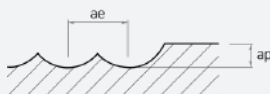
R	ap	ae
$R \leq 1.0$	$0.05 \times R0.1\delta t$	$0.2 \times R0.1\delta t$
$1.0 < R$	$0.1 \times R0.1\delta t$	$0.2 \times R0.1\delta t$

* Please reduce cutting speed around 20~30% from the above table or BL422 series.

B304 SERIES

Workpiece	Carbon Steels, Alloy Steels, Tool Steels		Alloy Steels, Tool Steels	
Hardness	~ HB225		HB225 ~ HB325	
Diameter (mm)	RPM	FEED	RPM	FEED
R0.5	39,750	718.25	34,875	6,275
R1	39,750	2,387.5	34,875	2,087.5
R2	19,875	2,387.5	17,375	2,087.5
R3	13,250	2,387.5	11,600	2,087.5
R4	9,950	2,387.5	8,700	2,087.5
R5	7,962.5	2,225	6,962.5	1,950
R6	6,637.5	1,987.5	5,800	1,737.5
R8	5,000	1,625	4,375	1,312.5
R10	4,000	1,250	3,500	1,050
R12.5	3,000	1,000	2,625	812.5

RPM = rev / min
FEED = mm / min



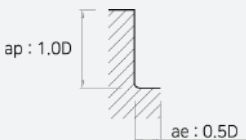
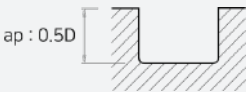
R	ap	ae
$R \leq 1.0$	$0.05 \times R0.1\delta t$	$0.2 \times R0.1\delta t$
$1.0 < R$	$0.1 \times R0.1\delta t$	$0.2 \times R0.1\delta t$

Technical Data

RC502 SERIES

Workpiece	Unalloyed Copper			
Diameter (mm)	RPM	FEED	RPM	FEED
3	44,500	2,350	50,000	3,700
4	33,400	2,100	50,000	4,700
6	22,300	2,100	33,400	4,900
8	16,700	2,100	25,000	4,700
10	13,370	2,100	20,000	4,800
12	11,100	2,100	16,700	4,700

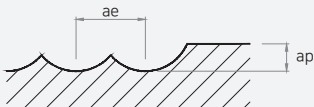
RPM = rev / min
FEED = mm / min

BC502 SERIES

Workpiece		Unalloyed Copper			
Mill Dia (mm)	Diameter (mm)	RPM	FEED	Rd	Ad
0.5	1	41,000	1,660	0.04	0.063
0.75	1.5	27,000	1,830	0.068	0.087
1	2	20,000	1,780	0.089	0.112
1.25	2.5	16,000	1,840	0.115	0.09
1.5	3	13,000	2,220	0.171	0.168
2	4	10,000	2,080	0.208	0.2
2.5	5	8,300	1,990	0.24	0.2
3	6	6,900	1,940	0.281	0.25
4	8	5,720	1,000	0.175	0.4
5	10	4,550	700	0.154	0.5
6	12	3,770	600	0.159	0.6

RPM = rev / min
FEED = mm / min

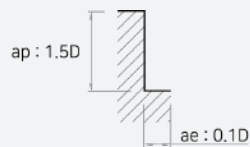




GE SERIES

Workpiece	Graphite	
Diameter (mm)	RPM	FEED
0.4	40,000	200
0.6	40,000	350
0.8	40,000	550
1	40,000	700
2	25,000	800
3	20,000	800
4	18,000	950
5	14,000	1,200
6	11,000	1,400
8	8,000	1,300
10	6,500	1,200
12	5,500	1,200

RPM = rev / min
FEED = mm / min

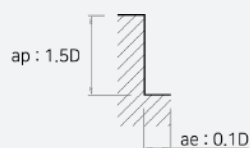


* Please reduce cutting speed 50% from the above table when using long and extra long type

WGE504 SERIES

Workpiece	Graphite	
Diameter (mm)	RPM	FEED
3	20,000	1,600
4	18,000	1,900
5	14,000	2,400
6	11,000	2,800
8	8,000	2,600
10	6,500	2,400
12	5,500	2,400
16	4,200	2,450
20	3,300	2,400

RPM = rev / min
FEED = mm / min



* Please reduce cutting speed 50% from the above table when using long and extra long type

Technical Data

WGR502 SERIES

Workpiece	Graphite	
Diameter (mm)	RPM	FEED
0.4	40,000	640
0.6	40,000	640
0.8	40,000	800
1	40,000	960
1.2	40,000	1,200
1.5	40,000	1,440
2	40,000	1,600
3	27,000	1,900
4	20,000	2,300
5	16,000	2,300
6	14,000	2,300

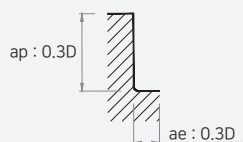
RPM = rev / min
FEED = mm / min



WGR504 SERIES

Workpiece	Graphite	
Diameter (mm)	RPM	FEED
4	40,000	3,500
6	40,000	5,600
8	32,000	5,600
10	26,000	5,700
12	21,000	5,450
16	15,800	5,450
20	12,800	5,500

RPM = rev / min
FEED = mm / min

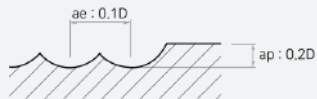




■ G SERIES

Workpiece	Graphite	
Diameter (mm)	RPM	FEED
0.5	16,000	480
0.75	16,000	640
1	16,000	800
1.5	16,000	1,450
2	16,000	2,100
3	15,000	2,950
4	13,000	3,000
5	11,500	3,050
6	10,500	3,150
8	8,555	2,960

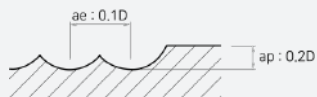
RPM = rev / min
FEED = mm / min



■ WGB504 SERIES

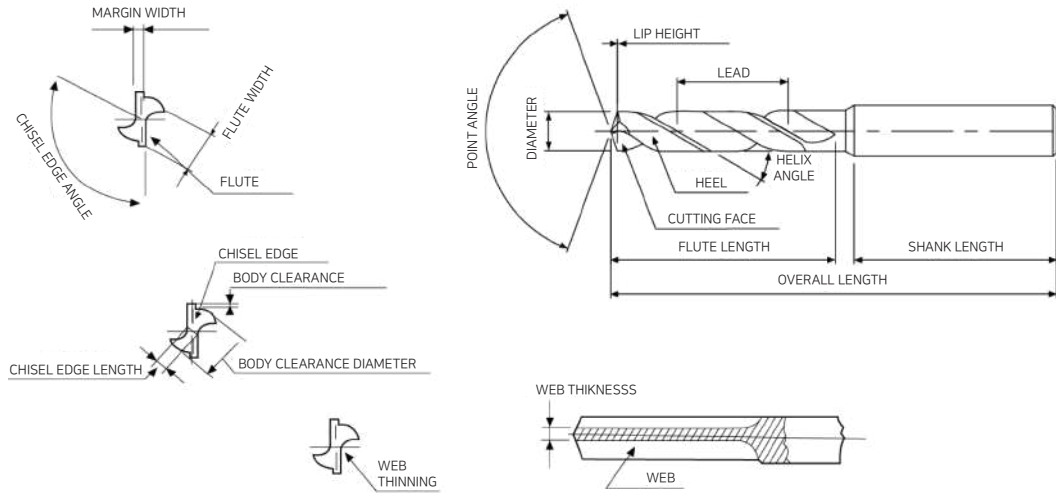
Workpiece	Graphite	
Diameter (mm)	RPM	FEED
1	20,000	700
2	16,000	1,200
3	16,000	2,000
4	16,000	3,100
5	15,000	3,800
6	15,000	4,400
8	13,000	4,500
10	12,000	4,600
12	10,000	4,700
16	7,500	3,800
20	6,000	3,500

RPM = rev / min
FEED = mm / min



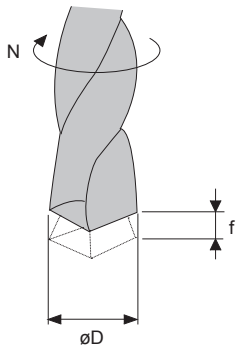
Technical Data

Nomenclature of Drill



Working of Main Angle

POINT ANGLE	HELIX ANGLE	LIP RELIEF ANGLE
Low High	Low High	Low High
Large → Torque → Small Small → Thrust → Large	Bad → Torque → Good Good → Thrust → Bad Large → Rigidity of tool → Small	Small → Tool Wear → Large Small → Unalloyed Copper → Large



Cutting Speed	$V = \frac{\pi \times D \times N}{1000} \text{ (m/min)}$	V : Cutting Speed D : Diameter of drill N : Revolution $\pi : 3.14$	(m/min) (mm) (rpm)
Feed	$f_z = F_n \times N \text{ (m/rev)}$	F : Feed F_n : Feed rate per revolution N : Revolution	(m/rev) (mm) (rpm)
Helix Angle	$\theta^\circ = \tan^{-1} \left(\frac{\pi D}{L} \right)$	θ° : Helix angle D : Diameter of drill L : Lead $\pi : 3.14$	(mm)



Technical Solutions about general problems to use drill

Problems and Circumstances	Cause	Technical Countermeasures
Not drill into workpiece	· No enough Lip Relief · Thick Web	· Re-grinding of Lip Relief · Get the Web thinner
Chipping-off on margin part	· large jig-bushing	· Use the right sized bushing on drill
Balance of cutting flutes	· To overheat on drill during the operation	· Reduce feed rate Supply enough cutting oil
Chipped-off on cutting flutes	· Large relief angle · High feed rate	· Adjust Lip Relief · Reduce feed rate
Damage on tang	· Incomplete adhesiveness between socket and shaft	· Remove foreign substance and replace it to new one when it is worn out
Damage on a drill during a processing of brass	· Wrong choice of shape of drill · Clogged-up with chips in groove	· Choose suitable drill for material
Crack on center of drill	· Lack of number of flutes · Huge feed rate	· Re-grinding with proper relief angle · Reduce feed rate
Getting hole size larger	· Difference between point angle and cutting flutes · Loose main spindle	· Choose good qualitative drill · Adjust spindle within measure
Damage on edge	· High feed rate · Foreign substance on workpiece · Lack of cutting oil supply on drill tip · The wear and tear of a drill	· Grind tip of drill suitable for workpiece · Reduce feed rate · Regrind it on early stage
Irregular size of chip	· Inappropriate grind on edge of flute or using only one side of flute	· Need a exact re-grinding · Choose good qualitative drill
Roughness of hole	· Blunt edge of flute or inappropriate grinding excessive feed rate · No supply cutting oil on tip of drill · loose fixture	· Regrind flute edge angle · Supply plenty of appropriate cutting oil · Reduce feed rate · Fasten fixture

Technical Data

NDPG, NDPK SERIES

Workpiece	Carbon Steels(C<0.3%) Alloy Steels/SS400 SCM ~710N/mm ²		Carbon Steels(C>0.3%) Alloy Steels/S50C SCM ~1,060N/mm ²		Grey Cast Iron <HB240		Grey Cast Iron <HB350		Stainless Steels	
Vc	80~120		80~120		120~200		80~130		40~45	
Dia.	RPM	fn (mm/rev)	RPM	fn (mm/rev)	RPM	fn (mm/rev)	RPM	fn (mm/rev)	RPM	fn (mm/rev)
1	13,000	0.04	13,000	0.04	21,300	0.04	14,200	0.04	7,160	0.03
2	13,000	0.06	13,000	0.06	21,300	0.06	14,200	0.06	7,160	0.04
3	13,000	0.13	13,000	0.13	21,000	0.13	14,000	0.13	4,780	0.07
4	9,500	0.14	9,500	0.14	16,000	0.14	10,500	0.14	3,600	0.08
5	7,600	0.15	7,600	0.15	13,000	0.15	8,300	0.15	2,850	0.09
6	6,400	0.17	6,400	0.17	11,000	0.17	6,900	0.17	2,400	0.1
8	4,800	0.21	4,800	0.21	8,000	0.21	5,200	0.21	1,800	0.12
10	3,800	0.25	3,800	0.25	6,400	0.25	4,150	0.25	1,450	0.15
12	3,200	0.27	3,200	0.27	5,300	0.27	3,450	0.27	1,200	0.17
14	2,750	0.29	2,750	0.29	4,550	0.29	3,000	0.29	1,000	0.19
16	2,400	0.31	2,400	0.31	4,000	0.31	2,600	0.31	900	0.21
18	2,100	0.33	2,100	0.33	3,550	0.33	2,300	0.33	800	0.23
20	1,900	0.35	1,900	0.35	3,200	0.35	2,100	0.35	700	0.25

* Recommended conditions in the above table are ideal conditions, and work by adjusting the conditions according to the equipment and other conditions.
 · 7D : Apply 85% of the table

NDPGH SERIES

Workpiece	Carbon Steels, Alloy Steels SS400, SM50C, SCM, SCr ~900N/mm ² / ~HRc 28		Alloy Steels SCM, SCr ~1,100N/mm ² HRc 28~35		Alloy Steels, Hardened Steels ~HRc40		Cast Iron ~350N/mm ²		Ductile Iron 400~600N/mm ²		Stainless Steels SUS300, SUS400	
Vc	80~120m/min		60~90m/min		30~60m/min		80~120m/min		60~100m/min		40~70m/min	
Dia.	RPM	fn (mm/rev)	RPM	fn (mm/rev)	RPM	fn (mm/rev)	RPM	fn (mm/rev)	RPM	fn (mm/rev)	RPM	fn (mm/rev)
3	10,600	0.09	8,000	0.09	4,800	0.08	10,600	0.09	8,500	0.09	5,800	0.09
4	8,000	0.14	6,000	0.14	3,600	0.1	8,000	0.14	6,400	0.14	4,400	0.14
6	5,300	0.17	4,000	0.17	2,400	0.14	5,300	0.17	4,200	0.21	2,900	0.17
8	4,000	0.21	3,000	0.21	1,800	0.18	4,000	0.21	3,200	0.24	2,200	0.21
10	3,200	0.25	2,400	0.25	1,400	0.22	3,200	0.25	2,500	0.26	1,800	0.25
12	2,700	0.27	2,000	0.27	1,200	0.24	2,700	0.27	2,100	0.28	1,500	0.27
14	2,300	0.29	1,700	0.29	1,000	0.26	2,300	0.29	1,800	0.31	1,300	0.29
16	2,000	0.31	1,500	0.31	900	0.29	2,000	0.31	1,600	0.33	1,100	0.31
18	1,800	0.33	1,300	0.33	800	0.32	1,800	0.33	1,400	0.35	1,000	0.33
20	1,600	0.35	1,200	0.35	700	0.34	1,600	0.35	1,300	0.37	900	0.35

* In actual machining, the condition should be adjusted according to the machining shape, purpose and machine type.
 * 8D : apply 75 % of above cutting condition



PF50, P50, HP50 SERIES

Work piece	Carbon Steels (C<0.3%) Alloy Steels/SS400 SCM ~710N/mm ²		Carbon Steels (C>0.3%) Alloy Steels/S50C SCM ~1,060N/mm ²		SUJ2 · SUS440		SKD61 HRC34~43		HRC43~48		SKD11 HRC48~53		Cast Iron FC 250~350		DuctileFC 400~500	
V (m/min)	80~125		80~125		63~80		40~63		32~45		25~36		80~125		63~90	
Diameter (mm)	RPM	fn (mm/rev)	RPM	fn (mm/rev)	RPM	fn (mm/rev)	RPM	fn (mm/rev)	RPM	fn (mm/rev)	RPM	fn (mm/rev)	RPM	fn (mm/rev)	RPM	fn (mm/rev)
2	12,000	0.06~0.08	12,000	0.06~0.08	11,000	0.06~0.08	8,000	0.06~0.08	6,000	0.05~0.07	4,500	0.03~0.06	15,000	0.06~0.08	11,000	0.06~0.08
3	9,600	0.09~0.12	9,600	0.09~0.12	7,500	0.09~0.12	5,300	0.09~0.12	4,000	0.07~0.11	3,200	0.05~0.09	10,000	0.09~0.12	7,600	0.09~0.12
4	8,000	0.10~0.15	8,000	0.10~0.15	5,650	0.10~0.15	4,000	0.10~0.15	3,000	0.08~0.13	2,600	0.06~0.10	8,000	0.10~0.15	6,000	0.10~0.15
5	6,400	0.12~0.18	6,400	0.12~0.18	4,550	0.12~0.18	3,300	0.12~0.18	2,400	0.10~0.15	2,000	0.8~0.12	6,400	0.12~0.18	4,800	0.12~0.18
6	5,300	0.14~0.20	5,300	0.14~0.20	3,800	0.14~0.20	2,750	0.14~0.20	2,000	0.12~0.18	1,700	0.09~0.15	5,300	0.14~0.20	4,000	0.14~0.20
8	4,000	0.16~0.24	4,000	0.16~0.24	2,850	0.16~0.24	2,100	0.16~0.24	1,500	0.14~0.22	1,300	0.12~0.20	4,000	0.16~0.24	3,000	0.16~0.24
10	3,200	0.18~0.27	3,200	0.18~0.27	2,250	0.18~0.27	1,700	0.18~0.27	1,200	0.15~0.25	1,000	0.13~0.23	3,200	0.18~0.27	2,400	0.18~0.27
12	2,650	0.20~0.30	2,650	0.20~0.30	1,900	0.20~0.30	1,400	0.20~0.30	1,000	0.17~0.26	850	0.14~0.24	2,700	0.20~0.30	2,000	0.20~0.30
14	2,300	0.22~0.35	2,300	0.22~0.35	1,600	0.22~0.35	1,200	0.22~0.35	860	0.18~0.30	730	0.15~0.26	2,300	0.22~0.35	1,700	0.22~0.35
16	2,000	0.25~0.36	2,000	0.25~0.36	1,400	0.25~0.36	1,050	0.25~0.36	760	0.20~0.32	640	0.16~0.26	2,000	0.25~0.36	1,500	0.25~0.36
18	1,800	0.28~0.38	1,800	0.28~0.38	1,250	0.28~0.38	920	0.28~0.38	670	0.23~0.33	570	0.18~0.28	1,800	0.28~0.38	1,350	0.28~0.38
20	1,600	0.30~0.40	1,600	0.30~0.40	1,150	0.30~0.40	850	0.30~0.40	600	0.25~0.35	500	0.20~0.30	1,600	0.30~0.40	1,200	0.30~0.40

SF, HPI SERIES

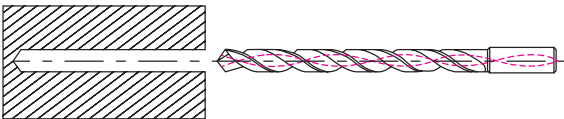
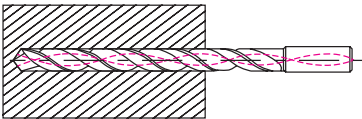
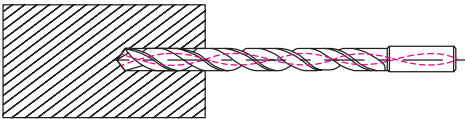
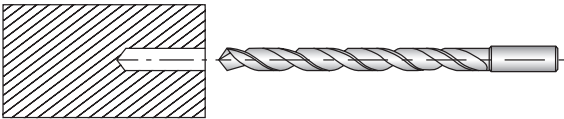
Work piece	Carbon Steels (C<0.3%) Alloy Steels/SS400 SCM ~710N/mm ²		Carbon Steels (C>0.3%) Alloy Steels/S50C SCM ~1,060N/mm ²		SUJ2 · SUS440		SKD61 HRC34~43		HRC43~48		SKD11 HRC48~53		Cast Iron FC 250~350		DuctileFC 400~500	
V (m/min)	80~125		80~125		63~80		40~63		32~45		25~36		80~125		63~90	
Diameter (mm)	RPM	fn (mm/rev)	RPM	fn (mm/rev)	RPM	fn (mm/rev)	RPM	fn (mm/rev)	RPM	fn (mm/rev)	RPM	fn (mm/rev)	RPM	fn (mm/rev)	RPM	fn (mm/rev)
3	12,000	0.09~0.12	13,000	0.09~0.12	7,600	0.09~0.12	6,400	0.09~0.12	5,300	0.07~0.11	3,800	0.05~0.09	12,000	0.09~0.12	8,500	0.09~0.12
4	9,500	0.1~0.15	10,000	0.1~0.15	5,700	0.1~0.15	4,800	0.1~0.15	4,000	0.08~0.13	2,950	0.06~0.1	9,000	0.1~0.15	6,350	0.1~0.15
5	7,600	0.12~0.18	8,000	0.12~0.18	4,600	0.12~0.18	3,800	0.12~0.18	3,200	0.1~0.15	2,300	0.08~0.12	7,600	0.12~0.18	5,100	0.12~0.18
6	6,400	0.14~0.20	6,600	0.14~0.20	3,800	0.14~0.20	3,200	0.14~0.20	2,650	0.12~0.18	1,900	0.09~0.15	6,400	0.14~0.20	4,250	0.14~0.20
8	4,800	0.16~0.24	5,000	0.16~0.24	2,900	0.16~0.24	2,400	0.16~0.24	2,000	0.14~0.22	1,450	0.12~0.2	4,800	0.16~0.24	3,200	0.16~0.24
10	3,800	0.18~0.27	4,000	0.18~0.27	2,300	0.18~0.27	1,900	0.18~0.27	1,600	0.15~0.25	1,150	0.13~0.23	3,800	0.18~0.27	2,550	0.18~0.27
12	3,200	0.20~0.30	3,300	0.20~0.30	1,900	0.20~0.30	1,600	0.20~0.30	1,300	0.17~0.26	950	0.14~0.24	3,200	0.20~0.30	2,100	0.20~0.30
14	2,700	0.22~0.35	2,800	0.22~0.35	1,600	0.22~0.35	1,350	0.22~0.35	1,150	0.18~0.3	800	0.15~0.26	2,700	0.22~0.35	1,800	0.22~0.35
16	2,400	0.25~0.36	2,500	0.25~0.36	1,400	0.25~0.36	1,200	0.25~0.36	1,000	0.2~0.32	700	0.16~0.26	2,400	0.25~0.36	1,600	0.25~0.36
18	2,100	0.28~0.38	2,200	0.28~0.38	1,300	0.28~0.38	1,100	0.28~0.38	900	0.23~0.33	650	0.18~0.28	2,100	0.28~0.38	1,400	0.28~0.38
20	1,900	0.30~0.40	2,000	0.30~0.40	1,150	0.30~0.40	1,000	0.30~0.40	800	0.25~0.35	600	0.2~0.3	1,900	0.30~0.40	1,250	0.30~0.40

· 8D : fn 70~80%

Technical Data

SF510, SF520 SERIES

Workpiece	Carbon Steels, Alloy Steels ~ 1060N/mm ²		Cast Iron 250 ~ 350N/mm ²		Ductile Cast Iron 400 ~ 500N/mm ²	
V(m/min)	80~125		80~125		63~90	
Diameter (mm)	RPM	fn (mm/rev)	RPM	fn (mm/rev)	RPM	fn (mm/rev)
3	7,500	0.06 ~ 0.12	7,500	0.06 ~ 0.12	7,500	0.06 ~ 0.12
4	6,400	0.08 ~ 0.16	6,400	0.08 ~ 0.16	5,600	0.08 ~ 0.16
5	5,800	0.10 ~ 0.20	5,800	0.10 ~ 0.20	4,500	0.10 ~ 0.20
6	4,800	0.12 ~ 0.24	4,800	0.12 ~ 0.24	3,800	0.12 ~ 0.24
8	3,600	0.16 ~ 0.28	3,600	0.16 ~ 0.28	2,800	0.16 ~ 0.28
10	2,900	0.20 ~ 0.35	2,900	0.20 ~ 0.35	2,300	0.20 ~ 0.35
12	2,900	0.24 ~ 0.42	2,400	0.24 ~ 0.42	1,900	0.24 ~ 0.42
14	2,050	0.28 ~ 0.46	2,050	0.28 ~ 0.46	1,600	0.28 ~ 0.46



1. Guide Drilling should be done as Diameter+0.1mm between 3D and 5D
2. For Main Drilling, proceed with low RPM at Guide Drilling segment. (RPM 300, FEED 400mm/min)
3. Just before the end of Guide Drilling segment, reduce feed to zero and increase the RPM according to Recommended
4. After then, proceed main drilling by increasing feed without step drilling.
5. When coming out from Guide Drilling start point after drilling, RPM should be reduced as 300 and feed should be 1000 mm/min.
6. When coming out from Guide Drilling segment to the outside, the feed should be decreased as 50%



SSD, SSDL, SSTD, SSTDL SERIES

Workpiece	Tool Steels, Alloy Steels		Aluminium, Aluminium Alloy		Brass, Bronze		Epoxy, Resin	
Diameter (mm)	RPM	fn (mm/rev)	RPM	fn (mm/rev)	RPM	fn (mm/rev)	RPM	fn (mm/rev)
3	4,000~7,000	0.02	10,000~12,000	0.03	7,000~10,000	0.02	9,000~12,000	0.08
5	2,400~4,200	0.03	6,000~8,000	0.05	4,200~6,000	0.04	5,400~7,200	0.08
8	1,500~2,600	0.05	3,700~5,000	0.08	2,600~3,700	0.08	3,400~4,500	0.09
12	1,000~1,700	0.06	2,500~3,200	0.12	1,700~2,500	0.12	2,200~3,000	0.11

APF505 SERIES

Workpiece	Aluminium Alloy Steels	Cast Aluminium	Magnesium	Copper&Brass	Titanium
Type	6061	380			6Al-4V
V(m/min)	140~200	90~150	75~150	75~151	30~90
Diameter (mm)	fn (mm/rev)	fn (mm/rev)	fn (mm/rev)	fn (mm/rev)	fn (mm/rev)
4	0.15~0.20	0.11~0.23	0.11~0.23	0.08~0.18	0.08~0.18
6	0.19~0.38	0.15~0.30	0.15~0.30	0.15~0.23	0.15~0.23
8	0.27~0.45	0.23~0.38	0.23~0.38	0.15~0.23	0.15~0.23
10	0.34~0.53	0.23~0.45	0.23~0.45	0.15~0.30	0.15~0.30
12	0.45~0.60	0.27~0.53	0.27~0.53	0.23~0.38	0.23~0.38
16	0.49~0.75	0.30~0.60	0.30~0.60	0.21~0.45	0.21~0.45

Technical Data

WH Limits

WIDIN applies an unique WH limits system in order to fulfill the degree of an internal thread and provides users the best taps for suitable working and operating conditions.

1. $\{P \leq 0.6(T.P.I. \geq 40)\}$

Upper Limits : $0.010 + 0.015 \times n$

Lower Limits : Upper Limits - 0.015

Unit :mm (n=WH number)

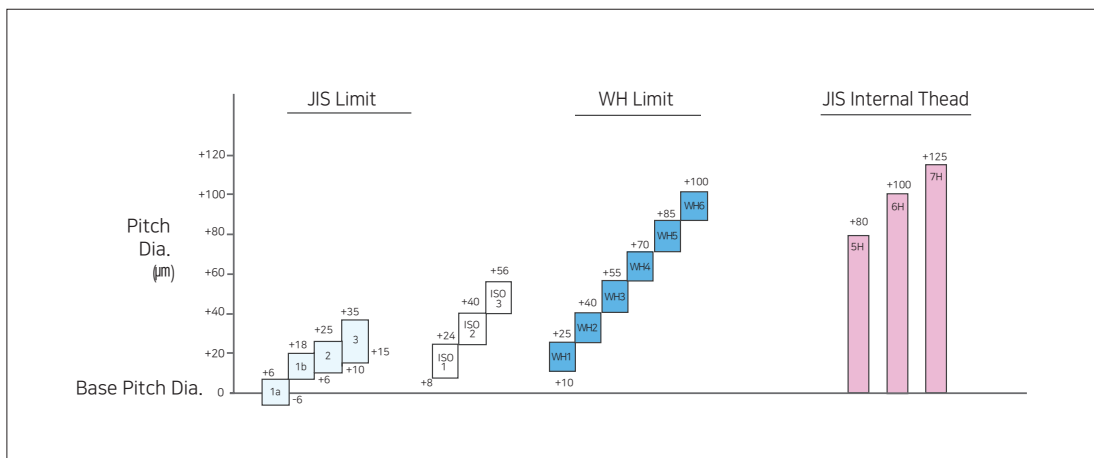
2. $\{P \leq 0.7(T.P.I. \leq 36)\}$

Upper Limits : $0.020 \times n$

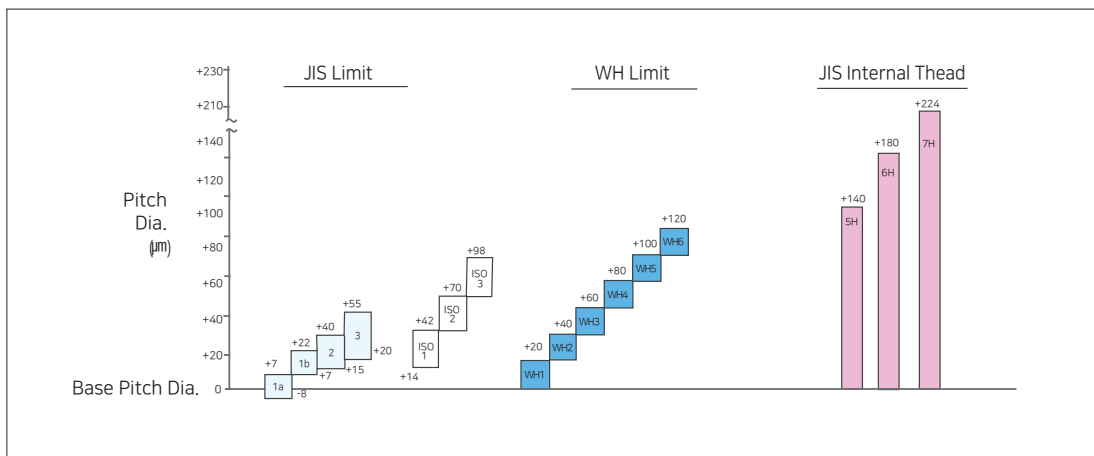
Lower Limits : Upper Limits - 0.020

Unit:mm (n=WH number)

► Example M3×0.5



► Example M10x1.5

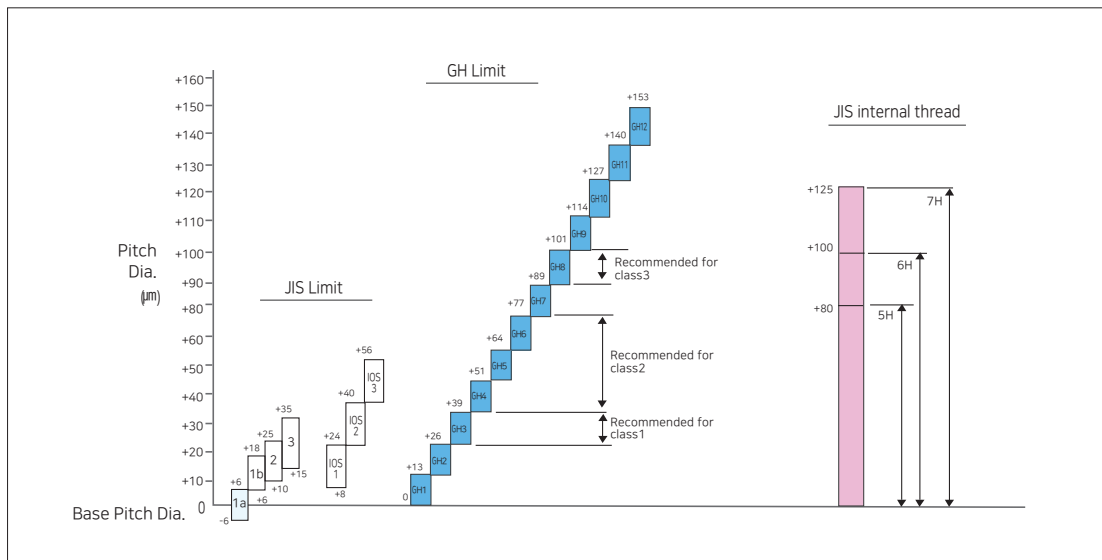




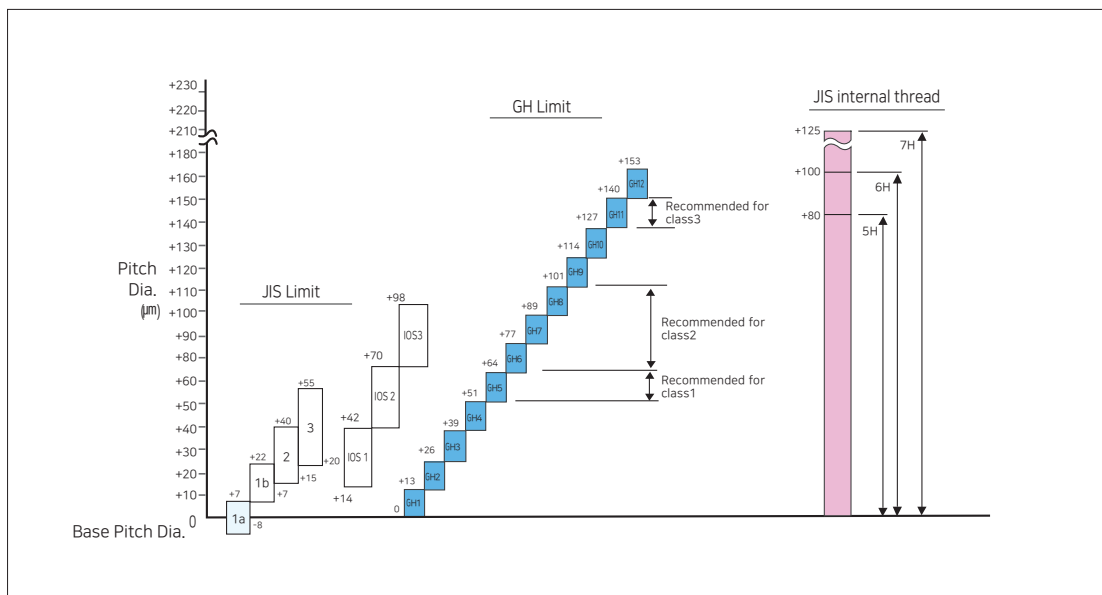
GH Limits

Since roll taps process female threads by plastic deformation, strict drill diameter management is required, unlike other cutting taps. Tap limit is strictly applied to. WIDIN adopts the limit of $12.7\mu\text{m}$ (0.0005") increments.

► Example M3x0.5



► Example M10x1.5



Technical Data

Recommended tapping speeds and cutting fluids

Tapping speeds depend on very important factors such as material type of tap, chamfer length, drill size, work materials and cutting fluids.

Users need to check every aspect before applying it.

Moreover, cutting fluids, cooling and abrasion resistance are three important factors affecting cutting fluids.

Therefore, users should provide enough fluids during the tapping process.

Work Material			Tapping(m/min)					Cutting Fluids			
ISO	Work Material	KS	Straight Tap	Spiral Tap	Point Tap	Carbide Tap	Roll Tap	Non Water soluble	Water soluble	Semidry	Dry
P	Low Carbon Steels	C ~0.25%	8~13	8~13	15~25	-	8~13	☉	○	△	△
	Medium Carbon Steels	C0.25 ~ 0.45%	7~12	7~12	10~15	-	7~10	☉	○	△	△
	High Carbon Steels	C0.45%~	6~9	6~9	8~13	-	5~8	☉	○	△	△
	Alloy Steels	SCM	7~12	7~12	10~15	-	5~8	☉	△	△	△
	Hardened Steels	25~45 HRC	3~5	3~5	4~6	-	-	☉	△	-	-
	Tool Steels	SKD	6~9	6~9	7~10	-	-	☉	-	-	-
	Cast Steels	SC	6~11	6~11	10~15	-	-	☉	○	-	-
M	Stainless Steels	SUS	4~7	5~8	8~13	-	5~10	☉	○	-	-
	Precipitation Hardened Stainless Steels	SUS630 SUS631	3~5	3~5	4~6	-	-	☉	-	-	-
S	Cast Iron	FC	10~15	-	-	10~20	-	☉	○	○	○
	Ductile, Cast Iron	FCD	7~12	7~12	10~20	10~20	-	☉	○	○	-
N	Unalloyed Copper	Cu	6~9	6~11	7~12	10~20	7~12	○	○	-	-
	Brass, Brass Casting	Bs, Bsc	10~15	10~20	15~25	15~25	7~12	○	○	○	○
	Bronze, Bronze Casting	PB, PBC	6~11	6~11	10~20	10~20	7~12	○	○	-	-
	Aluminum	AL	10~20	10~20	15~25	-	10~20	☉	○	△	-
	Aluminum, Alloy Casting	AC, ADC	10~15	10~15	15~20	10~20	10~25	☉	○	△	-
	Magnesium, Alloy Casting	MC	7~12	7~12	10~15	10~20	-	☉	○	○	-
	Zinc, Alloy Casting	ZDC	1~12	7~12	10~15	10~20	7~12	☉	○	△	-
	Thermo, Setting Plastic	Bakelite, Phenol Epoxy	10~20	-	-	15~25	-	-	○	○	○
	Thermo, Plastic	Vinyl Chloride Nylon	10~20	10~15	10~20	10~20	-	-	○	○	○

☉: Ideal / ○: Good / △: Applicable / -: Not Applicable



Recommended Drill hole size with JIS internal thread Class 2

Thread Size			
Thread Size	Recommended Drill Size(mm)	Drill Size(mm)	
		Min	Max
M3 X 0.5	2.50	2.459	2.599
M4 X 0.7	3.30	3.242	3.422
M5 X 0.8	4.20	4.134	4.334
M6 X 1.0	5.00	4.917	5.153
M8 X 1.25	6.80	6.647	6.912
M10 X 1.25	8.80	8.647	8.912
M10 X 1.5	8.50	8.376	8.676
M12 X 1.0	11.00	10.917	11.153
M12 X 1.25	10.80	10.647	10.912
M12 X 1.5	10.50	10.376	10.676
M12 X 1.75	10.30	10.106	10.441
M14 X 1.5	12.50	12.376	12.676
M14 X 2.0	12.00	11.835	12.21
M16 X 1.5	14.50	14.376	14.676
M16 X 2.0	14.00	13.835	14.21
M18 X 1.5	16.50	16.376	16.676
M18 X 2.5	15.50	15.294	15.744
M20 X 1.5	18.50	18.376	18.676
M20 X 2.5	17.50	17.294	17.744

Technical Data

■ CFT, CCT, CCF SERIES ► Metric

Workpiece	Carbon Steels		Alloy Steels		Prehardened Steels	
	(< Si 4%)		(< Si 8%)		(Die Casting)	
Alloy Steel (mm)	RPM	FEED	RPM	FEED	RPM	FEED
2	3,400 - 7,000	70 - 100	2,600 - 5,200	50 - 90	2,000 - 4,000	40 - 60
3	2,700 - 5,300	60 - 85	2,100 - 4,200	45 - 70	1,600 - 3,200	35 - 50
4	2,000 - 4,000	50 - 70	1,600 - 3,200	40 - 55	1,200 - 2,400	30 - 40
5	1,700 - 3,400	45 - 60	1,400 - 2,600	35 - 50	1,000 - 2,000	26 - 35
6	1,300 - 2,700	40 - 50	1,100 - 2,100	30 - 40	800 - 1,600	22 - 30
7	1,150 - 2,400	35 - 45	950 - 1,900	28 - 37	700 - 1,400	21 - 28
8	1,000 - 2,000	30 - 40	800 - 1,600	26 - 34	600 - 1,200	20 - 25
9	900 - 1,800	30 - 40	700 - 1,450	24 - 32	550 - 1,100	18 - 23
10	800 - 1,600	30 - 37	600 - 1,300	23 - 29	500 - 1,000	17 - 22
11	750 - 1,450	30 - 37	550 - 1,200	22 - 28	450 - 900	16 - 21
12	700 - 1,300	28 - 35	500 - 1,100	21 - 27	400 - 800	16 - 20

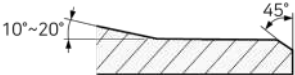


Recommendation of Cutting Conditions in Reamer

Workpiece			Diameter(mm)	Cutting Conditions	
Material	Strength(Kg/mm2)	Hardness(HB)		V(m/min)	fn(mm/rev)
Carbon Steels, Alloy Steels	~ 100	-	~ 10 10 ~ 25 25 ~ 40	8 ~ 12	0.15 ~ 0.25 0.20 ~ 0.40 0.30 ~ 0.50
	100 ~ 140	-	~ 10 10 ~ 25 25 ~ 40	6 ~ 10	0.12 ~ 0.20 0.15 ~ 0.30 0.20 ~ 0.40
Steel Castings	40 ~ 50	-	~ 10 10 ~ 25 25 ~ 40	8 ~ 12	0.15 ~ 0.25 0.20 ~ 0.40 0.30 ~ 0.50
	50 ~ 70	-	~ 10 10 ~ 25 25 ~ 40	6 ~ 10	0.12 ~ 0.20 0.15 ~ 0.30 0.20 ~ 0.40
Cast Iron	-	~ 200	~ 10 10 ~ 25 25 ~ 40	8 ~ 15	0.20 ~ 0.30 0.30 ~ 0.50 0.40 ~ 0.70
	-	200 ~	~ 10 10 ~ 25 25 ~ 40	6 ~ 12	0.15 ~ 0.25 0.20 ~ 0.40 0.30 ~ 0.50
Alumunum Alloys	-	-	~ 10	15 ~ 25	0.20 ~ 0.30 0.30 ~ 0.50 0.40 ~ 0.70
	-	-	10 ~ 25 25 ~ 40	20 ~ 30	

Technical Data

The Effect of Chamfer

Twist Direction	Characteristics
	If the work piece is caught by sharp blade edge, dent occurs on the machined surface. It is applied to chucking reamer, etc.
	Guide edge was rounded. The ground surface is excellent but round machining is difficult and it may deteriorate the machined surface.
	It is 2 blade-type. Chip is produced in 2 stages and it provides good results. But regrinding is difficult.
	The guide part of second stage of cutting edge is 1~2°. Cutting edge blade is long and life is limited. It provides good results on finish machining
	The guide part of second stage is 10~20. It is very economical as the length of blade is short and utilized length is long
	It is used for finish machining. It is applied to hand reamer.

The Effect of Twist Angle

Twist Direction	Characteristics
(1) Straight blade (twist angle is 0°)	• Surface is generally poor except cast iron.
(2) Right twist blade	• Excellent machinability and easy to discharge chip • Applicable work piece range is wide. • Excellent for high hardness work piece • Pulling the chip to the groove
(3) Left twist blade	• Excellent surface roughness for work piece of aluminium alloys, copper, and copper alloys • It is good for machining soft materials • Pushing the chip in the processing direction.



Trouble Shooting of Reaming

Plan	Plan	Measures
(1) Enlarged Hole	Increase burnishing effects	• Decrease chamfer angle • Increase margin width • Decrease back taper • Grind 2 stages chamfer • Check reamer diameter
	Suppress the occurrence of built-up-edge	• Increase margin width • Grind 2 stages chamfer • Change heat treatment conditions and microstructure of workpiece • Increase cutting oil supply • Increase cutting speed and reduce feed rate
	Reduce the unbalance of cutting force	• The cutting edge difference shall be less than 0.005mm • Increase cutting speed • Reduce the deviation of main axis and basic Diameter • Check wear conditions of bush and replace it • Change water soluble cutting oil to non-water soluble oil
(2) Shrunk Hole	Reduce finish effects	• Increase the clearance angle of cutting edge • Decrease margin width • Increase back taper • Increase cutting speed
(3) Poor roundness	Reduce Chattering	• Increase the strength of machine • Reduce the tolerance of bush • Change to left helix reamer • Increase margin width • Increase back taper • Decrease cutting speed • Increase feed rate
(4) Poor surface roughness	Increase burnishing	• Use left helix • Decrease chamfer angle • Grind with 2 stage chamfer
	Remove deposit	• Increase rake angle • Reduce feed rate • Increase cutting speed
	Remove chattering	• The cutting edge difference shall be less than 0.005mm • Increase cutting speed • Align main axis center and basic diameter center • Change water soluble cutting oil to non-water soluble oil
	Remove chip interference	• Change shape of flute type • Increase the depth of flute

MEMO

This image shows a single page of white paper with horizontal blue ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

HQ & Changwon Factory

172, Sahwa-ro, Uichang-gu, Changwon-si, Gyeongsangnam-do, Korea [51389]

Tel. 055-286-0905 Fax. 055-286-0978

WIDIN USA

Tel. +1-847-947-8320

Fax. +1-847-947-8322

E-mail. customerservice@widinus.com

WIDIN VIET NAM (OFFICE & FACTORY)

Tel. +84-24-6287-4883

└ Ha Noi OFFICE

Tel. +84-24-6287-3828

└ Ho Chi Minh OFFICE

Tel. +84-28-6297-3858

E-maill. widin@iwidin.com

www.iwidin.com



WD-CA-ENG-2511-V1