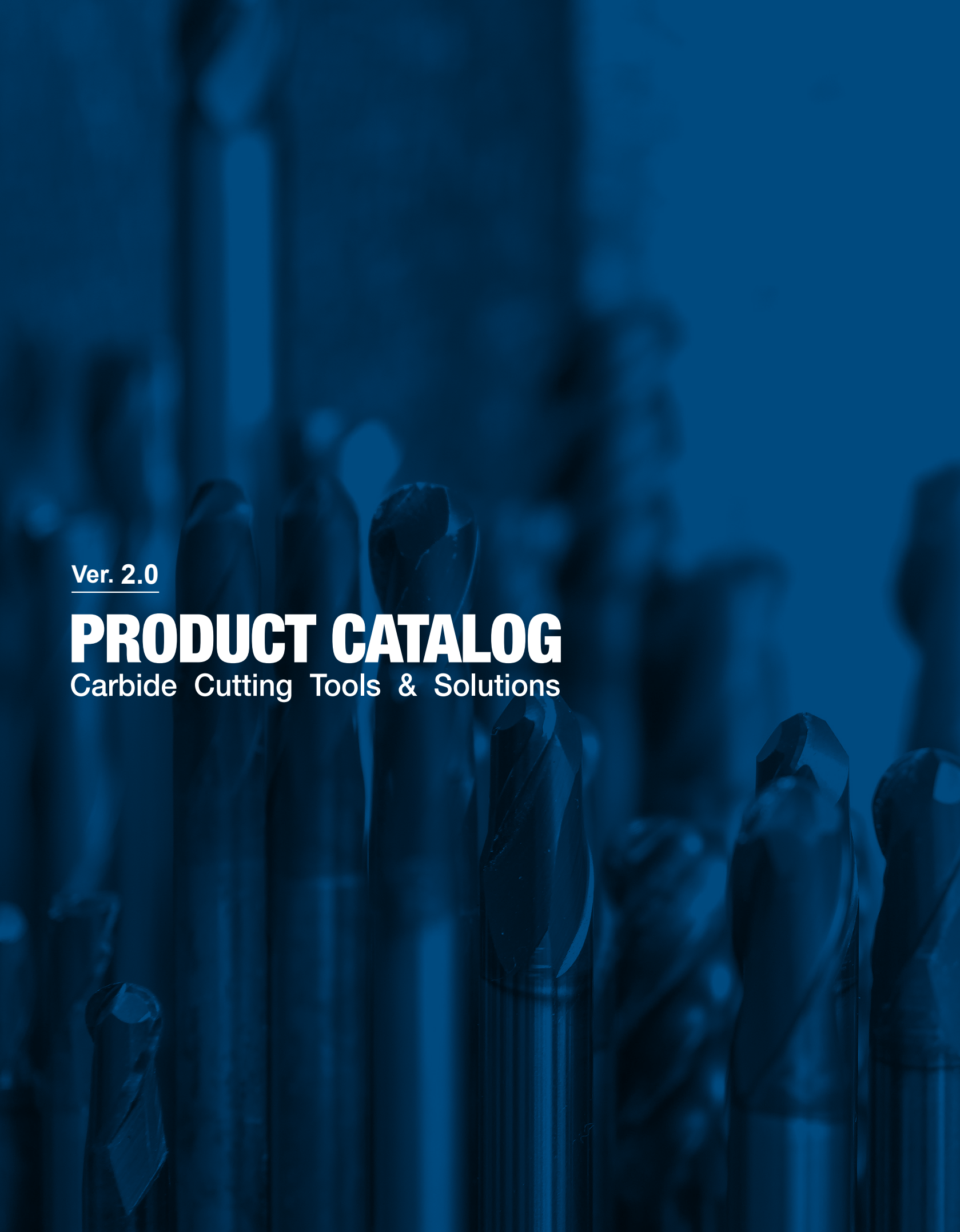
widinus.com(US)
iwidin.com(KR)

Ver. 2.0

PRODUCT CATALOG

Carbide Cutting Tools & Solutions

WIDIN
DINE GROUP



Ver. 2.0

PRODUCT CATALOG

Carbide Cutting Tools & Solutions

00 TABLE OF CONTENTS 06

01 MILLING 16

02 DRILLING 398

03 CENTERING TOOL 464

04 LIVE CENTER 476

05 PRODUCT SERIES INFORMATION

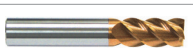
- COATING INFORMATION 506
- WORK MATERIAL FOR SERIES 508
- HARDNESS FOR SERIES 526
- END CUTTING TYPE FOR SERIES 544

PRODUCT INDEX

MILLING-INCH

CLASS	FEATURE	SHAPE	SERIES	APPEARANCE	FLUTES	TYPE	PAGE
ALU-WAVE (INCH)	* Aluminum * Non-Ferrous Material * Graphite * Plastics	Ball	WAB312A		2F	STUB BALL NOSE	18
		Square	WAE302A		2F	STUB LENGTH, UNCOATED	20
			WAE303A		3F	STUB LENGTH, UNCOATED	20
			WAE312A		2F	REGULAR LENGTH, UNCOATED	20
			WAE313A		3F	REGULAR LENGTH, UNCOATED	20
			WAE322A		2F	LONG LENGTH, UNCOATED	20
			WAE323A		3F	LONG LENGTH, UNCOATED	20
			WAE502A		2F	STUB LENGTH, DLC COATED	20
			WAE503A		3F	STUB LENGTH, DLC COATED	20
			WAE512A		2F	REGULAR LENGTH, DLC COATED	20
			WAE513A		3F	REGULAR LENGTH, DLC COATED	20
			WAE522A		2F	LONG LENGTH, DLC COATED	20
			WAE523A		3F	LONG LENGTH, DLC COATED	20
		Radius	WAR302A		2F	STUB LENGTH, UNCOATED	22
			WAR303A		3F	STUB LENGTH, UNCOATED	22
			WAR312A		2F	REGULAR LENGTH, UNCOATED	22
			WAR313A		3F	REGULAR LENGTH, UNCOATED	22
			WAR322A		2F	LONG LENGTH, UNCOATED	22
			WAR323A		3F	LONG LENGTH, UNCOATED	22
			WAR502A		2F	STUB LENGTH, DLC COATED	22
			WAR503A		3F	STUB LENGTH, DLC COATED	22
			WAR512A		2F	REGULAR LENGTH, DLC COATED	22
			WAR513A		3F	REGULAR LENGTH, DLC COATED	22
			WAR522A		2F	LONG LENGTH, DLC COATED	22
			WAR523A		3F	LONG LENGTH, DLC COATED	22
		Roughing	WAF303A		3F	ROUGHING ENDMILL FOR ALUMINNM	26
			WAF313A		3F	ROUGHING ENDMILL FOR ALUMINNM	26
ZAMUS GRA MATE (INCH)	* Graphite & non-ferrous material	Ball	WGB502A		2F	DIAMOND COATING BALL NOSE	28
			WGB504A		4F	DIAMOND COATING BALL NOSE	28
			WGB512A		2F	DIAMOND COATING BALL NOSE	28
			WGB514A		4F	DIAMOND COATING BALL NOSE	28
			WGB524A		4F	DIAMOND COATING BALL NOSE	28

MILLING-INCH

CLASS	FEATURE	SHAPE	SERIES	APPEARANCE	FLUTES	TYPE	PAGE
ZAMUS GRA MATE (INCH)	* Graphite & non-ferrous material	Ball	WGB534A		4F	DIAMOND COATING BALL NOSE	28
			WGNB504A		4F	DIAMOND COATING BALL NOSE	28
		Square	WGE502A		2F	DIAMOND COATING END MILL	30
			WGE504A		4F	DIAMOND COATING END MILL	30
			WGE514A		4F	DIAMOND COATING END MILL	30
			WGE524A		4F	DIAMOND COATING END MILL	30
			WGE534A		4F	DIAMOND COATING END MILL	30
		Radius	WGR504A		4F	DIAMOND COATING RADIUS	32
			WGR514A		4F	DIAMOND COATING RADIUS	32
			WGR524A		4F	DIAMOND COATING RADIUS	32
			WGR534A		4F	DIAMOND COATING RADIUS	32
			WGNR504A		4F	DIAMOND COATING RADIUS	32
GENERAL PURPOSE (INCH)	* Hardened Steels (~ HRc 45) * General Speed Cutting	Ball	BA302		2F	STANDARD LENGTH - BALL END	36
			BA304		4F	STANDARD LENGTH - BALL END	36
			ZB302		2F	STANDARD LENGTH - BALL END, AlTiN COATED	36
			ZB302S		2F	STUB LENGTH - BALL END, AlTiN COATED	36
			ZB304		4F	STANDARD LENGTH - BALL END, AlTiN COATED	36
		Square	EA302		2F	STANDARD LENGTH - SQUARE END	41
			EA304		4F	STANDARD LENGTH - SQUARE END	41
			ZA302		2F	STANDARD LENGTH - SQUARE END, AlTiN COATED	41
			ZA304		4F	STANDARD LENGTH - SQUARE END, AlTiN COATED	41
		Radius	ZR304A		4F	STANDARD LENGTH - CORNER RADIUS, AlTiN COATED	46
ZAMUS STAR (INCH)	* Hardened Steels (~ HRc 70) * High Speed Cutting	Ball	DA702		2F	STUB CUT LENGTH with EXTENDED NECK	50
			DA703		3F	STUB CUT LENGTH for FINISHING	50
			DA734		4F	BALL NOSE, FINISHING for MOLD & DIE	50
			ZB702A		2F	12° STUB CUT LENGTH, BALL NOSE with EXTENDED NECK	50
		Square	ZE712A		2F	35° HELIX REGULAR LENGTH	52
			ZE714A		4F	45° HELIX REGULAR LENGTH	52
			ZE716A		6F	50° HELIX REGULAR LENGTH	52
		Radius	ZR706A		6F	45° HELIX STUB CUT LENGTH with EXTENDED NECK	55
			ZS204A		4F	CORNER RADIUS VARIABLE HELIX	55
POWER MILL	* High speed & High feed rates	Radius	ZSPM4A		4F	STUB CUT LENGTH with EXTENDED NECK	58

PRODUCT INDEX

MILLING-INCH

CLASS	FEATURE	SHAPE	SERIES	APPEARANCE	FLUTES	TYPE	PAGE
ZAMUS CLASSIC (INCH)	* Hardened Steels (~ HRc 55) * High Speed Cutting * General Speed Cutting	Ball	MD502		2F	MINIATURE, BALL NOSE	60
			DA412		2F	15°HELIX, REGULAR LENGTH, BALL NOSE	62
			DA512		2F	LONG LENGTH, BALL NOSE	62
			DA514		4F	LONG LENGTH, BALL NOSE	62
			DA522		2F	LONG LENGTH, BALL NOSE with EXTENDED NECK	62
			DA542		2F	BALL NOSE with TAPER NECK	67
			DA552		2F	BALL NOSE with TAPER NECK	67
		Square	MZ502		2F	MINIATURE	70
			ZA502		2F	REGULAR LENGTH	72
			ZA504		4F	REGULAR LENGTH	72
			ZA506		6F	45°HELIX, LONG LENGTH	72
			ZA508		8F	45°HELIX, LONG LENGTH	72
			ZA522		2F	LONG LENGTH	72
			ZA524		4F	LONG LENGTH	72
			ZA526		6F	45°HELIX, EXTRA LONG LENGTH	72
			ZA528		8F	45°HELIX, EXTRA LONG LENGTH	72
		Radius	ZR502A		2F	STUB LENGTH, CORNER RADIUS	78
			ZR504A		4F	STUB LENGTH, CORNER RADIUS	78
			ZR506A		6F	50°HELIX, LONG LENGTH, CORNER RADIUS	78
			ZR508A		8F	50°HELIX, LONG LENGTH, CORNER RADIUS	78
			ZR522A		2F	REGULAR LENGTH, CORNER RADIUS	78
			ZR524A		4F	REGULAR LENGTH, CORNER RADIUS	78
			ZR532A		2F	LONG LENGTH, CORNER RADIUS	78
			ZR534A		4F	LONG LENGTH, CORNER RADIUS	78
		Roughing	FA503		3F	ROUGHING LONG LENGTH	81
			FA504		4F	ROUGHING LONG LENGTH	81
			FA505		5F	ROUGHING LONG LENGTH	81
ZAMUS SUS MATE (INCH)	* Stainless Steel * Titanium * Inconell	Ball	XXB504A		4F	REGULAR LENGTH, BALL NOSE, VARIABLE HELIX	83
			XXB524A		4F	STUB CUT with LONG REACH, BALL NOSE, VARIABLE HELIX	83
		Square	XXE504A		4F	REGULAR LENGTH, VARIABLE HELIX	84
			XXE524A		4F	STUB CUT with LONG REACH, VARIABLE HELIX	84
			XXE534A		4F	STUB CUT with EXTENDED NECK, VARIABLE HELIX	84
		Radius	XXR504A		4F	SHORT LENGTH, CORNER RADIUS, VARIABLE HELIX	85

MILLING-INCH/METRIC

CLASS	FEATURE	SHAPE	SERIES	APPEARANCE	FLUTES	TYPE	PAGE
ZAMUS SUS MATE (INCH)	* Stainless Steel * Titanium * Inconell	Radius	XXR514A		4F	REGULAR LENGTH, CORNER RADIUS, VARIABLE HELIX	85
			XXR524A		4F	STUB CUT with LONG REACH, CORNER RADIUS, VARIABLE HELIX	85
			XXR534A		4F	STUB CUT with EXTENDED NECK, CORNER RADIUS, VARIABLE HELIX	85
NEO CLASSIC X-STAR (INCH)	* High performance & High efficiency (~HRc45)	Ball	XXB504A		4F	REGULAR LENGTH, BALL NOSE, VARIABLE HELIX	89
			XXB524A		4F	STUB CUT with LONG REACH, BALL NOSE, VARIABLE HELIX	89
		Square	XE504A		4F	REGULAR LENGTH, VARIABLE HELIX	90
			XE505A		5F	STUB CUT LENGTH, VARIABLE HELIX	90
			XE515A		5F	REGULAR CUT LENGTH, VARIABLE HELIX	90
		Radius	XR504A		4F	REGULAR LENGTH, CORNER RADIUS, VARIABLE HELIX	92
			XR505A		5F	STUB CUT LENGTH CORNER RADIUS	92
			XR514A		4F	REGULAR LENGTH, CORNER RADIUS VARIABLE HELIX	92
			XR515A		5F	REGULAR CUT LENGTH CORNER RADIUS , VARIABLE HELIX	92
			XR524A		4F	LONG REACH, CORNER RADIUS VARIABLE HELIX	92
			XR525A		5F	REGULAR CUT LENGTH with EXTENDED NECK, CORNER RADIUS	92
			XR535A		5F	REGULAR CUT LENGTH with LONG EXTENDED NECK, CORNER RADIUS	92
ALU-WAVE (METRIC)	* Aluminum * Non-Ferrous Material * Graphite * Plastics	Ball	WAB312		2F	50° HELIX BALL ENDMILL - FOR ALUMINUM	98
		Square	WAE301		1F	1 FLUTE - FOR PLASTIC AND NONFERROUS	99
			WAE302		2F	45° HELIX - FOR ALUMINUM	99
			WAE303		3F	45° HELIX LONG & EXTRA LONG LENGTH - FOR ALUMINUM	99
			WAE323		3F	45° HELIX LONG & EXTRA LONG LENGTH - FOR ALUMINUM	99
		Radius	WAR302		2F	45° HELIX CORNER RADIUS - FOR ALUMINUM	106
			WAR303		3F	45° HELIX CORNER RADIUS - FOR ALUMINUM	106
			WAR502		2F	CORNER RADIUS WITH D.L.C COATED - FOR ALUMINUM & NONFERROUS	106
			WAR503		3F	CORNER RADIUS WITH D.L.C COATED - FOR ALUMINUM & NONFERROUS	106
		Roughing	WAF303		3F	38° HELIX ROUGHING ENDMILL - FOR ALUMINUM	112
ZAMUS GRA MATE (METRIC)	* Graphite & non-ferrous material	Ball	G		2F	DIAMOND COATING BALL NOSE	114
			WGB504		4F	DIAMOND COATING BALL NOSE	114
			IM-WGB504		4F	DIAMOND COATING BALL NOSE	114
		Square	GE		2F	DIAMOND COATING END MILL	118
			WGE504		4F	DIAMOND COATING END MILL	118
		Radius	GR502		2F	DIAMOND COATING RADIUS	120
			GR504		4F	DIAMOND COATING RADIUS	120

PRODUCT INDEX

MILLING-METRIC

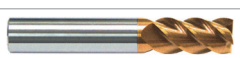
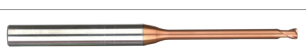
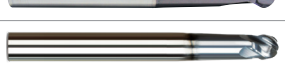
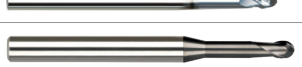
CLASS	FEATURE	SHAPE	SERIES	APPEARANCE	FLUTES	TYPE	PAGE
ZAMUS GRA MATE (METRIC)	* Graphite & non-ferrous material	Radius	WGR502		2F	DIAMOND COATING RADIUS	120
			WGR504		4F	DIAMOND COATING RADIUS	120
WINNER (METRIC)	* Alloy Steels & Carbon Steels * Die Steels	Ball	WB502		2F	SHORT LENGTH + REGULAR LENGTH + LONG LENGTH	124
			WB503		3F	HIGH FEED & CENTER MATCH	124
			WB504		4F	HIGH FEED	124
			WHPB902		2F	APPLIED ULTRA-HIGH PRECISION R TOLERANCE	130
			WB502P		2F	HIGH PRECISION	132
			WB532		2F	MILLING MACHINE COPY	134
			WSB502		2F	STRAIGHT FLUTE	136
			WB512		2F	for RIB PROCESSING	138
			WB512xxS6		2F	for RIB PROCESSING(Shank-6)	138
			WB542		2F	TAPER NECK	150
		Square	WME502		2F	Ø0.03~	161
			WE504H		4F	45°HELIX + REGULAR + LONG	164
			WE506		6F	45°HELIX + REGULAR + LONG	164
			WME504		4F	VARIABLE INDEX GEOMETRY	168
			WXE504		4F	SHORT + REGULAR + LONG LENGTH + VARIABLE INDEX GEOMETRY	172
			WE502		2F	SHORT + REGULAR + LONG LENGTH	172
			WE502xxS3		2F	SHANK 3	172
			WE502xxS4		2F	Ø0.1 + SHANK 4	172
			WE522		2F	LONG	176
			WE524		4F	LONG	176
			WE512		2F	LONG NECK	180
			WE514		4F	LONG NECK	180
		Radius	WR502		2F	SHORT LENGTH + REGULAR LENGTH + LONG LENGTH	190
			WR504		4F	SHORT LENGTH+REGULAR LENGTH+END TEETH VARIABLE INDEX GEOMETRY	190
			WR514		4F	LONG NECK CORNER RADIUS	190
			WDR503		3F	DOUBLE CORNER RADIUS	197
			WR506		6F	45°CORNER RADIUS	197
			WXR504		4F	SHORT LENGTH+REGULAR LENGTH+LONG SHANK+VARIABLE INDEX GEOMETRY	199

MILLING-METRIC

CLASS	FEATURE	SHAPE	SERIES	APPEARANCE	FLUTES	TYPE	PAGE
WINNER (METRIC)	* Alloy Steels & Carbon Steels * Die Steels	Radius	WXR514		4F	LONG NECK+VARIABLE INDEX GEOMETRY	199
			WSPM4		4F	HIGH FEED	211
			WR542		2F	TAPER NECK	214
			WR544		4F	TAPER NECK	214
			WR512		2F	LONG NECK	224
		Roughing	WF613		3F	ROUGHING ENDMILL	235
			WF614		4F	ROUGHING ENDMILL	235
			WF615		5F	ROUGHING ENDMILL	235
			WF603		3F	ROUGHING ENDMILL-CORNER R	237
			WF604		4F	ROUGHING ENDMILL-CORNER R	237
			WF605		5F	ROUGHING ENDMILL-CORNER R	237
		Ball	WTB502		2F	TAPER BALL	239
		Square	WTE502		2F	TAPER	242
			WTE504		4F	TAPER	242
			WTE514		4F	RIB	246
		Radius	WTR504		4F	TAPER CORNER RADIUS	251
ZAMUS STAR (METRIC)	* Hardened Steels (~ HRc 70) * High Speed Cutting	Ball	DB702		2F	STUB CUT LENGTH, BALL NOSE with EXTENDED NECK	258
			DB712		2F	REGULAR LENGTH, BALL NOSE	258
			DB703		3F	BALL NOSE for FINISHING MOLD & DIE	261
			ZSLNB		2F	LONG NECK	263
			DB734		4F	TAPER NECK for FINISHING MOLD & DIE	267
			ZSTNB20		2F	TAPER NECK & BACK DRAFT TYPE	269
			ZSTNB30		3F	TAPER NECK & BACK DRAFT TYPE	269
		Square	ZE712		2F	35° HELIX REGULAR LENGTH	275
			ZE714		4F	45° HELIX REGULAR LENGTH	275
			ZE716		6F	50° HELIX REGULAR LENGTH	275
			ZE702		2F	STUB CUT LENGTH, with EXTENDED NECK	278
			ZE704		4F	STUB CUT LENGTH, with EXTENDED NECK	278
			ZS124		4F	LONG LENGTH CUT, VARIABLE FLUTE	281
			ZSLNS20		2F	LONG NECK	283
			ZSLNS40		4F	LONG NECK	283

PRODUCT INDEX

MILLING-METRIC

CLASS	FEATURE	SHAPE	SERIES	APPEARANCE	FLUTES	TYPE	PAGE
ZAMUS STAR (METRIC)	* Hardened Steels (~ HRc 70) * High Speed Cutting	Square	ZE724		4F	FINISHING for MOLD & DIE	288
			ZE726		6F	FINISHING for MOLD & DIE	288
		Radius	ZS104		4F	CORNER RADIUS, VARIABLE HELIX	290
			ZS204		4F	CORNER RADIUS, VARIABLE HELIX	290
			ZR724		4F	STUB CUT LENGTH, CORNER RADIUS with LONG SHANK	293
			ZR732		2F	CORNER RADIUS with LONG SHANK	293
			ZR734		4F	CORNER RADIUS with LONG SHANK	293
			ZR706		6F	45° HELIX STUB CUT LENGTH, CORNER RADIUS with EXTENDED NECK	297
			ZR736		6F	45° HELIX, LONG SHANK, CORNER RADIUS	299
			ZR714		4F	45° HELIX FINISHING MOLD & DIE	301
			ZR702		2F	STUB CUT LENGTH, CORNER RADIUS with EXTENDED NECK	303
			ZR704		4F	STUB CUT LENGTH, CORNER RADIUS with EXTENDED NECK	303
			ZSTNR		2F	TAPER NECK & BACK DRAFT TYPE	311
			ZSLNR		2F	LONG NECK & BACK DRAFT TYPE	315
POWER MILL	* High speed & High feed rates	Radius	ZSPM4		4F	STUB CUT LENGTH, with EXTENDED NECK	321
ZAMUS CLASSIC (METRIC)	* Hardened Steels (~ HRc 55) * High Speed Cutting * General Speed Cutting	Ball	DB402		2F	SHORT LENGTH, BALL NOSE	323
			DB412		2F	LONG LENGTH, BALL NOSE	323
			DB502		2F	STUB CUT LENGTH, BALL NOSE with EXTENDED NECK	323
			DB512		2F	LONG LENGTH, BALL NOSE	323
			DB514		4F	LONG LENGTH, BALL NOSE	323
			DB522		2F	NECK & LONG SHANK TYPE	323
			DB532		2F	MMC - SPHERE TYPE	323
			DB534		4F	MMC - SPHERE TYPE	323
			WB712		2F	for RIB PROCESSING	323
			DB542		2F	BALL NOSE with TAPER NECK	335
			DB552		2F	BALL NOSE with TAPER NECK	335
		Square	ZM502		2F	MEDIUM LENGTH	337
			ZM504		4F	MEDIUM LENGTH	337
			WE712		2F	for RIB PROCESSING	339
			ZE502		2F	REGULAR LENGTH	339
			ZE503		3F	REGULAR LENGTH	339
			ZE504		4F	REGULAR LENGTH	339

MILLING-METRIC

CLASS	FEATURE	SHAPE	SERIES	APPEARANCE	FLUTES	TYPE	PAGE
ZAMUS CLASSIC (METRIC)	* Hardened Steels (~ HRc 55) * High Speed Cutting * General Speed Cutting	Square	ZE506		6F	REGULAR & LONG LENGTH	339
			ZE514		4F	45° HELIX REGULAR LENGTH	339
		Radius	ZR502		2F	STUB CUT LENGTH, CORNER RADIUS with EXTENDED NECK	349
			ZR504		4F	STUB CUT LENGTH, CORNER RADIUS with EXTENDED NECK	349
			ZR512		2F	REGULAR LENGTH, CORNER RADIUS	349
			ZR514		4F	REGULAR LENGTH, CORNER RADIUS	349
			ZR522		2F	LONG LENGTH, CORNER RADIUS	349
			ZR524		4F	LONG LENGTH, CORNER RADIUS	349
		Roughing	PK503		3F	Z - AXIS ROUGHING END MILL	352
			ZF603		3F	ROUGHING END MILL	342
			ZF604		4F	ROUGHING END MILL	342
			ZF605		5F	ROUGHING END MILL	342
			ZF606		6F	ROUGHING END MILL	342
			ZF613		3F	ROUGHING END MILL - FINE PITCH	342
			ZF614		4F	ROUGHING END MILL - FINE PITCH	342
			ZF615		5F	ROUGHING END MILL - FINE PITCH	342
ZAMUS COPPER MATE (METRIC)	* Copper & non-ferrous material	Ball	BC502		2F	STUB CUT with EXTENDED NECK	355
		Radius	RC502		2F	STUB CUT with EXTENDED NECK	357
ZAMUS SUS MATE (METRIC)	* Stainless Steel * Titanium * Inconell	Ball	DS502		2F	BALL NOSE REGULAR & LONG LENGTH	359
		Square	SM503		3F	REGULAR LENGTH	361
			XCE503		3F	REGULAR CUT LENGTH	361
			XCE504		4F	REGULAR CUT LENGTH, VARIABLE HELIX	361
			XE504		4F	REGULAR CUT LENGTH, VARIABLE HELIX	361
			XE505		5F	REGULAR CUT LENGTH, VARIABLE HELIX	361
			XE514		4F	STUB CUT LENGTH with EXTENDED NECK, VARIABLE HELIX	361
			XE515		5F	LONG CUT LENGTH	361
			XE524		4F	STUB CUT LENGTH with EXTENDED LONG NECK	361
		Chamfer	XCC503		3F	REGULAR CUT LENGTH, CORNER CHAMFER	365
			XCC504		4F	REGULAR CUT LENGTH, VARIABLE HELIX	365
		Square	SM504		4F	REGULAR LENGTH	367
		Radius	XCR503		3F	REGULAR CUT LENGTH, CORNER RADIUS	367
			XCR504		4F	REGULAR CUT LENGTH, CORNER RADIUS, VARIABLE HELIX	367

PRODUCT INDEX

MILLING-METRIC

CLASS	FEATURE	SHAPE	SERIES	APPEARANCE	FLUTES	TYPE	PAGE
ZAMUS SUS MATE (METRIC)	* Stainless Steel * Titanium * Inconell	Radius	XR504		4F	REGULAR CUT LENGTH, CORNER RADIUS, VARIABLE HELIX	367
			XR505		5F	REGULAR CUT LENGTH CORNER RADIUS, VARIABLE HELIX	367
			XR514		4F	REGULAR CUT LENGTH, VARIABLE HELIX	367
			XR524		4F	LONG REACH, CORNER RADIUS VARIABLE HELIX	367
		Roughing	ZF624 (F)		4F	ROUGHING END MILL	372
			ZF625 (F)		5F	ROUGHING END MILL	372
			ZF626 (F)		6F	ROUGHING END MILL	372
ZAMUS THUNDER (METRIC)	* Hardened Steels (~ HRc 45) * High Speed Cutting * General Speed Cutting * Economic Type	Ball	DB312		2F	LONG LENGTH, BALL NOSE	374
			TXB202		2F	REGULAR LENGTH, BALL NOSE	374
			TXB204		4F	REGULAR LENGTH, BALL NOSE	374
			TXB222		2F	LONG LENGTH, BALL NOSE	374
			TXB232		2F	LONG REACH, BALL NOSE	374
			TXB302		2F	REGULAR LENGTH, BALL NOSE	374
			TXB304		4F	REGULAR LENGTH, BALL NOSE	374
			DB342		2F	BALL NOSE with TAPER NECK	378
		Square	TX202		2F	SHORT LENGTH	380
			TX204		4F	SHORT LENGTH	380
			TX222		2F	LONG LENGTH	380
			TX224		4F	LONG LENGTH	380
			TX302		2F	REGULAR LENGTH	380
			TX304		4F	REGULAR LENGTH	380
			ZE302		2F	REGULAR LENGTH	380
			ZE304		4F	REGULAR LENGTH	380
			ZE322		2F	LONG & EXTRA LONG LENGTH	380
			ZE324		4F	LONG and X-LONG LENGTHS	380
			TX304H		4F	45° HELIX, REGULAR LENGTH	389
		Radius	ZR304H		4F	45° HELIX STUB CUT LENGTH, CORNER RADIUS, EXTENDED NECK	391
			ZR324H		4F	45° HELIX STUB CUT LENGTH, CORNER RADIUS, LONG SHANK	391
			ZR322		2F	CORNER RADIUS LONG LENGTH	393
			ZR324		4F	CORNER RADIUS LONG LENGTH	393
NEO CLASSIC X-STAR (METRIC)	* High performance & High efficiency(~HRc45)	Ball	XXB504		4F	REGULAR CUT LENGTH, VARIABLE HELIX	395

DRILLING

CLASS	FEATURE	SHAPE	SERIES	APPEARANCE	FLUTES	TYPE	PAGE
ALU-WAVE (METRIC & INCH)	* Aluminum * Non-Ferrous Material * Graphite * Plastics	Facet	APF505		3F	5 X D, D.L.C COATED for ALUMINUM	400
POWER MAX DRILL (METRIC & INCH)	* High Speed & General Speed Cutting	Facet	HPI503		2F	HIGH PRECISION 3 X D INTERNAL COOLANT, DOUBLE MARGIN	404
			HPI505		2F	HIGH PRECISION 5 X D INTERNAL COOLANT, DOUBLE MARGIN	404
			HPI508N		2F	HIGH PRECISION 8 X D INTERNAL COOLANT, DOUBLE MARGIN	404
			HP503		2F	HIGH PRECISION 3 X D, DOUBLE MARGIN	414
			PF503		2F	3 X D	418
			PF505		2F	5 X D	418
			SF503		2F	3 X D / INTERNAL COOLANT	428
			SF505		2F	5 X D / INTERNAL COOLANT	428
			SF510		2F	10 X D / INTERNAL COOLANT, DOUBLE MARGIN	428
			SF520		2F	20 X D / INTERNAL COOLANT, DOUBLE MARGIN	428
POWER DRILL (METRIC)	* General Speed Cutting	Relief	PDS		2F	STUB TYPE - 3 X D	441
		Facet	PDM		2F	MEDIUM TYPE - 5 X D	441
			PDSI		2F	STUB TYPE - 3 x D	450
			PDMI		2F	MEDIUM TYPE - 5 x D	450
SOLID SPIRAL (METRIC)	* General Purpose	Relief	SSD		2F	REGULAR LENGTH	458
			SSDL		2F	LONG LENGTH	460
			SSTD		2F	REGULAR LENGTH	461

CENTERING TOOL

CLASS	FEATURE	SHAPE	SERIES	APPEARANCE	FLUTES	TYPE	PAGE
NC SPOT DRILLS (INCH& METRIC)	* Multi-Purpose		LDA		2F	NC SPOTTING DRILL	466
			LDS		2F	NC SPOTTING DRILL	468
SOLID CENTER DRILLS (MET RIC)			CDS		2F	SOLID CENTER DRILL	470
CENTERING END MILLS (METRIC)			CEM		2F	CENTERING END MILL - BRAZED TYPE	472
			CES		2F	CENTERING END MILL - SOLID	474

01

MILLING

INCH

ALU-WAVE Aluminum / Non-Ferrous Material / Graphite / Plastics	18
ZAMUS GRA MATE Graphite & non-ferrous material	28
GENERAL PURPOSE Hardened Steels(~ HRc 45) / General Speed Cutting	36
ZAMUS STAR Hardened Steels(~ HRc 70) / High Speed Cutting	50
ZAMUS STAR POWER MILL High speed & High feed rates	58
ZAMUS CLASSIC Hardened Steels(~ HRc 55) / High Speed Cutting / General Speed Cutting	60
ZAMUS SUS MATE Stainless Steel / Titanium / Inconell	83
NEO CLASSIC X-STAR High performance & High efficiency(~HRc45)	89

METRIC

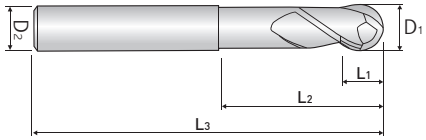
ALU-WAVE Aluminum / Non-Ferrous Material / Graphite / Plastics	98
ZAMUS GRA MATE Graphite & non-ferrous material	114
WINNER Alloy Steels & Carbon Steels / Die Steels	124
ZAMUS STAR Hardened Steels(~ HRc 70) / High Speed Cutting	258
ZAMUS STAR POWER MILL High speed & High feed rates	321
ZAMUS CLASSIC Hardened Steels(~ HRc 55) / High Speed Cutting / General Speed Cutting	323
ZAMUS COPPER MATE Copper & non-ferrous material	355
ZAMUS SUS MATE Stainless Steel / Titanium / Inconell	359
ZAMUS THUNDER Hardened Steels(~ HRc 45) / High Speed Cutting / General Speed Cutting Economic Type	374
NEO CLASSIC X-STAR High performance & High efficiency(~HRc45)	395

ALU-WAVE

WAB312A & WAB512A Series

BALL / 2 FLUTE / REGULAR LENGTH / BRIGHT & DLC COATED

FINE GRAIN | Plunge | Profile



TOLERANCE (inch)

D_1 = +0.0008 / -0.0008
D_2 = h6

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO.		Cutting Diameter (inch)	Cutting Length (inch)	Neck Length (inch)	Overall Length (inch)	Shank Diameter (inch)
2 Flute						
Bright	DLC					
Helix 50°	Helix 50°					
WAB312A	WAB512A	D1	L1	L2	L3	D2
WAB312A008	WAB512A008	1/8	1/8	3/8	3	1/8
WAB312A012	WAB512A012	3/16	3/16	9/16	3	3/16
WAB312A016	WAB512A016	1/4	1/4	2	3	1/4
WAB312A024	WAB512A024	3/8	3/8	2 1/4	3 1/2	3/8
WAB312A032	WAB512A032	1/2	1/2	2 1/2	4	1/2

Applicable Working Material

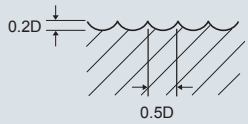
○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
All										◎	◎								○		

WAB312A & WAB512A Series

Work Material	Aluminum Alloy		Copper Alloy	
Cutting Diameter(inch)	RPM	FEED	RPM	FEED
1/8	14,000	28.8	4,200	7.3
3/16	14,000	40.9	4,200	10.3
1/4	14,000	53.0	4,200	13.3
3/8	10,800	71.2	3,200	17.6
1/2	10,800	90.9	3,200	22.7

RPM = rev. / min.
FEED = inch / min.

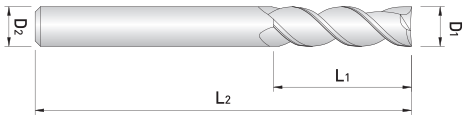


ALU-WAVE

WAE3xxA, WAE5xxA Series

FINE GRAIN | Slotting | Side milling | Sharp edge

SQUARE / 2 & 3 FLUTE / STUB, REGULAR & LONG LENGTH / BRIGHT & DLC COATED



TOLERANCE (inch)

D_1 = +0 / -0.0008
D_2 = h6

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO.				Cutting Diameter (inch)	Cutting Length (inch)	Overall Length (inch)	Shank Diameter (inch)
2 Flute		3 Flute					
Bright	DLC	Bright	DLC				
Helix 45°	Helix 45°	Helix 45°	Helix 45°				
WAE302A WAE312A WAE322A	WAE502A WAE512A WAE522A	WAE303A WAE313A WAE323A	WAE503A WAE513A WAE523A	D1	L1	L2	D2
WAE302A008	WAE502A008	WAE303A008	WAE503A008	1/8	1/4	1 1/2	1/8
WAE312A008	WAE512A008	WAE313A008	WAE513A008	1/8	3/8	1 1/2	1/8
WAE322A008	-	WAE323A008	WAE523A008	1/8	3/4	2 1/2	1/4
WAE302A012	WAE502A012	WAE303A012	WAE503A012	3/16	5/16	2	3/16
WAE312A012	WAE512A012	WAE313A012	WAE513A012	3/16	9/16	2	3/16
WAE302A016	WAE502A016	WAE303A016	WAE503A016	1/4	3/8	2 1/2	1/4
WAE312A016	WAE512A016	WAE313A016	WAE513A016	1/4	3/4	2 1/2	1/4
WAE322A016	WAE522A016	WAE323A016	WAE523A016	1/4	1 1/2	4	1/4
WAE302A020	WAE502A020	WAE303A020	WAE503A020	5/16	7/16	2 1/2	5/16
WAE312A020	WAE512A020	WAE313A020	WAE513A020	5/16	13/16	2 1/2	5/16
WAE322A020	WAE522A020	WAE323A020	WAE523A020	5/16	1 1/2	4	5/16
WAE302A024	WAE502A024	WAE303A024	WAE503A024	3/8	1/2	2 1/2	3/8
WAE312A024	WAE512A024	WAE313A024	WAE513A024	3/8	1	2 1/2	3/8
WAE322A024	WAE522A024	WAE323A024	WAE523A024	3/8	1 1/2	4	3/8
WAE302A028	WAE502A028	WAE303A028	WAE503A028	7/16	9/16	2 3/4	7/16
WAE312A028	WAE512A028	WAE313A028	WAE513A028	7/16	1	2 3/4	7/16
WAE302A032	WAE502A032	WAE303A032	WAE503A032	1/2	3/4	3	1/2
WAE312A032	WAE512A032	WAE313A032	WAE513A032	1/2	1 1/4	3	1/2
WAE322A032	WAE522A032	WAE323A032	WAE523A032	1/2	2	4	1/2
WAE302A040	WAE502A040	WAE303A040	WAE503A040	5/8	7/8	3 1/2	5/8
WAE312A040	WAE512A040	WAE313A040	WAE513A040	5/8	1 5/8	3 1/2	5/8
WAE322A040	WAE522A040	WAE323A040	WAE523A040	5/8	2 1/2	5	5/8
WAE302A048	WAE502A048	WAE303A048	WAE503A048	3/4	1	4	3/4
WAE312A048	WAE512A048	WAE313A048	WAE513A048	3/4	1 5/8	4	3/4
WAE322A048	WAE522A048	WAE323A048	WAE523A048	3/4	2 1/2	5	3/4
WAE302A064	WAE502A064	WAE303A064	WAE503A064	1	1 1/2	4	1
WAE312A064	WAE512A064	WAE313A064	WAE513A064	1	2	5	1
WAE322A064	WAE522A064	WAE323A064	WAE523A064	1	3 1/4	6	1

Applicable Working Material

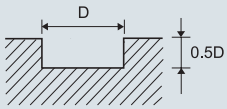
○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
All										◎	◎								○		

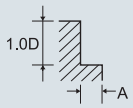
WAE302A, WAE312A & WAE322A series

End Cutting	Slotting		Side Milling	
Work Material	Aluminum Alloy, Non Ferrous Metals			
Cutting Diameter (inch)	RPM	FEED	RPM	FEED
1/8	10,000	27.6	10,000	35.4
3/16	10,000	39.4	10,000	51.2
1/4	10,000	47.2	10,000	59.1
5/16	8,000	55.1	8,000	70.9
3/8	8,000	66.9	8,000	82.7
7/16	8,000	74.8	8,000	96.5
1/2	8,000	82.7	8,000	102.4
5/8	6,000	74.8	6,000	94.5
3/4	4,000	55.1	4,000	70.9
1	4,000	63.0	4,000	74.8

RPM = rev. / min.
FEED = inch / min.



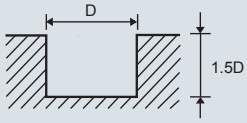
A : Ø1/8 ~ Ø3/8 = 0.25 x D
Ø1/2 ~ Ø1 = 0.5 x D



WAE303A, WAE313A & WAE323A series

End Cutting	Slotting		Side Milling	
Material	Aluminum Alloy, Non Ferrous Metals			
Cutting Diameter (inch)	RPM	FEED	RPM	FEED
1/8	7,000	17.9	7,000	13.8
3/16	7,000	25.6	7,000	19.8
1/4	7,000	29.8	7,000	23.9
5/16	5,600	33.9	5,600	27.6
3/8	5,600	37.6	5,600	30.6
7/16	5,600	38.0	5,600	37.5
1/2	5,600	34.7	5,600	41.3
5/8	4,200	47.6	4,200	37.2
3/4	2,800	36.7	2,800	29.6
1	2,800	36.7	2,800	29.6

RPM = rev. / min.
FEED = inch / min.

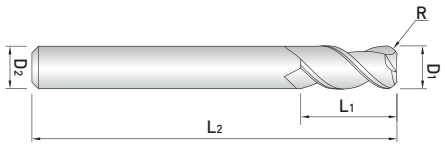


MG FINE GRAIN | Slotting | Side milling

ALU-WAVE

WAR3xxA, WAR5xxA Series

CORNER RADIUS / 2 & 3 FLUTE / STUB, REGULAR & LONG LENGTH / BRIGHT & DLC COATED



TOLERANCE (inch)

D_1 = +0 / -0.0008
D_2 = h6
R = ±0.0006

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO.				Cutting Diameter (inch)	Corner Radius (inch)	Cutting Length (inch)	Overall Length (inch)	Shank Diameter (inch)
2 Flute		3 Flute						
Bright	DLC	Bright	DLC					
Helix 45°	Helix 45°	Helix 45°	Helix 45°					
WAR302A WAR312A WAR322A	WAR502A WAR512A WAR522A	WAR303A WAR313A WAR323A	WAR503A WAR513A WAR523A	D1	R	L1	L2	D2
WAR302A008010	WAR502A008010	WAR303A008010	WAR503A008010	1/8	0.010	1/4	1 1/2	1/8
WAR312A008010	WAR512A008010	WAR313A008010	WAR513A008010	1/8	0.010	3/8	1 1/2	1/8
WAR302A012010	WAR502A012010	WAR303A012010	WAR503A012010	3/16	0.010	5/16	2	3/16
-	-	WAR303A012020	WAR503A012020	3/16	0.020	5/16	2	3/16
WAR312A012010	WAR512A012010	WAR313A012010	WAR513A012010	3/16	0.010	9/16	2	3/16
-	-	WAR313A012020	WAR513A012020	3/16	0.020	9/16	2	3/16
WAR302A016010	WAR502A016010	WAR303A016010	WAR503A016010	1/4	0.010	3/8	2 1/2	1/4
-	-	WAR303A016020	WAR503A016020	1/4	0.020	3/8	2 1/2	1/4
-	-	WAR303A016030	WAR503A016030	1/4	0.030	3/8	2 1/2	1/4
-	-	WAR303A016060	WAR503A016060	1/4	0.060	3/8	2 1/2	1/4
WAR312A016010	WAR512A016010	WAR313A016010	WAR513A016010	1/4	0.010	5/8	2 1/2	1/4
-	-	WAR313A016020	WAR513A016020	1/4	0.020	5/8	2 1/2	1/4
-	-	WAR313A016030	WAR513A016030	1/4	0.030	5/8	2 1/2	1/4
-	-	WAR313A016060	WAR513A016060	1/4	0.060	5/8	2 1/2	1/4
WAR322A016010	WAR522A016010	WAR323A016010	WAR523A016010	1/4	0.010	1 1/2	4	1/4
-	-	WAR323A016020	WAR523A016020	1/4	0.020	1 1/2	4	1/4
-	-	WAR323A016030	WAR523A016030	1/4	0.030	1 1/2	4	1/4
-	-	WAR323A016060	WAR523A016060	1/4	0.060	1 1/2	4	1/4
WAR302A020020	WAR502A020020	WAR303A020020	WAR503A020020	5/16	0.020	7/16	2 1/2	5/16
-	-	WAR303A020030	WAR503A020030	5/16	0.030	7/16	2 1/2	5/16
WAR312A020020	WAR512A020020	WAR313A020020	WAR513A020020	5/16	0.020	13/16	2 1/2	5/16
-	-	WAR313A020030	WAR513A020030	5/16	0.030	13/16	2 1/2	5/16
WAR322A020020	WAR522A020020	WAR323A020020	WAR523A020020	5/16	0.020	1 1/2	4	5/16
-	-	WAR323A020030	WAR523A020030	5/16	0.030	1 1/2	4	5/16
WAR302A024020	WAR502A024020	WAR303A024020	WAR503A024020	3/8	0.020	1/2	2 1/2	3/8
-	-	WAR303A024030	WAR503A024030	3/8	0.030	1/2	2 1/2	3/8
-	-	WAR303A024060	WAR503A024060	3/8	0.060	1/2	2 1/2	3/8
WAR312A024020	WAR512A024020	WAR313A024020	WAR513A024020	3/8	0.020	1	2 1/2	3/8
-	-	WAR313A024030	WAR513A024030	3/8	0.030	1	2 1/2	3/8
-	-	WAR313A024060	WAR513A024060	3/8	0.060	1	2 1/2	3/8
WAR322A024020	WAR522A024020	WAR323A024020	WAR523A024020	3/8	0.020	1 1/2	4	3/8
-	-	WAR323A024030	WAR523A024030	3/8	0.030	1 1/2	4	3/8
-	-	WAR323A024060	WAR523A024060	3/8	0.060	1 1/2	4	3/8
WAR302A028020	WAR502A028020	WAR303A028020	WAR503A028020	7/16	0.020	9/16	2 3/4	7/16

Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
All										◎	◎								○		

ALU-WAVE

WAR3xxA, WAR5xxA Series

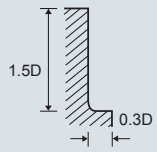
EDP NO.				Cutting Diameter (inch)	Corner Radius (inch)	Cutting Length (inch)	Overall Length (inch)	Shank Diameter (inch)
2 Flute		3 Flute						
Bright	DLC	Bright	DLC					
Helix 45°	Helix 45°	Helix 45°	Helix 45°					
WAR302A WAR312A WAR322A	WAR502A WAR512A WAR522A	WAR303A WAR313A WAR323A	WAR503A WAR513A WAR523A	D1	R	L1	L2	D2
WAR312A028020	WAR512A028020	WAR313A028020	WAR513A028020	7/16	0.020	1	2 3/4	7/16
-	-	WAR303A032020	WAR503A032020	1/2	0.020	5/8	3	1/2
-	-	WAR303A032030	WAR503A032030	1/2	0.030	5/8	3	1/2
-	-	WAR303A032060	WAR503A032060	1/2	0.060	5/8	3	1/2
WAR302A032020	WAR502A032020	-	-	1/2	0.020	3/4	3	1/2
WAR312A032020	WAR512A032020	WAR313A032020	WAR513A032020	1/2	0.020	1 1/4	3	1/2
WAR312A032030	-	WAR313A032030	WAR513A032030	1/2	0.030	1 1/4	3	1/2
-	-	WAR313A032060	WAR513A032060	1/2	0.060	1 1/4	3	1/2
WAR322A032020	WAR522A032020	WAR323A032020	WAR523A032020	1/2	0.020	2	4	1/2
-	-	WAR323A032030	WAR523A032030	1/2	0.030	2	4	1/2
-	-	WAR323A032060	WAR523A032060	1/2	0.060	2	4	1/2
WAR302A040030	WAR502A040030	WAR303A040030	WAR503A040030	5/8	0.030	3/4	3 1/2	5/8
-	-	WAR303A040060	WAR503A040060	5/8	0.060	3/4	3 1/2	5/8
-	-	WAR303A040090	WAR503A040090	5/8	0.090	3/4	3 1/2	5/8
WAR312A040030	WAR512A040030	WAR313A040030	WAR513A040030	5/8	0.030	1 5/8	3 1/2	5/8
-	-	WAR313A040060	WAR513A040060	5/8	0.060	1 5/8	3 1/2	5/8
-	-	WAR313A040090	WAR513A040090	5/8	0.090	1 5/8	3 1/2	5/8
WAR322A040030	WAR522A040030	WAR323A040030	WAR523A040030	5/8	0.030	2 1/2	5	5/8
-	-	WAR323A040060	WAR523A040060	5/8	0.060	2 1/2	5	5/8
-	-	WAR323A040090	WAR523A040090	5/8	0.090	2 1/2	5	5/8
WAR302A048030	WAR502A048030	WAR303A048030	WAR503A048030	3/4	0.030	1	4	3/4
-	-	WAR303A048060	WAR503A048060	3/4	0.060	1	4	3/4
-	-	WAR303A048090	WAR503A048090	3/4	0.090	1	4	3/4
-	-	WAR303A048120	WAR503A048120	3/4	0.120	1	4	3/4
WAR312A048030	WAR512A048030	WAR313A048030	WAR513A048030	3/4	0.030	1 5/8	4	3/4
-	-	WAR313A048060	WAR513A048060	3/4	0.060	1 5/8	4	3/4
-	-	WAR313A048090	WAR513A048090	3/4	0.090	1 5/8	4	3/4
-	-	WAR313A048120	WAR513A048120	3/4	0.120	1 5/8	4	3/4
WAR322A048030	WAR522A048030	WAR323A048030	WAR523A048030	3/4	0.030	2 1/2	5	3/4
-	-	WAR323A048060	WAR523A048060	3/4	0.060	2 1/2	5	3/4
-	-	WAR323A048090	WAR523A048090	3/4	0.090	2 1/2	5	3/4
-	-	WAR323A048120	WAR523A048120	3/4	0.120	2 1/2	5	3/4
-	-	WAR303A064060	WAR503A064060	1	0.060	1 1/4	4	1
-	-	WAR303A064090	WAR503A064090	1	0.090	1 1/4	4	1
-	-	WAR303A064120	WAR503A064120	1	0.120	1 1/4	4	1
WAR302A064030	WAR502A064030	WAR303A064030	WAR503A064030	1	0.030	1 1/2	4	1
WAR312A064030	WAR512A064030	WAR313A064030	WAR513A064030	1	0.030	2	5	1
-	-	WAR313A064060	WAR513A064060	1	0.060	2	5	1
-	-	WAR313A064090	WAR513A064090	1	0.090	2	5	1
-	-	WAR313A064120	WAR513A064120	1	0.120	2	5	1
WAR322A064030	WAR522A064030	WAR323A064030	WAR523A064030	1	0.030	3 1/4	6	1
-	-	WAR323A064060	WAR523A064060	1	0.060	3 1/4	6	1
-	-	WAR323A064090	WAR523A064090	1	0.090	3 1/4	6	1
-	-	WAR323A064120	WAR523A064120	1	0.120	3 1/4	6	1

WAR302A, WAR312A & WAR322A series

End Cutting	Slotting							
Work Material	Aluminum Alloy(<Si 4%)		Aluminum Alloy(<Si 8%)		Aluminum Alloy(Die Casted)		Copper Alloy	
Cutting Diameter(inch)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	24,000	151.2	19,900	117.3	16,000	88.2	12,000	56.7
3/16	24,000	151.2	19,900	117.3	16,000	88.2	12,000	56.7
1/4	16,000	120.9	13,200	93.3	10,600	70.1	8,000	45.2
5/16	12,000	113.4	9,900	87.8	8,000	66.1	6,000	42.5
3/8	10,800	110.4	8,900	86.4	7,200	64.2	5,400	41.5
7/16	8,800	104.1	7,300	81.5	5,800	60.2	4,400	39.2
1/2	8,000	100.8	6,600	78.0	5,300	58.3	4,000	37.8
5/8	6,000	94.5	5,000	73.6	4,000	55.1	3,000	35.4
3/4	5,000	78.7	4,200	62.0	3,300	48.8	2,500	29.5
1	3,840	60.5	3,200	47.2	2,560	39.7	1,920	22.7

End Cutting	Side Milling							
Work Material	Aluminum Alloy(<Si 4%)		Aluminum Alloy(<Si 8%)		Aluminum Alloy(Die Casted)		Copper Alloy	
Cutting Diameter(inch)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	24,000	188.9	19,900	156.7	16,000	126.0	12,000	94.5
3/16	24,000	188.9	19,900	156.7	16,000	126.0	12,000	94.5
1/4	16,000	151.2	13,200	124.4	10,600	100.2	8,000	75.6
5/16	12,000	141.7	9,900	116.9	8,000	94.5	6,000	70.9
3/8	10,800	138.2	8,900	115.2	7,200	91.7	5,400	69.3
7/16	8,800	130.3	7,300	108.7	5,800	86.2	4,400	65.4
1/2	8,000	126.0	6,600	103.9	5,300	83.5	4,000	63.0
5/8	6,000	118.1	5,000	98.4	4,000	78.7	3,000	59.1
3/4	5,000	98.4	4,200	82.7	3,300	46.3	2,500	49.2
1	3,840	75.6	3,200	63.0	2,560	50.4	1,920	37.8

RPM = rev. / min.
FEED = inch / min.

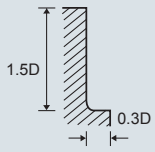


WAR303A, WAR313A & WAR323A series

End Cutting	Slotting							
Work Material	Aluminum Alloy(<Si 4%)		Aluminum Alloy(<Si 8%)		Aluminum Alloy(Die Casted)		Copper Alloy	
Cutting Diameter(inch)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	24,000	151.2	19,900	117.3	16,000	88.2	-	-
3/16	24,000	151.2	19,900	117.3	16,000	88.2	-	-
1/4	16,000	120.9	13,200	93.3	10,600	70.1	-	-
5/16	12,000	113.4	9,900	87.8	8,000	66.1	-	-
3/8	10,800	110.4	8,900	86.4	7,200	64.2	-	-
7/16	8,800	104.1	7,300	81.5	5,800	60.2	-	-
1/2	8,000	100.8	6,600	78.0	5,300	58.3	-	-
5/8	6,000	94.5	5,000	73.6	4,000	55.1	-	-
3/4	5,000	78.7	4,200	62.0	3,300	48.8	-	-
1	3,840	60.5	3,200	47.2	2,560	39.7	-	-

End Cutting	Side Milling							
Work Material	Aluminum Alloy(<Si 4%)		Aluminum Alloy(<Si 8%)		Aluminum Alloy(Die Casted)		Copper Alloy	
Cutting Diameter(inch)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	24,000	188.9	19,900	156.7	16,000	126.0	12,000	94.5
3/16	24,000	188.9	19,900	156.7	16,000	126.0	12,000	94.5
1/4	16,000	151.2	13,200	124.4	10,600	100.2	8,000	75.6
5/16	12,000	141.7	9,900	116.9	8,000	94.5	6,000	70.9
3/8	10,800	138.2	8,900	115.2	7,200	91.7	5,400	69.3
7/16	8,800	130.3	7,300	108.7	5,800	86.2	4,400	65.4
1/2	8,000	126.0	6,600	103.9	5,300	83.5	4,000	63.0
5/8	6,000	118.1	5,000	98.4	4,000	78.7	3,000	59.1
3/4	5,000	98.4	4,200	82.7	3,300	46.3	2,500	49.2
1	3,840	75.6	3,200	63.0	2,560	50.4	1,920	37.8

RPM = rev. / min.
FEED = inch / min.

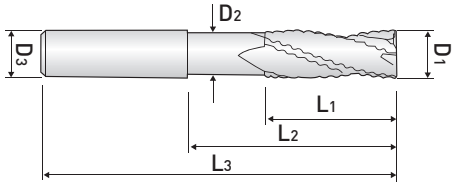


ALU-WAVE

WAF3xxA Series

ROUGHER / 3 FLUTE / STUB, REGULAR & LONG LENGTH / BRIGHT

FINE GRAIN | Slotting | Side milling | Conventional Pitch | DIN 6535HA | DIN6535HB



TOLERANCE (inch)

D_1 = +0 / -0.02
D_2 = h6

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO.		Cutting Diameter (inch)	Cutting Length (inch)	Neck Diameter (inch)	Neck Length (inch)	Overall Length (inch)	Shank Diameter (inch)
3 Flute Bright Helix 38°	3 Flute Bright Helix 38°						
WAF303A	WAF313A	D1	L1	D2	L2	L3	D3
-	WAF313A024	3/8	7/16	0.345	2 1/4	3 1/2	3/8
WAF303A024	-	3/8	1	-	-	3	3/8
WAF303A024L	-	3/8	1 1/2	-	-	3 1/2	3/8
-	WAF313A032	1/2	9/16	0.460	2 1/2	4	1/2
WAF303A032	-	1/2	1 1/4	-	-	3 1/4	1/2
WAF303A032L	-	1/2	2	-	-	4	1/2
-	WAF313A040	5/8	3/4	0.575	3	5	5/8
WAF303A040	-	5/8	1 1/4	-	-	3 1/2	5/8
WAF303A040L	-	5/8	2 1/2	-	-	5	5/8
-	WAF313A048	3/4	13/16	0.710	4	6	3/4
WAF303A048	-	3/4	1 1/2	-	-	4	3/4
WAF303A048L	-	3/4	2 1/2	-	-	5	3/4
-	WAF313A064	1	15/16	0.960	4	6	1
WAF303A064	-	1	1 1/2	-	-	4	1

Applicable Working Material

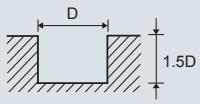
○ : GOOD ◎ : BEST

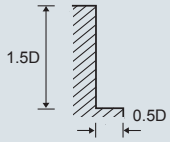
SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
All										◎	◎								○		

WAF303A, WAF313A series

End Cutting	Slotting		Side Milling	
Work Material	Aluminum Alloy			
Cutting Diameter (inch)	RPM	FEED	RPM	FEED
3/8	4,700	16.1	6,700	22.8
1/2	3,600	16.3	5,100	23.0
5/8	2,800	16.9	4,000	24.0
3/4	2,300	18.5	3,300	26.4
1	1,800	17.3	2,500	24.4

RPM = rev. / min.
FEED = inch / min.



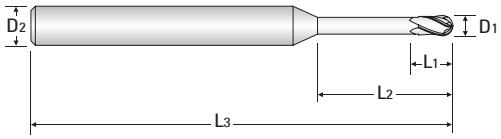


ZAMUS GRA MATE

WGB5xxA Series

BALL / 2 & 4 FLUTES / WITH & WITHOUT REACH / CVD COATING

MG FINE GRAIN | Plunge | Profile



TOLERANCE (inch)

D_1 = +0 / -0.0008 (up to 1/8)
D_1 = +0 / -0.0012 (3/16 to 1/2)
D_2 = h6
L_1 = ±0.060
L_3 = ±0.060

HARDNESS (HRc)

for GRAPHITE

EDP NO.		Cutting Diameter (inch)	Cutting Length (inch)	Neck Length (inch)	Overall Length (inch)	Shank Diameter (inch)
2 Flute	4 Flute					
CVD	CVD					
Helix 30°	Helix 30°					
WGB502A WGB512A - - -	WGB504A WGB514A WGB524A WGB534A WGNB504A	D1	L1	L2	L3	D2
WGB512A0010156-1.5SP	WGB514A0010156-1.5	1/64	3/64	5/32	1 1/2	1/8
WGB502A002	WGB504A002	1/32	3/32	-	1 1/2	1/8
-	WGB514A0020312-2SP	1/32	3/32	5/16	2	1/8
-	WGB514A0020500-2SP	1/32	3/32	1/2	2	1/8
-	WGB504A002-3	1/32	3/32	-	3	1/8
-	WGB514A0020312-3	1/32	3/32	5/16	3	1/8
-	WGB514A0020375-3	1/32	3/32	3/8	3	1/8
-	WGB514A0020500-3	1/32	3/32	1/2	3	1/8
-	WGB504A003	3/64	9/64	-	1 1/2	1/8
-	WGB504A003-3	3/64	9/64	-	3	1/8
-	WGB514A0030500-3	3/64	9/64	1/2	3	1/8
-	WGB514A0030750-3	3/64	9/64	3/4	3	1/8
-	WGB504A004-1.5SP	1/16	3/32	-	1 1/2	1/8
-	WGB514A0040750-2.5SP	1/16	3/32	3/4	2 1/2	1/8
-	WGB504A004	1/16	3/16	-	1 1/2	1/8
-	WGB514A0040650-2SP	1/16	3/16	13/20	2	1/8
-	WGB514A0040800-2SP	1/16	3/16	4/5	2	1/8
-	WGB504A004-3	1/16	3/16	-	3	1/8
-	WGB514A0040500-3	1/16	3/16	1/2	3	1/8
-	WGB514A0040750-3	1/16	3/16	3/4	3	1/8
-	WGB514A0041000-3	1/16	3/16	1	3	1/8
-	WGB504A005-3	5/64	1/4	-	3	1/8
-	WGB524A006	3/32	3/32	-	3	3/32
-	WGB534A0060344-3	3/32	3/32	11/32	3	3/32
-	WGB514A0060500-3	3/32	9/32	1/2	3	1/8
-	WGB514A0061000-3	3/32	9/32	1	3	1/8
-	WGB504A006	3/32	3/8	-	1 1/2	1/8
-	WGB504A006-3	3/32	3/8	-	3	1/8
-	WGB534A0081000-2.5	1/8	1/8	1	2 1/2	1/8
-	WGB524A008	1/8	1/8	-	3	1/8

Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
All										○	○									◎	

ZAMUS GRA MATE

WGB5xxA Series

EDP NO.		Cutting Diameter (inch)	Cutting Length (inch)	Neck Length (inch)	Overall Length (inch)	Shank Diameter (inch)
2 Flute	4 Flute					
CVD	CVD					
Helix 30°	Helix 30°					
WGB502A WGB512A - - -	WGB504A WGB514A WGB524A WGB534A WGNB504A	D1	L1	L2	L3	D2
-	WGB534A0080625-3	1/8	1/8	5/8	3	1/8
-	WGB534A0081500-3	1/8	1/8	2	3	1/8
-	WGB524A008-4SP	1/8	1/8	-	4	1/8
-	WGB534A0082000-4SP	1/8	1/8	2	4	1/8
-	WGNB504A00801SP	1/8	1/4	7/8	3	1/8
-	WGB504A008-3	1/8	3/8	-	3	1/8
-	WGB514A0080625-3	1/8	3/8	5/8	3	1/8
-	WGB514A0080875-3	1/8	3/8	7/8	3	1/8
-	WGB514A0081000-3	1/8	3/8	1	3	1/8
-	WGB504A008	1/8	1/2	-	1 1/2	1/8
-	WGB534A0120750-3	3/16	3/16	3/4	3	3/16
	WGB534A0120750-6SP	3/16	3/16	3/4	6	3/16
-	WGB514A0121500-4SP	3/16	3/8	1 1/2	4	3/16
-	WGB514A0120750-3	3/16	1/2	3/4	3	3/16
-	WGB504A012	3/16	5/8	-	2	3/16
-	WGB514A0121875-4	3/16	3/4	1 7/8	4	3/16
-	WGB534A0160750-4	1/4	1/4	3/4	4	1/4
-	WGB534A0162000-4	1/4	1/4	2	4	1/4
-	WGB504A016	1/4	3/4	-	2 1/2	1/4
-	WGB514A0162500-4	1/4	1	2 1/2	4	1/4
-	WGB514A0162500-6	1/4	1 1/2	2 1/2	6	1/4
-	WGB534A0200812-4	5/16	5/16	13/16	4	5/16
-	WGB504A020	5/16	7/8	-	2 1/2	5/16
-	WGB534A0241125-4	3/8	3/8	1 1/8	4	3/8
-	WGB504A024	3/8	7/8	-	2 1/2	3/8
-	WGB504A024-4	3/8	1 3/8	-	4	3/8
-	WGB504A024-6	3/8	1 3/8	-	6	3/8
-	WGB534A0321500-6	1/2	1/2	1 1/2	6	1/2
-	WGB504A032	1/2	1	-	3	1/2
-	WGB504A032-6	1/2	1 3/8	-	6	1/2
-	WGB504A032-4	1/2	2	-	4	1/2

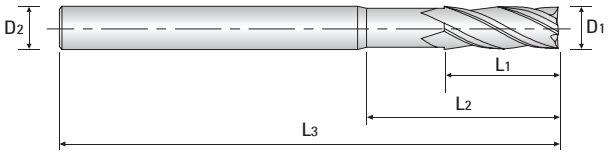
NOTE:
Effective July 2018 all Inch and Metric Diamond Tools will have a maximum of 1" of effective flute length coated with good USABLE CVD diamond coating.
If required, over 1" can be coated with a good USABLE diamond at a significantly higher cost and lead time.
All tools in the ZAMUS GRA MATE catalog (Ver. 1) except ball end will continue to have all effective flutes covered the full length stated even if in excess of 1".

ZAMUS GRA MATE

WGE5xxA Series

MG FINE GRAIN | Slotting | Side milling

SQUARE / 2 & 4 FLUTES / WITH & WITHOUT REACH / CVD COATING



TOLERANCE (inch)

D_1 = +0 / -0.0008 (up to 1/8)
D_1 = +0 / -0.0012 (3/16 to 1/2)
D_2 = h6
L_1 = ±0.060
L_3 = ±0.060

HARDNESS (HRc)

for GRAPHITE

EDP NO.		Cutting Diameter (inch)	Cutting Length (inch)	Neck Length (inch)	Overall Length (inch)	Shank Diameter (inch)
2 Flute	4 Flute					
CVD	CVD					
Helix 30°	Helix 30°					
WGE502A	WGE504A	D1	L1	L2	L3	D2
-	WGE514A					
-	WGE524A					
-	WGE534A					
WGE502A001	WGE504A001	1/64	3/64	-	1 1/2	1/8
-	WGE514A0010156-1.5	1/64	3/64	5/32	1 1/2	1/8
WGE502A002	WGE504A002	1/32	3/32	-	1 1/2	1/8
-	WGE514A0020312-2SP	1/32	3/32	5/16	2	1/8
-	WGE504A002-3	1/32	3/32	-	3	1/8
-	WGE514A0020312-3	1/32	3/32	5/16	3	1/8
-	WGE514A0020500-3	1/32	3/32	1/2	3	1/8
-	WGE504A002L	1/32	3/8	1/2	3	1/8
WGE502A003	-	3/64	1/8	-	1 1/2	1/8
-	WGE504A003	3/64	9/64	-	1 1/2	1/8
-	WGE504A003-3	3/64	9/64	-	3	1/8
-	WGE514A0030500-3	3/64	9/64	1/2	3	1/8
-	WGE514A0030750-3	3/64	9/64	3/4	3	1/8
-	WGE504A004	1/16	3/16	-	1 1/2	1/8
-	WGE514A0040500-2SP	1/16	3/16	1/2	2	1/8
-	WGE504A004-3	1/16	3/16	-	3	1/8
-	WGE514A0040500-3	1/16	3/16	1/2	3	1/8
-	WGE514A0040750-3	1/16	3/16	3/4	3	1/8
-	WGE514A0041000-3	1/16	3/16	1	3	1/8
-	WGE504A005	5/64	1/4	-	1 1/2	1/8
-	WGE504A005-3	5/64	1/4	-	3	1/8
-	WGE524A006	3/32	3/32	-	3	1/8
-	WGE534A0060344-3	3/32	3/32	11/32	3	1/8
-	WGE514A0060500-3	3/32	9/32	1/2	3	1/8
-	WGE514A0061000-3	3/32	9/32	1	3	1/8
-	WGE504A006	3/32	3/8	-	1 1/2	1/8
-	WGE504A006-3	3/32	3/8	-	3	1/8
-	WGE524A008	1/8	1/8	-	3	1/8
-	WGE534A0080625-3	1/8	1/8	5/8	3	1/8
-	WGE504A008-3	1/8	3/8	-	3	1/8
-	WGE514A0080625-3	1/8	3/8	5/8	3	1/8
-	WGE514A0080875-3	1/8	3/8	7/8	3	1/8

Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
All										○	○									◎	

ZAMUS GRA MATE > INCH

ZAMUS GRA MATE

WGE5xxA Series

EDP NO.		Cutting Diameter (inch)	Cutting Length (inch)	Neck Length (inch)	Overall Length (inch)	Shank Diameter (inch)
2 Flute	4 Flute					
CVD	CVD					
Helix 30°	Helix 30°					
WGE502A	WGE504A	D1	L1	L2	L3	D2
-	WGE514A					
-	WGE524A					
-	WGE534A					
-	WGE514A0081000-3	1/8	3/8	1	3	1/8
-	WGE504A008	1/8	1/2	-	1 1/2	1/8
-	WGE534A0120750-3	3/16	3/16	3/4	3	3/16
-	WGE514A0120750-3	3/16	1/2	3/4	3	3/16
-	WGE504A012	3/16	5/8	-	2	3/16
-	WGE514A0121875-4	3/16	3/4	1 7/8	4	3/16
-	WGE534A0160750-4	1/4	1/4	3/4	4	1/4
-	WGE504A016	1/4	3/4	-	2 1/2	1/4
-	WGE514A0162500-4	1/4	1	2 1/2	4	1/4
-	WGE514A0162500-6	1/4	1 1/2	2 1/2	6	1/4
-	WGE524A0200812-4	5/16	5/16	13/16	4	5/16
-	WGE534A0200812-4	5/16	5/16	13/16	4	5/16
-	WGE504A020	5/16	7/8	-	2 1/2	5/16
-	WGE534A0241125-4	3/8	3/8	1 1/8	4	3/8
-	WGE504A024	3/8	7/8	-	2 1/2	3/8
-	WGE504A024-4	3/8	1 3/8	-	4	3/8
-	WGE514A024-4	3/8	1 3/8	-	4	3/8
-	WGE504A024-6	3/8	1 3/8	-	6	3/8
-	WGE514A024-6	3/8	1 3/8	-	6	3/8
-	WGE534A0321500-6	1/2	1/2	1 1/2	6	1/2
-	WGE504A032	1/2	1	-	3	1/2
-	WGE504A032-6	1/2	1 3/8	-	6	1/2
-	WGE504A032-4	1/2	2	-	4	1/2

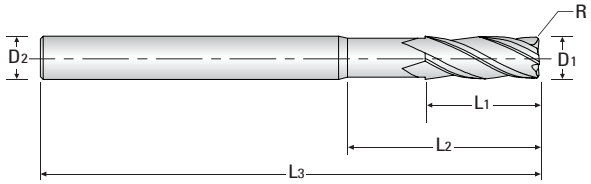
NOTE:
Effective July 2018 all Inch and Metric Diamond Tools will have a maximum of 1" of effective flute length coated with good USABLE CVD diamond coating.
If required, over 1" can be coated with a good USABLE diamond at a significantly higher cost and lead time.
All tools in the ZAMUS GRA MATE catalog (Ver. 1) except ball end will continue to have all effective flutes covered the full length stated even if in excess of 1".

MG FINE GRAIN | Slotting | Side milling

ZAMUS GRA MATE

WGR5xxA, WGNR5xxA Series

CORNER RADIUS / 4 FLUTES / WITH & WITHOUT REACH / CVD COATING



TOLERANCE (inch)

D_1 = +0 / -0.0008 (up to 1/8)
D_1 = +0 / -0.0012 (3/16 to 1/2)
D_2 = h6
L_1 = ±0.060 L_3 = ±0.060
R = ±0.010 (D1 ≤ 1/2)
R = ±0.015 (D1 > 1/2)

HARDNESS (HRc)

for GRAPHITE

EDP NO. 4 Flute CVD Helix 30°	Cutting Diameter (inch)	Corner Radius (inch)	Cutting Length (inch)	Neck Length (inch)	Overall Length (inch)	Shank Diameter (inch)
WGR504A WGR514A WGR524A WGR534A WGNR504A	D1	R	L1	L2	L3	D2
WGR504A002	1/32	0.005	3/32	-	1 1/2	1/8
WGR514A0020312-2-005SP	1/32	0.005	3/32	5/16	2	1/8
WGR514A0020500-2-005SP	1/32	0.005	3/32	1/2	2	1/8
WGR504A00201SP	1/32	0.005	3/32	-	2	1/8
WGR514A0020312-3-005	1/32	0.005	3/32	5/16	3	1/8
WGR514A0020375-3-005	1/32	0.005	3/32	3/8	3	1/8
WGR514A0020500-3-005	1/32	0.005	3/32	1/2	3	1/8
WGR504A002-3-005	1/32	0.005	3/32	-	3	1/8
WGR514A0030750-1.5-010SP	3/64	0.010	9/64	3/4	1 1/2	1/8
WGR504A003	3/64	0.010	9/64	-	1 1/2	1/8
WGR514A0030312-3-010	3/64	0.010	9/64	5/16	3	1/8
WGR514A0030500-3-010	3/64	0.010	9/64	1/2	3	1/8
WGR514A0030750-3-010	3/64	0.010	9/64	3/4	3	1/8
WGNR504A00401SP1	1/16	0.010	3/32	1/2	2 1/2	1/8
WGR514A0040625-2.5-010SP	1/16	0.010	3/32	5/8	2 1/2	1/8
WGR504A004010	1/16	0.010	3/16	-	1 1/2	1/8
WGR504A00401SP	1/16	0.010	3/16	1/2	2	1/8
WGR514A0040500-2-010SP	1/16	0.010	3/16	1/2	2	1/8
WGR514A0040650-2-010SP	1/16	0.010	3/16	13/20	2	1/8
WGR514A0040750-2-010SP	1/16	0.010	3/16	3/4	2	1/8
WGR514A0040800-2-010SP	1/16	0.010	3/16	4/5	2	1/8
WGR514A0040500-3-010	1/16	0.010	3/16	1/2	3	1/8
WGR514A0040750-3-010	1/16	0.010	3/16	3/4	3	1/8
WGR514A0041000-3-010	1/16	0.010	3/16	1	3	1/8
WGR504A005	5/64	0.010	1/4	-	1 1/2	1/8
WGR514A0050750-3-010	5/64	0.010	1/4	3/4	3	1/8
WGR514A0060500-3-010	3/32	0.010	9/32	1/2	3	1/8
WGR514A0061000-3-010	3/32	0.010	9/32	1	3	1/8
WGR504A006010	3/32	0.010	3/8	-	1 1/2	1/8
WGR534A0080625-3-015	1/8	0.015	1/8	5/8	3	1/8

Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
All										○	○									◎	

ZAMUS GRA MATE

WGR5xxA, WGNR5xxA Series

>>Continue

EDP NO. 4 Flute CVD Helix 30°	Cutting Diameter (inch)	Corner Radius (inch)	Cutting Length (inch)	Neck Length (inch)	Overall Length (inch)	Shank Diameter (inch)
WGR504A WGR514A WGR524A WGR534A WGNR504A	D1	R	L1	L2	L3	D2
WGR534A0080625-3-030	1/8	0.030	1/8	5/8	3	1/8
WGR534A0081500-3-015	1/8	0.015	1/8	1 1/2	3	1/8
WGR524A0080625-3-015SP	1/8	0.015	1/8	-	3	1/8
WGR524A0080625-3-030SP	1/8	0.030	1/8	-	3	1/8
WGR534A0081000-4-015	1/8	0.015	1/8	1	4	1/8
WGR504A008	1/8	0.015	3/8	-	1 1/2	1/8
WGR514A0080625-3-015	1/8	0.015	3/8	5/8	3	1/8
WGR514A0080625-3-030SP	1/8	0.030	3/8	5/8	3	1/8
WGR514A0081000-3-020	1/8	0.020	3/8	1	3	1/8
WGR514A0081000-3-030	1/8	0.030	3/8	1	3	1/8
WGR504A008015	1/8	0.015	1/2	-	1 1/2	1/8
WGR504A00801SP	1/8	0.030	1/2	5/8	3	1/8
WGR534A0120750-3-015	3/16	0.015	3/16	3/4	3	3/16
WGR534A0120750-3-030	3/16	0.030	3/16	3/4	3	3/16
WGR514A0121500-4-020SP	3/16	0.020	3/8	1 1/2	4	3/16
WGR504A012	3/16	0.020	1/2	-	2	3/16
WGR514A0120750-3-020	3/16	0.020	1/2	3/4	3	3/16
WGR514A0120750-3-030SP	3/16	0.030	1/2	3/4	3	3/16
WGR514A0120750-3-060SP	3/16	0.060	1/2	3/4	3	3/16
WGR514A0120750-4-020	3/16	0.020	1/2	3/4	4	3/16
WGR504A012020	3/16	0.020	5/8	-	2	3/16
WGR534A0160750-4-015	1/4	0.015	1/4	3/4	4	1/4
WGR534A0160750-4-030	1/4	0.030	1/4	3/4	4	1/4
WGR534A0162000-4-015	1/4	0.015	1/4	2	4	1/4
WGR524A016-4-020SP	1/4	0.020	1/4	-	4	1/4
WGR504A01601SP	1/4	0.060	3/4	1	2 1/2	1/4
WGR514A0161000-2.5-060SP	1/4	0.060	3/4	1	2 1/2	1/4
WGR504A016020	1/4	0.020	3/4	-	2 1/2	1/4
WGR514A0161000-4-060SP	1/4	0.060	3/4	1	4	1/4
WGR514A0162500-4-015	1/4	0.015	1	2 1/2	4	1/4
WGR514A0162500-4-020	1/4	0.020	1	2 1/2	4	1/4
WGR514A0162500-4-030	1/4	0.030	1	2 1/2	4	1/4
WGR504A020020	5/16	0.020	7/8	-	2 1/2	5/16
WGR534A0241125-4-015	3/8	0.015	3/8	1 1/8	4	3/8
WGR534A0241125-4-030	3/8	0.030	3/8	1 1/8	4	3/8
WGR524A024-4-015SP	3/8	0.015	3/8	-	4	3/8
WGR524A024-4-020SP	3/8	0.020	3/8	-	4	3/8
WGR524A024-6-015SP	3/8	0.015	3/8	-	6	3/8
WGR524A024-6-020SP	3/8	0.020	3/8	-	6	3/8
WGR504A024020	3/8	0.020	7/8	-	2 1/2	3/8
WGR504A024-4-020	3/8	0.020	1 3/8	-	4	3/8

ZAMUS GRA MATE

WGR5xxA, WGNR5xxA Series

EDP NO. 4 Flute CVD Helix 30°	Cutting Diameter (inch)	Corner Radius (inch)	Cutting Length (inch)	Neck Length (inch)	Overall Length (inch)	Shank Diameter (inch)
WGR504A WGR514A WGR524A WGR534A WGNR504A	D1	R	L1	L2	L3	D2
WGR504A024-4-030	3/8	0.030	1 3/8	-	4	3/8
WGR534A0321500-6-015	1/2	0.015	1/2	1 1/2	6	1/2
WGR534A0321500-6-030	1/2	0.030	1/2	1 1/2	6	1/2
WGR504A032030	1/2	0.030	1	-	3	1/2
WGR504A032-3-060	1/2	0.060	1	-	3	1/2
WGR504A032-6-030	1/2	0.030	1 3/8	-	6	1/2
WGR514A0321875-3-060SP	1/2	0.060	1 1/2	1 7/8	3	1/2
WGR514A0321875-4-060SP	1/2	0.060	1 1/2	1 7/8	4	1/2
WGR514A0321875-6-060SP	1/2	0.060	1 1/2	1 7/8	6	1/2
WGR504A032-4-030	1/2	0.030	2	-	4	1/2

NOTE:
Effective July 2018 all Inch and Metric Diamond Tools will have a maximum of 1" of effective flute length coated with good USABLE CVD diamond coating.
If required, over 1" can be coated with a good USABLE diamond at a significantly higher cost and lead time.
All tools in the ZAMUS GRA MATE catalog (Ver. 1) except ball end will continue to have all effective flutes covered the full length stated even if in excess of 1".

MATERIAL : GRAPHITE

Endmill dia.(Inch)	Machine speed(rpm)	Cutting speed(sfm)	Operation	Feedipt rate(ipt)
1/64	20,000 ~ 40,000	80 ~ 160	Finishing	0.0002 ~ 0.0005
1/32	18,000 ~ 40,000	150 ~ 300	Finishing	0.0005 ~ 0.001
1/16	12,000 ~ 40,000	175 ~ 600	General	0.001 ~ 0.002
1/16	12,000 ~ 40,000	175 ~ 600	Finishing	0.0005 ~ 0.001
1/8	6,000 ~ 40,000	200 ~ 1325	General	0.001 ~ 0.002
1/8	6,000 ~ 40,000	200 ~ 1325	Finishing	0.0005 ~ 0.001
3/16	4,000 ~ 40,000	200 ~ 1800	General	0.001 ~ 0.002
3/16	4,000 ~ 40,000	200 ~ 1800	Finishing	0.0005 ~ 0.001
1/4	3,000 ~ 36,700	200 ~ 2350	General	0.002 ~ 0.004
1/4	3,000 ~ 36,700	200 ~ 2350	Finishing	0.001 ~ 0.002
5/16	2,500 ~ 31,800	200 ~ 2600	General	0.002 ~ 0.004
5/16	2,500 ~ 31,800	200 ~ 2600	Finishing	0.001 ~ 0.002
3/8	2,000 ~ 28,500	200 ~ 2.800	General	0.003 ~ 0.005
3/8	2,000 ~ 28,500	200 ~ 2.800	Finishing	0.001 ~ 0.003
1/2	1,500 ~ 23,000	200 ~ 3,000	General	0.003 ~ 0.005
1/2	1,500 ~ 23,000	200 ~ 3,000	Finishing	0.001 ~ 0.003

MATERIAL : GREEN CERAMIC

Endmill dia.(Inch)	Machine speed(rpm)	Cutting speed(sfm)	Operation	Feedipt rate(ipt)
1/64	6,000 ~ 19,500	25 ~ 70	Finishing	0.0002 ~ 0.0005
1/32	6,000 ~ 19,500	50 ~ 150	Finishing	0.0005 ~ 0.001
1/16	6,000 ~ 19.500	100 ~ 300	General	0.001 ~ 0.002
1/16	6,000 ~ 19.500	100 ~ 300	Finishing	0.0005 ~ 0.001
1/8	4,800 ~ 16,000	200 ~ 700	General	0.001 ~ 0.002
1/8	4,800 ~ 16,000	200 ~ 700	Finishing	0.0005 ~ 0.001
3/16	4,100 ~ 15,000	200 ~ 700	General	0.001 ~ 0.002
3/16	4,100 ~ 15,000	200 ~ 700	Finishing	0.0005 ~ 0.001
1/4	3,000 ~ 12,000	200 ~ 800	General	0.002 ~ 0.004
1/4	3,000 ~ 12,000	200 ~ 800	Finishing	0.001 ~ 0.002
5/16	2,500 ~ 11,000	200 ~ 900	General	0.002 ~ 0.004
5/16	2,500 ~ 11,000	200 ~ 900	Finishing	0.001 ~ 0.002
3/8	2,000 ~ 10,800	200 ~ 1,000	General	0.003 ~ 0.005
3/8	2,000 ~ 10,800	200 ~ 1,000	Finishing	0.001 ~ 0.003
1/2	1,500 ~ 10,000	200 ~ 1,300	General	0.003 ~ 0.005
1/2	1,500 ~ 10,000	200 ~ 1,300	Finishing	0.001 ~ 0.003

MATERIAL : GLASS FIBER PRODUCTS

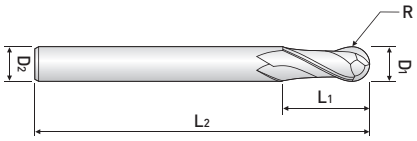
Endmill dia.(Inch)	Machine speed(rpm)	Cutting speed(sfm)	Operation	Feedipt rate(ipt)
1/16	3,700 ~ 7,300	60 ~ 120	General	0.001 ~ 0.002
1/16	5,200 ~ 10,400	85 ~ 170	Finishing	0.0005 ~ 0.001
1/8	3,600 ~ 7,300	120 ~ 240	General	0.0005 ~ 0.001
1/8	5,200 ~ 9,200	170 ~ 300	Finishing	0.00025 ~ 0.005
3/16	4,100 ~ 7,100	200 ~ 350	General	0.001 ~ 0.002
3/16	6,100 ~ 10,200	300 ~ 500	Finishing	0.0005 ~ 0.001
1/4	4,600 ~ 6,900	300 ~ 450	General	0.001 ~ 0.002
1/4	5,300 ~ 8,400	350 ~ 550	Finishing	0.0005 ~ 0.001
5/16	4,300 ~ 6,100	350 ~ 500	General	0.001 ~ 0.002
5/16	4,300 ~ 7,300	350 ~ 600	Finishing	0.0005 ~ 0.001
3/8	4,100 ~ 5,600	400 ~ 550	General	0.002 ~ 0.004
3/8	3,500 ~ 6,600	350 ~ 650	Finishing	0.001 ~ 0.002
1/2	3,400 ~ 4,600	450 ~ 600	General	0.002 ~ 0.004
1/2	2,600 ~ 5,700	350 ~ 750	Finishing	0.001 ~ 0.002

MG FINE GRAIN | Plunge | Profile

GENERAL PURPOSE

BA3xx, ZB3xx Series

BALL / 2 & 4 FLUTE / STUB, REGULAR & X-LONG /
BRIGHT & AlTiN COATING



TOLERANCE (inch)

D_1 = +0 / -0.0012 (BA302, ZB302S)
D_1 = +0 / -0.002
D_2 = h6

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO.					Cutting Diameter (inch)	Cutting Length (inch)	Overall Length (inch)	Shank Diameter (inch)
2 Flute			4 Flute					
Bright	AlTiN		Bright	AlTiN				
Helix 30°	Helix 30°		Helix 30°	Helix 30°				
BA302	ZB302	ZB302S	BA304	ZB304	D1	L1	L2	D2
BA302001	ZB302001	-	BA304001	ZB304001	1/64	1/32	1 1/2	1/8
-	-	ZB302002S	-	-	1/32	1/32	1 1/2	1/8
BA302002	ZB302002	-	BA304002	ZB304002	1/32	5/64	1 1/2	1/8
BA302003	ZB302003	-	BA304003	ZB304003	3/64	7/64	1 1/2	1/8
-	-	ZB302004S	-	-	1/16	1/16	1 1/2	1/8
BA302004	ZB302004	-	BA304004	ZB304004	1/16	3/16	1 1/2	1/8
BA302005	ZB302005	-	BA304005	ZB304005	5/64	1/4	1 1/2	1/8
-	-	ZB302006S	-	-	3/32	3/32	1 1/2	1/8
BA302006	ZB302006	-	BA304006	ZB304006	3/32	5/16	1 1/2	1/8
BA302007	ZB302007	-	BA304007	ZB304007	7/64	3/8	1 1/2	1/8
-	-	ZB302008S	-	-	1/8	5/16	1 1/2	1/8
BA302008	ZB302008	-	BA304008	ZB304008	1/8	1/2	2	1/8
-	-	-	BA304008L	ZB304008L	1/8	3/4	2 1/4	1/8
BA302008X	ZB302008X	-	BA304008X	ZB304008X	1/8	1	3	1/8
BA302009	ZB302009	-	BA304009	ZB304009	9/64	1/2	2	3/16
BA302010	ZB302010	-	BA304010	ZB304010	5/32	9/16	2	3/16
BA302011	ZB302011	-	BA304011	ZB304011	11/64	9/16	2	3/16
-	-	ZB302012S	-	-	3/16	3/8	2	3/16
BA302012	ZB302012	-	BA304012	ZB304012	3/16	5/8	2	3/16
BA302012X	ZB302012X	-	BA304012X	ZB304012X	3/16	1 1/8	3	3/16
BA302012LS	ZB302012LS	-	BA304012LS	ZB304012LS	3/16	1 1/2	4	3/16
BA302013	ZB302013	-	BA304013	ZB304013	13/64	5/8	2 1/2	1/4
BA302014	ZB302014	-	BA304014	ZB304014	7/32	5/8	2 1/2	1/4
BA302015	ZB302015	-	BA304015	ZB304015	15/64	3/4	2 1/2	1/4
-	-	ZB302016S	-	-	1/4	1/2	2 1/2	1/4
BA302016	ZB302016	-	BA304016	ZB304016	1/4	3/4	2 1/2	1/4
BA302016X	ZB302016X	-	BA304016X	ZB304016X	1/4	1 1/2	4	1/4
BA302016LS	ZB302016LS	-	BA304016LS	ZB304016LS	1/4	1 1/2	6	1/4
BA302018	ZB302018	-	BA304018	ZB304018	9/32	3/4	2 1/2	5/16
-	-	ZB302020S	-	-	5/16	9/16	2 1/2	5/16
BA302020	ZB302020	-	BA304020	ZB304020	5/16	13/16	2 1/2	5/16
BA302020X	ZB302020X	-	BA304020X	ZB304020X	5/16	1 5/8	4	5/16
BA302022	ZB302022	-	BA304022	ZB304022	11/32	7/8	2 1/2	3/8
-	-	ZB302024S	-	-	3/8	3/4	3	3/8
BA302024M	-	-	-	-	3/8	1	2 1/2	3/8

Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
BA Series	○	○	○	○	○	○															
ZB Series	◎	◎	◎	◎	◎	○								◎	○						

GENERAL PURPOSE

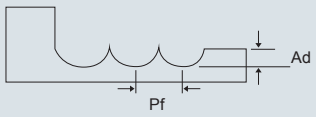
BA3xx, ZB3xx Series

EDP NO.					Cutting Diameter (inch)	Cutting Length (inch)	Overall Length (inch)	Shank Diameter (inch)
2 Flute			4 Flute					
Bright	AlTiN		Bright	AlTiN				
Helix 30°	Helix 30°		Helix 30°	Helix 30°				
BA302	ZB302	ZB302S	BA304	ZB304	D1	L1	L2	D2
BA302024	ZB302024	-	BA304024	ZB304024	3/8	1	3	3/8
-	-	-	BA304024L	-	3/8	1 1/8	3 1/2	3/8
BA302024X	ZB302024X	-	BA304024X	ZB304024X	3/8	1 3/4	4	3/8
BA302024LS	ZB302024LS	-	BA304024LS	ZB304024LS	3/8	2	6	3/8
BA302026	ZB302026	-	BA304026	ZB304026	13/32	1	3	7/16
BA302028	ZB302028	-	BA304028	ZB304028	7/16	1	3	7/16
BA302028X	ZB302028X	-	BA304028X	ZB304028X	7/16	2	6	7/16
BA302030	ZB302030	-	BA304030	ZB304030	15/32	1	3	1/2
-	-	ZB302032S	-	-	1/2	7/8	3	1/2
BA302032	ZB302032	-	BA304032	ZB304032	1/2	1	3	1/2
BA302032X	ZB302032X	-	BA304032X	ZB304032X	1/2	2	6	1/2
BA302032LS	ZB302032LS	-	BA304032LS	ZB304032LS	1/2	3	6	1/2
BA302036	ZB302036	-	BA304036	ZB304036	9/16	1 1/8	3 1/2	9/16
-	-	ZB302040S	-	-	5/8	1	3 1/2	5/8
BA302040	ZB302040	-	BA304040	ZB304040	5/8	1 1/4	3 1/2	5/8
BA302040X	ZB302040X	-	BA304040X	ZB304040X	5/8	3	6	5/8
BA302044	ZB302044	-	BA304044	ZB304044	11/16	1 3/8	4	3/4
-	-	ZB302048S	-	-	3/4	1	4	3/4
BA302048	ZB302048	-	BA304048	ZB304048	3/4	1 1/2	4	3/4
-	-	-	BA304048LSS	-	3/4	1 1/2	6	3/4
BA302048X	ZB302048X	-	BA304048X	ZB304048X	3/4	3	6	3/4
BA302056	ZB302056	-	BA304056	ZB304056	7/8	1 1/2	4	7/8
-	-	ZB302064S	-	-	1	1	4	1
BA302064	ZB302064	-	BA304064	ZB304064	1	1 1/2	4	1
BA302064X	ZB302064X	-	BA304064X	ZB304064X	1	3	6	1

BA302, BA304 Series

Work Material	Cast Iron		Mild Steels Carbon Steels		Alloy Steels, Tool Steels, Ti Steels(Annealed)		Hardened Steels, Prehardened Steels, Ti, Alloys(Solution Treated & Aged)		Hardened Steels, Prehardened Steels, Stainless Steels, Inconel, Ni Bases Alloys		Aluminum Alloys	
Hardness	-		-		≤ 30 HRc		30 ~ 38 HRc		38 ~ 45 HRc		38 ~ 45 HRc	
Strength	-		Up to 108,779lbf / inch²		-		-		-		-	
Cutting Diameter(inch)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/32	19,600	4.8	19,600	4.5	14,680	2.5	12,200	1.2	9,780	0.9	50,000	6.8
3/64	14,140	5.2	14,140	4.8	10,305	3.0	8,620	1.5	6,885	1.0	35,535	8.0
1/16	11,115	5.8	11,115	5.1	8,045	3.4	6,720	1.7	5,360	1.2	29,585	9.8
5/64	8,090	6.3	8,090	5.4	5,780	3.7	4,810	1.8	3,840	1.4	23,630	11.7
3/32	6,970	6.5	6,970	5.7	4,965	3.9	4,140	1.9	3,290	1.4	20,420	11.8
7/64	5,920	6.7	5,920	6.0	4,205	4.1	3,520	1.9	2,795	1.4	17,325	11.8
1/8	5,090	7.2	5,090	6.1	3,610	4.3	3,030	1.9	2,400	1.4	14,945	11.8
9/64	4,545	7.9	4,545	6.2	3,225	4.3	2,690	1.9	2,140	1.4	13,470	11.8
5/32	4,000	8.6	4,000	6.3	2,850	4.3	2,360	1.9	1,875	1.4	11,990	11.8
11/64	3,670	9.2	3,670	6.6	2,620	4.3	2,160	1.9	1,725	1.4	11,020	12.7
3/16	3,360	9.6	3,360	6.9	2,405	4.4	1,970	1.9	1,580	1.4	10,090	13.6
13/64	3,090	10.1	3,090	7.1	2,205	4.4	1,810	1.9	1,455	1.4	9,275	14.2
7/32	2,870	10.4	2,870	7.1	2,045	4.3	1,690	1.9	1,360	1.4	8,630	14.2
1/4	2,520	11.3	2,520	6.9	1,775	4.2	1,490	1.9	1,205	1.4	7,570	14.6
9/32	2,260	12.5	2,260	6.4	1,580	4.1	1,350	1.9	1,080	1.4	6,785	15.5
5/16	1,995	13.6	1,995	5.9	1,390	4.0	1,200	1.9	960	1.4	6,000	16.4
11/32	1,820	13.7	1,820	5.8	1,290	4.0	1,100	1.9	880	1.4	5,495	16.5
3/8	1,655	13.7	1,655	5.7	1,200	4.0	1,005	1.9	800	1.4	5,020	16.5
13/32	1,515	13.7	1,515	5.6	1,110	3.9	920	1.9	735	1.4	4,610	16.9
7/16	1,420	13.7	1,420	5.4	1,030	3.7	855	1.9	690	1.4	4,300	17.8
1/2	1,250	13.7	1,250	5.2	900	3.5	750	1.9	600	1.4	3,750	18.9
9/16	1,120	13.9	1,120	5.2	795	3.5	660	1.9	530	1.4	3,290	18.5
5/8	1,005	13.9	1,005	5.2	720	3.5	590	1.9	470	1.4	2,960	16.7
11/16	915	13.9	915	5.2	650	3.5	540	1.9	430	1.4	2,715	16.5
3/4	820	12.9	820	5.2	580	3.5	485	1.9	380	1.4	2,415	16.5
7/8	710	11.2	710	5.2	510	3.5	425	1.8	335	1.4	2,100	16.5
1	630	9.8	630	5.1	440	3.5	370	1.6	300	1.4	1,830	16.3

RPM = rev. / min.
FEED = inch / min.



R	Ad	pf
D 〈 1/8	0.1D	0.2D
1/8≤ D	0.3D	0.7D

Note

• for 2Flute

- Reduce Speeds & Feeds 25% for 2FL. Ball nose Long length
- Reduce Speeds & Feeds 50% for 2FL. Ball nose Extra Long length

• for 4Flute

- Increase Speeds & Feeds 40% for 4FL. Ball nose Standard & Stub length
- Reduce Speeds 25% & Increase Feeds 10% for 4FL. Ball nose Long length

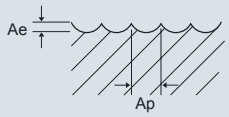
ZB302, ZB302S Series

General Speed Cutting

Work Material	Non-Alloyed Steels, Alloy Steels, Cast Iron		Alloy Steels, Heat Resistant Steels		Hardened Steels	
Hardness	≤ 30 HRc		30 ~ 40 HRc		45 ~ 65 HRc	
Strength	~ 145,038lbf / inch²		145,038 ~ 181,298lbf / inch²		217,557lbf / inch²	
Cutting Diameter(inch)	RPM	FEED	RPM	FEED	RPM	FEED
1/32	15,760	9.80	12,720	7.80	5,800	3.80
1/16	15,760	13.80	12,140	1.60	5,320	4.70
3/32	14,400	29.50	10,700	19.30	4,680	5.90
1/8	13,100	26.70	10,000	18.10	4,520	5.90
3/16	9,140	32.30	7,300	22.80	3,680	7.10
1/4	7,780	33.00	6,300	24.80	3,160	7.50
5/16	5,260	37.50	4,420	26.00	2,100	7.50
3/8	4,620	40.10	3,780	28.00	1,780	7.50
1/2	3,780	35.40	2,940	26.00	1,360	7.50
5/8	2,740	36.20	2,320	26.00	1,160	7.50
3/4	2,100	33.00	1,900	25.00	840	7.50

RPM = rev. / min.
FEED = inch / min.

Ae: D1/32~D1/4=.008 inch
D5/16~D3/4=.012 inch
Ap: 0.2 X D



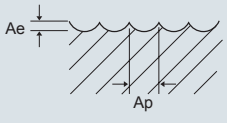
Ae: D1/32~D1/4=.008 inch
D5/16~D3/4=.012 inch
Ap: 0.1 X D

High Speed Cutting

Work Material	Non-Alloyed Steels, Alloy Steels, Cast Iron		Hardened Steels	
Hardness	≤ 45 HRc		45 ~ 65 HRc	
Strength	~ 217,557lbf / inch²		217,557lbf / inch²	
Cutting Diameter(inch)	RPM	FEED	RPM	FEED
1/32	25,000	25.60	25,000	15.70
1/16	23,000	27.50	23,000	16.90
3/32	21,000	34.60	19,000	19.30
1/8	21,000	39.40	17,000	20.50
3/16	21,000	70.90	12,000	23.60
1/4	21,000	90.90	10,500	24.80
5/16	15,760	111.80	7,880	29.10
3/8	13,660	120.00	6,300	33.00
1/2	10,500	103.50	5,260	33.00
5/8	8,200	103.50	3,780	28.00
3/4	6,300	99.00	2,940	20.80

RPM = rev. / min.
FEED = inch / min.

Ae: D1/32~D1/4=.008 inch
D5/16~D3/4=.012 inch
Ap: 0.05 X D



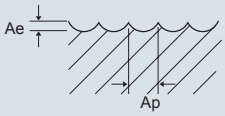
ZB304 Series

General Speed Cutting

Work Material	Carbon Steels, Alloy Steels, Cast Iron		Alloy Steels, Tool Steels		Hardened Steels	
Hardness	≤ 30 HRc		30 ~ 40 HRc		45 ~ 65 HRc	
Strength	~ 145,038lbf / inch²		145,038 ~ 181,298lbf / inch²		217,557lbf / inch²	
Cutting Diameter(inch)	RPM	FEED	RPM	FEED	RPM	FEED
1/8	13,100	40.10	10,000	27.00	4,520	8.85
3/16	9,140	48.50	7,300	34.00	3,680	10.50
1/4	7,780	49.50	6,300	37.00	3,160	11.25
5/16	5,260	56.00	4,420	39.00	2,100	11.25
3/8	4,620	60.00	3,780	42.00	1,780	11.25
1/2	3,780	53.00	2,940	39.00	1,360	11.25
5/8	2,740	54.50	2,320	38.50	1,160	11.25

RPM = rev. / min.
FEED = inch / min.

Ae: D1/8~D1/4=.008 inch
D5/16~D5/8=.012 inch
Ap: 0.02 X D



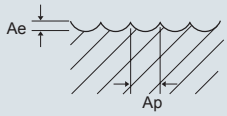
Ae: D1/8~D1/4=.008 inch
D5/16~D5/8=.012 inch
Ap: 0.1 X D

High Speed Cutting

Work Material	Carbon Steels, Alloy Steels, Cast Iron		Hardened Steels	
Hardness	≤ 45 HRc		45 ~ 65 HRc	
Strength	~ 217,557lbf / inch²		217,557lbf / inch²	
Cutting Diameter(inch)	RPM	FEED	RPM	FEED
R1/16 X 1/8	21,000	59.00	17,000	30.50
R3/32 X 3/16	21,000	106.25	12,000	35.50
R1/8 X 1/4	21,000	136.50	10,500	37.00
R5/32 X 5/16	15,760	167.50	7,800	43.50
R3/16 X 3/8	13,660	180.00	6,300	49.50
R1/4 X 1/2	10,500	155.50	5,260	49.50
R5/16 X 5/8	8,200	155.50	3,780	42.00

RPM = rev. / min.
FEED = inch / min.

Ae: D1/8~D1/4=.008 inch
D5/16~D5/8=.012 inch
Ap: 0.05 X D

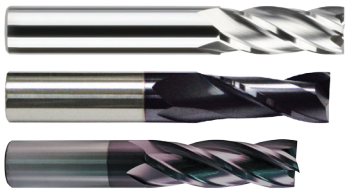


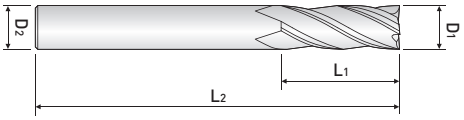
GENERAL PURPOSE

EA3xx, ZA3xx Series

MG FINE GRAIN | Slotting | Side milling

SQUARE / 2 & 4 FLUTE / STUB, REGULAR, LONG & X-LONG /
BRIGHT & AlTiN COATING

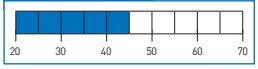




TOLERANCE (inch)

D_1 = +0 / -0.002
D_2 = h6

HARDNESS (HRc)



EDP NO.				Cutting Diameter (inch)	Cutting Length (inch)	Overall Length (inch)	Shank Diameter (inch)
2 Flute		4 Flute					
Bright	AlTiN	Bright	AlTiN				
Helix 30°	Helix 30°	Helix 30°	Helix 30°				
EA302	ZA302	EA304	ZA304	D1	L1	L2	D2
EA302001	ZA302001	EA304001	ZA304001	1/64	1/32	1 1/2	1/8
EA302002	ZA302002	EA304002	ZA304002	1/32	5/64	1 1/2	1/8
EA302003	ZA302003	EA304003	ZA304003	3/64	7/64	1 1/2	1/8
-	-	EA304004S	ZA304004S	1/16	1/8	1 1/2	1/8
EA302004	ZA302004	EA304004	ZA304004	1/16	3/16	1 1/2	1/8
-	-	EA304004L	-	1/16	1/4	1 1/2	1/8
EA302005	ZA302005	EA304005	ZA304005	5/64	1/4	1 1/2	1/8
-	-	EA304006S	ZA304006S	3/32	3/16	1 1/2	1/8
EA302006	ZA302006	EA304006	ZA304006	3/32	5/16	1 1/2	1/8
EA302007	ZA302007	EA304007	ZA304007	7/64	3/8	1 1/2	1/8
EA302008S	ZA302008S	EA304008S	ZA304008S	1/8	1/4	1 1/2	1/8
EA302008	ZA302008	EA304008	ZA304008	1/8	1/2	2	1/8
EA302008L	ZA302008L	EA304008L	ZA304008L	1/8	3/4	2 1/4	1/8
EA302008X	ZA302008X	EA304008X	ZA304008X	1/8	1	3	1/8
EA302009	ZA302009	EA304009	ZA304009	9/64	1/2	2	3/16
-	-	EA304010S	ZA304010S	5/32	5/16	2	3/16
EA302010	ZA302010	EA304010	ZA304010	5/32	9/16	2	3/16
EA302011	ZA302011	EA304011	ZA304011	11/64	9/16	2	3/16
EA302012S	ZA302012S	EA304012S	ZA304012S	3/16	3/8	2	3/16
EA302012	ZA302012	EA304012	ZA304012	3/16	5/8	2	3/16
EA302012L	ZA302012L	EA304012L	ZA304012L	3/16	3/4	2 1/4	3/16
EA302012X	ZA302012X	EA304012X	ZA304012X	3/16	1 1/8	3	3/16
EA302012LS	ZA302012LS	EA304012LS	ZA304012LS	3/16	1 1/2	4	3/16
EA302013	ZA302013	EA304013	ZA304013	13/64	5/8	2 1/2	1/4
-	-	EA304014S	ZA304014S	7/32	7/16	2	1/4
EA302014	ZA302014	EA304014	ZA304014	7/32	5/8	2 1/2	1/4
EA302015	ZA302015	EA304015	ZA304015	15/64	3/4	2 1/2	1/4
EA302016S	ZA302016S	EA304016S	ZA304016S	1/4	1/2	2 1/2	1/4
EA302016	ZA302016	EA304016	ZA304016	1/4	3/4	2 1/2	1/4
EA302016L	ZA302016L	EA304016L	ZA304016L	1/4	1 1/8	3	1/4
EA302016X	ZA302016X	EA304016X	ZA304016X	1/4	1 1/2	4	1/4
EA302016LS	ZA302016LS	EA304016LS	ZA304016LS	1/4	1 1/2	6	1/4
EA302018	ZA302018	EA304018	ZA304018	9/32	3/4	2 1/2	5/16
EA302020S	ZA302020S	EA304020S	ZA304020S	5/16	1/2	2 1/2	5/16
EA302020	ZA302020	EA304020	ZA304020	5/16	13/16	2 1/2	5/16

Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
EA Series	○	○	○	○	○	○															
ZA Series	◎	◎	◎	◎	◎	○								◎	○						

GENERAL PURPOSE

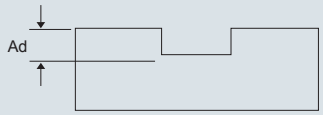
EA3xx, ZA3xx Series

EDP NO.				Cutting Diameter (inch)	Cutting Length (inch)	Overall Length (inch)	Shank Diameter (inch)
2 Flute		4 Flute					
Bright	AlTiN	Bright	AlTiN				
Helix 30°	Helix 30°	Helix 30°	Helix 30°				
EA302	ZA302	EA304	ZA304	D1	L1	L2	D2
EA302020L	ZA302020L	EA304020L	ZA304020L	5/16	1 1/8	3	5/16
EA302020X	ZA302020X	EA304020X	ZA304020X	5/16	1 5/8	4	5/16
EA302022	ZA302022	EA304022	ZA304022	11/32	7/8	2 1/2	3/8
EA302024S	ZA302024S	EA304024S	ZA304024S	3/8	9/16	2 1/2	3/8
-	-	-	ZA304024M	3/8	1	2 1/2	3/8
EA302024	ZA302024	EA304024	ZA304024	3/8	1	3	3/8
EA302024L	ZA302024L	EA304024L	ZA304024L	3/8	1 1/8	3 1/2	3/8
EA302024X	ZA302024X	EA304024X	ZA304024X	3/8	1 3/4	4	3/8
EA302024LS	ZA302024LS	EA304024LS	ZA304024LS	3/8	2	6	3/8
EA302026	ZA302026	EA304026	ZA304026	13/32	1	3	7/16
-	-	EA304028S	ZA304028S	7/16	9/16	2 1/2	7/16
EA302028	ZA302028	EA304028	ZA304028	7/16	1	3	7/16
EA302028L	ZA302028L	EA304028L	ZA304028L	7/16	1 1/2	4	7/16
EA302028X	ZA302028X	EA304028X	ZA304028X	7/16	2	6	7/16
EA302030	ZA302030	EA304030	ZA304030	15/32	1	3	1/2
EA302032S	ZA302032S	EA304032S	ZA304032S	1/2	5/8	3	1/2
EA302032	ZA302032	EA304032	ZA304032	1/2	1	3	1/2
-	-	EA304032F	ZA304032F	1/2	1	3	1/2
EA302032L	ZA302032L	EA304032L	ZA304032L	1/2	1 1/2	4	1/2
-	-	-	ZA304032L1	1/2	1 1/4	4	1/2
EA302032X	ZA302032X	EA304032X	ZA304032X	1/2	2	6	1/2
EA302032LS	ZA302032LS	EA304032LS	ZA304032LS	1/2	3	6	1/2
-	-	-	ZA304032L2	1/2	2	4	1/2
EA302036	ZA302036	EA304036	ZA304036	9/16	1 1/8	3 1/2	9/16
EA302040	ZA302040	EA304040	ZA304040	5/8	1 1/4	3 1/2	5/8
-	-	EA304040F	ZA304040F	5/8	1 1/4	3 1/2	5/8
EA302040L	ZA302040L	EA304040L	ZA304040L	5/8	2 1/4	5	5/8
EA302040X	ZA302040X	EA304040X	ZA304040X	5/8	3	6	5/8
EA302044	ZA302044	EA304044	ZA304044	11/16	1 3/8	4	3/4
EA302048	ZA302048	EA304048	ZA304048	3/4	1 1/2	4	3/4
-	-	EA304048F	-	3/4	1 1/2	4	3/4
EA302048L	ZA302048L	EA304048L	ZA304048L	3/4	2 1/4	5	3/4
-	-	-	ZA304048LF	3/4	2-1/2	5	3/4
EA302048X	ZA302048X	EA304048X	ZA304048X	3/4	3	6	3/4
EA302056	ZA302056	EA304056	ZA304056	7/8	1 1/2	4	7/8
EA302064	ZA302064	EA304064	ZA304064	1	1 1/2	4	1
-	-	EA304064F	-	1	1 1/2	4	1
EA302064L	ZA302064L	EA304064L	ZA304064L	1	2 1/4	5	1
EA302064X	ZA302064X	EA304064X	ZA304064X	1	3	6	1

EA302 Series

Work Material	Cast Iron		Mild Steels Carbon Steels		Alloy Steels, Tool Steels, Ti Steels(Annealed)		Hardened Steels, Prehardened Steels, Ti, Alloys(Solution Treated & Aged)		Hardened Steels, Prehardened Steels, Stainless Steels, Inconel, Ni Bases Alloys		Aluminum Alloys	
Hardness	-		-		≤ 30 HRc		30 ~ 38 HRc		38 ~ 45 HRc		38 ~ 45 HRc	
Strength	-		Up to 108,779lbf / inch²		-		-		-		-	
Cutting Diameter(inch)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/32	20,790	6.6	18,950	4.5	15,900	1.9	13,450	1.4	10,640	1.2	47,700	9.4
3/64	15,225	6.6	13,590	4.5	11,430	1.9	9,660	1.4	7,595	1.2	34,140	9.4
1/16	11,970	6.6	10,660	4.6	9,000	2.0	7,540	1.4	5,925	1.2	26,520	9.4
5/64	8,705	6.6	7,730	4.7	6,570	2.1	5,415	1.4	4,260	1.2	18,900	9.4
3/32	7,480	6.8	6,635	4.7	5,650	2.4	4,650	1.4	3,645	1.2	16,305	9.4
7/64	6,335	6.9	5,610	4.7	4,790	2.6	3,935	1.4	3,075	1.2	13,925	9.4
1/8	5,445	7.1	4,815	4.7	4,125	3.0	3,375	1.4	2,640	1.2	12,060	10.3
9/64	4,870	7.3	4,310	4.7	3,700	3.4	3,020	1.4	2,380	1.2	10,845	12.1
5/32	4,300	7.5	3,815	4.7	3,270	3.7	2,660	1.4	2,115	1.2	9,630	14.0
11/64	3,945	7.6	3,490	4.7	2,990	3.8	2,440	1.4	1,940	1.2	8,835	14.2
3/16	3,615	7.7	3,180	4.7	2,735	3.8	2,225	1.4	1,775	1.2	8,075	14.2
13/64	3,320	8.0	2,920	4.7	2,505	3.8	2,040	1.4	1,630	1.2	7,415	14.2
7/32	3,080	8.6	2,730	4.7	2,345	3.8	1,895	1.4	1,510	1.2	6,915	14.2
1/4	2,690	9.5	2,400	4.7	2,060	3.8	1,660	1.4	1,320	1.2	6,070	14.2
9/32	2,405	10.2	2,140	4.7	1,845	3.8	1,490	1.4	1,185	1.2	5,430	14.2
5/16	2,115	10.8	1,875	4.7	1,630	3.8	1,330	1.4	1,055	1.2	4,785	14.2
11/32	1,940	10.9	1,725	4.7	1,485	3.8	1,220	1.4	970	1.2	4,385	14.2
3/8	1,775	10.9	1,580	4.7	1,340	3.8	1,120	1.4	885	1.2	4,005	14.2
13/32	1,630	10.9	1,455	4.7	1,230	3.8	1,035	1.4	815	1.2	3,680	14.2
7/16	1,510	10.9	1,360	4.7	1,155	3.8	965	1.4	755	1.2	3,440	14.2
1/2	1,310	10.9	1,190	4.7	1,020	3.8	840	1.4	660	1.2	3,010	14.2
9/16	1,175	10.9	1,060	4.7	905	3.8	740	1.4	585	1.2	2,645	14.2
5/8	1,080	11.1	960	4.7	815	3.8	670	1.6	520	1.2	2,355	14.2
11/16	980	11.1	870	4.7	740	3.8	610	1.7	470	1.2	2,160	14.2
3/4	880	11.1	780	4.7	665	3.8	545	1.7	425	1.2	1,920	14.2
7/8	765	11.1	675	4.7	580	3.8	480	1.7	370	1.2	1,660	14.2
1	670	10.9	590	4.7	500	3.8	420	1.7	330	1.2	1,475	14.2

RPM = rev. / min.
FEED = inch / min.



	Ad
D 〈 1/8	0.3D
1/8≤ D	0.5D

Note

• for 2Flute

- Reduce Speeds & Feeds 25% for 2FL. Long length
- Reduce Speeds & Feeds 50% for 2FL. Extra Long length

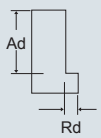
• for Side Milling

- Increase Feeds 25% or More

EA304 Series

Work Material	Cast Iron		Mild Steels Carbon Steels		Alloy Steels, Tool Steels, Ti Steels (Annealed)		Hardened Steels, Prehardened Steels, Ti, Alloys(Solution Treated & Aged)		Hardened Steels, Prehardened Steels, Stainless Steels, Inconel, Ni Bases Alloys		Aluminum Alloys	
Hardness	-		-		≤ 30 HRc		30 ~ 38 HRc		38 ~ 45 HRc		38 ~ 45 HRc	
Strength	-		Up to 108,779lbf / inch^2		-		-		-		-	
Cutting Diameter(inch)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/32	21,150	23.9	23,240	11.8	15,900	10.9	14,600	4.5	12,200	3.5	50,000	39.4
3/64	14,140	23.9	15,680	11.8	11,390	10.9	10,305	4.5	8,145	3.5	40,275	39.4
1/16	11,115	23.9	12,105	11.8	8,895	10.9	8,045	4.5	6,390	3.5	31,710	39.4
5/64	8,090	23.9	8,535	11.8	6,395	10.9	5,780	4.5	4,625	3.5	23,135	39.4
3/32	6,970	23.9	7,320	12.6	5,495	10.9	4,965	4.4	3,960	3.4	19,820	40.6
7/64	5,920	23.9	6,200	13.5	4,660	10.9	4,205	4.3	3,340	3.4	16,725	41.8
1/8	5,090	24.6	5,330	14.4	4,005	10.9	3,610	4.3	2,870	3.3	14,370	42.9
9/64	4,545	26.3	4,785	15.4	3,580	10.9	3,225	4.3	2,585	3.3	12,935	43.8
5/32	4,000	28.0	4,240	16.4	3,150	10.9	2,850	4.3	2,295	3.3	11,505	44.8
11/64	3,670	28.1	3,885	16.9	2,895	11.2	2,620	4.3	2,100	3.3	10,565	45.2
3/16	3,360	28.1	3,555	17.2	2,655	11.6	2,405	4.3	1,910	3.3	9,660	45.6
13/64	3,090	28.1	3,260	17.6	2,445	11.8	2,205	4.3	1,750	3.3	8,880	46.0
7/32	2,870	28.1	3,020	17.9	2,285	11.8	2,045	4.3	1,630	3.3	8,280	46.3
1/4	2,520	28.1	2,640	18.2	2,000	11.8	1,775	4.3	1,430	3.3	7,280	46.8
9/32	2,260	28.1	2,380	18.3	1,785	11.8	1,580	4.3	1,295	3.3	6,520	47.0
5/16	1,995	28.1	2,115	18.4	1,570	11.8	1,390	4.3	1,150	3.3	5,760	47.2
11/32	1,820	28.3	1,940	19.4	1,445	11.8	1,290	4.3	1,055	3.3	5,280	47.2
3/8	1,655	28.6	1,775	20.4	1,325	11.8	1,200	4.3	965	3.3	4,830	47.2
13/32	1,515	28.9	1,630	21.0	1,220	11.8	1,110	4.3	885	3.3	4,430	48.0
7/16	1,420	29.1	1,510	21.1	1,140	11.8	1,035	4.3	825	3.3	4,120	49.8
1/2	1,250	30.9	1,310	22.5	995	12.2	900	4.3	720	3.3	3,585	52.0
9/16	1,120	34.3	1,175	24.9	880	13.1	795	4.3	635	3.3	3,170	52.0
5/8	1,005	35.5	1,055	25.7	790	13.8	720	4.3	570	3.3	2,840	52.0
11/16	915	38.4	960	25.9	720	13.9	650	4.3	515	3.3	2,595	52.0
3/4	820	39.4	860	26.3	640	13.9	580	4.1	465	3.3	2,340	52.0
7/8	710	35.5	750	23.6	560	12.6	510	3.7	405	3.0	2,015	49.1
1	630	31.2	660	20.7	490	10.9	440	3.3	360	2.6	1,775	43.5

RPM = rev. / min.
FEED = inch / min.



Ad = 1.5D
Rd = 0.1D

Note

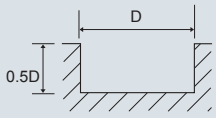
- **for 2Flute**
  - Reduce Speeds & Feeds 25% for 2FL. Long length
  - Reduce Speeds & Feeds 50% for 2FL. Extra Long length
- **for Side Milling**
  - Increase Feeds 25% or More

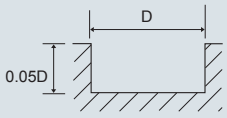
ZA302 Series

Work Material	Carbon Steels, Alloy Steels, Cast Iron		Alloy Steels, Tool Steels		Stainless Steels		Hardened Steels		Hardened Steels	
Hardness	≤ 30 HRc		30 ~ 40 HRc		-		45 ~ 55 HRc		55 ~ 65 HRc	
Strength	~ 145,038lbf / inch²		145,038 ~ 217,557lbf / inch²		-		217,557 ~ 290,076lbf / inch²		290,076lbf / inch²	
Cutting Diameter(inch)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/16	11,560	7.50	7,560	4.70	6,300	3.55	5,040	1.40		
1/8	8,920	8.25	5,560	5.50	4,620	4.70	3,360	1.55	1,900	1.55
3/16	6,300	12.60	3,780	7.50	3,160	6.30	2,320	1.95	1,260	1.55
1/4	5,560	13.80	3,360	8.65	2,840	7.10	2,000	2.15	1,100	1.55
5/16	4,200	14.95	2,520	7.85	2,100	7.10	1,680	2.95	840	1.55
3/8	3,260	13.00	2,000	6.30	1,680	6.30	1,360	2.35	680	1.40
1/2	2,740	11.00	1,680	5.10	1,360	5.10	1,160	2.15	560	1.40
5/8	2,200	8.65	1,360	4.30	1,060	4.30	900	1.55	440	0.80
3/4	1,680	6.70	1,060	3.15	840	3.15	680	1.20	320	0.80
1	1,360	5.10	840	2.75	680	2.35	540	0.80	260	0.60

RPM = rev. / min.
FEED = inch / min.

(Up to φ1/8:0.2D)

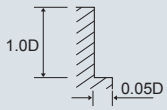


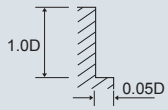


ZA304 Series

Work Material	Carbon Steels, Alloy Steels, Cast Iron		Alloy Steels, Tool Steels		Stainless Steels		Hardened Steels		Hardened Steels	
Hardness	≤ 30 HRc		30 ~ 40 HRc		-		45 ~ 55 HRc		55 ~ 65 HRc	
Strength	~ 145,038lbf / inch²		145,038 ~ 217,557lbf / inch²		-		217,557 ~ 290,076lbf / inch²		290,076lbf / inch²	
Cutting Diameter(inch)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/16	11,560	11.00	7,560	6.70	6,300	5.50	5,040	1.95		
1/8	8,920	12.60	5,560	7.85	4,620	6.70	3,360	2.35	1,900	2.35
3/16	6,300	23.60	3,780	14.15	3,160	11.80	2,320	2.75	1,260	2.35
1/4	5,560	26.00	3,360	16.15	2,840	13.00	2,000	3.15	1,100	2.35
5/16	4,200	27.95	2,520	14.95	2,100	13.80	1,680	4.30	840	2.35
3/8	3,260	24.00	2,000	11.80	1,680	11.80	1,360	3.55	680	1.95
1/2	2,740	20.50	1,680	9.85	1,360	9.45	1,160	3.15	560	1.95
5/8	2,200	16.15	1,360	7.85	1,060	7.85	900	2.35	440	1.20
3/4	1,680	12.60	1,060	6.30	840	5.90	680	1.55	320	1.20
1	1,360	9.85	840	5.10	680	4.70	540	1.20	260	0.80

RPM = rev. / min.
FEED = inch / min.



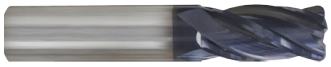


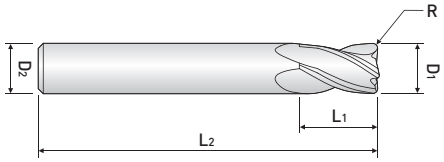
GENERAL PURPOSE

ZR304A Series

FINE GRAIN Slotting Side milling

CORNER RADIUS / 4 FLUTE / REGULAR, LONG & X-LONG / AlTiN COATING





TOLERANCE (inch)

D_1 = +0 / -0.002
D_2 = h6
R = ±0.001

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO. 4 Flute AlTiN Helix 30°	Cutting Diameter (inch)	Corner Radius (inch)	Cutting Length (inch)	Overall Length (inch)	Shank Diameter (inch)
ZR304A	D1	R	L1	L2	D2
ZR304A008010	1/8	0.010	1/2	2	1/8
ZR304A008020	1/8	0.020	1/2	2	1/8
ZR304A008030	1/8	0.030	1/2	2	1/8
ZR304A012010	3/16	0.010	5/8	2	3/16
ZR304A012020	3/16	0.020	5/8	2	3/16
ZR304A012030	3/16	0.030	5/8	2	3/16
ZR304A012010L	3/16	0.010	1 1/8	3	3/16
ZR304A012020L	3/16	0.020	1 1/8	3	3/16
ZR304A012030L	3/16	0.030	1 1/8	3	3/16
ZR304A016010	1/4	0.010	3/4	2 1/2	1/4
ZR304A016020	1/4	0.020	3/4	2 1/2	1/4
ZR304A016030	1/4	0.030	3/4	2 1/2	1/4
ZR304A016045	1/4	0.045	3/4	2 1/2	1/4
ZR304A016010L	1/4	0.010	1 1/8	3	1/4
ZR304A016020L	1/4	0.020	1 1/8	3	1/4
ZR304A016030L	1/4	0.030	1 1/8	3	1/4
ZR304A016045L	1/4	0.045	1 1/8	3	1/4
ZR304A016010X	1/4	0.010	1 1/2	4	1/4
ZR304A016020X	1/4	0.020	1 1/2	4	1/4
ZR304A016030X	1/4	0.030	1 1/2	4	1/4
ZR304A016045X	1/4	0.045	1 1/2	4	1/4
ZR304A016010LS	1/4	0.010	1 1/2	6	1/4
ZR304A016020LS	1/4	0.020	1 1/2	6	1/4
ZR304A016030LS	1/4	0.030	1 1/2	6	1/4
ZR304A016045LS	1/4	0.045	1 1/2	6	1/4
ZR304A020010	5/16	0.010	13/16	2 1/2	5/16
ZR304A020020	5/16	0.020	13/16	2 1/2	5/16
ZR304A020030	5/16	0.030	13/16	2 1/2	5/16
ZR304A020045	5/16	0.045	13/16	2 1/2	5/16
ZR304A020020L	5/16	0.020	1 1/8	3	5/16
ZR304A020030L	5/16	0.030	1 1/8	3	5/16
ZR304A020045L	5/16	0.045	1 1/8	3	5/16
ZR304A020020X	5/16	0.020	1 5/8	4	5/16
ZR304A020030X	5/16	0.030	1 5/8	4	5/16
ZR304A020045X	5/16	0.045	1 5/8	4	5/16

Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
ZR304A	◎	◎	◎	◎	◎	○								◎	○						

>>Continue

EDP NO. 4 Flute AlTiN Helix 30°	Cutting Diameter (inch)	Corner Radius (inch)	Cutting Length (inch)	Overall Length (inch)	Shank Diameter (inch)
ZR304A	D1	R	L1	L2	D2
ZR304A024010	3/8	0.010	1	3	3/8
ZR304A024020	3/8	0.020	1	3	3/8
ZR304A024030	3/8	0.030	1	3	3/8
ZR304A024045	3/8	0.045	1	3	3/8
ZR304A024010L	3/8	0.010	1 1/8	3 1/2	3/8
ZR304A024020L	3/8	0.020	1 1/2	3 1/2	3/8
ZR304A024030L	3/8	0.030	1 1/2	3 1/2	3/8
ZR304A024045L	3/8	0.045	1 1/2	3 1/2	3/8
ZR304A024010X	3/8	0.010	1 3/4	4	3/8
ZR304A024020X	3/8	0.020	1 3/4	4	3/8
ZR304A024030X	3/8	0.030	1 3/4	4	3/8
ZR304A024045X	3/8	0.045	1 3/4	4	3/8
ZR304A024010LS	3/8	0.010	2	6	3/8
ZR304A024020LS	3/8	0.020	2	6	3/8
ZR304A024030LS	3/8	0.030	2	6	3/8
ZR304A024045LS	3/8	0.045	2	6	3/8
ZR304A032010	1/2	0.010	1	3	1/2
ZR304A032015	1/2	0.015	1	3	1/2
ZR304A032020	1/2	0.020	1	3	1/2
ZR304A032030	1/2	0.030	1	3	1/2
ZR304A032060	1/2	0.060	1	3	1/2
ZR304A032015L	1/2	0.015	1 1/2	4	1/2
ZR304A032020L	1/2	0.020	1 1/2	4	1/2
ZR304A032030L	1/2	0.030	1 1/2	4	1/2
ZR304A032060L	1/2	0.060	1 1/2	4	1/2
ZR304A032090L	1/2	0.090	1 1/2	4	1/2
ZR304A032015X	1/2	0.015	2	6	1/2
ZR304A032020X	1/2	0.020	2	6	1/2
ZR304A032030X	1/2	0.030	2	6	1/2
ZR304A032060X	1/2	0.060	2	6	1/2
ZR304A032090X	1/2	0.090	2	6	1/2
ZR304A032010LS	1/2	0.010	3	6	1/2
ZR304A032015LS	1/2	0.015	3	6	1/2
ZR304A032020LS	1/2	0.020	3	6	1/2
ZR304A032030LS	1/2	0.030	3	6	1/2
ZR304A032060LS	1/2	0.060	3	6	1/2
ZR304A032090LS	1/2	0.090	3	6	1/2
ZR304A040030	5/8	0.030	1 1/4	3 1/2	5/8
ZR304A040060	5/8	0.060	1 1/4	3 1/2	5/8
ZR304A040090	5/8	0.090	1 1/4	3 1/2	5/8
ZR304A040125	5/8	0.125	1 1/4	3 1/2	5/8
ZR304A040030L	5/8	0.030	2 1/4	5	5/8
ZR304A040060L	5/8	0.060	2 1/4	5	5/8
ZR304A040090L	5/8	0.090	2 1/4	5	5/8
ZR304A040030X	5/8	0.030	3	6	5/8
ZR304A040060X	5/8	0.060	3	6	5/8

GENERAL PURPOSE

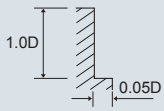
ZR304A Series

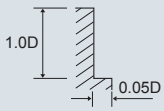
EDP NO. 4 Flute AlTiN Helix 30°	Cutting Diameter (inch)	Corner Radius (inch)	Cutting Length (inch)	Overall Length (inch)	Shank Diameter (inch)
ZR304A	D1	R	L1	L2	D2
ZR304A040090X	5/8	0.090	3	6	5/8
ZR304A048030	3/4	0.030	1 1/2	4	3/4
ZR304A048060	3/4	0.060	1 1/2	4	3/4
ZR304A048090	3/4	0.090	1 1/2	4	3/4
ZR304A048125	3/4	0.125	1 1/2	4	3/4
ZR304A048250	3/4	0.250	1 1/2	4	3/4
ZR304A048030L	3/4	0.030	2 1/4	5	3/4
ZR304A048060L	3/4	0.060	2 1/4	5	3/4
ZR304A048090L	3/4	0.090	2 1/4	5	3/4
ZR304A048030X	3/4	0.030	3	6	3/4
ZR304A048060X	3/4	0.060	3	6	3/4
ZR304A048090X	3/4	0.090	3	6	3/4
ZR304A064030	1	0.030	1 1/2	4	1
ZR304A064060	1	0.060	1 1/2	4	1
ZR304A064090	1	0.090	1 1/2	4	1
ZR304A064125	1	0.125	1 1/2	4	1
ZR304A064250	1	0.250	1 1/2	4	1
ZR304A064030L	1	0.030	2 1/4	5	1
ZR304A064060L	1	0.060	2 1/4	5	1
ZR304A064090L	1	0.090	2 1/4	5	1
ZR304A064030X	1	0.030	3	6	1
ZR304A064060X	1	0.060	3	6	1

ZR304A Series

Work Material	Carbon Steels, Alloy Steels, Cast Iron		Alloy Steels, Tool Steels		Stainless Steels		Hardened Steels		Hardened Steels	
Hardness	≤ 30 HRc		30 ~ 40 HRc		-		45 ~ 55 HRc		55 ~ 65 HRc	
Strength	~ 145,038lbf / inch²		145,038 ~ 217,557lbf / inch²		-		217,557 ~ 290,076lbf / inch²		290,076lbf / inch²	
Cutting Diameter(inch)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/16	11,560	11.0	7,560	6.7	6,300	5.5	5,040	2.0		
1/8	8,920	12.6	5,560	7.9	4,620	6.7	3,360	2.4	1,900	2.4
3/16	6,300	23.6	3,780	14.2	3,160	11.8	2,320	2.8	1,260	2.4
1/4	5,560	26.0	3,360	16.2	2,840	13.0	2,000	3.2	1,100	2.4
5/16	4,200	28.0	2,520	15.0	2,100	13.8	1,680	4.3	840	2.4
3/8	3,260	24.0	2,000	11.8	1,680	11.8	1,360	3.6	680	2.0
1/2	2,740	20.5	1,680	9.9	1,360	9.5	1,160	3.2	560	2.0
5/8	2,200	16.2	1,360	7.9	1,060	7.9	900	2.4	440	1.2
3/4	1,680	12.6	1,060	6.3	840	5.9	680	1.6	320	1.2
1	1,360	9.9	840	5.1	680	4.7	540	1.2	260	0.8

RPM = rev. / min.
FEED = inch / min.



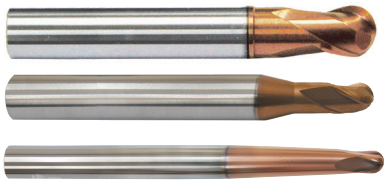


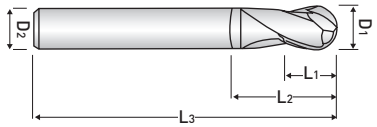
ZAMUS STAR

DA7xx, ZB702A Series

ULTRA FINE | Plunge | Profile

BALL / 2, 3 & 4 FLUTES / REGULAR / AlTiN-HH COATING

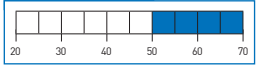




TOLERANCE (inch)

D_1 = +0 / -0.0008
D_1 = +0 / -0.0006 (DA734)
D_2 = h6

HARDNESS (HRc)



EDP NO.			Cutting Diameter (inch)	Cutting Length (inch)	Neck Length (inch)	Overall Length (inch)	Shank Diameter (inch)
2 Flute	3 Flute	4 Flute					
AlTiN-HH	AlTiN-HH	AlTiN-HH					
Helix 45°	Helix 45°	Helix 45°					
Helix 12°	-	-					
DA702 ZB702A	DA703 -	DA734 -	D1	L1	L2	L3	D2
DA702001	-	-	1/32	1/32	1/16	2	1/4
DA702002	DA703002	-	1/16	1/16	1/8	2	1/4
DA702003	DA703003	-	3/32	3/32	3/16	2	1/4
-	DA703004	-	1/8	1/8	1/4	2	1/4
DA702004	-	-	1/8	1/8	1/4	2 1/2	1/4
-	-	DA734004	1/8	1/8	-	3	1/4
-	-	DA734005	5/32	5/32	-	3	1/4
-	DA703006	-	3/16	3/16	3/8	2	1/4
DA702006	-	-	3/16	3/16	3/8	3	1/4
-	-	DA734006	3/16	3/16	-	3	1/4
ZB702A012093	-	-	3/16	22/83	13/20	2	1/4
ZB702A012093L	-	-	3/16	22/83	1 3/10	4	3/16
-	DA703008	-	1/4	1/4	1/2	2 1/4	1/4
DA702008	-	-	1/4	1/4	1/2	3 1/2	1/4
-	-	DA734008	1/4	1/4	-	4	3/8
ZB702A016125	-	-	1/4	7/20	4/5	3	1/4
ZB702A016125L	-	-	1/4	7/20	1 3/5	6	1/4
-	DA703010	-	5/16	5/16	5/8	2 1/2	5/16
DA702010	-	-	5/16	5/16	5/8	4	5/16
-	-	DA734010	5/16	5/16	-	4	3/8
-	DA703012	-	3/8	3/8	3/4	3	3/8
DA702012	-	-	3/8	3/8	3/4	4	3/8
-	-	DA734012	3/8	3/8	-	5	1/2
ZB702A024187	-	-	3/8	23/50	1 10/37	3	3/8
ZB702A024187L	-	-	3/8	23/50	2 1/10	6	3/8
-	DA703016	-	1/2	1/2	1	3	1/2
DA702016	-	-	1/2	1/2	1	4 1/2	1/2
-	-	DA734016	1/2	1/2	-	5	1/2
ZB702A032250	-	-	1/2	5/8	1 23/59	4	1/2
ZB702A032250L	-	-	1/2	5/8	2 3/10	6	1/2
ZB702A040312	-	-	5/8	3/4	1 33/50	4	5/8
ZB702A040312L	-	-	5/8	3/4	2 3/5	6	5/8

Applicable Working Material

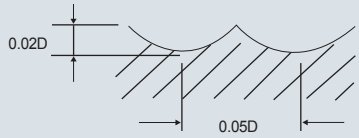
○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
All				○	○									○	○	◎	◎		○		

DA702, DA703, DA734 & ZB702A Series

Work Material	Hardened Steels Heat Resistant Steels		Hardened Steels									
Hardness	30 ~ 40 HRc		40 ~ 50 HRc		50 ~ 55 HRc		55 ~ 60 HRc		65 HRc		65 ~ 70 HRc	
Cutting Diameter(inch)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/32	50,000	188.98	50,000	165.35	45,000	149.61	40,000	118.11	35,000	102.36	35,000	90.55
1/16	49,700	224.41	47,800	188.98	40,000	157.48	35,000	124.02	32,000	110.24	28,500	90.55
3/32	49,700	224.41	47,800	188.98	40,000	157.48	35,000	124.02	32,000	110.24	28,500	90.55
1/8	33,100	236.22	31,800	208.66	26,500	157.48	23,500	124.02	21,000	110.24	19,000	90.55
3/16	18,600	228.35	17,800	192.91	15,000	147.64	13,500	120.08	11,500	100.39	10,500	82.68
1/4	13,900	190.94	13,400	161.42	11,000	122.05	10,000	98.43	8,800	84.65	8,000	68.9
5/16	11,100	165.35	10,700	137.8	9,000	106.3	8,000	84.65	7,000	72.83	6,500	61.02
3/8	9,300	145.67	8,900	122.05	7,500	94.49	6,600	74.8	5,800	64.96	5,300	54.33
1/2	6,950	116.14	6,680	98.43	5,600	74.8	5,000	61.02	4,400	49.21	4,000	41.34

RPM = rev. / min.
FEED = inch / min.



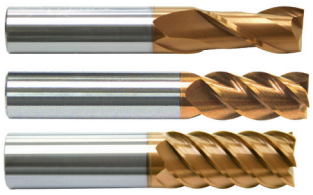
※ The FEED for long & extra long types, should be reduced by around 50%

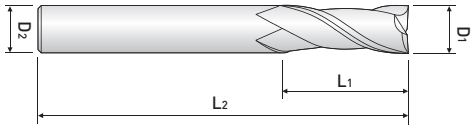
ZAMUS STAR

ZE7xxA Series

ULTRA FINE | Slotting | Side milling

SQUARE / 2, 4 & 6 FLUTES / REGULAR, LONG & X-LONG /
AlTiN-HH COATING





TOLERANCE (inch)

D_1 = +0 / -0.0008 (ZE712A)
D_1 = +0 / -0.0012
D_2 = h6

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO.			Cutting Diameter (inch)	Cutting Length (inch)	Overall Length (inch)	Shank Diameter (inch)
2 Flute	4 Flute	6 Flute				
AlTiN-HH	AlTiN-HH	AlTiN-HH				
Helix 35°	Helix 45°	Helix 50°				
ZE712A	ZE714A	ZE716A	D1	L1	L2	D2
ZE712A004	ZE714A004	-	1/16	3/16	1 1/2	1/8
ZE712A008	ZE714A008	-	1/8	1/2	1 1/2	1/8
ZE712A012	ZE714A012	-	3/16	5/8	2	3/16
-	-	ZE716A016	1/4	1/2	2 1/4	1/4
ZE712A016	ZE714A016	-	1/4	3/4	2 1/2	1/4
-	-	ZE716A016L	1/4	1	2 3/4	1/4
-	-	ZE716A020	5/16	3/4	2 1/2	5/16
ZE712A020	ZE714A020	-	5/16	13/16	2 1/2	5/16
-	-	ZE716A020L	5/16	1 1/2	3 5/8	5/16
-	-	ZE716A024	3/8	7/8	2 7/8	3/8
ZE712A024	ZE714A024	-	3/8	1	2 1/2	3/8
-	-	ZE716A024L	3/8	1 3/4	4	3/8
ZE712A032	ZE714A032	-	1/2	1	3	1/2
-	-	ZE716A032	1/2	1	3 1/4	1/2
-	-	ZE716A032L	1/2	2 3/16	4 3/8	1/2
-	-	ZE716A040	5/8	1 1/4	3 5/8	5/8
-	-	ZE716A040L	5/8	2 5/8	5 1/8	5/8
-	-	ZE716A048	3/4	1 1/2	4 1/8	3/4
-	-	ZE716A048L	3/4	2 1/4	5	3/4
-	-	ZE716A048XL	3/4	3 1/4	6	3/4
-	-	ZE716A064	1	1 3/4	4 1/4	1

Applicable Working Material

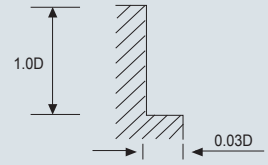
○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
All				○	○									○	○	◎	◎		○		

ZE712A Series

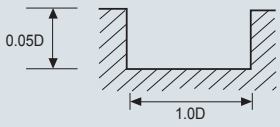
End Cutting	Side Milling											
Work Material	Hardened Steels Heat Resistant Steels		Hardened Steels									
Hardness	30 ~ 40 HRc		40 ~ 50 HRc		50 ~ 55 HRc		55 ~ 60 HRc		65 HRc		65 ~ 70 HRc	
Cutting Diameter(inch)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/16	33,300	47.24	26,000	38.19	17,500	23.62	14,500	14.57	11,000	9.06	9,500	6.50
1/8	21,800	47.24	17,300	38.19	11,500	23.62	9,500	14.57	7,500	9.06	6,400	6.50
3/16	15,700	57.09	12,500	45.28	8,300	27.95	6,400	16.14	5,100	10.24	4,450	7.48
1/4	13,100	53.15	10,350	43.31	6,900	27.17	5,300	15.75	4,200	10.04	3,700	7.28
5/16	9,880	51.97	7,800	40.55	5,200	25.00	4,000	14.37	3,200	9.25	2,800	6.69
3/8	7,800	47.24	6,150	38.19	4,100	23.23	3,200	13.39	2,550	8.66	2,200	6.30
1/2	6,650	47.24	5,250	38.19	3,500	23.23	2,650	13.39	2,100	8.66	1,860	6.30

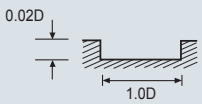
RPM = rev. / min.
FEED = inch / min.



End Cutting	Slotting											
Work Material	Hardened Steels Heat Resistant Steels		Hardened Steels									
Hardness	30 ~ 40 HRc		40 ~ 50 HRc		50 ~ 55 HRc		55 ~ 60 HRc		65 HRc		65 ~ 70 HRc	
Cutting Diameter(inch)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/16	33,300	33.46	26,000	26.77	17,500	16.54	14,500	13.39	2,100	8.66	1,860	6.30
1/8	21,800	33.46	17,300	26.77	11,500	16.54	9,500	11.81	1,600	7.48	1,400	5.51
3/16	15,700	39.37	12,500	31.69	8,300	19.69	6,400	11.22	5,100	7.09	4,450	5.20
1/4	13,100	37.40	10,350	30.31	6,900	18.90	5,300	11.02	4,200	7.09	3,700	5.12
5/16	9,880	36.61	7,800	28.35	5,200	17.52	4,000	10.04	3,200	6.50	2,800	4.72
3/8	7,800	33.46	6,150	26.77	4,100	16.34	3,200	9.45	2,550	6.10	2,200	4.41
1/2	6,650	33.46	5,250	26.77	3,500	16.34	2,650	9.45	2,100	6.10	1,860	4.41

RPM = rev. / min.
FEED = inch / min.

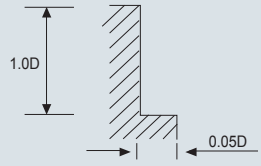


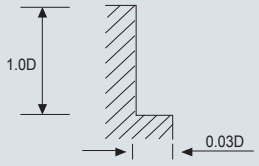


ZE714A Series

End Cutting	Side Milling											
Work Material	Hardened Steels Heat Resistant Steels		Hardened Steels									
Hardness	30 ~ 40 HRc		40 ~ 50 HRc		50 ~ 55 HRc		55 ~ 60 HRc		65 HRc		65 ~ 70 HRc	
Cutting Diameter(inch)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/16	33,300	68.90	26,000	49.21	17,500	33.07	14,500	20.47	11,000	12.60	9,500	9.06
1/8	21,800	68.90	17,300	49.21	11,500	33.07	9,500	20.47	7,500	12.60	6,400	9.06
3/16	15,700	78.74	12,500	59.06	8,300	39.37	6,400	22.83	5,100	14.57	4,450	10.63
1/4	13,100	76.77	10,350	55.12	6,900	37.40	5,300	22.05	4,200	13.78	3,700	10.24
5/16	9,880	74.02	7,800	53.15	5,200	35.43	4,000	20.47	3,200	12.99	2,800	9.45
3/8	7,800	68.90	6,150	49.61	4,100	33.07	3,200	18.90	2,550	12.20	2,200	8.66
1/2	6,650	68.90	5,250	49.61	3,500	33.07	2,650	18.90	2,100	11.81	1,860	8.66

RPM = rev. / min.
FEED = inch / min.

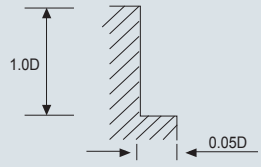


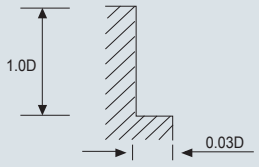


ZE716A Series

Work Material	Hardened Steels Heat Resistant Steels		Hardened Steels									
Hardness	30 ~ 40 HRc		40 ~ 50 HRc		50 ~ 55 HRc		55 ~ 60 HRc		65 HRc		65 ~ 70 HRc	
Cutting Diameter(inch)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	24,800	210.63	23,500	192.91	16,000	192.91	13,500	129.92	10,500	82.68	8,000	57.09
5/16	20,000	216.54	19,000	196.85	12,000	181.10	10,000	122.05	8,000	78.74	6,000	55.12
3/8	16,000	192.91	15,500	177.17	9,500	161.42	8,000	114.17	6,400	70.87	4,800	51.18
1/2	13,000	177.17	12,500	161.42	8,000	149.61	6,600	98.43	5,300	62.99	4,000	45.28
5/8	10,000	157.48	9,700	145.67	6,000	133.86	5,000	90.55	4,000	49.21	3,000	34.25
3/4	8,000	131.89	7,800	133.86	4,800	125.98	4,000	82.68	3,200	40.16	2,400	27.17

RPM = rev. / min.
FEED = inch / min.



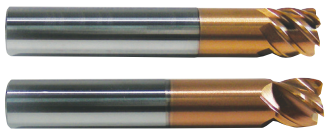


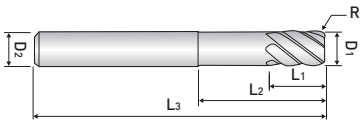
ZAMUS STAR

ZS204A. ZR706A Series

ULTRA FINE | Slotting | Side milling

CORNER RADIUS / 4 & 6 FLUTES / REGULAR & LONG /
AlTiN-HH COATING

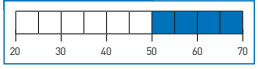




TOLERANCE (inch)

D_1 = +0 / -0.0008 (ZR706A)
D_1 = +0 / -0.0012
D_2 = h6
R = ±0.0004 (1/8 - 1/4)
R = ±0.0006 (5/16 - 1/2)

HARDNESS (HRc)



EDP NO.		Cutting Diameter (inch)	Corner Radius (inch)	Cutting Length (inch)	Neck Length (inch)	Overall Length (inch)	Shank Diameter (inch)
4 Flute	6 Flute						
AlTiN-HH	AlTiN-HH						
Helix 38°	Helix 45°						
ZS204A	ZR706A	D1	R	L1	L2	L3	D2
ZS204A008010	-	1/8	0.010	5/32	3/4	1 1/2	1/8
ZS204A008015	-	1/8	0.015	5/32	3/4	1 1/2	1/8
ZS204A012010	-	3/16	0.010	1/4	1.000	2	3/16
ZS204A012015	-	3/16	0.015	1/4	1.000	2	3/16
-	ZR706A01220	3/16	0.020	0.265	0.650	2	1/4
-	ZR706A01230	3/16	0.030	0.265	0.650	2	1/4
-	ZR706A01220L	3/16	0.020	0.265	1.300	4	1/4
-	ZR706A01230L	3/16	0.030	0.265	1.300	4	1/4
ZS204A016020	-	1/4	0.020	5/16	1.000	2 1/2	1/4
ZS204A016060	-	1/4	0.060	5/16	1.000	2 1/2	1/4
ZS204A016060L	-	1/4	0.060	5/16	1 1/2	3	1/4
-	ZR706A01620	1/4	0.020	0.350	0.800	3	1/4
-	ZR706A01630	1/4	0.030	0.350	0.800	3	1/4
-	ZR706A01620L	1/4	0.020	0.350	1.600	6	1/4
-	ZR706A01630L	1/4	0.030	0.350	1.600	6	1/4
ZS204A020020	-	5/16	0.020	3/8	1	2 1/2	5/16
ZS204A020060	-	5/16	0.060	3/8	1	2 1/2	5/16
-	ZR706A02020	5/16	0.020	0.400	1.130	3	5/16
-	ZR706A02030	5/16	0.030	0.400	1.130	3	5/16
-	ZR706A02030L	5/16	0.030	0.400	1.800	6	5/16
ZS204A024030	-	3/8	0.030	7/16	1	2 1/2	3/8
ZS204A024080	-	3/8	0.080	7/16	1	2 1/2	3/8
ZS204A024080L	-	3/8	0.080	7/16	2	3 1/2	3/8
-	ZR706A02420	3/8	0.020	0.460	1.270	3	3/8
-	ZR706A02430	3/8	0.030	0.460	1.270	3	3/8
-	ZR706A02420L	3/8	0.020	0.460	2.100	6	3/8
-	ZR706A02430L	3/8	0.030	0.460	2.100	6	3/8
-	ZR706A02420381SP	3/8	0.020	1.025	1 1/2	3	3/8
ZS204A028030	-	7/16	0.030	1/2	1 1/8	3	7/16
ZS204A028080	-	7/16	0.080	1/2	1 1/8	3	7/16
ZS204A032030	-	1/2	0.030	9/16	1 1/4	3	1/2
ZS204A032060	-	1/2	0.060	9/16	1 1/4	3	1/2
ZS204A032090	-	1/2	0.090	9/16	1 1/4	3	1/2
ZS204A032090L	-	1/2	0.090	9/16	2 1/4	4	1/2
-	ZR706A03230S	1/2	0.030	5/8	1.390	3	1/2

Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
All				○	○									○	○	◎	◎		○		

ZAMUS STAR

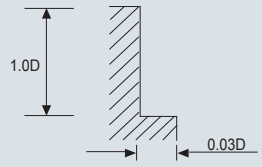
ZS204A. ZR706A Series

EDP NO.		Cutting Diameter (inch)	Corner Radius (inch)	Cutting Length (inch)	Neck Length (inch)	Overall Length (inch)	Shank Diameter (inch)
4 Flute	6 Flute						
AlTiN-HH	AlTiN-HH						
Helix 38°	Helix 45°						
ZS204A	ZR706A	D1	R	L1	L2	L3	D2
-	ZR706A03230	1/2	0.030	0.625	1.390	4	1/2
-	ZR706A03260	1/2	0.060	0.625	1.390	4	1/2
-	ZR706A03230L	1/2	0.030	0.625	2.300	6	1/2
-	ZR706A03260L	1/2	0.060	0.625	2.300	6	1/2
-	ZR706A04030	5/8	0.030	0.750	1.660	4	5/8
-	ZR706A04030L	5/8	0.030	0.750	2.600	6	5/8

ZS204A Series

End Cutting	Side Milling									
Work Material	Hardened Steels									
Hardness	40 ~ 50 HRc		50 ~ 55 HRc		55 ~ 60 HRc		65 HRc		65 ~ 70 HRc	
Cutting Diameter(inch)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3/16	17,200	66.54	11,440	44.88	9,360	27.56	7,280	16.93	6,170	12.20
1/4	13,450	71.65	8,970	48.43	6,890	28.35	5,460	17.72	4,810	12.99
5/16	9,100	68.90	6,760	46.06	5,200	26.38	4,160	16.54	3,640	12.20
3/8	8,000	64.17	5,330	42.91	4,160	24.41	3,320	15.75	2,860	11.02
1/2	6,830	64.17	4,550	39.76	3,450	22.83	2,730	14.57	2,420	10.24

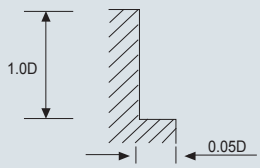
RPM = rev. / min.
FEED = inch / min.

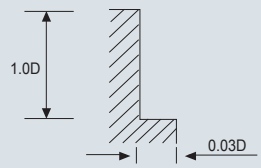


ZR706A Series

Work Material	Hardened Steels Heat Resistant Steels		Hardened Steels									
Hardness	30 ~ 40 HRc		40 ~ 50 HRc		50 ~ 55 HRc		55 ~ 60 HRc		65 HRc		65 ~ 70 HRc	
Cutting Diameter(inch)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	24,800	210.63	23,500	192.91	16,000	192.91	13,500	129.92	10,500	82.68	8,000	57.09
5/16	20,000	216.54	19,000	196.85	12,000	181.10	10,000	122.05	8,000	78.74	6,000	55.12
3/8	16,000	192.91	15,500	177.17	9,500	161.42	8,000	114.17	6,400	70.87	4,800	51.18
1/2	13,000	177.17	12,500	161.42	8,000	149.61	6,600	98.43	5,300	62.99	4,000	45.28
5/8	10,000	157.48	9,700	145.67	6,000	133.86	5,000	90.55	4,000	49.21	3,000	34.25
3/4	8,000	131.89	7,800	133.86	4,800	125.98	4,000	82.68	3,200	40.16	2,400	27.17

RPM = rev. / min.
FEED = inch / min.



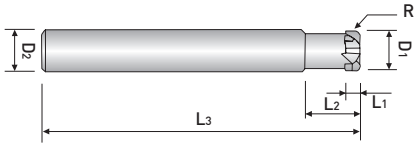


ZAMUS STAR POWER MILL

ZSPM4A Series

ULTRA FINE | Slotting | Side milling

POWER FEED MILL / 4 FLUTE / AlTiN-HH COATING



TOLERANCE (inch)

D_1 = +0 / -0.0012
D_2 = h6
R = ±0.0006

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO. 4 Flute AlTiN-HH	Cutting Diameter (inch)	Corner Radius (inch)	Cutting Length (inch)	Neck Length (inch)	Overall Length (inch)	Shank Diameter (inch)
ZSPM4A	D1	R	L1	L2	L3	D2
ZSPM4A008	1/8	1/32	0.063	3/8	2 1/4	1/4
ZSPM4A012	3/16	1/16	0.094	9/16	2 1/4	1/4
ZSPM4A016	1/4	1/16	0.100	1/2	2 1/4	1/4
ZSPM4A016L	1/4	1/16	0.100	1	3	1/4
ZSPM4A020	5/16	3/32	0.130	5/8	2 1/2	5/16
ZSPM4A020L	5/16	3/32	0.130	1 1/4	3	5/16
ZSPM4A024	3/8	3/32	0.150	3/4	3	3/8
ZSPM4A024L	3/8	3/32	0.150	1 1/2	4	3/8
ZSPM4A032	1/2	1/8	0.200	1	3	1/2
ZSPM4A032L	1/2	1/8	0.200	2	5	1/2

Applicable Working Material

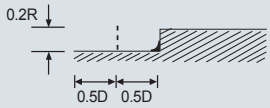
○ : GOOD ◎ : BEST

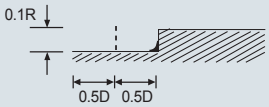
SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
ZSPM4A				○	○									○	○	◎	◎		○		

ZSPM4A Series

Feed Rate	General Speed Cutting									
Work Material	Hardened Steels									
Hardness	≤ 40 HRc		40 ~ 50 HRc		50 ~ 55 HRc		55 ~ 60 HRc		65 HRc	
Cutting Diameter(inch)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	9,070	243	6,550	155	4,320	103	2,710	43	1,800	23
3/16	6,680	232	4,830	152	3,360	106	2,140	45	1,470	23
1/4	5,450	283	3,850	182	2,740	130	1,740	69	1,270	30
5/16	4,350	300	3,050	193	2,200	138	1,400	73	995	31
3/8	3,670	316	2,570	200	1,840	145	1,160	76	840	33
1/2	2,740	284	1,940	182	1,370	130	870	69	630	30

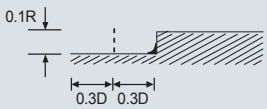
RPM = rev. / min.
FEED = inch / min.

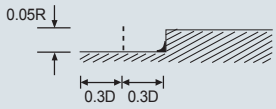




Feed Rate	High Speed Cutting									
Work Material	Hardened Steels									
Hardness	≤ 40 HRc		40 ~ 50 HRc		50 ~ 55 HRc		55 ~ 60 HRc		65 HRc	
Cutting Diameter(inch)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	20,800	590	16,000	370	11,800	298	8,970	170	6,520	9
3/16	14,280	578	10,900	394	9,250	304	6,720	180	4,700	96
1/4	12,700	685	9,870	508	8,460	405	6,000	236	4,230	133
5/16	10,000	728	8,000	551	6,800	433	4,800	264	3,400	160
3/8	8,400	768	6,720	579	5,670	453	4,000	280	2,850	157
1/2	6,230	687	5,000	520	4,250	408	3,020	260	2,120	134

RPM = rev. / min.
FEED = inch / min.



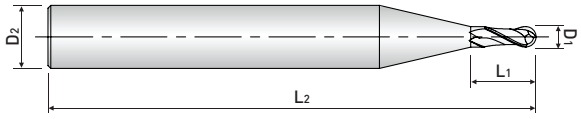


ZAMUS CLASSIC - MINIATURE

MD502 Series

MINIATURE BALL / 2 FLUTE / REGULAR / ALTiN COATING

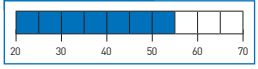
MG FINE GRAIN | Plunge | Profile



TOLERANCE (inch)

D_1 = +0 / -0.001
D_2 = h6

HARDNESS (HRc)



EDP NO. 2 Flute AlTiN Helix 30°	Cutting Diameter (inch)	Cutting Length (inch)	Overall Length (inch)	Shank Diameter (inch)
MD502	D1	L1	L2	D2
MD502016	0.016	0.032	1 1/2	1/8
MD502020	0.020	0.038	1 1/2	1/8
MD502024	0.024	0.043	1 1/2	1/8
MD502028	0.028	0.060	1 1/2	1/8
MD502031	0.031	0.080	1 1/2	1/8
MD502035	0.035	0.087	1 1/2	1/8
MD502040	0.040	0.100	1 1/2	1/8
MD502043	0.043	0.118	1 1/2	1/8
MD502047	0.047	0.118	1 1/2	1/8
MD502052	0.052	0.138	1 1/2	1/8
MD502055	0.055	0.138	1 1/2	1/8
MD502062	0.062	0.157	1 1/2	1/8

Applicable Working Material

○ : GOOD ◎ : BEST

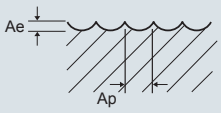
SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
MD502	○	○	○	○	◎	○	○	○	○					◎	◎	◎	○				

MD502 Series

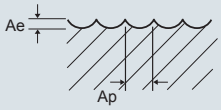
Feed Rate	High Speed Cutting			
Work Material	Non-Alloyed Steels, Alloy Steels, Cast Iron		Alloy Steels, Heat Resistant Steels	
Hardness	≤ 25 HRc		25 ~ 40 HRc	
Strength	145,038 ~ 181,298lbf / inch²		217,557 ~ 253,817lbf / inch²	
Cutting Diameter (inch)	RPM	FEED	RPM	FEED
0.024	30,000	23.60	30,000	11.80
0.031	27,000	25.60	27,000	15.00
0.040	25,000	25.60	25,000	15.70
0.047	24,000	26.40	24,000	16.50
0.062	23,000	27.60	23,000	16.90

RPM = rev. / min.
FEED = inch / min.

D < .040
Ae: 0.05 X D
Ap: 0.15 X D
D≥ .040
Ae: 0.075 X D
Ap: 0.15 X D



D < .040
Ae: 0.05 X D
Ap: 0.1 X D
D≥ .040
Ae: 0.05 X D
Ap: 0.15 X D

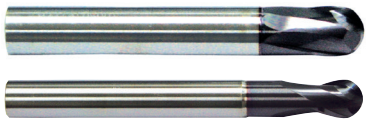


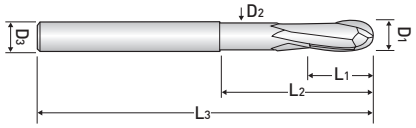
ZAMUS CLASSIC

DA4xx, DA5xx Series

BALL / 2 & 4 FLUTE / STUB / AlTiN COATING

ULTRA FINE | Plunge | Profile





TOLERANCE (inch)

D_1 = +0 / -0.0012
D_2 = h6

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO.			Cutting Diameter (inch)	Cutting Length (inch)	Neck Diameter (inch)	Neck Length (inch)	Overall Length (inch)	Shank Diameter (inch)
2 Flute		4 Flute						
AlTiN		AlTiN						
Helix 15°	Helix 30°	Helix 30°						
DA412	DA512	DA514	D1	L1	D2	L2	L3	D3
-	DA522	-						
DA412001	-	-	1/32	1/32	0.029	1/16	2	1/4
-	DA512001	-	1/32	1/32	-	-	2 1/2	1/4
DA412002	-	-	1/16	1/16	0.059	1/8	2	1/4
-	DA512002	DA514002	1/16	1/16	-	-	2 1/2	1/4
DA412003	-	-	3/32	3/32	0.090	3/16	2	1/4
-	DA512003	DA514003	3/32	3/32	-	-	2 1/2	1/4
DA412004	-	-	1/8	1/8	0.121	1/4	2 1/2	1/4
-	DA512004	DA514004	1/8	5/16	-	-	2 3/8	1/8
-	DA522004	-	1/8	5/16	-	-	2 3/4	1/4
DA412006	-	-	3/16	3/16	0.184	3/8	3	1/4
-	DA512006	DA514006	3/16	3/8	-	-	3 1/8	3/16
-	DA522006	-	3/16	1/2	-	-	3 1/8	1/4
DA412008	-	-	1/4	1/4	0.246	1/2	3 1/2	1/4
-	DA522008	-	1/4	1/2	-	7/8	3 1/8	1/4
-	DA512008	DA514008	1/4	1/2	-	-	3 1/2	1/4
DA412010	-	-	5/16	5/16	0.309	5/8	4	5/16
-	DA522010	-	5/16	9/16	-	1 1/16	3 1/2	5/16
-	DA512010	DA514010	5/16	9/16	-	-	4	5/16
DA412012	-	-	3/8	3/8	0.371	3/4	4	3/8
-	DA522012	-	3/8	3/4	-	1 1/4	4	3/8
-	DA512012	DA514012	3/8	3/4	-	-	4	3/8
DA412012L	-	-	3/8	1	0.371	1 3/8	6	3/8
DA412016	-	-	1/2	1/2	0.496	1	4 1/2	1/2
-	DA522016	-	1/2	7/8	-	1 3/8	4 1/4	1/2
-	DA512016	DA514016	1/2	7/8	-	-	4 1/4	1/2
DA412016L	-	-	1/2	1	0.496	1 1/2	6	1/2
-	DA522020	-	5/8	1 1/4	-	2	5 1/2	5/8
-	DA512020	DA514020	5/8	1 1/4	-	-	5 1/2	5/8
-	DA522024	-	3/4	1 1/2	-	2 1/4	6 1/4	3/4
-	DA512024	DA514024	3/4	1 1/2	-	-	6 1/4	3/4
-	DA512032	DA514032	1	2	-	-	7 1/8	1
-	DA522032	-	1	2 1/8	-	3	7	1

Applicable Working Material

○ : GOOD ◎ : BEST

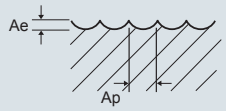
SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
All	○	○	○	○	◎	○	○	○	○					◎	◎	◎	○				

DA412 Series

Feed Rate	General Speed Cutting							
Work Material	Hardened Steels							
Hardness	45 ~ 50 HRc		50 ~ 55 HRc		55 ~ 60 HRc		60 ~ 65 HRc	
Strength	217,557 ~ 253,817lbf / inch²		253,817 ~ 290,076lbf / inch²		290,076 ~ 301,679lbf / inch²		301,679lbf / inch²	
Cutting Diameter(inch)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	12,700	43.30	12,300	41.30	11,800	39.40	8,400	26.00
3/16	9,400	43.30	9,050	41.30	8,600	37.40	5,600	26.80
1/4	8,600	45.30	8,250	43.30	7,850	37.40	4,850	27.60
5/16	7,000	41.30	6,700	39.40	6,350	37.40	3,800	25.60
3/8	6,050	39.40	5,800	37.80	5,450	35.40	3,200	24.40
1/2	5,450	39.40	5,200	37.80	4,900	35.40	2,750	24.40
5/8	4,350	34.30	4,150	32.70	3,900	32.30	2,150	10.40
3/4	3,500	27.20	3,300	25.60	3,150	24.80	1,700	8.70
1	2,800	27.20	2,650	25.60	2,520	24.80	1,360	8.70

RPM = rev. / min.
FEED = inch / min.

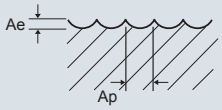
Ae: D1/8=.006
D3/16~D5/16=.010
D3/8~D1=.012
Ap: 0.1 X D



Feed Rate	High Speed Cutting					
Work Material	Hardened Steels					
Hardness	45 ~ 50 HRc		50 ~ 55 HRc		55 ~ 60 HRc	
Strength	217,557 ~ 253,817lbf / inch²		253,817 ~ 290,076lbf / inch²		290,076 ~ 301,679lbf / inch²	
Cutting Diameter(inch)	RPM	FEED	RPM	FEED	RPM	FEED
1/8	12,700	43.30	12,300	41.30	11,800	26.00
3/16	9,400	43.30	9,050	41.30	8,600	26.80
1/4	8,600	45.30	8,250	43.30	7,850	27.60
5/16	7,000	41.30	6,700	39.40	6,350	25.60
3/8	6,050	39.40	5,800	37.80	5,450	24.40
1/2	5,450	39.40	5,200	37.80	4,900	24.40
5/8	4,350	34.30	4,150	32.70	3,900	10.40
3/4	3,500	27.20	3,300	25.60	3,150	8.70
1	2,800	27.20	2,650	25.60	2,520	8.70

RPM = rev. / min.
FEED = inch / min.

Ae: D1/8=.006
D3/16~D5/16=.010
D3/8~D1=.012
Ap: 0.05 X D

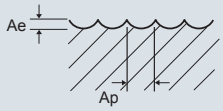


DA512 Series

Feed Rate	General Speed Cutting					
Work Material	Non-Alloyed Steels, Alloy Steels, Cast Iron		Alloy Steels, Heat Resistant Steels		Hardened Steels	
Hardness	≤ 30 HRc		30 ~ 40 HRc		45 ~ 65 HRc	
Strength	145,038lbf / inch²		145,038 ~ 181,298lbf / inch²		217,557lbf / inch²	
Cutting Diameter(inch)	RPM	FEED	RPM	FEED	RPM	FEED
1/32	15,760	9.80	12,720	7.80	5,800	3.80
1/16	15,760	13.80	12,140	1.60	5,320	4.70
3/32	14,400	29.50	10,700	19.30	4,680	5.90
1/8	13,100	26.70	10,000	18.10	4,520	5.90
3/16	9,140	32.30	7,300	22.80	3,680	7.10
1/4	7,780	33.00	6,300	24.80	3,160	7.50
5/16	5,260	37.50	4,420	26.00	2,100	7.50
3/8	4,620	40.10	3,780	28.00	1,780	7.50
1/2	3,780	35.40	2,940	26.00	1,360	7.50
5/8	2,740	36.20	2,320	26.00	1,160	7.50
3/4	2,100	33.00	1,900	25.00	840	7.50

RPM = rev. / min.
FEED = inch / min.

Ae: D1/32~D1/4=.008inch
D5/16~D3/4=.012inch
Ap: 0.2 X D

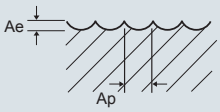


Ae: D1/32~D1/4=.008inch
D5/16~D3/4=.012inch
Ap: 0.1 X D

Feed Rate	High Speed Cutting			
Work Material	Non-Alloyed Steels, Alloy Steels, Cast Iron		Hardened Steels	
Hardness	≤ 45 HRc		45 ~ 65 HRc	
Strength	~ 217,557lbf / inch²		217,557lbf / inch²	
Cutting Diameter(inch)	RPM	FEED	RPM	FEED
1/32	25,000	25.60	12,720	15.70
1/16	23,000	27.50	12,140	16.90
3/32	21,000	34.60	10,700	19.30
1/8	21,000	39.40	10,000	20.50
3/16	21,000	70.90	7,300	23.60
1/4	21,000	90.90	6,300	24.80
5/16	15,760	111.80	4,420	29.10
3/8	13,660	120.00	3,780	33.00
1/2	10,500	103.50	2,940	33.00
5/8	8,200	103.50	2,320	28.00
3/4	6,300	99.00	1,900	20.80

RPM = rev. / min.
FEED = inch / min.

Ae: D1/32~D1/4=.008 inch
D5/16~D3/4=.012 inch
Ap: 0.05 X D

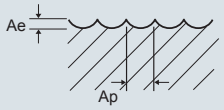


DA514 Series

Feed Rate	General Speed Cutting					
Work Material	Non-Alloyed Steels, Alloy Steels, Cast Iron		Alloy Steels, Heat Resistant Steels		Hardened Steels	
Hardness	≤ 30 HRc		30 ~ 40 HRc		45 ~ 65 HRc	
Strength	145,038lbf / inch²		145,038 ~ 181,298lbf / inch²		217,557lbf / inch²	
Cutting Diameter(inch)	RPM	FEED	RPM	FEED	RPM	FEED
1/8	13,100	40.10	10,000	27.00	4,520	8.85
3/16	9,140	48.50	7,300	34.00	3,680	10.50
1/4	7,780	49.50	6,300	37.00	3,160	11.25
5/16	5,260	56.00	4,420	39.00	2,100	11.25
3/8	4,620	60.00	3,780	42.00	1,780	11.25
1/2	3,780	53.00	2,940	39.00	1,360	11.25
5/8	2,740	54.50	2,320	38.50	1,160	11.25

RPM = rev. / min.
FEED = inch / min.

Ae: D1/8~D1/4=.008 inch
D5/16~D5/8=.012 inch
Ap: 0.02 X D

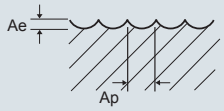


Ae: D1/8~D1/4=.008 inch
D5/16~D5/8=.012 inch
Ap: 0.1 X D

Feed Rate	High Speed Cutting			
Work Material	Non-Alloyed Steels, Alloy Steels, Cast Iron		Hardened Steels	
Hardness	≤ 45 HRc		45 ~ 65 HRc	
Strength	~ 217,557lbf / inch²		217,557lbf / inch²	
Cutting Diameter(inch)	RPM	FEED	RPM	FEED
1/8	21,000	59.00	17,000	30.50
3/16	21,000	106.25	12,000	35.50
1/4	21,000	136.50	10,500	37.00
5/16	15,760	167.50	7,800	43.50
3/8	13,660	180.00	6,300	49.50
1/2	10,500	155.50	5,260	49.50
5/8	8,200	155.50	3,780	42.00

RPM = rev. / min.
FEED = inch / min.

Ae: D1/8~D1/4=.008 inch
D5/16~D5/8=.012 inch
Ap: 0.05 X D

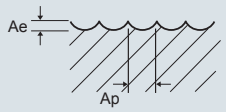


DA522 Series

Feed Rate	General Speed Cutting					
Work Material	Alloy Steels, Heat Resistant Steels		Hardened Steels			
Hardness	30 ~ 40 HRc		45 ~ 50 HRc		50 ~ 55 HRc	
Strength	145,038 ~ 181,298lbf / inch²		217,557 ~ 253,817lbf / inch²		253,817 ~ 290,076lbf / inch²	
Cutting Diameter(inch)	RPM	FEED	RPM	FEED	RPM	FEED
1/8	10,000	18.10	12,700	43.30	12,300	41.30
3/16	7,300	22.80	9,400	43.30	9,050	41.30
1/4	6,300	24.80	8,600	45.30	8,250	43.30
5/16	4,420	26.00	7,000	41.30	6,700	39.40
3/8	3,780	28.00	6,050	39.40	5,800	37.80
1/2	2,940	26.00	5,450	39.40	5,200	37.80
5/8	2,320	26.00	4,350	34.30	4,150	32.70
3/4	1,900	25.00	3,500	27.20	3,300	25.60
1	1,520	25.00	2,800	27.20	2,650	25.60

RPM = rev. / min.
FEED = inch / min.

Ae: D1/8~D1/4=.008
D5/16~D1=.012
Ap: 0.2 X D

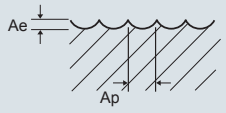


Ae: D1/8=.006
D3/16~D5/16=.010
D3/8~D1=.012
Ap: 0.1 X D

Feed Rate	High Speed Cutting					
Work Material	Alloy Steels, Heat Resistant Steels		Hardened Steels			
Hardness	30 ~ 40 HRc		45 ~ 50 HRc		50 ~ 55 HRc	
Strength	145,038 ~ 181,298lbf / inch²		217,557 ~ 253,817lbf / inch²		253,817 ~ 290,076lbf / inch²	
Cutting Diameter(inch)	RPM	FEED	RPM	FEED	RPM	FEED
1/8	21,000	39.40	12,700	68.90	12,300	65.70
3/16	21,000	70.90	9,400	65.00	9,050	61.80
1/4	21,000	90.90	8,600	69.00	8,250	65.70
5/16	15,760	111.80	7,000	61.00	6,700	57.50
3/8	13,660	120.10	6,050	57.10	5,800	53.50
1/2	10,500	103.50	5,450	55.90	5,200	52.40
5/8	8,200	103.50	4,350	48.40	4,150	44.50
3/4	6,300	99.20	3,500	39.40	3,300	35.40
1	5,040	99.20	2,800	39.40	2,650	35.40

RPM = rev. / min.
FEED = inch / min.

Ae: D1/8~D1/4=.008
D5/16~D1=.012
Ap: 0.05 X D



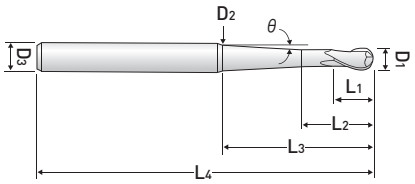
Ae: D1/8=.006
D3/16~D5/16=.010
D3/8~D1=.012
Ap: 0.05 X D

ULTRA FINE Plunge Profile

ZAMUS CLASSIC

DA542, DA552 Series

TAPER & PENCIL NECK BALL / 2 FLUTE /
STUB & REGULAR / AlTiN COATING



TOLERANCE (inch)

D_1 = +0 / -0.0012
D_2 = h6

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO.		Cutting Diameter (inch)	Cutting Length (inch)	Neck Diameter (inch)	Neck Length (inch)	Taper Degree°	Taper Length (inch)	Overall Length (inch)	Shank Diameter (inch)
2 Flute									
AlTiN									
Helix 30°									
Taper Neck	Pencil Neck								
DA542	DA552	D1	L1	D2	L2	θ	L3	L4	D3
DA542001	-	1/16	5/32	0.096	15/64	1°30'	7/8	2 3/8	1/4
DA542002	-	1/16	5/32	0.208	15/64	3°	1 5/8	3 1/8	1/4
DA542004	-	1/8	1/4	0.216	21/64	1°30'	2 1/16	3 5/8	1/4
DA542006	-	3/16	3/8	0.288	29/64	1°30'	2 3/8	4 3/8	3/8
-	DA552007	3/16	9/16	-	2/3	2°30'	2 13/16	6	3/8
-	DA552006	3/16	9/16	-	29/44	2°	3 11/32	7 3/4	3/8
DA542008	-	1/4	1/2	0.325	5/8	1°30'	2 1/16	4 3/8	3/8
-	DA552009	1/4	3/4	-	6/7	2°30'	3 23/32	6	1/2
-	DA552008	1/4	3/4	-	67/78	2°	4 7/16	7 3/4	1/2
DA542010	-	5/16	9/16	0.385	11/16	1°30'	2 1/16	4 3/4	1/2
-	DA552011	5/16	3/4	-	67/77	1°45'	3 15/16	6	1/2
-	DA552010	5/16	3/4	-	46/53	1°20'	4 29/32	7 3/4	1/2
DA542012	-	3/8	11/16	0.458	13/16	1°30'	2 3/8	5 1/16	1/2
-	DA552013	3/8	1 3/16	-	1 13/40	2°30'	4 3/16	6	5/8
-	DA552012	3/8	1 3/16	-	1 15/46	2°	4 29/32	7 3/4	5/8
DA542016	-	1/2	7/8	0.618	1	1°30'	3 1/4	6 3/8	3/4
-	DA552017	1/2	1 3/16	-	1 25/76	1°45'	3 3/8	6	5/8
-	DA552016	1/2	1 3/16	-	1 17/55	1°20'	4	7 3/4	5/8

Applicable Working Material

○ : GOOD ◎ : BEST

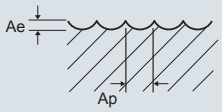
SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
All	○	○	○	○	◎	○	○	○	○					◎	◎	◎	○				

DA542 Series

Feed Rate	General Speed Cutting					
Work Material	Alloy Steels, Heat Resistant Steels		Hardened Steels			
Hardness	30 ~ 40 HRc		45 ~ 50 HRc		50 ~ 55 HRc	
Strength	145,038 ~ 181,298lbf / inch²		217,557 ~ 253,817lbf / inch²		253,817 ~ 290,076lbf / inch²	
Cutting Diameter(inch)	RPM	FEED	RPM	FEED	RPM	FEED
1/16	9,000	8.30	13,800	19.90	13,600	17.90
1/8	8,000	14.60	10,200	34.60	9,800	33.50
3/16	5,840	18.10	7,500	34.60	7,200	33.50
1/4	5,040	19.70	6,900	36.20	6,500	34.60
5/16	3,540	20.90	5,600	33.10	5,300	31.50
3/8	3,020	22.40	4,850	31.50	4,650	30.30
1/2	2,350	20.90	4,350	31.50	4,150	30.30

RPM = rev. / min.
FEED = inch / min.

Ae: D1/16~D1/4=.008
D5/16~D1/2=.012
Ap: 0.2 X D

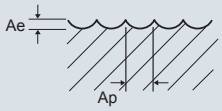


Ae: D1/16~D1/8=0.05 X D
D3/16~D5/16=.010
D3/8~D1/2=.012
Ap: 0.1 X D

Feed Rate	High Speed Cutting					
Work Material	Alloy Steels, Heat Resistant Steels		Hardened Steels			
Hardness	30 ~ 40 HRc		45 ~ 50 HRc		50 ~ 55 HRc	
Strength	145,038 ~ 181,298lbf / inch²		217,557 ~ 253,817lbf / inch²		253,817 ~ 290,076lbf / inch²	
Cutting Diameter(inch)	RPM	FEED	RPM	FEED	RPM	FEED
1/16	18,400	21.90	13,800	28.90	13,600	30.10
1/8	16,800	31.50	10,200	55.10	9,800	51.20
3/16	16,800	56.70	7,500	52.00	7,200	49.20
1/4	16,800	72.80	6,900	55.10	6,500	53.10
5/16	12,600	89.40	5,600	49.20	5,300	45.30
3/8	10,930	96.10	4,850	45.30	4,650	43.30
1/2	8,400	82.70	4,350	44.50	4,150	41.30

RPM = rev. / min.
FEED = inch / min.

Ae: D1/16~D1/4=.008
D5/16~D1/2=.012
Ap: 0.05 X D



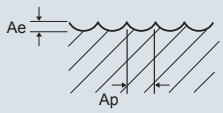
Ae: D1/16~D1/8=0.05 X D
D3/16~D5/16=.010
D3/8~D1/2=.012
Ap: 0.05 X D

DA552 Series

Feed Rate	General Speed Cutting					
Work Material	Alloy Steels, Heat Resistant Steels		Hardened Steels			
Hardness	30 ~ 40 HRc		45 ~ 50 HRc		50 ~ 55 HRc	
Strength	145,038 ~ 181,298lbf / inch²		217,557 ~ 253,817lbf / inch²		253,817 ~ 290,076lbf / inch²	
Cutting Diameter(inch)	RPM	FEED	RPM	FEED	RPM	FEED
3/16	4,670	14.50	6,000	27.70	5,760	26.80
1/4	4,030	15.80	5,520	29.00	5,200	27.70
5/16	2,830	16.70	4,480	26.50	4,240	25.20
3/8	2,420	17.90	3,880	25.20	3,720	24.20
1/2	1,880	16.70	3,480	25.20	3,320	24.20

RPM = rev. / min.
FEED = inch / min.

Ae: D3/16~D1/4=.008
D5/16~D1/2=.012
Ap: 0.2 X D

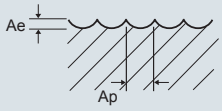


Ae: D3/16~D5/16=.010
D3/8~D1/2=.012
Ap: 0.1 X D

Feed Rate	High Speed Cutting					
Work Material	Alloy Steels, Heat Resistant Steels		Hardened Steels			
Hardness	30 ~ 40 HRc		45 ~ 50 HRc		50 ~ 55 HRc	
Strength	145,038 ~ 181,298lbf / inch²		217,557 ~ 253,817lbf / inch²		253,817 ~ 290,076lbf / inch²	
Cutting Diameter(inch)	RPM	FEED	RPM	FEED	RPM	FEED
3/16	13,440	45.40	6,000	41.60	5,760	39.40
1/4	13,440	58.20	5,520	44.10	5,200	42.50
5/16	10,080	71.50	4,480	39.40	4,240	36.20
3/8	8,740	76.90	3,880	36.30	3,720	34.60
1/2	6,720	66.20	3,480	35.60	3,320	33.00

RPM = rev. / min.
FEED = inch / min.

Ae: D3/16~D1/4=.008
D5/16~D1/2=.012
Ap: 0.5 X D



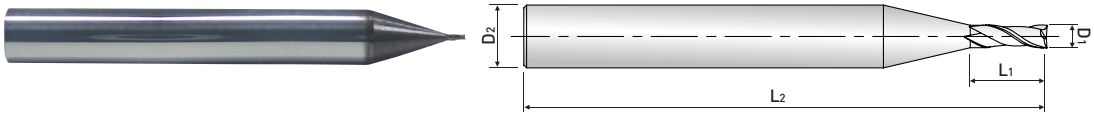
Ae: D3/16~D5/16=.010
D3/8~D1/2=.012
Ap: 0.05 X D

ZAMUS CLASSIC - MINIATURE

MZ502 Series

MINIATURE SQUARE / 2 FLUTES / REGULAR / AlTiN COATING

FINE GRAIN | Slotting | Side milling



TOLERANCE (inch)

D_1 = +0.0005 / -0.0005
D_1 = +0 / -0.0012 (DA412)
D_2 = h6

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO. / 2 Flute / Helix 30° / MZ502			Cutting Diameter (inch)	Cutting Length (inch)	Overall Length (inch)	Shank Diameter (inch)
AlTiN	DLC	BRIGHT	D1	L1	L2	D2
-	MZ50201201SP	-	0.006	0.009	1 1/2	1/8
-	MZ50201201SP	-	0.006	0.015	1 1/2	1/8
-	MZ50201201SP	-	0.006	0.018	1 1/2	1/8
-	MZ50201201SP	-	0.007	0.010	1 1/2	1/8
-	MZ50201201SP	-	0.007	0.015	1 1/2	1/8
-	MZ50201201SP	-	0.007	0.021	1 1/2	1/8
-	MZ50201201SP	-	0.012	0.015	1 1/2	1/8
-	MZ50200305DLCSP1	-	0.012	0.019	1 1/2	1/8
MZ502014	-	-	0.014	0.031	1 1/2	1/8
-	MZ50200355SP	-	0.014	0.042	1 1/2	1/8
MZ502016	-	-	0.016	0.031	1 1/2	1/8
MZ502020	-	-	0.020	0.040	1 1/2	1/8
MZ502024	-	-	0.024	0.047	1 1/2	1/8
MZ502028	-	-	0.028	0.055	1 1/2	1/8
MZ502031	-	-	0.031	0.063	1 1/2	1/8
MZ502035	-	-	0.035	0.080	1 1/2	1/8
MZ502040	-	-	0.040	0.100	1 1/2	1/8
MZ502043	-	-	0.043	0.100	1 1/2	1/8
MZ502047	-	-	0.047	0.157	1 1/2	1/8
MZ502052	-	-	0.052	0.157	1 1/2	1/8
MZ502055	-	-	0.055	0.157	1 1/2	1/8
MZ502062	-	-	0.062	0.157	1 1/2	1/8
-	MZ502008SP	-	0.800	2.400	3/8	3

Applicable Working Material

○ : GOOD ◎ : BEST

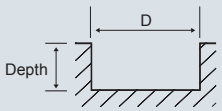
SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
MZ502	○	○	○	○	◎	○	○	○	○					◎	◎	◎	○				

MZ502 Series

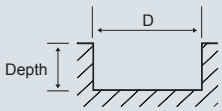
Feed Rate	High Speed Cutting			
Work Material	Alloy Steels, Tool Steels		Hardened Steels	
Hardness	30 ~ 45 HRc		45 ~ 55 HRc	
Strength	145,038 ~ 181,298lbf / inch²		217,557 ~ 253,817lbf / inch²	
Cutting Diameter(inch)	RPM	FEED	RPM	FEED
0.016	30,000	23.60	23,000	3.90
0.031	27,000	25.60	18,000	5.10
0.040	25,000	25.60	15,000	5.90
0.047	24,000	26.40	12,000	5.90
0.062	23,000	27.60	9,000	5.50

RPM = rev. / min.
FEED = inch / min.

D < .040
Depth=0.15 X D
D ≧ .040
Depth=0.25 X D



D < .040
Depth=0.02 X D
D ≧ .040
Depth=0.05 X D

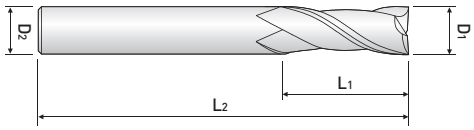


ULTRA FINE Slotting Side milling

ZAMUS CLASSIC

ZA5xx Series

SQUARE / 2,4,6 & 8 FLUTES / REGULAR, LONG & X-LONG /
AlTiN COATING



TOLERANCE (inch)

D_1 = +0 / -0.0012
D_2 = h6

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO.				Cutting Diameter (inch)	Cutting Length (inch)	Overall Length (inch)	Shank Diameter (inch)
2 Flute	4 Flute	6 Flute	8 Flute				
AlTiN	AlTiN	AlTiN	AlTiN				
Helix 30°	Helix 30°	Helix 45°	Helix 45°				
ZA502 ZA522	ZA504 ZA524	ZA506 ZA526	ZA508 ZA528	D1	L1	L2	D2
ZA502002	-	-	-	1/32	1/8	1 1/2	1/8
ZA502004	ZA504004	-	-	1/16	3/16	1 1/2	1/8
-	ZA524004	-	-	1/16	1/4	1 1/2	1/8
ZA502006	-	-	-	3/32	5/16	1 1/2	1/8
ZA502008	ZA504008	-	-	1/8	1/2	1 1/2	1/8
ZA522008	ZA524008	-	-	1/8	3/4	2 1/4	1/8
ZA502010	-	-	-	5/32	9/16	2	3/16
ZA502012	ZA504012	-	-	3/16	5/8	2	3/16
ZA522012	ZA524012	-	-	3/16	3/4	2 1/2	3/16
ZA502014	-	-	-	7/32	5/8	2 1/2	1/4
-	-	ZA506016	-	1/4	1/2	2 1/4	1/4
ZA502016	ZA504016	-	-	1/4	3/4	2 1/2	1/4
-	-	ZA526016	-	1/4	1	2 3/4	1/4
ZA522016	ZA524016	-	-	1/4	1 1/8	3	1/4
ZA502018	-	-	-	9/32	3/4	2 1/2	5/16
-	-	ZA506020	-	5/16	3/4	2 1/2	5/16
ZA502020	ZA504020	-	-	5/16	13/16	2 1/2	5/16
ZA522020	ZA524020	-	-	5/16	1 1/8	3	5/16
-	-	ZA526020	-	5/16	1 1/2	3 5/8	5/16
-	-	ZA506024	-	3/8	7/8	2 7/8	3/8
ZA502024	ZA504024	-	-	3/8	1	2 1/2	3/8
ZA522024	ZA524024	-	-	3/8	1 1/8	3	3/8
-	-	ZA526024	-	3/8	1 3/4	4	3/8
ZA502026	-	-	-	13/32	1	2 3/4	7/16
ZA502028	ZA504028	-	-	7/16	1	2 3/4	7/16
ZA502032	ZA504032	-	-	1/2	1	3	1/2
-	-	ZA506032	-	1/2	1	3 1/4	1/2
ZA522032	ZA524032	-	-	1/2	2	4	1/2
-	-	ZA526032	-	1/2	2 3/16	4 3/8	1/2
ZA502036	-	-	-	9/16	1 1/8	3 1/2	9/16
ZA502040	ZA504040	-	-	5/8	1 1/4	3 1/2	5/8
-	-	ZA506040	-	5/8	1 1/4	3 5/8	5/8
ZA522040	ZA524040	-	-	5/8	2 1/4	5	5/8
-	-	ZA526040	-	5/8	2 5/8	5 1/8	5/8

Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
All	○	○	○	○	◎	○	○	○	○					◎	◎	◎	○				

ZAMUS CLASSIC

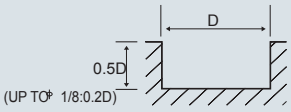
ZA5xx Series

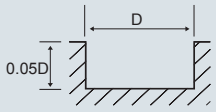
EDP NO.				Cutting Diameter (inch)	Cutting Length (inch)	Overall Length (inch)	Shank Diameter (inch)
2 Flute	4 Flute	6 Flute	8 Flute				
AlTiN	AlTiN	AlTiN	AlTiN				
Helix 30°	Helix 30°	Helix 45°	Helix 45°				
ZA502 ZA522	ZA504 ZA524	ZA506 ZA526	ZA508 ZA528	D1	L1	L2	D2
ZA502048	ZA504048	-	-	3/4	1 1/2	4	3/4
-	-	-	ZA508048	3/4	1 1/2	4 1/8	3/4
ZA522048	ZA524048	-	ZA528048	3/4	2 1/4	5	3/4
-	-	-	ZA528049	3/4	3 1/4	6	3/4
-	-	-	ZA528050	3/4	4 1/8	7	3/4
ZA502064	ZA504064	-	-	1	1 1/2	4	1
-	-	-	ZA508064	1	1 3/4	4 1/4	1
ZA522064	ZA524064	-	-	1	2 1/4	5	1
-	-	-	ZA528064	1	4 1/8	7	1

ZA502 Series

Work Material	Carbon Steels, Alloy Steels, Cast Iron		Alloy Steels, Tool Steels		Stainless Steels		Hardened Steels			
Hardness	≤ 30 HRc		30 ~ 45 HRc		-		45 ~ 55 HRc		55 ~ 65 HRc	
Strength	~ 145,038lbf / inch²		145,038 ~ 217,557lbf / inch²		-		217,557 ~ 290,076lbf / inch²		290,076lbf / inch²	
Cutting Diameter(inch)	RPM		FEED		RPM		FEED		RPM	
1/16	11,560	7.50	7,560	4.70	6,300	3.55	5,040	1.40		
1/8	8,920	8.25	5,560	5.50	4,620	4.70	3,360	1.55	1,900	1.55
3/16	6,300	12.60	3,780	7.50	3,160	6.30	2,320	1.95	1,260	1.55
1/4	5,560	13.80	3,360	8.65	2,840	7.10	2,000	2.15	1,100	1.55
5/16	4,200	14.95	2,520	7.85	2,100	7.10	1,680	2.95	840	1.55
3/8	3,260	13.00	2,000	6.30	1,680	6.30	1,360	2.35	680	1.40
1/2	2,740	11.00	1,680	5.10	1,360	5.10	1,160	2.15	560	1.40
5/8	2,200	8.65	1,360	4.30	1,060	4.30	900	1.55	440	0.80
3/4	1,680	6.70	1,060	3.15	840	3.15	680	1.20	320	0.80
1	1,360	5.10	840	2.75	680	2.35	540	0.80	260	0.60

RPM = rev. / min.
FEED = inch / min.

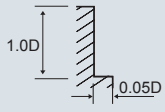


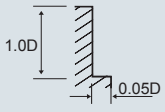


ZA504 Series

Work Material	Carbon Steels, Alloy Steels, Cast Iron		Alloy Steels, Tool Steels		Stainless Steels		Hardened Steels			
Hardness	≤ 30 HRc		30 ~ 45 HRc		-		45 ~ 55 HRc		55 ~ 65 HRc	
Strength	~ 145,038lbf / inch²		145,038 ~ 217,557lbf / inch²		-		217,557 ~ 290,076lbf / inch²		290,076lbf / inch²	
Cutting Diameter(inch)	RPM		FEED		RPM		FEED		RPM	
1/16	11,560	11.00	7,560	6.70	6,300.00	5.50	5,040	1.95		
1/8	8,920	12.60	5,560	7.85	4,620.00	6.70	3,360	2.35	1,900	2.35
3/16	6,300	23.60	3,780	14.15	3,160.00	11.80	2,320	2.75	1,260	2.35
1/4	5,560	26.00	3,360	16.15	2,840.00	13.00	2,000	3.15	1,100	2.35
5/16	4,200	27.95	2,520	14.95	2,100.00	13.80	1,680	4.30	840	2.35
3/8	3,260	24.00	2,000	11.80	1,680.00	11.80	1,360	3.55	680	1.95
1/2	2,740	20.50	1,680	9.85	1,360.00	9.45	1,160	3.15	560	1.95
5/8	2,200	16.15	1,360	7.85	1,060.00	7.85	900	2.35	440	1.20
3/4	1,680	12.60	1,060	6.30	840.00	5.90	680	1.55	320	1.20
1	1,360	9.85	840	5.10	680.00	4.70	540	1.20	260	0.80

RPM = rev. / min.
FEED = inch / min.

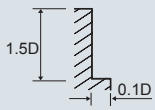


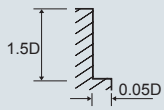


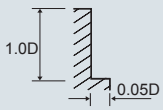
ZA506 & ZA508 Series

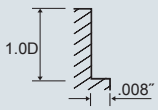
Feed Rate	General Speed Cutting							
Work Material	Carbon Steels, Alloy Steels, Cast Iron		Alloy Steels, Tool Steels		Hardened Steels			
Hardness	≤ 30 HRc		30 ~ 45 HRc		45 ~ 55 HRc		55 ~ 65 HRc	
Strength	~ 145,038lbf / inch²		145,038 ~ 217,557lbf / inch²		217,557 ~ 290,076lbf / inch²		290,076lbf / inch²	
Cutting Diameter(inch)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	5,560	79.00	3,880	54.00	1,580	8.25	1,100	5.10
5/16	4,200	79.00	2,940	54.00	1,160	8.25	840	5.10
3/8	3,360	79.00	2,320	54.00	1,000	8.25	680	5.10
1/2	2,840	66.00	2,000	46.00	840	7.10	560	4.35
5/8	2,100	50.00	1,480	35.00	640	5.10	420	2.75
3/4	1,680	40.00	1,160	27.00	500	4.35	320	2.35
1	1,260	25.00	870	17.50	375	3.00	240	1.54

RPM = rev. / min.
FEED = inch / min.



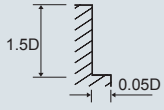


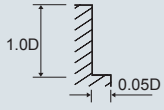


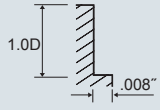


Feed Rate	High Speed Cutting					
Work Material	Carbon Steels, Tool Steels		Hardened Steels			
Hardness	≤ 50 HRc		50 ~ 60 HRc		≥ 65 HRc	
Strength	253,817lbf / inch²		253,817 ~ 301,679lbf / inch²		301,679lbf / inch²	
Cutting Diameter(inch)	RPM	FEED	RPM	FEED	RPM	FEED
1/4	16,800	240.00	8,400	120.00	4,200	58.00
5/16	12,600	240.00	6,300	120.00	3,160	58.00
3/8	9,980	235.00	5,040	120.00	2,520	58.00
1/2	8,400	199.00	4,200	100.00	2,100	50.00
5/8	6,300	149.00	3,160	75.00	1,580	37.00
3/4	5,040	120.00	2,520	58.00	1,260	30.00
1	3,790	75.00	1,890	38.00	950	19.00

RPM = rev. / min.
FEED = inch / min.





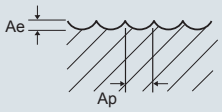


ZA522 Series

Feed Rate	General Speed Cutting					
Work Material	Carbon Steels,Alloy Steels, Cast Iron		Alloy Steels, Tool Steels		Hardened Steels	
Hardness	≤ 30 HRc		30 ~ 45 HRc		45 ~ 55 HRc	
Strength	~ 145,038lbf / inch²		145,038 ~ 217,557lbf / inch²		217,557 ~ 290,076lbf / inch²	
Cutting Diameter(inch)	RPM	FEED	RPM	FEED	RPM	FEED
1/8	4,410	7.80	3,570	2.40	2,200	1.20
3/16	3,050	4.10	2,420	3.30	1,580	1.60
1/4	2,630	4.90	2,100	4.10	1,370	2.00
5/16	2,000	5.30	1,580	4.10	1,050	2.00
3/8	1,680	5.30	1,370	4.10	840	2.00
1/2	1,370	4.10	1,160	3.70	700	1.60
5/8	1,160	3.70	890	3.00	560	1.40
3/4	840	2.80	680	2.00	420	1.00
1	610	2.00	540	1.60	330	0.70

RPM = rev. / min.
FEED = inch / min.

Ae: D3/16~D1/4=.008
D5/16~D1/2=.012
Ap: 0.2 X D

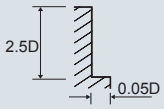


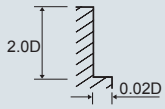
Ae: D3/16~D5/16=.010
D3/8~D1/2=.012
Ap: 0.1 X D

ZA524 Series

Feed Rate	General Speed Cutting							
Work Material	Carbon Steels, Alloy Steels, Cast Iron		Alloy Steels, Tool Steels		Hardened Steels			
Hardness	≤ 30 HRc		30 ~ 45 HRc		45 ~ 55 HRc		55 ~ 65 HRc	
Strength	~ 145,038lbf / inch²		145,038 ~ 217,557lbf / inch²		217,557 ~ 290,076lbf / inch²		290,076lbf / inch²	
Cutting Diameter(inch)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/16	4,410	4.50	3,570	3.90	2,200	2.20	1,890	1.20
1/8	3,050	7.10	2,420	5.50	1,580	2.80	1,260	1.60
3/16	2,630	8.50	2,100	7.10	1,370	3.50	1,160	2.00
1/4	2,000	9.10	1,580	7.10	1,050	3.50	840	2.00
5/16	1,680	9.10	1,370	7.10	840	3.50	670	2.00
3/8	1,370	7.10	1,160	6.30	700	2.80	560	1.60
1/2	1,160	6.30	890	4.90	560	2.40	440	1.40
5/8	840	4.50	680	3.50	420	1.80	340	1.00
3/4	670	4.50	540	3.50	340	1.80	270	1.00
1	1,360	9.85	840	5.10	540	1.20	260	0.80

RPM = rev. / min.
FEED = inch / min.

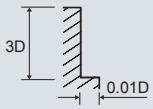


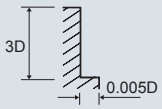


ZA526 & ZA528 Series

Feed Rate	High Speed Cutting							
Work Material	Carbon Steels, Alloy Steels, Cast Iron		Alloy Steels, Tool Steels		Hardened Steels			
Hardness	≤ 40 HRc		40 ~ 50 HRc		50 ~ 60 HRc		60 ~ 65 HRc	
Strength	~ 181,298lbf / inch^2		181,298 ~ 253,817lbf / inch^2		253,817 ~ 301,679lbf / inch^2		301,679lbf / inch^2	
Cutting Diameter(inch)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	2,230	19.00	1,670	14.00	1,390	10.00	1,110	8.00
5/16	1,670	18.00	1,250	13.00	1,050	9.50	840	7.00
3/8	1,330	17.00	1,000	12.00	840	9.00	680	6.30
1/2	1,110	16.00	840	11.00	690	8.50	560	6.00
5/8	840	13.00	630	9.00	530	6.50	420	5.00
3/4	670	11.00	500	8.00	420	6.00	320	4.70
1	540	9.50	400	6.50	340	5.00	270	3.70

RPM = rev. / min.
FEED = inch / min.



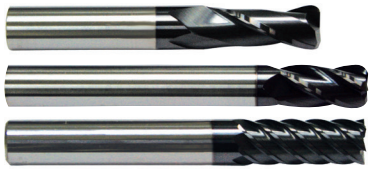


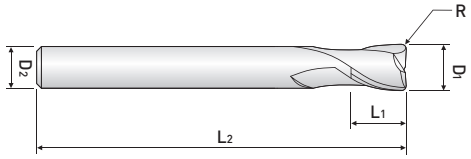
ULTRA FINE Slotting Side milling

ZAMUS CLASSIC

ZR5xxA Series

CORNER RADIUS / 2,4,6 & 8 FLUTES /
REGULAR, LONG & X-LONG / ALTiN COATING





TOLERANCE (inch)

D_1 = +0 / -0.0012
D_2 = h6
R = ±0.001

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO.				Cutting Diameter (inch)	Corner Radius (inch)	Cutting Length (inch)	Overall Length (inch)	Shank Diameter (inch)
2 Flute	4 Flute	6 Flute	8 Flute					
AlTiN	AlTiN	AlTiN	AlTiN					
Helix 30°	Helix 30°	Helix 45°	Helix 45°					
ZR502A	ZR504A	ZR506A	ZR508A					
ZR522A	ZR524A	-	-	D1	R	L1	L2	D2
ZR532A	ZR534A	-	-					
ZR502A00408	ZR504A00408	-	-	1/16	0.008	1/8	2 1/4	1/4
ZR522A00408	ZR524A00408	-	-	1/16	0.008	3/16	2 1/4	1/4
ZR502A00810	ZR504A00810	-	-	1/8	0.010	1/4	2 1/4	1/4
ZR502A00820	ZR504A00820	-	-	1/8	0.020	1/4	2 1/4	1/4
ZR502A00830	ZR504A00830	-	-	1/8	0.030	1/4	2 1/4	1/4
ZR522A00810	ZR524A00810	-	-	1/8	0.010	1/2	2 1/4	1/4
ZR522A00820	ZR524A00820	-	-	1/8	0.020	1/2	2 1/4	1/4
ZR522A00830	ZR524A00830	-	-	1/8	0.030	1/2	2 1/4	1/4
ZR502A01210	ZR504A01210	-	-	3/16	0.010	3/8	2 1/2	1/4
ZR502A01220	ZR504A01220	-	-	3/16	0.020	3/8	2 1/2	1/4
ZR502A01230	ZR504A01230	-	-	3/16	0.030	3/8	2 1/2	1/4
ZR522A01210	ZR524A01210	-	-	3/16	0.010	5/8	2 1/2	1/4
ZR522A01220	ZR524A01220	-	-	3/16	0.020	5/8	2 1/2	1/4
ZR522A01230	ZR524A01230	-	-	3/16	0.030	5/8	2 1/2	1/4
-	-	ZR506A01620	-	1/4	0.020	1/2	2 1/4	1/4
ZR502A01610	ZR504A01610	-	-	1/4	0.010	1/2	3	1/4
ZR502A01620	ZR504A01620	-	-	1/4	0.020	1/2	3	1/4
ZR502A01630	ZR504A01630	-	-	1/4	0.030	1/2	3	1/4
-	ZR504A01660	-	-	1/4	0.060	1/2	3	1/4
ZR522A01610	ZR524A01610	-	-	1/4	0.010	3/4	3	1/4
ZR522A01620	ZR524A01620	-	-	1/4	0.020	3/4	3	1/4
ZR522A01630	ZR524A01630	-	-	1/4	0.030	3/4	3	1/4
ZR522A01660	ZR524A01660	-	-	1/4	0.060	3/4	3	1/4
ZR532A01620	ZR534A01620	-	-	1/4	0.020	1 1/8	3	1/4
ZR532A01630	ZR534A01630	-	-	1/4	0.030	1 1/8	3	1/4
-	ZR534A01660	-	-	1/4	0.060	1 1/8	3	1/4
ZR502A02020	ZR504A02020	-	-	5/16	0.020	1/2	3	5/16
ZR502A02030	ZR504A02030	-	-	5/16	0.030	1/2	3	5/16
ZR502A02060	ZR504A02060	-	-	5/16	0.060	1/2	3	5/16
ZR502A02090	ZR504A02090	-	-	5/16	0.090	1/2	3	5/16
-	-	ZR506A02020	-	5/16	0.020	3/4	2 1/2	5/16
ZR522A02020	ZR524A02020	-	-	5/16	0.020	13/16	3	5/16
ZR522A02030	ZR524A02030	-	-	5/16	0.030	13/16	3	5/16

Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
All	○	○	○	○	◎	○	○	○	○					◎	◎	◎	○				

ZAMUS CLASSIC

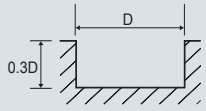
ZR5xxA Series

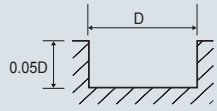
EDP NO.				Cutting Diameter (inch)	Corner Radius (inch)	Cutting Length (inch)	Overall Length (inch)	Shank Diameter (inch)
2 Flute	4 Flute	6 Flute	8 Flute					
AlTiN	AlTiN	AlTiN	AlTiN					
Helix 30°	Helix 30°	Helix 45°	Helix 45°					
ZR502A	ZR504A	ZR506A	ZR508A					
ZR522A	ZR524A	-	-	D1	R	L1	L2	D2
ZR532A	ZR534A	-	-					
ZR522A02060	ZR524A02060	-	-	5/16	0.060	13/16	3	5/16
ZR522A02090	ZR524A02090	-	-	5/16	0.090	13/16	3	5/16
ZR532A02020	ZR534A02020	-	-	5/16	0.020	1 1/8	3	5/16
ZR532A02030	ZR534A02030	-	-	5/16	0.030	1 1/8	3	5/16
ZR532A02060	ZR534A02060	-	-	5/16	0.060	1 1/8	3	5/16
ZR532A02090	ZR534A02090	-	-	5/16	0.090	1 1/8	3	5/16
ZR502A02420	ZR504A02420	-	-	3/8	0.020	5/8	3	3/8
ZR502A02430	ZR504A02430	-	-	3/8	0.030	5/8	3	3/8
ZR502A02460	ZR504A02460	-	-	3/8	0.060	5/8	3	3/8
ZR502A02490	ZR504A02490	-	-	3/8	0.090	5/8	3	3/8
-	-	ZR506A02420	-	3/8	0.020	7/8	2 7/8	3/8
-	-	ZR506A02430	-	3/8	0.030	7/8	2 7/8	3/8
ZR522A02420	ZR524A02420	-	-	3/8	0.020	1	3	3/8
ZR522A02430	ZR524A02430	-	-	3/8	0.030	1	3	3/8
ZR522A02460	ZR524A02460	-	-	3/8	0.060	1	3	3/8
ZR522A02490	ZR524A02490	-	-	3/8	0.090	1	3	3/8
ZR532A02420	ZR534A02420	-	-	3/8	0.020	1 1/8	3	3/8
ZR532A02430	ZR534A02430	-	-	3/8	0.030	1 1/8	3	3/8
ZR532A02460	ZR534A02460	-	-	3/8	0.060	1 1/8	3	3/8
ZR532A02490	ZR534A02490	-	-	3/8	0.090	1 1/8	3	3/8
ZR522A02820	ZR524A02820	-	-	7/16	0.020	1	4	7/16
ZR522A02830	ZR524A02830	-	-	7/16	0.030	1	4	7/16
ZR522A02860	ZR524A02860	-	-	7/16	0.060	1	4	7/16
ZR522A02890	ZR524A02890	-	-	7/16	0.090	1	4	7/16
ZR502A03220	ZR504A03220	-	-	1/2	0.020	5/8	4	1/2
ZR502A03230	ZR504A03230	-	-	1/2	0.030	5/8	4	1/2
ZR502A03260	ZR504A03260	-	-	1/2	0.060	5/8	4	1/2
ZR502A03290	ZR504A03290	-	-	1/2	0.090	5/8	4	1/2
-	-	ZR506A03220	-	1/2	0.020	1	3 1/4	1/2
-	-	ZR506A03230	-	1/2	0.030	1	3 1/4	1/2
ZR522A03220	ZR524A03220	-	-	1/2	0.020	1	4	1/2
ZR522A03230	ZR524A03230	-	-	1/2	0.030	1	4	1/2
ZR522A03260	ZR524A03260	-	-	1/2	0.060	1	4	1/2
ZR522A03290	ZR524A03290	-	-	1/2	0.090	1	4	1/2
ZR532A03220	ZR534A03220	-	-	1/2	0.020	2	4	1/2
ZR532A03230	ZR534A03230	-	-	1/2	0.030	2	4	1/2
ZR532A03260	ZR534A03260	-	-	1/2	0.060	2	4	1/2
ZR532A03290	ZR534A03290	-	-	1/2	0.090	2	4	1/2
-	-	ZR506A04030	-	5/8	0.030	1 1/4	3 5/8	5/8
-	-	ZR506A04060	-	5/8	0.060	1 1/4	3 5/8	5/8
-	-	-	ZR508A04830	3/4	0.030	1 1/2	4 1/8	3/4
-	-	-	ZR508A04860	3/4	0.060	1 1/2	4 1/8	3/4
-	-	-	ZR508A04890	3/4	0.090	1 1/2	4 1/8	3/4

ZR502A, ZR522A, ZR532A Series

Feed Rate	General Speed Cutting							
Work Material	Carbon Steels, Alloy Steels, Cast Iron		Alloy Steels, Tool Steels		Hardened Steels			
Hardness	≤ 30 HRc		30 ~ 38 HRc		45 ~ 55 HRc		55 ~ 65 HRc	
Strength	~ 145,038lbf / inch^2		145,038 ~ 174,046lbf / inch^2		203,053 ~ 290,076lbf / inch^2		290,076lbf / inch^2	
Cutting Diameter(inch)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	2,630	4.90	2,100	4.20	1,370	2.00	1,160	1.40
5/16	2,000	5.30	1,580	4.20	1,050	2.00	840	1.40
3/8	1,680	5.30	1,370	4.20	840	2.00	670	1.40
1/2	1,370	4.20	1,160	3.80	700	1.50	550	1.00

RPM = rev. / min.
FEED = inch / min.

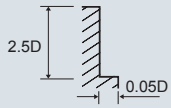


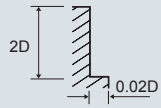


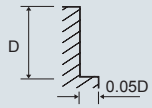
ZR504A, ZR524A, ZR534A Series

Feed Rate	General Speed Cutting							
Work Material	Carbon Steels, Alloy Steels, Cast Iron		Alloy Steels, Tool Steels		Hardened Steels			
Hardness	≤ 30 HRc		30 ~ 50 HRc		50 ~ 55 HRc		55 ~ 65 HRc	
Strength	~ 145,038lbf / inch^2		145,038 ~ 174,046lbf / inch^2		203,053 ~ 290,076lbf / inch^2		290,076lbf / inch^2	
Cutting Diameter(inch)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	2,630	8.50	2,100	7.10	1,370	3.30	1,160	2.00
5/16	2,000	9.00	1,580	7.10	1,050	3.30	840	2.00
3/8	1,680	9.00	1,370	7.10	840	3.30	670	2.00
1/2	1,370	7.10	1,160	6.30	700	2.80	550	1.50

RPM = rev. / min.
FEED = inch / min.



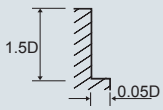


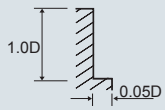


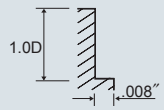
ZR506A, ZR508A Series

Feed Rate	High Speed Cutting					
Work Material	Carbon Steels, Alloy Steels, Cast Iron		Alloy Steels, Tool Steels		Hardened Steels	
Hardness	≤ 50 HRc		50 ~ 60 HRc		60 ~ 65 HRc	
Strength	253,817lbf / inch^2		253,817lbf / inch^2		301,679lbf / inch^2	
Cutting Diameter(inch)	RPM	FEED	RPM	FEED	RPM	FEED
1/4	16,800	240.00	8,400	120.00	4,200	58.00
5/16	12,600	240.00	6,300	120.00	3,200	58.00
3/8	10,000	235.00	5,000	120.00	2,500	58.00
1/2	8,400	200.00	4,200	100.00	2,100	50.00
5/8	6,300	150.00	3,150	75.00	1,600	37.00
3/4	5,000	120.00	2,500	58.00	1,260	30.00

RPM = rev. / min.
FEED = inch / min.





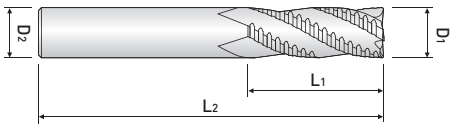


ZAMUS CLASSIC

FA50x Series

ROUGHER / 2,4 & 5 FLUTES / REGULAR / ALTiN COATING

ULTRA FINE | Slotting | Side milling | Flat Shallow Pitch



TOLERANCE (inch)

D_1 = +0 / -0.0022 (FA503)
D_1 = +0 / -0.0027 (FA504)
D_1 = +0 / -0.0033 (FA505)
D_2 = h6

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO.			Cutting Diameter (inch)	Cutting Length (inch)	Overall Length (inch)	Shank Diameter (inch)
3 Flute	4 Flute	5 Flute				
AlTiN	AlTiN	AlTiN				
Helix 20°	Helix 20°	Helix 20°				
FA503	FA504	FA505	D1	L1	L2	D2
FA503016	-	-	1/4	3/4	2 1/2	1/4
FA503020	-	-	5/16	3/4	2 1/2	5/16
FA503024	-	-	3/8	7/8	2 1/2	3/8
-	FA504032	-	1/2	1	3	1/2
-	FA504040	-	5/8	1 1/4	3 1/2	5/8
-	FA504048	-	3/4	1 5/8	4	3/4
-	-	FA505064	1	1 3/4	4	1

Applicable Working Material

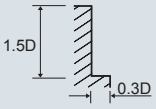
○ : GOOD ◎ : BEST

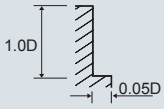
SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
FA5xx	○	○	○	○	◎	○	○	○	○					◎	◎	◎	○				

FA50x Series

Feed Rate	General Speed Cutting									
Work Material	Non-Alloyed Steels, Alloy Steels, Cast Iron		Alloy Steels, Heat Resistant Steels		Alloy Steels, Heat Resistant Steels		Hardened Steels			
Hardness	≤ 30 HRc		30 ~ 45 HRc		-		45 ~ 55 HRc		55 ~ 65 HRc	
Strength	~ 145,038lbf / inch^2		145,038 ~ 217,557lbf / inch^2		-		217,557 ~ 290,076lbf / inch^2		290,076lbf / inch^2	
Cutting Diameter(inch)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	15,600	91.35	12,400	33.10	8,400	22.45	3,400	10.25	2,400	7.50
5/16	11,600	91.35	9,200	33.10	6,300	22.45	2,400	9.50	1,800	7.10
3/8	9,200	91.35	7,600	33.10	5,100	22.45	2,000	11.40	1,300	7.50
1/2	8,000	94.50	6,000	31.50	4,200	22.45	1,680	10.25	1,200	7.50
5/8	6,000	94.50	4,800	29.90	3,300	20.05	1,200	6.30	800	4.35
3/4	5,200	91.35	4,400	28.35	2,700	16.55	1,100	5.90	700	3.95
1	4,800	85.05	3,600	22.05	2,400	14.15	1,000	5.90	660	3.95

RPM = rev. / min.
FEED = inch / min.



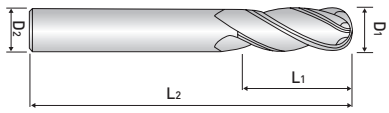


ZAMUS SUS MATE

XXB5xxA Series

BALL / 4 FLUTES / VARIABLE HELIX / STUB & REGULAR /
TiAlN-SH COATING

FINE GRAIN | Plunge | Profile | Variable index



TOLERANCE (inch)

D_1 = +0 / -0.0012 (1/8 up to 1/4)
D_1 = +0 / -0.0016 (5/16 up to 3/8)
D_1 = +0 / -0.002 (1/2 up to 1)
D_2 = h6

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO. 4 Flute TiAlN-SH Variable Helix	Cutting Diameter (inch)	Cutting Length (inch)	Overall Length (inch)	Shank Diameter (inch)
XXB504A XXB524A	D1	L1	L2	D2
XXB504A008	1/8	1/2	2	1/8
XXB504A012	3/16	5/8	2 1/4	3/16
XXB524A016	1/4	3/8	4	1/4
XXB504A016	1/4	3/4	2 1/2	1/4
XXB504A020	5/16	3/4	2 1/2	5/16
XXB524A024	3/8	1/2	4	3/8
XXB504A024	3/8	7/8	2 1/2	3/8
XXB524A032	1/2	5/8	5	1/2
XXB504A032	1/2	1	3	1/2
XXB504A033	1/2	1 1/4	3 1/4	1/2
XXB524A041	5/8	3/4	6	5/8
XXB504A040	5/8	1 1/4	3 1/2	5/8
XXB524A049	3/4	1	6	3/4
XXB504A048	3/4	1 1/2	4	3/4
XXB504A064	1	1 1/2	4	1

Applicable Working Material

○ : GOOD ◎ : BEST

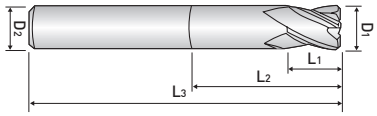
SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
All	◎	◎	◎	◎	○	◎	◎	◎				○	○	○	○				○		

ZAMUS SUS MATE

XXE5xxA Series

FINE GRAIN | Slotting | Side milling | Variable index

SQUARE / 4 FLUTE / VARIABLE HELIX / STUB & REGULAR / TiAlN-SH COATING



TOLERANCE (inch)

D_1 = +0 / -0.0012 (1/8 up to 1/4)
D_1 = +0 / -0.0016 (5/16 up to 3/8)
D_1 = +0 / -0.002 (1/2 up to 1)
D_2 = h6

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO. 4 Flute TiAlN-SH Variable Helix	Cutting Diameter (inch)	Cutting Length (inch)	Neck Diameter (inch)	Neck Length (inch)	Overall Length (inch)	Shank Diameter (inch)
XXE504A XXE524A XXE534A	D1	L1	L2	L2	L3	D2
XXE504A008	1/8	3/8	-	-	1 1/2	1/8
XXE504A010	5/32	7/16	-	-	2	3/16
XXE504A012	3/16	7/16	-	-	2	3/16
XXE524A016	1/4	3/8	-	-	4	1/4
XXE534A016	1/4	3/8	0.240	1 1/4	4	1/4
XXE504A016	1/4	1/2	-	-	2 1/2	1/4
XXE504A017	1/4	3/4	-	-	2 1/2	1/4
XXE504A020	5/16	13/16	-	-	2 1/2	5/16
XXE524A024	3/8	1/2	-	-	4	3/8
XXE534A024	3/8	1/2	0.365	1 7/8	4	3/8
XXE504A024	3/8	7/8	-	-	2 1/2	3/8
XXE504A028	7/16	1	-	-	2 3/4	7/16
XXE534A032	1/2	5/8	0.490	2 1/4	4	1/2
XXE524A032	1/2	5/8	-	-	5	1/2
XXE504A032	1/2	1	-	-	3	1/2
XXE524A033	1/2	5/8	-	-	6	1/2
XXE504A033	1/2	1 1/4	-	-	3 1/4	1/2
XXE504A036	9/16	1 1/8	-	-	3 1/2	9/16
XXE534A040	5/8	3/4	0.615	2 1/4	4 1/8	5/8
XXE524A040	5/8	3/4	-	-	5	5/8
XXE524A041	5/8	3/4	-	-	6	5/8
XXE504A040	5/8	1 1/4	-	-	3 1/2	5/8
XXE534A048	3/4	1	0.740	2 1/4	4 1/4	3/4
XXE524A048	3/4	1	-	-	5	3/4
XXE524A049	3/4	1	-	-	6	3/4
XXE504A048	3/4	1 1/2	-	-	4	3/4
XXE534A064	1	1 1/8	0.990	2 1/4	4 1/2	1
XXE504A064	1	1 1/2	-	-	4	1

Applicable Working Material

○ : GOOD ◎ : BEST

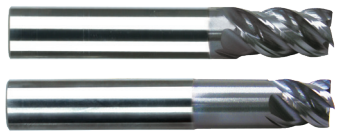
SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
All	◎	◎	◎	◎	○	◎	◎	◎				○	○	○	○				○		

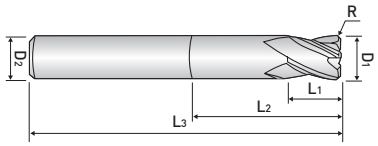
ZAMUS SUS MATE

XXR5xxA Series

FINE GRAIN | Slotting | Side milling | Ramping | Variable index

CORNER RADIUS / 4 FLUTE / VARIABLE HELIX /
STUB & REGULAR / TiAlN-SH COATING





TOLERANCE (inch)

D_1 = +0 / -0.0012 (1/8 up to 1/4)
D_1 = +0 / -0.0016 (5/16 up to 3/8)
D_1 = +0 / -0.002 (1/2 up to 1)
D_2 = h6
R = ±0.001

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO. 4 Flute TiAlN-SH Variable Helix	Cutting Diameter (inch)	Corner Radius (inch)	Cutting Length (inch)	Neck Length (inch)	Overall Length (inch)	Shank Diameter (inch)
XXR504A XXR514A XXR524A XXR534A	D1	R	L1	L2	L3	D2
XXR504A008010	1/8	0.010	1/4	-	1 1/2	1/8
XXR504A008015	1/8	0.015	3/8	-	1 1/2	1/8
XXR514A008010	1/8	0.010	3/8	-	1 1/2	1/8
XXR504A010010	5/32	0.010	5/16	-	2	3/16
XXR504A012010	3/16	0.010	3/8	-	2	3/16
XXR514A012015	3/16	0.015	7/16	-	2	3/16
XXR524A016030	1/4	0.030	3/8	-	4	1/4
XXR534A016015	1/4	0.015	3/8	1 1/4	4	1/4
XXR504A016015	1/4	0.015	7/16	-	2	1/4
XXR514A016015	1/4	0.015	1/2	-	2 1/2	1/4
XXR514A016030	1/4	0.030	1/2	-	2 1/2	1/4
XXR514A017015	1/4	0.015	3/4	-	2 1/2	1/4
XXR514A017030	1/4	0.030	3/4	-	2 1/2	1/4
XXR504A020020	5/16	0.020	1/2	-	2	5/16
XXR514A020030	5/16	0.030	13/16	-	2 1/2	5/16
XXR524A024030	3/8	0.030	1/2	-	4	3/8
XXR534A024030	3/8	0.030	1/2	1 7/8	4	3/8
XXR504A024020	3/8	0.020	5/8	-	2	3/8
XXR514A024015	3/8	0.015	7/8	-	2 1/2	3/8
XXR514A024030	3/8	0.030	7/8	-	2 1/2	3/8
XXR504A032030	1/2	0.030	5/8	-	2 1/2	1/2
XXR534A032020	1/2	0.020	5/8	2 1/4	4	1/2
XXR524A032020	1/2	0.020	5/8	-	5	1/2
XXR524A033030	1/2	0.030	5/8	-	6	1/2
XXR514A032010	1/2	0.010	1	-	3	1/2
XXR514A032020	1/2	0.020	1	-	3	1/2
XXR514A032030	1/2	0.030	1	-	3	1/2
XXR514A032030F	1/2	0.030	1	-	3	1/2
XXR514A032060	1/2	0.060	1	-	3	1/2
XXR514A033010	1/2	0.010	1 1/4	-	3 1/4	1/2
XXR514A033020	1/2	0.020	1 1/4	-	3 1/4	1/2
XXR514A033030	1/2	0.030	1 1/4	-	3 1/4	1/2

Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
All	◎	◎	◎	◎	○	◎	◎	◎				○	○	○	○				○		

ZAMUS SUS MATE

XXR5xxA Series

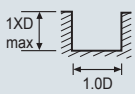
EDP NO. 4 Flute TiAlN-SH Variable Helix	Cutting Diameter (inch)	Corner Radius (inch)	Cutting Length (inch)	Neck Length (inch)	Overall Length (inch)	Shank Diameter (inch)
XXR504A XXR514A XXR524A XXR534A	D1	R	L1	L2	L3	D2

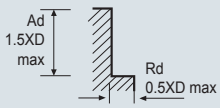
XXB5xxA, XXE5xxA & XXR5xxA Series

Work Material	Low Carbon Steels				Medical Alloy Steels		Mold & Die Steels		Cast Iron Gray		Cast Iron Ductile	
Hardness	≤ 175 HB		≤ 275 HB		≤ 275 HB		≤ 275 HB		≤ 200 HB		≤ 300 HB	
Cutting Diameter(inch)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	FEED	RPM
1/8	15,585	12	12,835	10	10,695	8	5,500	4	14,515	11	7,335	5
3/16	10,360	20	8,560	17	7,150	14	3,670	8	9,690	19	4,880	9
1/4	7,795	24	6,420	20	5,350	17	2,750	8	7,260	23	3,665	11
5/16	6,235	29	5,135	24	4,280	20	2,200	10	5,805	27	2,935	14
3/8	5,195	39	4,280	32	3,565	27	1,835	13	4,840	36	2,445	18
7/16	4,455	38	3,665	31	3,055	26	1,570	13	4,145	35	2,095	18
1/2	3,895	37	3,210	30	2,675	25	1,375	13	3,630	34	1,835	17
9/16	3,465	35	2,850	29	2,375	24	1,220	12	3,225	32	1,630	16
5/8	3,115	33	2,565	27	2,140	23	1,100	11	2,905	31	1,465	15
3/4	2,600	31	2,140	25	1,785	21	915	11	2,420	29	1,220	14
1	1,950	25	1,605	21	1,335	17	690	9	1,815	24	915	12

Work Material	Cast Iron Malleable		Stainless 300 Series		Stainless 400 Series		Stainless PH Series		Titanium Alloys		High Temp Alloys	
Hardness	≤ 300 HB		≤ 275 HB		≤ 185 HB		≤ 232 HB		≤ 295 HB		≤ 300 HB	
Cutting Diameter(inch)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	4,585	4	9,170	7	12,835	10	7,640	5	9,170	9	2,445	2
3/16	3,070	6	6,080	12	8,550	17	5,080	10	6,080	14	1,600	3
1/4	2,290	7	4,585	14	6,420	22	3,820	12	4,585	16	1,220	3
5/16	1,835	8	3,665	16	5,135	25	3,055	14	3,665	18	980	4
3/8	1,530	11	3,055	16	4,280	25	2,545	14	3,055	18	815	4
7/16	1,310	11	2,620	16	3,665	25	2,185	14	2,620	18	700	4
1/2	1,145	11	2,290	16	3,210	25	1,910	14	2,290	18	610	4
9/16	1,020	10	2,035	20	2,850	29	1,700	17	2,035	20	545	6
5/8	915	9	1,835	16	2,565	25	1,530	14	1,835	18	490	4
3/4	765	9	1,520	15	2,410	22	1,275	12	1,520	16	400	4
1	575	7	1,145	15	1,605	22	955	12	1,145	16	305	3

RPM = rev. / min.
FEED = inch / min.

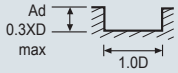


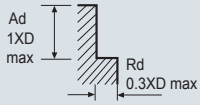


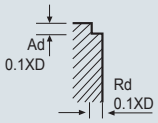
※ Use a rigid and precise machines and holders.
※ Use a suitable cutting oil.

End Cutting / Feed Speed	Slotting		Side Milling		High Speed Cutting	
Work Material	Hardened Steels		Hardened Steels		Hardened Steels	
Hardness	30 ~ 45 HRc		30 ~ 45 HRc		30 ~ 45 HRc	
Cutting Diameter(inch)	RPM	FEED	RPM	FEED	RPM	FEED
1/8	6,573	16	6,573	16	17,121	75
3/16	4,382	16	4,382	16	11,414	78
1/4	3,287	17	3,287	17	8,561	75
5/16	2,629	17	2,629	17	6,848	77
3/8	2,191	17	2,191	17	5,707	75
7/16	1,878	17	1,878	17	4,892	76
1/2	1,643	16	1,643	16	4,280	75
9/16	1,461	16	1,461	16	3,805	75
5/8	1,315	16	1,315	16	3,424	75
3/4	1,096	17	1,096	17	2,854	75
1	822	16	822	16	2,140	73

RPM = rev. / min.
FEED = inch / min.







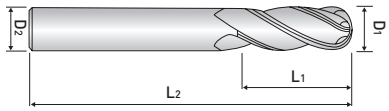
※ Use a rigid and precise machines and holders.
※ Use a suitable cutting oil.

NEO CLASSIC X-STAR

XXB5xxA Series

FINE GRAIN | Plunge | Profile | Variable index

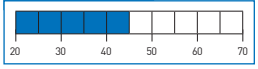
BALL / 4 FLUTES / VARIABLE HELIX / STUB & REGULAR /
TiAlN-SH COATING



TOLERANCE (inch)

D_1 = +0 / -0.0012 (1/8 up to 1/4)
D_1 = +0 / -0.0016 (5/16 up to 3/8)
D_1 = +0 / -0.002 (1/2 up to 1)
D_2 = h6

HARDNESS (HRc)



EDP NO. 4 Flute TiAlN-SH Variable Helix	Cutting Diameter (inch)	Cutting Length (inch)	Overall Length (inch)	Shank Diameter (inch)
XXB504A XXB524A	D1	L1	L2	D2
XXB504A008	1/8	1/2	2	1/8
XXB504A012	3/16	5/8	2 1/4	3/16
XXB524A016	1/4	3/8	4	1/4
XXB504A016	1/4	3/4	2 1/2	1/4
XXB504A020	5/16	3/4	2 1/2	5/16
XXB524A024	3/8	1/2	4	3/8
XXB504A024	3/8	7/8	2 1/2	3/8
XXB524A032	1/2	5/8	5	1/2
XXB504A032	1/2	1	3	1/2
XXB504A033	1/2	1 1/4	3 1/4	1/2
XXB524A041	5/8	3/4	6	5/8
XXB504A040	5/8	1 1/4	3 1/2	5/8
XXB524A049	3/4	1	6	3/4
XXB504A048	3/4	1 1/2	4	3/4
XXB504A064	1	1 1/2	4	1

Applicable Working Material

○ : GOOD ◎ : BEST

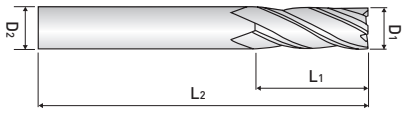
SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
All	◎	◎	◎	◎	○	◎	◎	◎				○	○	○	○				○		

NEO CLASSIC X-STAR

XE5xxA Series

SQUARE / 4 & 5 FLUTE / VARIABLE HELIX / STUB & REGULAR /
AlTiN OR TiAlN-SH COATING

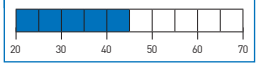
MG FINE GRAIN | Slotting | Side milling | Variable index



TOLERANCE (inch)

D_1 = +0 / -0.0012 (1/8 up to 1/4)
D_1 = +0 / -0.0016 (1/4 up to 3/8)
D_1 = +0 / -0.002 (13/32 up to 1)
D_2 = h6

HARDNESS (HRc)



EDP NO.		Cutting Diameter (inch)	Cutting Length (inch)	Overall Length (inch)	Shank Diameter (inch)
4 Flute	5 Flute				
AlTiN	TiAlN-SH				
Variable Helix	Variable Helix				
XE504A -	XE505A XE515A	D1	L1	L2	D2
XE504A008	-	1/8	3/8	1 1/2	1/8
XE504A010	-	5/32	7/16	2	3/16
XE504A012S	-	3/16	3/8	2	3/16
XE504A012	-	3/16	7/16	2	3/16
XE504A014	-	7/32	7/16	2 1/2	1/4
-	XE505A016	1/4	3/8	2	1/4
XE504A016	-	1/4	1/2	2 1/2	1/4
-	XE515A016	1/4	5/8	2 1/2	1/4
XE504A017	-	1/4	3/4	2 1/2	1/4
XE504A018	-	9/32	5/8	2 1/2	5/16
-	XE515A018	9/32	5/8	2 1/2	5/16
-	XE505A020	5/16	7/16	2	5/16
XE504A020	-	5/16	13/16	2 1/2	5/16
XE504A020F	-	5/16	13/16	2 1/2	5/16
-	XE515A020	5/16	13/16	2 1/2	5/16
XE504A022	-	11/32	13/16	2 1/2	3/8
-	XE515A022	11/32	13/16	2 1/2	3/8
-	XE505A024	3/8	1/2	2	3/8
XE504A024	-	3/8	7/8	2 1/2	3/8
XE504A024F	-	3/8	7/8	2 1/2	3/8
-	XE515A024	3/8	7/8	2 1/2	3/8
-	XE515A026	13/32	7/8	2 3/4	7/16
XE504A026	-	13/32	15/16	2 3/4	7/16
-	XE505A028	7/16	9/16	2 1/2	7/16
XE504A028	-	7/16	1	2 3/4	7/16
-	XE515A028	7/16	1	2 3/4	7/16
XE504A030	-	15/32	1	3	1/2
-	XE515A030	15/32	1	3	1/2
-	XE505A032	1/2	5/8	2 1/2	1/2
XE504A032	-	1/2	1	3	1/2
XE504A032F	-	1/2	1	3	1/2
-	XE515A032	1/2	1 1/4	3	1/2
XE504A033	-	1/2	1 1/4	3 1/4	1/2

Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
XE504A	◎	◎	◎	◎	○	◎	◎	◎				○	○						○		
All	◎	◎	◎	◎	○	◎	◎	◎				◎	○	○	○	○			○		

NEO CLASSIC X-STAR

XE5xxA Series

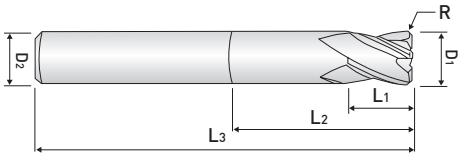
EDP NO.		Cutting Diameter (inch)	Cutting Length (inch)	Overall Length (inch)	Shank Diameter (inch)
4 Flute	5 Flute				
AlTiN	TiAlN-SH				
Variable Helix	Variable Helix				
XE504A -	XE505A XE515A	D1	L1	L2	D2
XE504A033F	-	1/2	1 1/4	3 1/4	1/2
XE504A036	-	9/16	1 1/8	3 1/2	9/16
XE504A036F	-	9/16	1 1/8	3 1/2	9/16
-	XE515A036	9/16	1 1/4	3 1/2	9/16
-	XE505A040	5/8	3/4	3	5/8
XE504A040	-	5/8	1 1/4	3 1/2	5/8
XE504A040F	-	5/8	1 1/4	3 1/2	5/8
-	XE515A040	5/8	1 1/4	3 1/2	5/8
-	XE505A048	3/4	1	3	3/4
XE504A048	-	3/4	1 1/2	4	3/4
XE504A048F	-	3/4	1 1/2	4	3/4
-	XE515A048	3/4	1 1/2	4	3/4
-	XE505A064	1	1	4	1
XE504A064	-	1	1 1/2	4	1
-	XE515A064	1	1 1/2	4	1

FINE GRAIN | Slotting | Side milling | Ramping | Variable index

NEO CLASSIC X-STAR

XR5xxA Series

CORNER RADIUS / 4 & 5 FLUTE / VARIABLE HELIX /
STUB & REGULAR / AlTiN OR TiAlN-SH COATING



TOLERANCE (inch)

D_1 = +0 / -0.0012 (1/8 up to 1/4)
D_1 = +0 / -0.0016 (1/4 up to 3/8)
D_1 = +0 / -0.002 (13/32 up to 1)
D_2 = h6
R = ±0.001

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO.		Cutting Diameter (inch)	Corner Radius (inch)	Cutting Length (inch)	Neck Length (inch)	Overall Length (inch)	Shank Diameter (inch)
4 Flute	5 Flute						
AlTiN-H	TiAlN-SH						
Variable Helix	Variable Helix						
XR504A XR514A XR524A -	XR505A XR515A XR525A XR535A	D1	R	L1	L2	L3	D2
XR504A008010	-	1/8	0.010	1/4	-	1 1/2	1/8
XR514A008010	-	1/8	0.010	3/8	-	1 1/2	1/8
XR504A010010	-	5/32	0.010	5/16	-	2	3/16
XR504A012010	-	3/16	0.010	3/8	-	2	3/16
XR514A012010	-	3/16	0.010	7/16	-	2	3/16
XR514A012020	-	3/16	0.020	7/16	-	2	3/16
XR514A012030	-	3/16	0.030	7/16	-	2	3/16
XR504A014015	-	7/32	0.015	3/8	-	2	1/4
-	XR505A016015	1/4	0.015	3/8	-	2	1/4
-	XR505A016030	1/4	0.030	3/8	-	2	1/4
XR504A016015	-	1/4	0.015	7/16	-	2	1/4
XR504A016015F	-	1/4	0.015	7/16	-	2	1/4
XR514A016010	-	1/4	0.010	1/2	-	2 1/2	1/4
XR514A016015	-	1/4	0.015	1/2	-	2 1/2	1/4
XR514A016030	-	1/4	0.030	1/2	-	2 1/2	1/4
XR524A016030	-	1/4	0.030	1/2	-	4	1/4
-	XR515A016015	1/4	0.015	5/8	-	2 1/2	1/4
-	XR515A016030	1/4	0.030	5/8	-	2 1/2	1/4
XR514A017010	-	1/4	0.010	3/4	-	2 1/2	1/4
XR514A017015	-	1/4	0.015	3/4	-	2 1/2	1/4
XR514A017030	-	1/4	0.030	3/4	-	2 1/2	1/4
XR514A017030F	-	1/4	0.030	3/4	-	2 1/2	1/4
-	XR525A016015	1/4	0.015	3/4	2 1/8	4	1/4
-	XR525A016030	1/4	0.030	3/4	2 1/8	4	1/4
XR514A018015	XR515A018015	9/32	0.015	5/8	-	2 1/2	5/16
-	XR515A018030	9/32	0.030	5/8	-	2 1/2	5/16
-	XR505A020015	5/16	0.015	7/16	-	2	5/16
-	XR505A020030	5/16	0.030	7/16	-	2	5/16
XR504A020020	-	5/16	0.020	1/2	-	2	5/16
XR514A020020	-	5/16	0.020	13/16	-	2 1/2	5/16
-	XR515A020015	5/16	0.015	13/16	-	2 1/2	5/16
-	XR515A020030	5/16	0.030	13/16	-	2 1/2	5/16

Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
XR5x4A Series	◎	◎	◎	◎	○	◎	◎	◎				○	○						○		
XR5x5A Series	◎	◎	◎	◎	○	◎	◎	◎				◎	○	○	○	○			○		

NEO CLASSIC X-STAR

XR5xxA Series

>>Continue

EDP NO.		Cutting Diameter (inch)	Corner Radius (inch)	Cutting Length (inch)	Neck Length (inch)	Overall Length (inch)	Shank Diameter (inch)
4 Flute	5 Flute						
AlTiN-H	TiAlN-SH						
Variable Helix	Variable Helix						
XR504A XR514A XR524A -	XR505A XR515A XR525A XR535A	D1	R	L1	L2	L3	D2
XR524A020020	-	5/16	0.020	13/16	-	4	5/16
-	XR525A020015	5/16	0.015	1	2 1/8	4	5/16
-	XR525A020030	5/16	0.030	1	2 1/8	4	5/16
XR514A022020	-	11/32	0.020	13/16	-	2 1/2	3/8
-	XR515A022015	11/32	0.015	13/16	-	2 1/2	3/8
-	XR515A022030	11/32	0.030	13/16	-	2 1/2	3/8
-	XR505A024015	3/8	0.015	1/2	-	2	3/8
-	XR505A024030	3/8	0.030	1/2	-	2	3/8
XR504A024020	-	3/8	0.020	5/8	-	2	3/8
XR504A024020F	-	3/8	0.020	5/8	-	2	3/8
XR514A024010	-	3/8	0.010	7/8	-	2 1/2	3/8
XR514A024015	XR515A024015	3/8	0.015	7/8	-	2 1/2	3/8
XR514A024015F	-	3/8	0.015	7/8	-	2 1/2	3/8
XR514A024020	-	3/8	0.020	7/8	-	2 1/2	3/8
XR514A024020F	-	3/8	0.020	7/8	-	2 1/2	3/8
XR514A024030	XR515A024030	3/8	0.030	7/8	-	2 1/2	3/8
XR514A024030F	-	3/8	0.030	7/8	-	2 1/2	3/8
XR514A024060	-	3/8	0.060	7/8	-	2 1/2	3/8
XR524A024020	-	3/8	0.020	7/8	-	5	3/8
-	XR525A024015	3/8	0.015	1	2 1/8	4	3/8
-	XR525A024030	3/8	0.030	1	2 1/8	4	3/8
-	XR535A024015	3/8	0.015	1 1/4	3 3/8	6	3/8
-	XR535A024030	3/8	0.030	1 1/4	3 3/8	6	3/8
-	XR515A026015	13/32	0.015	7/8	-	2 3/4	7/16
-	XR515A026030	13/32	0.030	7/8	-	2 3/4	7/16
-	XR505A028015	7/16	0.015	9/16	-	2 1/2	7/16
-	XR505A028030	7/16	0.030	9/16	-	2 1/2	7/16
XR504A028020	-	7/16	0.020	5/8	-	2 1/2	7/16
XR514A028020	XR515A028020	7/16	0.020	1	-	2 3/4	7/16
XR514A028020F	-	7/16	0.020	1	-	2 3/4	7/16
XR514A028030	XR515A028030	7/16	0.030	1	-	2 3/4	7/16
XR524A028020	-	7/16	0.020	1	-	6	7/16
-	XR525A028030	7/16	0.030	1 1/4	2 1/8	4	7/16
-	XR535A028020	7/16	0.020	1 1/2	3 3/8	6	7/16
-	XR535A028030	7/16	0.030	1 1/2	3 3/8	6	7/16
-	XR515A030015	15/32	0.015	1	-	3	1/2
-	XR515A030030	15/32	0.030	1	-	3	1/2
-	XR505A032015	1/2	0.015	5/8	-	2 1/2	1/2
XR504A032030	XR505A032030	1/2	0.030	5/8	-	2 1/2	1/2
XR504A032030F	-	1/2	0.030	5/8	-	2 1/2	1/2
-	XR525A032015SP	1/2	0.015	0.778	0.7	3	1/2
XR514A032010	-	1/2	0.010	1	-	3	1/2
XR514A032020	-	1/2	0.020	1	-	3	1/2

NEO CLASSIC X-STAR

XR5xxA Series

>>Continue

EDP NO.		Cutting Diameter (inch)	Corner Radius (inch)	Cutting Length (inch)	Neck Length (inch)	Overall Length (inch)	Shank Diameter (inch)
4 Flute	5 Flute						
AlTiN-H	TiAlN-SH						
Variable Helix	Variable Helix						
XR504A XR514A XR524A -	XR505A XR515A XR525A XR535A	D1	R	L1	L2	L3	D2
XR514A032020F	-	1/2	0.020	1	-	3	1/2
XR514A032030	-	1/2	0.030	1	-	3	1/2
XR514A032030F	-	1/2	0.030	1	-	3	1/2
XR514A032060	-	1/2	0.060	1	-	3	1/2
XR514A032090	-	1/2	0.090	1	-	3	1/2
XR524A032030	-	1/2	0.030	1	-	6	1/2
-	XR515A032020	1/2	0.020	1 1/4	-	3	1/2
-	XR515A032030	1/2	0.030	1 1/4	-	3	1/2
-	XR515A032030F	1/2	0.030	1 1/4	-	3	1/2
-	XR515A032045	1/2	0.045	1 1/4	-	3	1/2
-	XR515A032060	1/2	0.060	1 1/4	-	3	1/2
-	XR515A032090	1/2	0.090	1 1/4	-	3	1/2
XR514A033010	-	1/2	0.010	1 1/4	-	3 1/4	1/2
XR514A033015	-	1/2	0.015	1 1/4	-	3 1/4	1/2
XR514A033030	-	1/2	0.030	1 1/4	-	3 1/4	1/2
XR514A033030F	-	1/2	0.030	1 1/4	-	3 1/4	1/2
XR514A033060	-	1/2	0.060	1 1/4	-	3 1/4	1/2
XR514A033060F	-	1/2	0.060	1 1/4	-	3 1/4	1/2
XR514A033090	-	1/2	0.090	1 1/4	-	3 1/4	1/2
-	XR525A032020	1/2	0.020	1 1/4	2 1/8	4	1/2
-	XR525A032030	1/2	0.030	1 1/4	2 1/8	4	1/2
-	XR525A032020L	1/2	0.020	1 3/8	3 1/8	5	1/2
-	XR525A032030L	1/2	0.030	1 3/8	3 1/8	5	1/2
-	XR535A032020	1/2	0.020	1 1/2	4 1/8	6	1/2
-	XR535A032030	1/2	0.030	1 1/2	4 1/8	6	1/2
XR514A036030	-	9/16	0.030	1 1/8	-	3 1/2	9/16
XR524A036030	-	9/16	0.030	1 1/8	-	6	9/16
-	XR515A036015	9/16	0.015	1 1/4	-	3	9/16
-	XR515A036030	9/16	0.030	1 1/4	-	3	9/16
XR504A040030	XR505A040030	5/8	0.030	3/4	-	3	5/8
XR504A040030F	-	5/8	0.030	3/4	-	3	5/8
-	XR505A040060	5/8	0.060	3/4	-	3	5/8
-	XR515A040030	5/8	0.030	1 1/4	-	3	5/8
-	XR515A040060	5/8	0.060	1 1/4	-	3	5/8
-	XR515A040090	5/8	0.090	1 1/4	-	3	5/8
-	XR515A040125	5/8	0.125	1 1/4	-	3	5/8
XR514A040030	-	5/8	0.030	1 1/4	-	3 1/2	5/8
XR514A040030F	-	5/8	0.030	1 1/4	-	3 1/2	5/8
XR514A040060	-	5/8	0.060	1 1/4	-	3 1/2	5/8
XR514A040090	-	5/8	0.090	1 1/4	-	3 1/2	5/8
XR514A040090F	-	5/8	0.090	1 1/4	-	3 1/2	5/8
XR514A040125	-	5/8	0.125	1 1/4	-	3 1/2	5/8
XR514A040125F	-	5/8	0.125	1 1/4	-	3 1/2	5/8

NEO CLASSIC X-STAR

XR5xxA Series

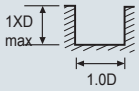
EDP NO.		Cutting Diameter (inch)	Corner Radius (inch)	Cutting Length (inch)	Neck Length (inch)	Overall Length (inch)	Shank Diameter (inch)
4 Flute	5 Flute						
AlTiN-H	TiAlN-SH						
Variable Helix	Variable Helix						
XR504A XR514A XR524A -	XR505A XR515A XR525A XR535A	D1	R	L1	L2	L3	D2
XR524A040060	-	5/8	0.060	1 1/4	-	6	5/8
-	XR525A040030	5/8	0.030	1 1/2	2 1/8	4	5/8
-	XR525A040060	5/8	0.060	1 1/2	2 1/8	4	5/8
-	XR515A040030SP	5/8	0.030	1 5/8	-	3 1/2	5/8
-	XR525A040030L	5/8	0.030	1 3/4	3 1/8	5	5/8
-	XR525A040060L	5/8	0.060	1 3/4	3 1/8	5	5/8
-	XR535A040030	5/8	0.030	2	4	6	5/8
-	XR535A040060	5/8	0.060	2	4	6	5/8
XR504A048030	XR505A048030	3/4	0.030	1	-	3	3/4
XR504A048030F	-	3/4	0.030	1	-	3	3/4
-	XR505A048060	3/4	0.060	1	-	3	3/4
-	XR515A048015	3/4	0.015	1 1/2	-	4	3/4
XR514A048030	XR515A048030	3/4	0.030	1 1/2	-	4	3/4
XR514A048030F	-	3/4	0.030	1 1/2	-	4	3/4
XR514A048040	-	3/4	0.040	1 1/2	-	4	3/4
XR514A048040F	-	3/4	0.040	1 1/2	-	4	3/4
-	XR515A048045	3/4	0.045	1 1/2	-	4	3/4
XR514A048060	XR515A048060	3/4	0.060	1 1/2	-	4	3/4
XR514A048060F	-	3/4	0.060	1 1/2	-	4	3/4
XR514A048090	XR515A048090	3/4	0.090	1 1/2	-	4	3/4
XR514A048090F	-	3/4	0.090	1 1/2	-	4	3/4
-	XR515A048125	3/4	0.125	1 1/2	-	4	3/4
XR524A048040	-	3/4	0.040	1 1/2	-	6	3/4
-	XR525A048015	3/4	0.015	1 7/8	3	5	3/4
-	XR525A048030	3/4	0.030	1 7/8	3	5	3/4
-	XR525A048060	3/4	0.060	1 7/8	3	5	3/4
-	XR535A048015	3/4	0.015	2 1/4	4	6	3/4
-	XR535A048030	3/4	0.030	2 1/4	4	6	3/4
-	XR535A048060	3/4	0.060	2 1/4	4	6	3/4
-	XR535A048030SP	3/4	0.030	3 1/2	-	6	3/4
XR514A064030	XR505A064030	1	0.030	1 1/2	-	4	1
XR514A064030F	-	1	0.030	1 1/2	-	4	1
XR514A064060	XR505A064060	1	0.060	1 1/2	-	4	1
XR514A064060F	-	1	0.060	1 1/2	-	4	1
XR514A064090	XR505A064090	1	0.090	1 1/2	-	4	1
XR524A064030	-	1	0.030	1 1/2	-	6	1
-	XR525A064015	1	0.015	2 1/4	3	5	1
-	XR525A064030	1	0.030	2 1/4	3	5	1
-	XR525A064060	1	0.060	2 1/4	3	5	1
-	XR535A064015	1	0.015	3	4	6	1
-	XR535A064030	1	0.030	3	4	6	1
-	XR535A064060	1	0.060	3	4	6	1

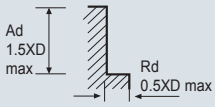
XXB5xxA, XE5xxA & XR5xxA Series

Work Material	Low Carbon Steels				Medical Alloy Steels		Mold & Die Steels		Cast Iron Gray		Cast Iron Ductile	
Hardness	≤ 175 HB		≤ 275 HB		≤ 275 HB		≤ 275 HB		≤ 200 HB		≤ 300 HB	
Cutting Diameter(inch)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	FEED	RPM
1/8	15,585	12	12,835	10	10,695	8	5,500	4	14,515	11	7,335	5
3/16	10,360	20	8,560	17	7,150	14	3,670	8	9,690	19	4,880	9
1/4	7,795	24	6,420	20	5,350	17	2,750	8	7,260	23	3,665	11
5/16	6,235	29	5,135	24	4,280	20	2,200	10	5,805	27	2,935	14
3/8	5,195	39	4,280	32	3,565	27	1,835	13	4,840	36	2,445	18
7/16	4,455	38	3,665	31	3,055	26	1,570	13	4,145	35	2,095	18
1/2	3,895	37	3,210	30	2,675	25	1,375	13	3,630	34	1,835	17
9/16	3,465	35	2,850	29	2,375	24	1,220	12	3,225	32	1,630	16
5/8	3,115	33	2,565	27	2,140	23	1,100	11	2,905	31	1,465	15
3/4	2,600	31	2,140	25	1,785	21	915	11	2,420	29	1,220	14
1	1,950	25	1,605	21	1,335	17	690	9	1,815	24	915	12

Work Material	Cast Iron Malleable		Stainless 300 Series		Stainless 400 Series		Stainless PH Series		Titanium Alloys		High Temp Alloys	
Hardness	≤ 300 HB		≤ 275 HB		≤ 185 HB		≤ 232 HB		≤ 295 HB		≤ 300 HB	
Cutting Diameter(inch)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	4,585	4	9,170	7	12,835	10	7,640	5	9,170	9	2,445	2
3/16	3,070	6	6,080	12	8,550	17	5,080	10	6,080	14	1,600	3
1/4	2,290	7	4,585	14	6,420	22	3,820	12	4,585	16	1,220	3
5/16	1,835	8	3,665	16	5,135	25	3,055	14	3,665	18	980	4
3/8	1,530	11	3,055	16	4,280	25	2,545	14	3,055	18	815	4
7/16	1,310	11	2,620	16	3,665	25	2,185	14	2,620	18	700	4
1/2	1,145	11	2,290	16	3,210	25	1,910	14	2,290	18	610	4
9/16	1,020	10	2,035	20	2,850	29	1,700	17	2,035	20	545	6
5/8	915	9	1,835	16	2,565	25	1,530	14	1,835	18	490	4
3/4	765	9	1,520	15	2,410	22	1,275	12	1,520	16	400	4
1	575	7	1,145	15	1,605	22	955	12	1,145	16	305	3

RPM = rev. / min.
FEED = inch / min.

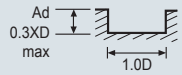


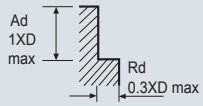


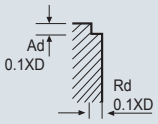
※ Use a rigid and precise machines and holders.
※ Use a suitable cutting oil.

End Cutting / Feed Speed	Slotting		Side Milling		High Speed Cutting	
Work Material	Hardened Steels		Hardened Steels		Hardened Steels	
Hardness	30 ~ 45 HRc		30 ~ 45 HRc		30 ~ 45 HRc	
Cutting Diameter(inch)	RPM	FEED	RPM	FEED	RPM	FEED
1/8	6,573	16	6,573	16	17,121	75
3/16	4,382	16	4,382	16	11,414	78
1/4	3,287	17	3,287	17	8,561	75
5/16	2,629	17	2,629	17	6,848	77
3/8	2,191	17	2,191	17	5,707	75
7/16	1,878	17	1,878	17	4,892	76
1/2	1,643	16	1,643	16	4,280	75
9/16	1,461	16	1,461	16	3,805	75
5/8	1,315	16	1,315	16	3,424	75
3/4	1,096	17	1,096	17	2,854	75
1	822	16	822	16	2,140	73

RPM = rev. / min.
FEED = inch / min.







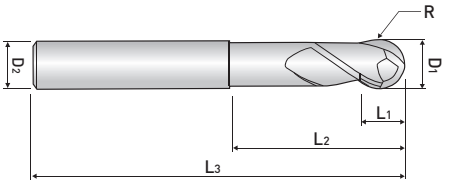
※ Use a rigid and precise machines and holders.
※ Use a suitable cutting oil.

ALU-WAVE

WAB312 Series

ULTRA FINE | Plunge | Profile

BALL / 2 FLUTES / STUB / BRIGHT



TOLERANCE (metric)

D_1 = +0.02 / -0.02
D_2 = h6

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO. 2 Flute Bright Helix 50°	Cutting Diameter (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
WAB312	D1	L1	L2	L3	D2
WAB312060	6.00	5.50	25.00	55.00	6.00
WAB312061	6.00	5.50	40.00	90.00	6.00
WAB312080	8.00	7.00	30.00	65.00	8.00
WAB312081	8.00	7.00	50.00	100.00	8.00
WAB312100	10.00	8.50	35.00	75.00	10.00
WAB312101	10.00	10.00	50.00	100.00	10.00
WAB312102	10.00	10.00	60.00	150.00	10.00
WAB312120	12.00	10.50	40.00	75.00	12.00
WAB312121	12.00	12.00	50.00	110.00	12.00
WAB312122	12.00	12.00	60.00	150.00	12.00
WAB312160	16.00	14.00	50.00	90.00	16.00
WAB312161	16.00	16.00	70.00	150.00	16.00
WAB312162	16.00	16.00	90.00	200.00	16.00
WAB312200	20.00	17.00	50.00	100.00	20.00

Applicable Working Material

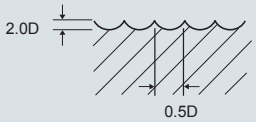
○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
WAB312										◎	◎								○		

WAB312 series

Work Material	Aluminum Alloy		Copper Alloy	
Cutting Diameter(metric)	RPM	FEED	RPM	FEED
6	18,000	1,750	5,500	440
8	14,000	2,000	4,200	500
10	14,000	2,350	4,200	580
12	14,000	3,000	4,200	750
16	11,000	2,700	3,300	670
20	8,000	2,200	2,200	600

RPM = rev. / min.
FEED = mm / min.

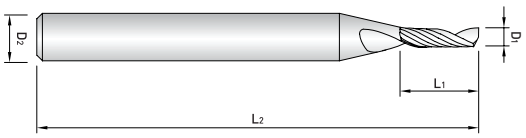


ALU-WAVE

WAE3xx Series

FINE GRAIN | Slotting | Side milling | Sharp edge

SQUARE / 1, 2 & 3 FLUTES / STUB, REGULAR & LONG / BRIGHT



TOLERANCE (metric)

D_1 = +0 / -0.02
D_1 = +0 / -0.03 (WAE301 D1<5)
D_2 = h6

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO.			Cutting Diameter (metric)	Cutting Length (metric)	Overall Length (metric)	Shank Diameter (metric)
1 Flute	2 Flute	3 Flute				
Bright	Bright	Bright				
Helix 30°	Helix 45°	Helix 45°				
WAE301	WAE302	WAE303	D1	L1	L2	D2
-	-	WAE323				
WAE301002	-	-	0.20	0.30	40.00	4.00
WAE301003	-	-	0.30	0.90	40.00	4.00
WAE301004	-	-	0.40	1.20	40.00	4.00
WAE301005	-	-	0.50	1.50	40.00	4.00
WAE301006	-	-	0.60	1.80	40.00	4.00
WAE301007	-	-	0.70	2.10	40.00	4.00
WAE301008	-	-	0.80	2.40	40.00	4.00
WAE301009	-	-	0.90	2.70	40.00	4.00
-	-	WAE303010-02	1.00	2.00	40.00	6.00
-	-	WAE303010-025	1.00	2.50	40.00	6.00
WAE301010	-	-	1.00	3.00	45.00	6.00
-	WAE302010	-	1.00	3.00	50.00	4.00
-	-	WAE303010	1.00	3.00	50.00	6.00
-	-	WAE303010-04	1.00	4.00	60.00	6.00
WAE301010-4.5	-	-	1.00	4.50	45.00	6.00
WAE301010-6	-	-	1.00	6.00	50.00	6.00
-	WAE302010-6	WAE303010-06	1.00	6.00	60.00	6.00
WAE301012	-	-	1.20	3.00	45.00	6.00
-	WAE302012	WAE303012	1.20	4.00	50.00	6.00
WAE301012-5	-	-	1.20	5.00	45.00	6.00
WAE301012-6	-	-	1.20	6.00	50.00	6.00
-	-	WAE303015-03	1.50	3.00	40.00	6.00
WAE301015	-	-	1.50	4.00	45.00	6.00
-	-	WAE303015	1.50	5.00	50.00	6.00
WAE301015-6	WAE302015	-	1.50	6.00	50.00	6.00
-	-	WAE303015-06	1.50	6.00	60.00	6.00
WAE301015-8	-	-	1.50	8.00	50.00	6.00
-	WAE302015-8	WAE303015-08	1.50	8.00	60.00	6.00
-	-	WAE303015-10	1.50	10.00	60.00	6.00
-	-	WAE303020-03	2.00	3.00	40.00	6.00
WAE301020	-	-	2.00	6.00	50.00	6.00
-	WAE302020	WAE303020	2.00	6.00	50.00	6.00
-	WAE302020S4	-	2.00	6.00	50.00	4.00
WAE301020-8	-	-	2.00	8.00	50.00	6.00

Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
All										◎	◎								○		

ALU-WAVE

WAE3xx Series

>>Continue

EDP NO.			Cutting Diameter (metric)	Cutting Length (metric)	Overall Length (metric)	Shank Diameter (metric)
1 Flute	2 Flute	3 Flute				
Bright	Bright	Bright				
Helix 30°	Helix 45°	Helix 45°				
WAE301	WAE302	WAE303	D1	L1	L2	D2
-	-	WAE323				
-	-	WAE303020-08	2.00	8.00	60.00	6.00
WAE301020-10	-	-	2.00	10.00	50.00	6.00
-	WAE302020-10	WAE303020-10	2.00	10.00	60.00	6.00
-	-	WAE303020-12	2.00	12.00	60.00	6.00
WAE301025	-	-	2.50	7.00	50.00	6.00
-	-	WAE303025	2.50	8.00	40.00	6.00
WAE301025-8	-	-	2.50	8.00	50.00	6.00
WAE301025-10	-	-	2.50	10.00	50.00	6.00
-	-	WAE303025-10	2.50	10.00	55.00	6.00
WAE301025-12	-	-	2.50	12.00	50.00	6.00
-	WAE302025	-	2.50	12.00	55.00	6.00
-	-	WAE303025-12	2.50	12.00	60.00	6.00
-	-	WAE303030-04	3.00	4.00	45.00	6.00
-	-	WAE303030-08	3.00	8.00	45.00	6.00
WAE301030	-	-	3.00	8.00	50.00	6.00
WAE301030-12	-	-	3.00	12.00	50.00	6.00
-	WAE302030	WAE303030	3.00	12.00	55.00	6.00
WAE301030-15	-	-	3.00	15.00	50.00	6.00
-	WAE302030-15	WAE303031	3.00	15.00	65.00	6.00
-	-	WAE323030	3.00	20.00	70.00	6.00
-	-	WAE323031	3.00	25.00	75.00	6.00
-	-	WAE323032	3.00	30.00	80.00	6.00
-	-	WAE303035	3.50	12.00	55.00	6.00
-	WAE302035	-	3.50	14.00	57.00	6.00
-	-	WAE303040-05	4.00	5.00	45.00	6.00
-	-	WAE303040-08	4.00	8.00	45.00	6.00
WAE301040	-	-	4.00	10.00	50.00	6.00
-	-	WAE303040-11	4.00	11.00	45.00	6.00
-	WAE302040	WAE303040	4.00	14.00	55.00	6.00
WAE301040-15	-	-	4.00	15.00	50.00	6.00
-	WAE302040-16	WAE303040-16	4.00	16.00	65.00	6.00
WAE301040-20	-	-	4.00	20.00	60.00	6.00
-	-	WAE303041	4.00	20.00	70.00	6.00
-	-	WAE323040	4.00	26.00	75.00	6.00
-	-	WAE323041	4.00	30.00	80.00	6.00
-	-	WAE303045	4.50	15.00	55.00	6.00
-	-	WAE303050-06	5.00	6.00	45.00	6.00
WAE301050	-	-	5.00	13.00	60.00	6.00
-	WAE302050	WAE303050	5.00	17.00	55.00	6.00
WAE301050-20	-	-	5.00	20.00	60.00	6.00
-	WAE302050-22	WAE303051	5.00	22.00	60.00	6.00
WAE301050-25	-	-	5.00	25.00	60.00	6.00
-	-	WAE303052	5.00	26.00	70.00	6.00
-	-	WAE323050	5.00	31.00	75.00	6.00
-	-	WAE323051	5.00	36.00	80.00	6.00

WAE3xx Series

>>Continue

EDP NO.			Cutting Diameter (metric)	Cutting Length (metric)	Overall Length (metric)	Shank Diameter (metric)
1 Flute	2 Flute	3 Flute				
Bright	Bright	Bright				
Helix 30°	Helix 45°	Helix 45°				
WAE301	WAE302	WAE303	D1	L1	L2	D2
-	-	WAE323				
-	-	WAE323052	5.00	41.00	85.00	6.00
-	-	WAE323053	5.00	46.00	90.00	6.00
-	-	WAE303055	5.50	17.00	55.00	6.00
-	-	WAE303060-07	6.00	7.00	50.00	6.00
-	-	WAE303060-13	6.00	13.00	50.00	6.00
WAE301060	-	-	6.00	15.00	60.00	6.00
-	WAE302060	WAE303060	6.00	17.00	60.00	6.00
WAE301060-20	-	-	6.00	20.00	60.00	6.00
-	WAE302060-22	WAE303061	6.00	22.00	60.00	6.00
WAE301060-25	-	-	6.00	25.00	60.00	6.00
-	-	WAE303062	6.00	26.00	70.00	6.00
-	-	WAE303063	6.00	31.00	75.00	6.00
-	-	WAE323060	6.00	36.00	80.00	6.00
-	-	WAE323061	6.00	43.00	90.00	6.00
-	-	WAE323062	6.00	51.00	100.00	6.00
-	WAE302070	-	7.00	20.00	63.00	8.00
-	-	WAE303070	7.00	23.00	65.00	8.00
-	-	WAE303080-10	8.00	10.00	60.00	8.00
WAE301080	-	WAE303080-20	8.00	20.00	60.00	8.00
-	WAE302080	-	8.00	20.00	70.00	8.00
WAE301080-25	-	WAE303080	8.00	23.00	70.00	8.00
-	-	-	8.00	25.00	75.00	8.00
-	WAE302080-31	WAE303080-29	8.00	29.00	80.00	8.00
-	-	WAE303081	8.00	31.00	80.00	8.00
-	-	WAE303082	8.00	36.00	85.00	8.00
-	-	WAE323080	8.00	41.00	90.00	8.00
-	-	WAE323081	8.00	46.00	95.00	8.00
-	-	WAE323082	8.00	51.00	100.00	8.00
-	-	WAE323083	8.00	56.00	105.00	8.00
-	WAE302090	WAE323084	8.00	66.00	110.00	8.00
-	-	-	9.00	25.00	72.00	10.00
-	-	WAE303090	9.00	28.00	70.00	10.00
WAE301100	-	WAE303100-12	10.00	12.00	65.00	10.00
-	-	-	10.00	22.00	75.00	10.00
-	WAE302100	WAE303100-23	10.00	23.00	65.00	10.00
WAE301100-30	-	WAE303100	10.00	28.00	75.00	10.00
-	-	-	10.00	30.00	80.00	10.00
-	WAE302100-36	WAE303100-33	10.00	33.00	90.00	10.00
-	-	WAE303101	10.00	36.00	90.00	10.00
-	-	WAE303100-41	10.00	41.00	90.00	10.00
-	-	WAE303102	10.00	46.00	100.00	10.00
-	-	WAE303103	10.00	51.00	100.00	10.00
-	-	WAE323100	10.00	56.00	110.00	10.00
-	-	WAE323100-61	10.00	61.00	110.00	10.00
-	WAE302110	WAE323101	10.00	66.00	120.00	10.00

ALU-WAVE

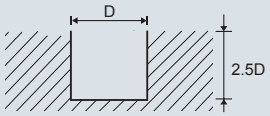
WAE3xx Series

EDP NO.			Cutting Diameter (metric)	Cutting Length (metric)	Overall Length (metric)	Shank Diameter (metric)
1 Flute	2 Flute	3 Flute				
Bright	Bright	Bright				
Helix 30°	Helix 45°	Helix 45°				
WAE301	WAE302	WAE303	D1	L1	L2	D2
-	-	WAE323				
-	-	WAE303110	11.00	30.00	80.00	12.00
WAE301120	-	WAE303120-14	12.00	14.00	70.00	12.00
-	-	-	12.00	26.00	75.00	12.00
-	WAE302120	WAE303120-27	12.00	27.00	70.00	12.00
WAE301120-35	-	WAE303120	12.00	33.00	80.00	12.00
-	WAE302120-41	-	12.00	35.00	90.00	12.00
-	WAE302122	WAE303121	12.00	41.00	95.00	12.00
-	-	-	12.00	45.00	100.00	12.00
-	-	WAE303122	12.00	46.00	100.00	12.00
-	-	WAE303122-51	12.00	51.00	100.00	12.00
-	-	WAE303123	12.00	56.00	110.00	12.00
-	-	WAE303124-61	12.00	61.00	110.00	12.00
-	-	WAE323120	12.00	66.00	120.00	12.00
-	-	WAE323120-71	12.00	71.00	120.00	12.00
-	WAE302130	WAE323121	12.00	76.00	135.00	12.00
-	WAE302140	WAE303130	13.00	35.00	85.00	14.00
-	WAE302150	WAE303140	14.00	38.00	90.00	14.00
-	-	WAE303150	15.00	40.00	90.00	16.00
-	-	WAE303160-19	16.00	19.00	90.00	16.00
-	WAE302160	WAE303160-33	16.00	33.00	90.00	16.00
-	-	WAE303160	16.00	45.00	100.00	16.00
-	WAE302160-53	WAE303160-53	16.00	53.00	105.00	16.00
-	-	-	16.00	53.00	110.00	16.00
-	-	WAE303161	16.00	56.00	110.00	16.00
-	-	WAE303162	16.00	66.00	130.00	16.00
-	-	WAE303163	16.00	76.00	150.00	16.00
-	-	WAE323160	16.00	86.00	160.00	16.00
-	-	WAE323161	16.00	96.00	180.00	16.00
-	-	WAE323162	16.00	106.00	190.00	16.00
-	WAE302180	WAE323163	16.00	116.00	200.00	16.00
-	-	WAE303180	18.00	49.00	100.00	18.00
-	-	WAE303200-23	20.00	23.00	90.00	20.00
-	-	WAE303200-25-100F	20.00	25.00	100.00	20.00
-	WAE302200	WAE303200-39	20.00	39.00	90.00	20.00
-	-	WAE303200	20.00	50.00	100.00	20.00
-	WAE302200-55	WAE303200F	20.00	50.00	100.00	20.00
-	-	-	20.00	55.00	110.00	20.00
-	-	WAE303201	20.00	60.00	110.00	20.00
-	-	WAE303202	20.00	70.00	130.00	20.00
-	-	WAE303203	20.00	76.00	150.00	20.00
-	-	WAE323200	20.00	86.00	160.00	20.00
-	-	WAE323201	20.00	96.00	180.00	20.00
-	-	WAE323202	20.00	106.00	190.00	20.00
-	-	WAE323203	20.00	116.00	200.00	20.00
-	WAE302250	WAE323204	20.00	126.00	220.00	20.00
-	-	WAE303250	25.00	50.00	120.00	25.00

WAE301 series

End Cutting	Slotting			
Feed Rate	General Speed Cutting			
Work Material	Acrylic		Alloy Steels	
Cutting Diameter(metric)	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

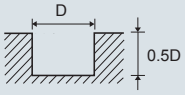
RPM = rev. / min.
FEED = mm / min.



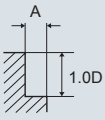
WAE302 series

End Cutting	Slotting			
Feed Rate	General Speed Cutting			
Work Material	Acrylic		Alloy Steels	
Cutting Diameter(metric)	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
7	8,850	1,240	8,850	1,505
8	8,000	1,400	8,000	1,800
9	8,000	1,550	8,000	1,680
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.



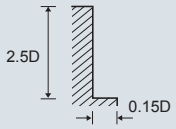
A : Φ3 ~ Φ10 = 0.25 x D
Φ12 ~ Φ20 = 0.5 x D

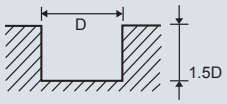


WAE303, WAE323 series

End Cutting	Side Milling		Slotting	
Feed Rate	General Speed Cutting		General Speed Cutting	
Work Material	Acrylic		Acrylic	
Cutting Diameter(metric)	RPM	FEED	RPM	FEED
3	7,000	455	7,000	350
4	7,000	546	7,000	441
5	7,000	651	7,000	504
6	7,000	756	7,000	606
8	5,600	861	5,600	700
10	5,600	1,050	5,600	854
12	5,600	882	5,600	1,050
14	4,200	1,106	4,200	903
16	4,200	1,211	4,200	945
18	2,800	910	2,800	700
20	2,800	956	2,800	805

RPM = rev. / min.
FEED = mm / min.





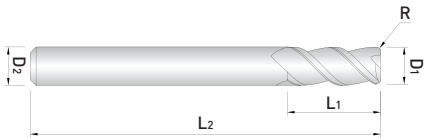
※ Please reduce cutting speed around 20~30% from the above table or AE323 series.

ALU-WAVE

WAR3xx Series

FINE GRAIN | Slotting | Side milling | Sharp edge

CORNER RADIUS / 2 & 3 FLUTES / STUB, REGULAR & LONG / BRIGHT & DLC COATED



TOLERANCE (metric)

D_1 = +0 / -0.02
D_1 = +0 / -0.05 (WAR302)
D_2 = h6
R = ±0.015

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO.				Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute		3 Flute						
BRIGHT	DLC	BRIGHT	DLC					
Helix 45°	Helix 45°	Helix 45°	Helix 45°					
WAR302	WAR502	WAR303	WAR503	D1	R	L1	L2	D2
-	WAR502010	-	-	1.00	0.050	3.00	40.00	6.00
-	WAR502015	-	-	1.50	0.050	5.00	40.00	6.00
-	WAR502020	-	-	2.00	0.100	6.00	40.00	6.00
-	WAR502021	-	-	2.00	0.100	12.00	50.00	6.00
-	WAR502030	-	-	3.00	0.100	10.00	50.00	6.00
-	WAR502031	-	-	3.00	0.100	20.00	60.00	6.00
-	WAR502040	-	-	4.00	0.100	12.00	50.00	6.00
-	-	-	WAR503040	4.00	0.500	14.00	57.00	6.00
-	WAR502041	-	-	4.00	0.100	20.00	60.00	6.00
-	-	-	WAR503041	4.00	1.000	25.00	62.00	6.00
-	WAR502050	-	-	5.00	0.100	15.00	57.00	6.00
WAR3020605	-	WAR3030605	-	6.00	0.500	15.00	50.00	6.00
WAR3020610	-	WAR3030610	-	6.00	1.000	15.00	50.00	6.00
WAR3020615	-	WAR3030615	-	6.00	1.500	15.00	50.00	6.00
WAR3020620	-	WAR3030620	-	6.00	2.000	15.00	50.00	6.00
-	WAR502060	-	-	6.00	0.100	15.00	57.00	6.00
-	-	-	WAR503060	6.00	0.500	16.00	57.00	6.00
-	WAR502061	-	-	6.00	0.100	22.00	65.00	6.00
-	-	-	WAR503061	6.00	1.000	25.00	62.00	6.00
-	WAR502070	-	-	7.00	0.100	20.00	63.00	8.00
WAR3020805	-	WAR3030805	-	8.00	0.500	20.00	60.00	8.00
WAR3020810	-	WAR3030810	-	8.00	1.000	20.00	60.00	8.00
WAR3020815	-	WAR3030815	-	8.00	1.500	20.00	60.00	8.00
WAR3020820	-	WAR3030820	-	8.00	2.000	20.00	60.00	8.00
WAR3020830	-	-	-	8.00	3.000	20.00	60.00	8.00
-	WAR502080	-	-	8.00	0.100	20.00	63.00	8.00
-	-	-	WAR503080	8.00	0.500	22.00	63.00	8.00
-	WAR502081	-	-	8.00	0.100	28.00	70.00	8.00
-	-	-	WAR503081	8.00	1.000	35.00	80.00	8.00
-	WAR502090	-	-	9.00	0.100	25.00	72.00	10.00
WAR3021005	-	WAR3031005	-	10.00	0.500	25.00	70.00	10.00
WAR3021010	-	WAR3031010	-	10.00	1.000	25.00	70.00	10.00
WAR3021015	-	WAR3031015	-	10.00	1.500	25.00	70.00	10.00
WAR3021020	-	WAR3031020	-	10.00	2.000	25.00	70.00	10.00
WAR3021030	-	WAR3031030	-	10.00	3.000	25.00	70.00	10.00

Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
All										◎	◎								○		

ALU-WAVE

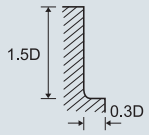
WAR3xx Series

EDP NO.				Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute		3 Flute						
BRIGHT	DLC	BRIGHT	DLC					
Helix 45°	Helix 45°	Helix 45°	Helix 45°					
WAR302	WAR502	WAR303	WAR503	D1	R	L1	L2	D2
WAR3021040	-	WAR3031040	-	10.00	4.000	25.00	70.00	10.00
-	WAR502100	-	-	10.00	0.200	28.00	72.00	10.00
-	-	-	WAR503100	10.00	0.500	28.00	72.00	10.00
-	WAR502101	-	-	10.00	0.200	32.00	80.00	10.00
-	-	-	WAR503101	10.00	1.000	45.00	100.00	10.00
-	WAR502110	-	-	11.00	0.200	30.00	80.00	12.00
WAR3021210	-	WAR3031210	-	12.00	1.000	30.00	75.00	12.00
WAR3021220	-	WAR3031220	-	12.00	2.000	30.00	75.00	12.00
WAR3021230	-	WAR3031230	-	12.00	3.000	30.00	75.00	12.00
WAR3021240	-	WAR3031240	-	12.00	4.000	30.00	75.00	12.00
-	WAR502120	-	-	12.00	0.200	32.00	80.00	12.00
-	-	-	WAR503120	12.00	0.500	32.00	80.00	12.00
-	WAR502121	-	-	12.00	0.200	40.00	100.00	12.00
-	-	-	WAR503121	12.00	1.000	45.00	100.00	12.00
WAR3021410	-	WAR3031410	-	14.00	1.000	35.00	80.00	14.00
WAR3021420	-	WAR3031420	-	14.00	2.000	35.00	80.00	14.00
WAR3021430	-	WAR3031430	-	14.00	3.000	35.00	80.00	14.00
WAR3021440	-	WAR3031440	-	14.00	4.000	35.00	80.00	14.00
WAR3021450	-	WAR3031450	-	14.00	5.000	35.00	80.00	14.00
WAR3021610	-	WAR3031610	-	16.00	1.000	40.00	90.00	16.00
WAR3021620	-	WAR3031620	-	16.00	2.000	40.00	90.00	16.00
WAR3021630	-	WAR3031630	-	16.00	3.000	40.00	90.00	16.00
WAR3021640	-	WAR3031640	-	16.00	4.000	40.00	90.00	16.00
WAR3021650	-	WAR3031650	-	16.00	5.000	40.00	90.00	16.00
-	-	-	WAR503160	16.00	0.500	45.00	90.00	16.00
-	-	-	WAR503161	16.00	1.000	65.00	125.00	16.00
WAR3022010	-	WAR3032010	-	20.00	1.000	45.00	100.00	20.00
WAR3022020	-	WAR3032020	-	20.00	2.000	45.00	100.00	20.00
WAR3022030	-	WAR3032030	-	20.00	3.000	45.00	100.00	20.00
WAR3022040	-	WAR3032040	-	20.00	4.000	45.00	100.00	20.00
WAR3022050	-	WAR3032050	-	20.00	5.000	45.00	100.00	20.00
-	-	-	WAR503200	20.00	0.500	50.00	100.00	20.00
-	-	-	WAR503201	20.00	1.000	70.00	130.00	20.00

WAR302 series

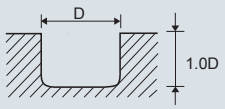
End Cutting	Side Milling							
Feed Rate	General Speed Cutting							
Work Material	Aluminum Alloy(<Si 4%)		Aluminum Alloy(<Si 8%)		Aluminum Alloy(Die Casted)		Copper Alloy	
Cutting Diameter(metric)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
4	24,000	4,800	19,900	3,980	16,000	3,200	12,000	2,400
6	16,000	3,840	13,200	3,160	10,600	2,544	8,000	1,920
8	12,000	3,600	9,900	2,970	8,000	2,400	6,000	1,800
10	9,500	3,420	8,000	2,880	6,300	2,260	4,800	1,720
12	8,000	3,200	6,600	2,640	5,300	2,120	4,000	1,600
14	6,800	2,990	5,600	2,460	4,500	1,980	3,400	1,490
16	6,000	3,000	8,000	2,500	4,000	2,000	3,000	1,500
18	5,300	2,600	4,400	2,200	3,500	1,750	2,600	1,300
20	4,800	2,400	4,000	2,000	3,200	1,600	2,400	1,200

RPM = rev. / min.
FEED = mm / min.



End Cutting	Slotting							
Feed Rate	General Speed Cutting							
Work Material	Aluminum Alloy(<Si 4%)		Aluminum Alloy(<Si 8%)		Aluminum Alloy(Die Casted)		Copper Alloy	
Cutting Diameter(metric)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
4	24,000	3,840	19,900	2,980	16,000	2,240	12,000	1,440
6	16,000	3,072	13,200	2,370	10,600	1,780	8,000	1,150
8	12,000	2,880	9,900	2,230	8,000	1,680	6,000	1,080
10	9,500	2,730	8,000	2,160	6,300	1,580	4,800	1,030
12	8,000	2,560	6,600	1,980	5,300	1,480	4,000	960
14	6,800	2,390	5,600	1,845	4,500	1,380	3,400	890
16	6,000	2,400	8,000	1,870	4,000	1,400	3,000	900
18	5,300	2,080	4,400	1,650	3,500	1,220	2,600	780
20	4,800	1,920	4,000	1,500	3,200	1,260	2,400	720

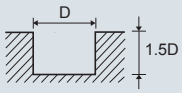
RPM = rev. / min.
FEED = mm / min.

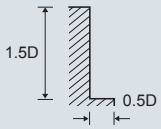


WAR303 series

End Cutting	Side Milling		Slotting	
Feed Rate	General Speed Cutting		General Speed Cutting	
Work Material	Acrylic		Acrylic	
Cutting Diameter(metric)	RPM	FEED	RPM	FEED
3	7,000	455	7,000	350
4	7,000	546	7,000	441
5	7,000	651	7,000	504
6	7,000	756	7,000	606
8	5,600	861	5,600	700
10	5,600	1,050	5,600	854
12	5,600	882	5,600	1,050
14	4,200	1,106	4,200	903
16	4,200	1,211	4,200	945
18	2,800	910	2,800	700
20	2,800	956	2,800	805

RPM = rev. / min.
FEED = mm / min.

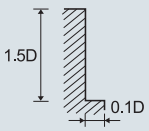


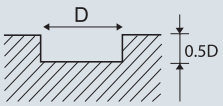


WAR502 series

End Cutting	Side Milling, Slotting					
Feed Rate	General Speed Cutting					
Work Material	Aluminum Alloy(A7075)		Aluminum Alloy Casting(Si13%)		Magnesium Alloy Copper Alloy	
Cutting Diameter(metric)	RPM	FEED	RPM	FEED	RPM	FEED
1	32,000	220	32,000	220	23,000	220
1.2	32,000	230	32,000	230	19,000	220
1.4	32,000	260	32,000	260	16,500	220
1.5	32,000	280	32,000	280	15,500	220
1.6	32,000	320	32,000	320	14,500	220
1.8	32,000	360	32,000	360	13,000	220
2	32,000	420	32,000	420	11,500	220
2.5	25,000	600	25,000	600	9,500	250
3	21,000	700	21,000	700	7,950	250
4	15,500	725	15,500	725	5,950	280
5	12,500	760	12,500	760	4,750	295
6	10,500	830	10,500	830	3,950	310
8	7,950	890	7,950	890	2,950	300
10	6,350	995	6,350	995	2,350	365
12	5,300	1,050	5,300	1,050	1,950	390

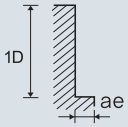
RPM = rev. / min.
FEED = mm / min.



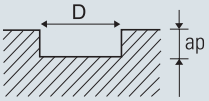


End Cutting	Side Milling, Slotting					
Feed Rate	High Speed Cutting					
Work Material	Aluminum Alloy(A7075)		Aluminum Alloy Casting(Si13%)		Magnesium Alloy Copper Alloy	
Cutting Diameter(metric)	RPM	FEED	RPM	FEED	RPM	FEED
1	50,000	1,000	50,000	950	42,000	700
1.2	50,000	1,200	50,000	1,150	36,000	700
1.4	50,000	1,400	50,000	1,250	31,000	700
1.5	50,000	1,600	48,000	1,250	29,500	700
1.6	50,000	1,700	45,000	1,250	28,000	700
1.8	50,000	1,850	41,000	1,250	26,500	750
2	50,000	2,000	38,000	1,250	24,000	750
2.5	48,000	2,100	31,000	1,250	20,000	750
3	40,000	2,100	26,000	1,250	17,000	750
4	33,000	2,250	20,000	1,350	14,000	800
5	31,000	2,800	19,200	1,650	12,500	950
6	26,000	2,800	15,900	1,700	10,500	1,000
8	19,500	2,900	12,000	1,800	7,900	1,000
10	15,500	3,200	9,600	1,900	6,350	1,100
12	13,000	3,200	8,000	1,900	5,300	1,100

RPM = rev. / min.
FEED = mm / min.



	ae
Alumunm Alloy, Alumunm Alloy Casting	0.15D
Magnsium Alloy, Copper Alloy	0.1D



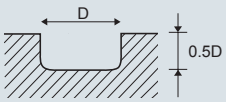
	ap
Alumunm Alloy, Alumunm Alloy Casting	0.15D
Magnsium Alloy, Copper Alloy	0.1D

WAR503 series

Slotting, General Cutting

End Cutting	Slotting					
Feed Rate	General Speed Cutting					
Work Material	Aluminum Alloy(A7075)		Aluminum Alloy Casting(Si13%)		Magnesium Alloy Copper Alloy	
Cutting Diameter(metric)	RPM	FEED	RPM	FEED	RPM	FEED
3	21,000	770	2,100	770	7,950	325
4	15,500	810	15,500	810	5,950	375
5	12,500	860	12,500	860	4,750	385
6	10,500	950	10,500	950	3,950	400
8	8,000	1,000	8,000	1,000	2,950	460
10	6,350	1,150	6,350	1,150	2,350	475
12	5,300	1,200	5,300	1,200	1,950	510
16	3,950	1,200	3,950	1,200	1,450	510
20	3,150	1,200	3,150	1,200	1,150	510

RPM = rev. / min.
FEED = mm / min.

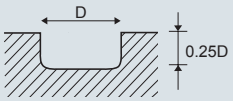


WAR503 series

Slotting, High Speed Cutting

End Cutting	Slotting			
Feed Rate	High Speed Cutting			
Work Material	Aluminum Alloy(A7075)		Aluminum Alloy Casting(Si13%)	
Cutting Diameter(metric)	RPM	FEED	RPM	FEED
3	40,000	1,450	24,000	880
4	32,000	1,700	19,200	1,000
5	32,000	2,200	19,200	1,350
6	26,500	2,400	15,900	1,450
8	20,000	2,500	12,000	1,500
10	16,000	2,800	9,600	1,700
12	13,300	2,950	8,000	1,800
16	10,000	3,000	6,000	1,800
20	8,000	3,000	4,800	1,800

RPM = rev. / min.
FEED = mm / min.

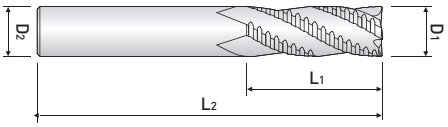


ALU-WAVE

WAF3xx Series

ROUGHER / 3 FLUTE / REGULAR & LONG / BRIGHT

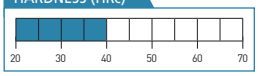
MG FINE GRAIN | COARSE Conventional Pitch | DIN 6535HAM DIN 6535HAM | DIN 6535HB DIN6535HB



TOLERANCE (metric)

D_1 = +0 / -0.048 (D1≤6)
D_1 = +0 / -0.058 (D1=7 up to 10)
D_1 = +0 / -0.07 (D1=12 up to 18)
D_1 = +0 / -0.084 (D1=20)
D_2 = h6

HARDNESS (HRc)



EDP NO. 3 Flute BRIGHT Helix 38°	Cutting Diameter (metric)	Cutting Length (metric)	Overall Length (metric)	Shank Diameter (metric)
WAF303	D1	L1	L2	D2
WAF303040	4.00	10.00	55.00	6.00
WAF303050	5.00	15.00	55.00	6.00
WAF303060	6.00	16.00	60.00	6.00
WAF303061	6.00	25.00	80.00	6.00
WAF303070	7.00	16.00	63.00	8.00
WAF303080	8.00	20.00	65.00	8.00
WAF303081	8.00	30.00	90.00	8.00
WAF303090	9.00	19.00	72.00	10.00
WAF303100	10.00	25.00	75.00	10.00
WAF303101	10.00	40.00	100.00	10.00
WAF303120	12.00	30.00	80.00	12.00
WAF303121	12.00	50.00	110.00	12.00
WAF303140	14.00	35.00	90.00	14.00
WAF303160	16.00	42.00	100.00	16.00
WAF303161	16.00	52.00	150.00	16.00
WAF303162	16.00	65.00	125.00	16.00
WAF303180	18.00	32.00	92.00	18.00
WAF303200	20.00	38.00	104.00	20.00
WAF303201	20.00	55.00	160.00	20.00

Applicable Working Material

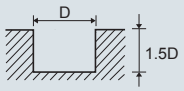
○ : GOOD ◎ : BEST

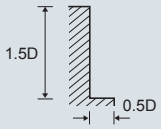
SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
WAF303										◎	◎								○		

WAF303 series

End Cutting	Side Milling			
Work Material	Aluminum, Nonferrous Metals			
Cutting Diameter(metric)	RPM	FEED	RPM	FEED
6	10,500	800	13,500	1,050
8	8,000	700	10,500	900
10	6,500	750	8,500	950
12	5,250	800	6,800	1,050
16	4,000	800	5,200	1,050
20	3,200	800	4,200	1,050

RPM = rev. / min.
FEED = mm / min.





ZAMUS GRA MATE

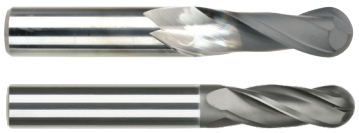
G, WGB5xx, IM-WGB5xx Series

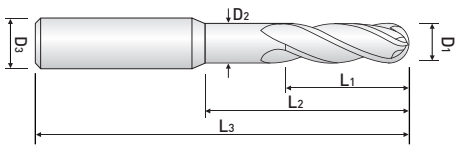
BALL / 2 & 4 FLUTES / STUB, REGULAR & LONG / CVD DIAMOND COATED

MG FINE GRAIN

G Series: Slotting, Side milling

WGB504 Series: Plunge, Profile





TOLERANCE (metric)

D_1 = +0 / -0.03 (G)
D_1 = +0 / -0.02 (WGB504)
D_2 = h6

HARDNESS (HRc)

for GRAPHITE

EDP NO.		Cutting Diameter (metric)	Cutting Length (metric)	Neck Diameter (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute	4 flute						
CVD	CVD						
Helix 30°	Helix 30°						
G	WGB504	D1	L1	D2	L2	L3	D3
-	IM-WGB504						
G00501003	-	0.50	1.00	0.45	3.00	50.00	4.00
G00501006	-	0.50	1.00	0.45	6.00	50.00	4.00
G00501010	-	0.50	1.00	0.45	10.00	50.00	4.00
G00601203	-	0.60	1.20	0.55	3.00	50.00	4.00
G00601206	-	0.60	1.20	0.55	6.00	50.00	4.00
G00601208	-	0.60	1.20	0.55	8.00	50.00	4.00
G00601210	-	0.60	1.20	0.55	10.00	50.00	4.00
G00601212	-	0.60	1.20	0.55	12.00	50.00	4.00
G0080164	-	0.80	1.60	0.75	4.00	50.00	4.00
G0080166	-	0.80	1.60	0.75	6.00	50.00	4.00
G0080168	-	0.80	1.60	0.75	8.00	50.00	4.00
-	WGB504010	1.00	3.00	-	-	60.00	4.00
-	WGB50401010	1.00	3.00	-	10.00	60.00	4.00
-	WGB50401015	1.00	3.00	-	15.00	60.00	4.00
-	WGB50401020	1.00	3.00	-	20.00	60.00	4.00
-	IM-WGB5040102560SP	1.00	3.00	-	25.00	60.00	4.00
G0100306	-	1.00	3.00	0.95	6.00	60.00	4.00
G0100308	-	1.00	3.00	0.95	8.00	60.00	4.00
G0100310	-	1.00	3.00	0.95	10.00	60.00	4.00
G0100312	-	1.00	3.00	0.95	12.00	60.00	4.00
G0100314	-	1.00	3.00	0.95	14.00	60.00	4.00
G0100316	-	1.00	3.00	0.95	16.00	60.00	4.00
G0100318	-	1.00	3.00	0.95	18.00	60.00	4.00
G0100320	-	1.00	3.00	0.95	20.00	60.00	4.00
-	WGB50401025	1.00	3.00	-	25.00	80.00	4.00
-	WGB50401030	1.00	3.00	-	30.00	80.00	4.00
G0120410	-	1.20	4.00	1.15	10.00	70.00	4.00
-	WGB504015	1.50	4.00	-	-	60.00	4.00
-	IM-WGB5040151060SP	1.50	4.00	-	10.00	60.00	4.00
-	IM-WGB5040151560SP	1.50	4.00	-	15.00	60.00	4.00
-	IM-WGB5040152060SP	1.50	4.00	-	20.00	60.00	4.00
-	IM-WGB5040152560SP	1.50	4.00	-	25.00	60.00	4.00
-	WGB50401510	1.50	4.00	-	10.00	80.00	4.00
-	WGB50401515	1.50	4.00	-	15.00	80.00	4.00

Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
All										○	○									◎	

ZAMUS GRA MATE

G, WGB5xx, IM-WGB5xx Series

>>Continue

EDP NO.		Cutting Diameter (metric)	Cutting Length (metric)	Neck Diameter (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute	4 flute						
CVD	CVD						
Helix 30°	Helix 30°						
G -	WGB504 IM-WGB504	D1	L1	D2	L2	L3	D3
-	WGB50401520	1.50	4.00	-	20.00	80.00	4.00
-	WGB50401525	1.50	4.00	-	25.00	80.00	4.00
-	WGB50401530	1.50	4.00	-	30.00	80.00	4.00
G0150510	-	1.50	5.00	1.45	10.00	60.00	4.00
G0150512	-	1.50	5.00	1.45	12.00	60.00	4.00
G0150516	-	1.50	5.00	1.45	16.00	60.00	4.00
G0150520	-	1.50	5.00	1.45	20.00	60.00	4.00
G0150525	-	1.50	5.00	1.45	25.00	70.00	4.00
G0150530	-	1.50	5.00	1.45	30.00	70.00	4.00
-	WGB504020	2.00	6.00	-	-	60.00	4.00
-	IM-WGB5040201560SP	2.00	6.00	-	15.00	60.00	4.00
-	IM-WGB5040202060SP	2.00	6.00	-	20.00	60.00	4.00
-	IM-WGB5040202560SP	2.00	6.00	-	25.00	60.00	4.00
-	IM-WGB5040203060SP	2.00	6.00	-	30.00	60.00	4.00
-	WGB50402010	2.00	6.00	-	10.00	80.00	4.00
-	WGB50402015	2.00	6.00	-	15.00	80.00	4.00
-	WGB50402020	2.00	6.00	-	20.00	80.00	4.00
-	WGB50402025	2.00	6.00	-	25.00	80.00	4.00
-	WGB50402030	2.00	6.00	-	30.00	80.00	4.00
-	WGB50402040	2.00	6.00	-	40.00	100.00	4.00
G0200812	-	2.00	8.00	1.95	12.00	60.00	4.00
G0200816	-	2.00	8.00	1.95	16.00	60.00	4.00
G0200820	-	2.00	8.00	1.95	20.00	60.00	4.00
G0200825	-	2.00	8.00	1.95	25.00	70.00	4.00
G0200830	-	2.00	8.00	1.95	30.00	70.00	4.00
G0200835	-	2.00	8.00	1.95	35.00	80.00	4.00
G0200840	-	2.00	8.00	1.95	40.00	80.00	4.00
G0201020	-	2.00	10.00	1.95	20.00	80.00	4.00
G0201020L	-	2.00	10.00	1.95	20.00	100.00	4.00
G0251020	-	2.50	10.00	2.43	20.00	80.00	4.00
-	WGB504030	3.00	9.00	-	-	60.00	4.00
-	IM-WGB5040301560SP	3.00	9.00	-	15.00	60.00	4.00
-	IM-WGB5040302060SP	3.00	9.00	-	20.00	60.00	4.00
-	IM-WGB5040302560SP	3.00	9.00	-	25.00	60.00	4.00
-	IM-WGB5040303060SP	3.00	9.00	-	30.00	60.00	4.00
-	WGB50403015	3.00	9.00	-	15.00	100.00	4.00
-	WGB50403020	3.00	9.00	-	20.00	100.00	4.00
-	WGB50403025	3.00	9.00	-	25.00	100.00	4.00
-	WGB50403030	3.00	9.00	-	30.00	100.00	4.00
-	WGB50403040	3.00	9.00	-	40.00	100.00	4.00
-	WGB50403050	3.00	9.00	-	50.00	100.00	4.00
G0301216	-	3.00	12.00	2.90	16.00	60.00	6.00
G0301220	-	3.00	12.00	2.90	20.00	70.00	6.00
G0301225	-	3.00	12.00	2.90	25.00	70.00	6.00
G0301230	-	3.00	12.00	2.90	30.00	80.00	6.00

ZAMUS GRA MATE

G, WGB5xx, IM-WGB5xx Series

>>Continue

EDP NO.		Cutting Diameter (metric)	Cutting Length (metric)	Neck Diameter (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute	4 flute						
CVD	CVD						
Helix 30°	Helix 30°						
G	WGB504	D1	L1	D2	L2	L3	D3
-	IM-WGB504						
G0301235	-	3.00	12.00	2.90	35.00	80.00	6.00
G0301240	-	3.00	12.00	2.90	40.00	90.00	6.00
G0301245	-	3.00	12.00	2.90	45.00	90.00	6.00
G0301525	-	3.00	15.00	2.90	25.00	80.00	4.00
-	WGB504040060	4.00	12.00	-	-	60.00	4.00
-	WGB504040080	4.00	12.00	-	-	80.00	4.00
-	WGB504040110	4.00	12.00	-	-	110.00	4.00
-	WGB504040130	4.00	12.00	-	-	130.00	4.00
-	WGB504040150	4.00	12.00	-	-	150.00	4.00
G04015S	-	4.00	15.00	-	-	50.00	4.00
G0401520	-	4.00	15.00	3.90	20.00	60.00	6.00
G0401525	-	4.00	15.00	3.90	25.00	70.00	6.00
G04015M	-	4.00	15.00	-	-	80.00	4.00
G0401530	-	4.00	15.00	3.90	30.00	80.00	6.00
G0401535	-	4.00	15.00	3.90	35.00	80.00	6.00
G0401540	-	4.00	15.00	3.90	40.00	90.00	6.00
G0401545	-	4.00	15.00	3.90	45.00	90.00	6.00
G0401550	-	4.00	15.00	3.90	50.00	100.00	6.00
G04015L	-	4.00	15.00	-	-	120.00	4.00
G0402030	-	4.00	20.00	3.90	30.00	80.00	4.00
-	WGB504050080	5.00	15.00	-	25.00	80.00	6.00
-	WGB504050110	5.00	15.00	-	25.00	110.00	6.00
G0503050	-	5.00	30.00	4.80	50.00	100.00	6.00
G0503050L	-	5.00	30.00	4.80	50.00	150.00	6.00
G06020S	-	6.00	20.00	-	-	70.00	6.00
-	WGB504060090	6.00	20.00	-	-	90.00	6.00
G06020M	-	6.00	20.00	-	-	100.00	6.00
-	WGB504060110	6.00	20.00	-	-	110.00	6.00
-	WGB504060130	6.00	20.00	-	-	130.00	6.00
-	WGB504060150	6.00	20.00	-	-	150.00	6.00
G06020L	-	6.00	20.00	-	-	150.00	6.00
-	WGB504060180	6.00	20.00	-	-	180.00	6.00
G0603050	-	6.00	30.00	5.80	50.00	100.00	6.00
G0603050L	-	6.00	30.00	5.80	50.00	150.00	6.00
G08025S	-	8.00	25.00	-	-	70.00	8.00
-	WGB504080110	8.00	25.00	-	-	110.00	8.00
G08025M	-	8.00	25.00	-	-	110.00	8.00
-	WGB504080130	8.00	25.00	-	-	130.00	8.00
-	WGB504080150	8.00	25.00	-	-	150.00	8.00
G08025L	-	8.00	25.00	-	-	160.00	8.00
-	WGB504080200	8.00	25.00	-	-	200.00	8.00
G0804060	-	8.00	40.00	7.80	60.00	110.00	8.00
G0804060L	-	8.00	40.00	7.80	60.00	200.00	8.00
G10030S	-	10.00	30.00	-	-	80.00	10.00
-	WGB504100110	10.00	30.00	-	-	110.00	10.00

ZAMUS GRA MATE

G, WGB5xx, IM-WGB5xx Series

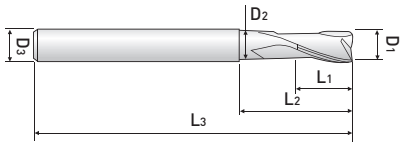
EDP NO.		Cutting Diameter (metric)	Cutting Length (metric)	Neck Diameter (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute	4 flute						
CVD	CVD						
Helix 30°	Helix 30°						
G -	WGB504 IM-WGB504	D1	L1	D2	L2	L3	D3
G10030M	-	10.00	30.00	-	-	120.00	10.00
-	WGB504100130	10.00	30.00	-	-	130.00	10.00
-	WGB504100150	10.00	30.00	-	-	150.00	10.00
G10030L	-	10.00	30.00	-	-	170.00	10.00
-	WGB504100180	10.00	30.00	-	-	180.00	10.00
-	WGB504100200	10.00	30.00	-	-	200.00	10.00
G1005070	-	10.00	50.00	9.70	70.00	120.00	10.00
G1005070L	-	10.00	50.00	9.70	70.00	200.00	10.00
G12035S	-	12.00	35.00	-	-	80.00	12.00
-	WGB504120110	12.00	35.00	-	-	110.00	12.00
-	WGB504120130	12.00	35.00	-	-	130.00	12.00
G12035M	-	12.00	35.00	-	-	130.00	12.00
-	WGB504120150	12.00	35.00	-	-	150.00	12.00
-	WGB504120180	12.00	35.00	-	-	180.00	12.00
G12035L	-	12.00	35.00	-	-	180.00	12.00
-	WGB504120200	12.00	35.00	-	-	200.00	12.00
G1205575	-	12.00	55.00	11.70	75.00	130.00	12.00
G1205575L	-	12.00	55.00	11.70	75.00	200.00	12.00
-	WGB504160150	16.00	50.00	-	-	150.00	16.00
-	WGB504160200	16.00	50.00	-	-	200.00	16.00
-	WGB504200150	20.00	60.00	-	-	150.00	20.00
-	WGB504200200	20.00	60.00	-	-	200.00	20.00

MG FINE GRAIN | Slotting | Side milling

ZAMUS GRA MATE

GE, WGE5xx Series

SQUARE / 2 & 4 FLUTES / STUB, REGULAR & LONG /
CVD DIAMOND COATED



TOLERANCE (metric)

D_1 = +0 / -0.03
D_2 = h6

HARDNESS (HRc)

for GRAPHITE

EDP NO.		Cutting Diameter (metric)	Cutting Length (metric)	Neck Diameter (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
Flute No.	4 Flute						
CVD	CVD						
Helix 30°	Helix 30°						
GE	WGE504	D1	L1	D2	L2	L3	D3
GE00501006	-	0.50	1.00	0.45	6.00	50.00	4.00
GE00601206	-	0.60	1.20	0.55	6.00	50.00	4.00
GE00601210	-	0.60	1.20	0.55	10.00	50.00	4.00
GE00701506	-	0.70	1.50	0.65	6.00	50.00	4.00
GE00802006	-	0.80	2.00	0.75	6.00	50.00	4.00
GE0100308	-	1.00	3.00	0.95	8.00	60.00	4.00
GE0100310	-	1.00	3.00	0.95	10.00	60.00	4.00
GE0100312	-	1.00	3.00	0.95	12.00	60.00	4.00
GE0150412	-	1.50	4.00	1.45	12.00	60.00	4.00
-	WGE504020	2.00	6.00	-	-	50.00	4.00
GE0200612	-	2.00	6.00	1.95	12.00	60.00	4.00
GE0200612S6	-	2.00	6.00	1.95	12.00	60.00	6.00
-	WGE50402008	2.00	8.00	-	-	50.00	4.00
-	WGE50402010	2.00	10.00	-	-	50.00	4.00
-	WGE504025	2.50	8.00	-	-	50.00	4.00
GE0250812	-	2.50	8.00	2.43	12.00	60.00	4.00
-	WGE504030	3.00	8.00	-	-	50.00	6.00
-	WGE50403010	3.00	10.00	-	-	50.00	6.00
GE0301012	-	3.00	10.00	2.90	12.00	60.00	4.00
GE0301012S6	-	3.00	10.00	2.90	12.00	60.00	6.00
GE0301016	-	3.00	10.00	2.90	16.00	60.00	4.00
GE0301016S6	-	3.00	10.00	2.90	16.00	60.00	6.00
-	WGE50403012	3.00	12.00	-	-	50.00	6.00
-	WGE50403016	3.00	16.00	-	-	60.00	6.00
-	WGE50403020	3.00	20.00	-	-	60.00	6.00
-	WGE504040	4.00	10.00	-	-	50.00	6.00
-	WGE50404012	4.00	12.00	-	-	50.00	6.00
GE04012S	-	4.00	12.00	-	-	60.00	6.00
GE0401216	-	4.00	12.00	3.90	16.00	60.00	6.00
GE0401220	-	4.00	12.00	3.90	20.00	60.00	6.00
-	WGE50404016	4.00	16.00	-	-	60.00	6.00
-	WGE50404020	4.00	20.00	-	-	60.00	6.00
-	WGE50404025	4.00	25.00	-	-	60.00	6.00
-	WGE504050	5.00	15.00	-	-	60.00	6.00
GE0501520	-	5.00	15.00	4.80	20.00	60.00	6.00

Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
All										○	○									◎	

ZAMUS GRA MATE

GE, WGE5xx Series

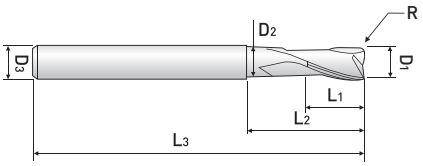
EDP NO.		Cutting Diameter (metric)	Cutting Length (metric)	Neck Diameter (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
Flute No.	4 Flute						
CVD	CVD						
Helix 30°	Helix 30°						
GE	WGE504	D1	L1	D2	L2	L3	D3
-	WGE504060	6.00	15.00	-	-	60.00	6.00
GE06020S	-	6.00	20.00	-	-	60.00	6.00
GE0602030	-	6.00	20.00	5.80	30.00	80.00	6.00
-	WGE50406020	6.00	20.00	-	-	110.00	6.00
-	WGE50406030	6.00	30.00	-	-	150.00	6.00
GE0603050	-	6.00	30.00	5.80	50.00	150.00	6.00
-	WGE504080	8.00	20.00	-	-	70.00	8.00
GE08025S	-	8.00	25.00	-	-	70.00	8.00
GE0802540	-	8.00	25.00	7.80	40.00	100.00	8.00
-	WGE50408030	8.00	30.00	-	-	110.00	8.00
-	WGE50408040	8.00	40.00	-	-	150.00	8.00
GE0804070	-	8.00	40.00	7.80	70.00	150.00	8.00
-	WGE504100	10.00	25.00	-	-	75.00	10.00
GE10030S	-	10.00	30.00	-	-	80.00	10.00
GE1003050	-	10.00	30.00	9.70	50.00	100.00	10.00
-	WGE50410040	10.00	40.00	-	-	110.00	10.00
GE1004580	-	10.00	45.00	9.70	80.00	160.00	10.00
-	WGE50410050	10.00	50.00	-	-	150.00	10.00
-	WGE504120	12.00	30.00	-	-	80.00	12.00
GE12030S	-	12.00	30.00	-	-	80.00	12.00
GE1203050	-	12.00	30.00	11.70	50.00	110.00	12.00
-	WGE50412050	12.00	50.00	-	-	120.00	12.00
GE1205080	-	12.00	50.00	11.70	80.00	160.00	12.00
-	WGE50412060	12.00	60.00	-	-	160.00	12.00
-	WGE504160	16.00	50.00	-	-	110.00	16.00
-	WGE50416070	16.00	70.00	-	-	160.00	16.00
-	WGE50416090	16.00	90.00	-	-	160.00	16.00
-	WGE504160100	16.00	100.00	-	-	200.00	16.00
-	WGE504160120	16.00	120.00	-	-	250.00	16.00
-	WGE504200	20.00	70.00	-	-	160.00	20.00
-	WGE50420090	20.00	90.00	-	-	160.00	20.00
-	WGE504200100	20.00	100.00	-	-	200.00	20.00
-	WGE504200120	20.00	120.00	-	-	250.00	20.00

MG FINE GRAIN | Slotting | Side milling

ZAMUS GRA MATE

GR, WGR5xx Series

CORNER RADIUS / 2 & 4 FLUTES / STUB, REGULAR & LONG /
CVD DIAMOND COATED



TOLERANCE (metric)

D_1 = +0 / -0.02
D_1 = +0 / -0.03 (GR)
D_2 = h6
R = ±0.010 (D1≤12)
R = ±0.015 (D1>12)

HARDNESS (HRc)

for GRAPHITE

EDP NO. 2 Flute CVD Helix 30°	EDP NO. 4 Flute CVD Helix 30°	Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Neck Diameter (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
WGR502 GR502	WGR504 GR504	D1	R	L1	D2	L2	L3	D3
WGR502002	-	0.20	-	0.30	-	-	40.00	3.00
WGR502003	-	0.30	-	0.50	-	-	40.00	3.00
WGR502004	-	0.40	-	0.60	-	-	40.00	3.00
WGR502005025	-	0.50	0.05	0.70	0.45	2.50	40.00	3.00
WGR502005040	-	0.50	0.05	0.70	0.45	4.00	40.00	3.00
WGR502006030	-	0.60	0.05	0.90	0.55	3.00	40.00	3.00
WGR502006050	-	0.60	0.05	0.90	0.55	5.00	40.00	3.00
WGR502008040	-	0.80	0.05	1.20	0.75	4.00	40.00	3.00
WGR502008070	-	0.80	0.05	1.20	0.75	7.00	40.00	3.00
WGR502010050	-	1.00	0.10	1.50	0.95	5.00	40.00	3.00
WGR502010085	-	1.00	0.10	1.50	0.95	8.50	40.00	3.00
WGR502010120	-	1.00	0.10	1.50	0.95	12.00	40.00	3.00
WGR502012060	-	1.20	0.10	1.80	1.15	6.00	50.00	3.00
WGR502012100	-	1.20	0.10	1.80	1.15	10.00	50.00	3.00
WGR502015075	-	1.50	0.15	2.20	1.40	7.50	50.00	3.00
WGR502015120	-	1.50	0.15	2.20	1.40	12.00	50.00	3.00
WGR502015180	-	1.50	0.15	2.20	1.40	18.00	50.00	3.00
WGR502020100	-	2.00	0.15	2.20	1.90	10.00	60.00	3.00
WGR502020160	-	2.00	0.15	2.20	1.90	16.00	60.00	3.00
WGR502020250	-	2.00	0.15	2.20	1.90	25.00	60.00	3.00
GR502020225SP	-	2.00	0.20	4.00	-	25.00	60.00	4.00
-	GR5040202525SP	2.00	0.25	4.00	-	25.00	60.00	4.00
WGR502030100	-	3.00	0.20	3.00	2.90	10.00	65.00	4.00
WGR502030150	-	3.00	0.20	3.00	2.90	15.00	65.00	4.00
WGR502030200	-	3.00	0.20	3.00	2.90	20.00	65.00	4.00
WGR502030250	-	3.00	0.20	3.00	2.90	25.00	75.00	4.00
WGR502030300	-	3.00	0.20	3.00	2.90	30.00	75.00	4.00
-	GR504030230SP	3.00	0.20	6.00	-	30.00	75.00	4.00
-	WGR50403002080	3.00	0.20	8.00	-	-	80.00	4.00
-	WGR50403003080	3.00	0.30	8.00	-	-	80.00	4.00
-	WGR50403005080	3.00	0.50	8.00	-	-	80.00	4.00
-	WGR50403010080	3.00	1.00	16.00	-	-	60.00	3.00
WGR502040200	-	4.00	0.20	4.00	3.90	20.00	65.00	6.00
WGR502040300	-	4.00	0.20	4.00	3.90	30.00	75.00	6.00

Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
All										○	○									◎	

>>Continue

EDP NO.		Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Neck Diameter (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute	4 Flute							
CVD	CVD							
Helix 30°	Helix 30°							
WGR502 GR502	WGR504 GR504	D1	R	L1	D2	L2	L3	D3
WGR502040400	-	4.00	0.20	4.00	3.90	40.00	90.00	6.00
-	GR504040225SP	4.00	0.20	8.00	-	25.00	60.00	4.00
-	GR504040525SP	4.00	0.50	8.00	-	25.00	60.00	4.00
-	GR504040230SP	4.00	0.20	8.00	-	30.00	100.00	4.00
-	GR504040250SP	4.00	0.20	8.00	-	50.00	100.00	4.00
-	GR504040550SP	4.00	0.50	8.00	-	50.00	100.00	4.00
-	WGR50404003100	4.00	0.30	10.00	-	-	100.00	4.00
-	WGR50404005100	4.00	0.50	10.00	-	-	100.00	4.00
-	WGR50404010100	4.00	1.00	10.00	-	-	100.00	4.00
-	GR5040402SP	4.00	0.20	12.00	-	-	60.00	4.00
-	WGR50404003080	4.00	0.30	16.00	-	-	60.00	4.00
-	WGR50404005080	4.00	0.50	16.00	-	-	60.00	4.00
-	WGR50404010080	4.00	1.00	16.00	-	-	60.00	4.00
WGR502050200	-	5.00	0.30	5.00	4.90	20.00	75.00	6.00
WGR502050300	-	5.00	0.30	5.00	4.90	30.00	75.00	6.00
WGR502050400	-	5.00	0.30	5.00	4.90	40.00	90.00	6.00
WGR502050500	-	5.00	0.30	5.00	4.90	50.00	90.00	6.00
WGR502060300	-	6.00	0.30	6.00	5.90	30.00	75.00	6.00
WGR502060400	-	6.00	0.30	6.00	5.90	40.00	90.00	6.00
WGR502060500	-	6.00	0.30	6.00	5.90	50.00	90.00	6.00
WGR502060600	-	6.00	0.30	6.00	5.90	60.00	100.00	6.00
-	GR504060550SP	6.00	0.50	12.00	-	50.00	100.00	6.00
-	WGR50406003080	6.00	0.30	15.00	-	-	60.00	6.00
-	WGR50406005080	6.00	0.50	15.00	-	-	60.00	6.00
-	WGR50406010080	6.00	1.00	15.00	-	-	60.00	6.00
-	WGR50406003110	6.00	0.30	15.00	-	-	110.00	6.00
-	WGR50406005110	6.00	0.50	15.00	-	-	110.00	6.00
-	WGR50406010110	6.00	1.00	15.00	-	-	110.00	6.00
-	GR504080550SP	8.00	0.50	16.00	-	50.00	100.00	8.00
-	GR504080575SP	8.00	0.50	16.00	-	75.00	150.00	8.00
-	WGR50408005080	8.00	0.50	20.00	-	-	70.00	8.00
-	WGR50408010080	8.00	1.00	20.00	-	-	70.00	8.00
-	WGR50408005110	8.00	0.50	20.00	-	-	110.00	8.00
-	WGR50408010110	8.00	1.00	20.00	-	-	110.00	8.00
-	WGR50408005130	8.00	0.50	20.00	-	-	130.00	8.00
-	WGR50408010130	8.00	1.00	20.00	-	-	130.00	8.00
-	WGR50410005080	10.00	0.50	25.00	-	-	75.00	10.00
-	WGR50410010080	10.00	1.00	25.00	-	-	75.00	10.00
-	WGR50410005130	10.00	0.50	25.00	-	-	130.00	10.00
-	WGR50410010130	10.00	1.00	25.00	-	-	130.00	10.00
-	WGR50410005150	10.00	0.50	25.00	-	-	150.00	10.00
-	WGR50410010150	10.00	1.00	25.00	-	-	150.00	10.00
-	GR504121075SP	12.00	0.50	24.00	-	75.00	160.00	12.00
-	WGR50412005080	12.00	0.50	30.00	-	-	80.00	12.00
-	WGR50412010080	12.00	1.00	30.00	-	-	80.00	12.00

ZAMUS GRA MATE

GR, WGR5xx Series

EDP NO.		Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Neck Diameter (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute	4 Flute							
CVD	CVD							
Helix 30°	Helix 30°							
WGR502 GR502	WGR504 GR504	D1	R	L1	D2	L2	L3	D3
-	WGR50412005130	12.00	0.50	30.00	-	-	130.00	12.00
-	WGR50412010130	12.00	1.00	30.00	-	-	130.00	12.00
-	WGR50412005150	12.00	0.50	30.00	-	-	150.00	12.00
-	WGR50412010150	12.00	1.00	30.00	-	-	150.00	12.00
-	WGR50416005200	16.00	0.50	32.00	-	-	200.00	16.00
-	WGR50416010200	16.00	1.00	32.00	-	-	200.00	16.00
-	WGR50420005200	20.00	0.50	40.00	-	-	200.00	20.00
-	WGR50420010200	20.00	1.00	40.00	-	-	200.00	20.00

MATERIAL : GRAPHITE

Endmill dia.(Metric)	Machine speed(rpm)	Cutting speed(m/min)	Operation	Feed rate(mpt)
0.5	20,000 ~ 40,000	24.4 ~ 48.8	Finishing	0.0002 ~ 0.0005
1.0	18,000 ~ 40,000	45.7 ~ 91.5	Finishing	0.0128 ~ 0.0257
1.5	12,000 ~ 40,000	53.4 ~ 182.9	General	0.0257 ~ 0.0514
1.5	12,000 ~ 40,000	53.4 ~ 182.9	Finishing	0.0128 ~ 0.0257
3.0	6,000 ~ 40,000	61.0 ~ 403.9	General	0.0257 ~ 0.0514
3.0	6,000 ~ 40,000	61.0 ~ 403.9	Finishing	0.0128 ~ 0.0257
5.0	4,000 ~ 40,000	61.0 ~ 548.8	General	0.0257 ~ 0.0514
5.0	4,000 ~ 40,000	61.0 ~ 548.8	Finishing	0.0128 ~ 0.0257
6.0	3,000 ~ 36,700	61.0 ~ 716.5	General	0.0514 ~ 0.1028
6.0	3,000 ~ 36,700	61.0 ~ 716.5	Finishing	0.0257 ~ 0.0514
8.0	2,500 ~ 31,800	61.0 ~ 792.7	General	0.0514 ~ 0.1028
8.0	2,500 ~ 31,800	61.0 ~ 792.7	Finishing	0.0257 ~ 0.0514
10.0	2,000 ~ 28,500	61.0 ~ 853.6	General	0.0771 ~ 0.1280
10.0	2,000 ~ 28,500	61.0 ~ 853.6	Finishing	0.0257 ~ 0.0771
12.0	1,500 ~ 23,000	61.0 ~ 914.6	General	0.0771 ~ 0.1280
12.0	1,500 ~ 23,000	61.0 ~ 914.6	Finishing	0.0257 ~ 0.0771

MATERIAL : GREEN CERAMIC

Endmill dia.(Metric)	Machine speed(rpm)	Cutting speed(m/min)	Operation	Feed rate(mpt)
0.5	6,000 ~ 19,500	7.6 ~ 21.3	Finishing	0.0002 ~ 0.0005
1.0	6,000 ~ 19,500	15.2 ~ 45.7	Finishing	0.0128 ~ 0.0257
1.5	6,000 ~ 19.500	30.5 ~ 91.5	General	0.0257 ~ 0.0514
1.5	6,000 ~ 19.500	30.5 ~ 91.5	Finishing	0.0128 ~ 0.0257
3.0	4,800 ~ 16,000	61.0 ~ 213.4	General	0.0257 ~ 0.0514
3.0	4,800 ~ 16,000	61.0 ~ 213.4	Finishing	0.0128 ~ 0.0257
5.0	4,100 ~ 15,000	61.0 ~ 213.4	General	0.0257 ~ 0.0514
5.0	4,100 ~ 15,000	61.0 ~ 213.4	Finishing	0.0128 ~ 0.0257
6.0	3,000 ~ 12,000	61.0 ~ 243.9	General	0.0514 ~ 0.1028
6.0	3,000 ~ 12,000	61.0 ~ 243.9	Finishing	0.0257 ~ 0.0514
8.0	2,500 ~ 11,000	61.0 ~ 274.4	General	0.0514 ~ 0.1028
8.0	2,500 ~ 11,000	61.0 ~ 274.4	Finishing	0.0257 ~ 0.0514
10.0	2,000 ~ 10,800	61.0 ~ 304.9	General	0.0771 ~ 0.1280
10.0	2,000 ~ 10,800	61.0 ~ 304.9	Finishing	0.0257 ~ 0.0771
12.0	1,500 ~ 10,000	61.0 ~ 304.9	General	0.0771 ~ 0.128
12.0	1,500 ~ 10,000	61.0 ~ 304.9	Finishing	0.0257 ~ 0.0771

MATERIAL: GLASS FIBER PRODUCTS

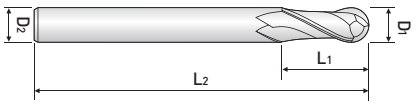
Endmill dia.(Metric)	Machine speed(rpm)	Cutting speed(m/min)	Operation	Feed rate(mpt)
1.5	3,700 ~ 7,300	18.3 ~ 36.6	General	0.0257 ~ 0.002
1.5	5,200 ~ 10,400	26.2 ~51.8	Finishing	0.0128 ~ 0.0257
3.0	3,600 ~ 7,300	36.6 ~ 73.2	General	0.0128 ~ 0.0257
3.0	5,200 ~ 9,200	51.8 ~ 91.5	Finishing	0.0064 ~ 0.1285
5.0	4,100 ~ 7,100	61.0 ~ 106.7	General	0.0257 ~ 0.0514
5.0	6,100 ~ 10,200	91.5 ~ 152.4	Finishing	0.0128 ~ 0.0257
6.0	4,600 ~ 6,900	91.5 ~ 137.2	General	0.0257 ~ 0.0514
6.0	5,300 ~ 8,400	106.7 ~ 167.7	Finishing	0.0128 ~ 0.0257
8.0	4,300 ~ 6,100	106.7 ~ 152.4	General	0.0257 ~ 0.0514
8.0	4,300 ~ 7,300	106.7 ~ 182.9	Finishing	0.0128 ~ 0.0257
10.0	4,100 ~ 5,600	121.9 ~ 167.7	General	0.0514 ~ 0.1028
10.0	3,500 ~ 6,600	106.7 ~ 198.2	Finishing	0.0257 ~ 0.0514
12.0	3,400 ~ 4,600	137.2 ~ 182.9	General	0.0514 ~ 0.1028
12.0	2,600 ~ 5,700	106.7 ~ 228.7	Finishing	0.0257 ~ 0.0514

WINNER

WB5xx Series

ULTRA FINE | Plunge | Profile

BALL / 2, 3 & 4 FLUTES / STUB, REGULAR & LONG / W-COATING



TOLERANCE (metric)

D_1 = +0 / -0.012 (WB502 D1≤6.0)
D_1 = +0 / -0.015 (WB502 D1≥6.5)
D_1 = +0 / -0.02
D_2 = h6

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO.			Cutting Diameter (metric)	Cutting Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute	3 Flute	4 Flute				
W Coating	W Coating	W Coating				
Helix 30°	Helix 30°	Helix 30°				
WB502	WB503	WB504	D1	L1	L2	D2
WB502001S	-	-	0.10	0.10	40.00	4.00
WB502001	-	-	0.10	0.20	40.00	4.00
WB502001S3	-	-	0.10	0.20	40.00	3.00
WB5020015S	-	-	0.15	0.15	40.00	4.00
WB5020015	-	-	0.15	0.30	40.00	4.00
WB5020015S3	-	-	0.15	0.30	40.00	3.00
WB502002S	-	-	0.20	0.20	40.00	4.00
WB502002	-	-	0.20	0.40	40.00	4.00
WB502002S3	-	-	0.20	0.40	40.00	3.00
WB502003S	-	-	0.30	0.30	40.00	4.00
WB502003	-	-	0.30	0.60	40.00	4.00
WB502003S3	-	-	0.30	0.60	40.00	3.00
WB502004S	-	-	0.40	0.40	40.00	4.00
WB502004	-	-	0.40	0.80	40.00	4.00
WB502004S3	-	-	0.40	0.80	40.00	3.00
WB502005S	-	-	0.50	0.50	40.00	4.00
WB502005	-	-	0.50	1.00	40.00	4.00
WB502005S3	-	-	0.50	1.00	40.00	3.00
WB502006S	-	-	0.60	0.60	40.00	4.00
WB502006	-	-	0.60	1.20	40.00	4.00
WB502006S3	-	-	0.60	1.20	40.00	3.00
WB502007S	-	-	0.70	0.70	40.00	4.00
WB502007	-	-	0.70	1.40	40.00	4.00
WB502007S3	-	-	0.70	1.40	40.00	3.00
WB502008S	-	-	0.80	0.80	40.00	4.00
WB502008	-	-	0.80	1.60	40.00	4.00
WB502008S3	-	-	0.80	1.60	40.00	3.00
WB502009S	-	-	0.90	0.90	40.00	4.00
WB502009	-	-	0.90	1.80	40.00	4.00
WB502009S3	-	-	0.90	1.80	40.00	3.00
-	WB503010	WB504010	1.00	1.00	50.00	6.00
WB502010S	-	-	1.00	1.50	40.00	6.00
WB502010	-	-	1.00	2.50	50.00	6.00
WB502010S3	-	-	1.00	2.50	50.00	3.00
WB502010S4	-	-	1.00	2.50	50.00	4.00

Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
All	○	○	○	○	◎	○	○	○	○					◎	◎	◎	○				

>>Continue

EDP NO.			Cutting Diameter (metric)	Cutting Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute	3 Flute	4 Flute				
W Coating	W Coating	W Coating				
Helix 30°	Helix 30°	Helix 30°				
WB502	WB503	WB504	D1	L1	L2	D2
WB502010070	-	-	1.00	2.50	70.00	6.00
WB502010100	-	-	1.00	2.50	100.00	6.00
WB5020120S	-	-	1.20	2.00	40.00	6.00
WB502012	-	-	1.20	3.00	50.00	6.00
WB502012S3	-	-	1.20	3.00	50.00	3.00
WB502012S4	-	-	1.20	3.00	50.00	4.00
WB502012070	-	-	1.20	3.00	70.00	6.00
WB502012100	-	-	1.20	3.00	100.00	6.00
-	WB503015	WB504015	1.50	1.50	50.00	6.00
WB502015S	-	-	1.50	2.50	40.00	6.00
WB502015	-	-	1.50	4.00	50.00	6.00
WB502015S3	-	-	1.50	4.00	50.00	3.00
WB502015S4	-	-	1.50	4.00	50.00	4.00
WB502015070	-	-	1.50	4.00	70.00	6.00
WB502015100	-	-	1.50	4.00	100.00	6.00
-	WB503020	WB504020	2.00	2.00	50.00	6.00
WB502020S	-	-	2.00	3.00	40.00	6.00
WB502020	-	-	2.00	5.00	50.00	6.00
WB502020S3	-	-	2.00	5.00	50.00	3.00
WB502020S4	-	-	2.00	5.00	50.00	4.00
WB502020080	-	-	2.00	5.00	80.00	6.00
WB502020100	-	-	2.00	5.00	100.00	6.00
WB502025S	-	-	2.50	4.00	40.00	6.00
WB502025	-	-	2.50	6.00	60.00	6.00
WB502025S3	-	-	2.50	6.00	60.00	3.00
WB502025S4	-	-	2.50	6.00	60.00	4.00
WB502025080	-	-	2.50	6.00	80.00	6.00
WB502025100	-	-	2.50	6.00	100.00	6.00
-	WB503030	WB504030	3.00	3.00	60.00	6.00
WB502030S	-	-	3.00	4.50	40.00	6.00
WB502030	-	-	3.00	6.00	60.00	6.00
WB502030S3	-	-	3.00	6.00	60.00	3.00
WB502030S4	-	-	3.00	6.00	60.00	4.00
WB502030080	-	-	3.00	6.00	80.00	6.00
WB502030100	-	-	3.00	6.00	100.00	6.00
WB502035	-	-	3.50	8.00	70.00	6.00
-	WB503040	WB504040	4.00	4.00	70.00	6.00
-	WB503050	-	4.00	5.00	80.00	6.00
WB502040S	-	-	4.00	6.00	50.00	6.00
WB502040	-	-	4.00	8.00	70.00	6.00
WB502040S4	-	-	4.00	8.00	70.00	4.00
WB502040100	-	-	4.00	8.00	100.00	6.00
WB502040100S4	-	-	4.00	8.00	100.00	4.00
WB502040120	-	-	4.00	8.00	120.00	6.00
WB502040120S4	-	-	4.00	8.00	120.00	4.00
WB502045	-	-	4.50	9.00	80.00	6.00

>>Continue

EDP NO.			Cutting Diameter (metric)	Cutting Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute	3 Flute	4 Flute				
W Coating	W Coating	W Coating				
Helix 30°	Helix 30°	Helix 30°				
WB502	WB503	WB504	D1	L1	L2	D2
-	-	WB504050	5.00	5.00	80.00	6.00
WB502050S	-	-	5.00	7.50	60.00	6.00
WB502050	-	-	5.00	10.00	80.00	6.00
WB502050S5	-	-	5.00	10.00	80.00	5.00
WB502055	-	-	5.50	11.00	90.00	6.00
-	WB503060	WB504060	6.00	6.00	90.00	6.00
WB502060S	-	-	6.00	9.00	50.00	6.00
WB502060060	-	-	6.00	9.00	60.00	6.00
WB502060080	-	-	6.00	9.00	80.00	6.00
WB502060	-	-	6.00	12.00	90.00	6.00
WB502060110	-	-	6.00	12.00	110.00	6.00
WB502060130	-	-	6.00	12.00	130.00	6.00
WB502060150	-	-	6.00	12.00	150.00	6.00
WB502065	-	-	6.50	13.00	90.00	8.00
WB502070	-	-	7.00	14.00	90.00	8.00
-	WB503080	WB504080	8.00	8.00	100.00	8.00
WB502080S	-	-	8.00	12.00	50.00	8.00
WB502080060	-	-	8.00	12.00	60.00	8.00
WB502080080	-	-	8.00	12.00	80.00	8.00
WB502080090	-	-	8.00	12.00	90.00	8.00
WB502080	-	-	8.00	14.00	100.00	8.00
WB502080130	-	-	8.00	14.00	130.00	8.00
WB502080150	-	-	8.00	14.00	150.00	8.00
WB502085	-	-	8.50	16.00	100.00	10.00
WB502090	-	-	9.00	18.00	100.00	10.00
-	WB503100	WB504100	10.00	10.00	100.00	10.00
WB502100S	-	-	10.00	15.00	50.00	10.00
WB502100060	-	-	10.00	15.00	60.00	10.00
WB502100080	-	-	10.00	15.00	80.00	10.00
WB502100090	-	-	10.00	15.00	90.00	10.00
WB502100	-	-	10.00	18.00	100.00	10.00
WB502100130	-	-	10.00	18.00	130.00	10.00
WB502100150	-	-	10.00	18.00	150.00	10.00
WB502100180	-	-	10.00	18.00	180.00	10.00
WB502100200	-	-	10.00	18.00	200.00	10.00
WB502110	-	-	11.00	20.00	100.00	12.00
-	WB503120	WB504120	12.00	12.00	110.00	12.00
WB502120060	-	-	12.00	18.00	60.00	12.00
WB502120080	-	-	12.00	18.00	80.00	12.00
WB502120090	-	-	12.00	18.00	90.00	12.00
WB502120100	-	-	12.00	18.00	100.00	12.00
WB502120	-	-	12.00	24.00	110.00	12.00
WB502120130	-	-	12.00	24.00	130.00	12.00
WB502120150	-	-	12.00	24.00	150.00	12.00
WB502120180	-	-	12.00	24.00	180.00	12.00
WB502120200	-	-	12.00	24.00	200.00	12.00

WINNER

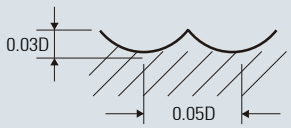
WB5xx Series

EDP NO.			Cutting Diameter (metric)	Cutting Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute	3 Flute	4 Flute				
W Coating	W Coating	W Coating				
Helix 30°	Helix 30°	Helix 30°				
WB502	WB503	WB504	D1	L1	L2	D2
WB502130	-	-	13.00	24.00	100.00	12.00
WB502140	-	-	14.00	26.00	100.00	14.00
WB502140S12	-	-	14.00	26.00	100.00	12.00
WB502140S16	-	-	14.00	26.00	100.00	16.00
WB502150	-	-	15.00	28.00	140.00	16.00
WB502160100	-	-	16.00	24.00	100.00	16.00
WB502160130	-	-	16.00	24.00	130.00	16.00
WB502160	-	-	16.00	30.00	150.00	16.00
WB502160180	-	-	16.00	30.00	180.00	16.00
WB502160200	-	-	16.00	30.00	200.00	16.00
WB502180	-	-	18.00	34.00	150.00	18.00
WB502180S16	-	-	18.00	34.00	150.00	16.00
WB502200100	-	-	20.00	30.00	100.00	20.00
WB502200130	-	-	20.00	30.00	130.00	20.00
WB502200	-	-	20.00	38.00	150.00	20.00
WB502200200	-	-	20.00	38.00	200.00	20.00
WB502250120	-	-	25.00	50.00	120.00	25.00
WB502250180	-	-	25.00	50.00	180.00	25.00

WB502 series

Work Material	Alloy Steels, Carbon Steels (SCM, SNCM, S45C)		Prehardened Steels (NAK, CENA, KP4)		Hardened Steels (SKD, SKT, STAVAX)	
Hardness	≤ 35 HRc		35 ~ 45 HRc		45 ~ 55 HRc	
Strength	≤ 1100N / mm²		1100~1500N / mm²		1500~2000N / mm²	
Cutting Diameter (metric)	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
1.0	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
2.0	29,820	3,420	28,680	2,880	24,000	2,400
3.0	19,860	3,600	19,080	3,180	15,900	2,400
4.0	14,940	3,600	14,340	3,180	12,000	2,400
5.0	11,160	3,480	10,680	2,940	9,000	2,250
6.0	8,340	2,910	8,040	2,460	6,600	1,860
8.0	6,660	2,520	6,420	2,100	5,400	1,620
10.0	5,580	2,220	5,340	1,860	4,500	1,440
12.0	4,170	1,770	4,008	1,500	3,360	1,140
16.0	3,340	1,590	3,210	1,320	2,700	1,020
20.0	2,670	1,410	2,580	1,170	2,160	900
25.0	2,130	1,150	2,060	950	1,730	730

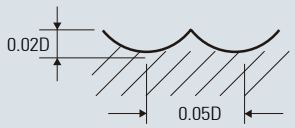
RPM = rev. / min.
FEED = mm / min.



WB503 series

Work Material	Alloy Steels, Carbon Steels (SCM, SNCM, S45C)		Prehardened Steels (NAK, CENA, KP4)		Hardened Steels (SKD, SKT, STAVAX)	
Hardness	≤ 35 HRc		35 ~ 45 HRc		45 ~ 55 HRc	
Strength	≤ 1100N / mm²		1100~1500N / mm²		1500~2000N / mm²	
Cutting Diameter (metric)	RPM	FEED	RPM	FEED	RPM	FEED
1.0	50,000	4,150	44,000	3,000	33,000	2,100
1.5	40,000	5,100	35,000	3,660	36,400	2,600
2.0	33,000	5,890	29,000	4,150	21,700	3,000
3.0	25,000	6,930	22,000	4,880	16,500	3,490
4.0	21,670	6,930	18,120	4,880	13,400	3,490
5.0	18,000	6,520	15,100	4,880	11,160	3,320
6.0	16,200	7,710	13,680	5,590	10,980	4,050
8.0	12,150	6,610	10,170	4,720	8,280	3,580
10.0	9,720	5,870	8,190	4,130	6,620	3,100
12.0	8,150	5,490	4,130	3,830	5,520	2,870
12.0	8,150	5,490	4,130	3,830	5,520	2,870

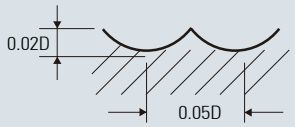
RPM = rev. / min.
FEED = mm / min.



WB504 series

Work Material	Alloy Steels, Carbon Steels (SCM, SNCM, S45C)		Prehardened Steels (NAK, CENA, KP4)		Hardened Steels (SKD, SKT, STAVAX)	
Hardness	≤ 35 HRc		35 ~ 45 HRc		45 ~ 55 HRc	
Strength	≤ 1100N / mm²		1100~1500N / mm²		1500~2000N / mm²	
Cutting Diameter (metric)	RPM	FEED	RPM	FEED	RPM	FEED
1.0	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
2.0	31,680	4,600	23,100	3,300	21,000	3,100
3.0	24,000	5,430	17,500	3,880	16,000	3,650
4.0	20,130	5,430	14,880	3,880	14,220	3,650
5.0	16,780	5,430	12,400	3,690	11,670	3,470
6.0	15,200	6,220	12,200	4,500	11,100	3,830
8.0	11,300	5,250	9,200	3,980	8,320	3,350
10.0	9,100	4,590	7,350	3,450	6,660	2,870
12.0	7,590	4,260	6,130	3,190	5,530	2,400

RPM = rev. / min.
FEED = mm / min.

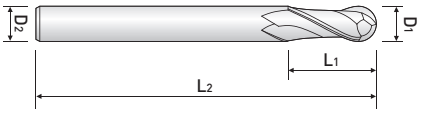


WINNER

WHPB902 Series

ULTRA HIGH PRECISION BALL / 2 FLUTES / REGULAR / W-COATING

ULTRA FINE | Plunge | Profile



TOLERANCE (metric)

D_1 = +0 / -0.012 (D1≤6.0)
D_1 = +0 / -0.015 (D1>6.0)
D_2 = h6

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO. 2 Flute W Coating Helix 30°	Cutting Diameter (metric)	Cutting Length (metric)	Overall Length (metric)	Shank Diameter (metric)
WHPB902	D1	L1	L2	D2
WHPB902001	0.10	0.20	40.00	4.00
WHPB9020015	0.15	0.30	40.00	4.00
WHPB902002	0.20	0.40	40.00	4.00
WHPB902003	0.30	0.60	40.00	4.00
WHPB902004	0.40	0.80	40.00	4.00
WHPB902005	0.50	1.00	40.00	4.00
WHPB902006	0.60	1.20	40.00	4.00
WHPB902007	0.70	1.40	40.00	4.00
WHPB902008	0.80	1.60	40.00	4.00
WHPB902009	0.90	1.80	40.00	4.00
WHPB902010	1.00	2.50	50.00	6.00
WHPB902012	1.20	3.00	50.00	6.00
WHPB902015	1.50	4.00	50.00	6.00
WHPB902020	2.00	5.00	50.00	6.00
WHPB902025	2.50	6.00	60.00	6.00
WHPB902030	3.00	6.00	60.00	6.00
WHPB902040	4.00	8.00	70.00	6.00
WHPB902050	5.00	10.00	80.00	6.00
WHPB902060	6.00	12.00	90.00	6.00
WHPB902080	8.00	14.00	100.00	8.00
WHPB902100	10.00	18.00	100.00	10.00
WHPB902120	12.00	24.00	110.00	12.00

Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
WHPB902	○	○	○	○	◎	○	○	○	○					◎	◎	◎	○				

WHPB902 series

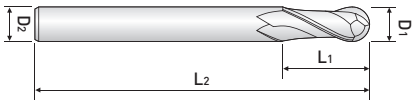
Work Material	Alloy Steels, Carbon Steels (SCM, SNCM, S45C)		Prehardened Steels (NAK, CENA, KP4)		Hardened Steels (SKD, SKT, STAVAX)	
Hardness	≤ 35 HRc		35 ~ 45 HRc		45 ~ 55 HRc	
Strength	≤ 1100N / mm²		1100~1500N / mm²		1500~2000N / mm²	
Cutting Diameter (metric)	RPM	FEED	RPM	FEED	RPM	FEED
0.1	40,000	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
1.0	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
2.0	29,820	3,420	28,680	2,880	24,000	2,400
3.0	19,860	3,600	19,080	3,180	15,900	2,400
4.0	14,940	3,600	14,340	3,180	12,000	2,400
5.0	11,160	3,480	10,680	2,940	9,000	2,250
6.0	8,340	2,910	8,040	2,460	6,600	1,860
8.0	6,660	2,520	6,420	2,100	5,400	1,620
10.0	5,580	2,220	5,340	1,860	4,500	1,440
12.0	4,170	1,770	4,008	1,500	3,360	1,440
16.0	3,340	1,590	3,210	1,320	2,700	1,020
20.0	2,670	1,410	2,580	1,170	2,160	900
25.0	2,130	1,150	2,060	950	1,730	730

WINNER

WB502P Series

HIGH PRECISION BALL / 2 FLUTES / REGULAR / W-COATING

ULTRA FINE | Plunge | Profile



TOLERANCE (metric)

D_1 = +0 / -0.012 (D1≤6.0)
D_1 = +0 / -0.015 (D1>6.0)
D_2 = h6

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO. 2 Flute W Coating Helix 30°	Cutting Diameter (metric)	Cutting Length (metric)	Overall Length (metric)	Shank Diameter (metric)
WB502P	D1	L1	L2	D2
WB502001P	0.10	0.20	40.00	4.00
WB5020015P	0.15	0.30	40.00	4.00
WB502002P	0.20	0.40	40.00	4.00
WB502003P	0.30	0.60	40.00	4.00
WB502004P	0.40	0.80	40.00	4.00
WB502005P	0.50	1.00	40.00	4.00
WB502006P	0.60	1.20	40.00	4.00
WB502007P	0.70	1.40	40.00	4.00
WB502008P	0.80	1.60	40.00	4.00
WB502009P	0.90	1.80	40.00	4.00
WB502010P	1.00	2.50	50.00	6.00
WB502012P	1.20	3.00	50.00	6.00
WB502015P	1.50	4.00	50.00	6.00
WB502020P	2.00	5.00	50.00	6.00
WB502025P	2.50	6.00	60.00	6.00
WB502030P	3.00	6.00	60.00	6.00
WB502040P	4.00	8.00	70.00	6.00
WB502050P	5.00	10.00	80.00	6.00
WB502060P	6.00	12.00	90.00	6.00
WB502080P	8.00	14.00	100.00	8.00
WB502100P	10.00	18.00	100.00	10.00
WB502120P	12.00	24.00	110.00	12.00

Applicable Working Material

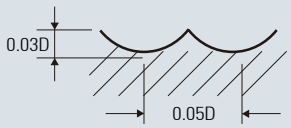
○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
WB502P	○	○	○	○	◎	○	○	○	○					◎	◎	◎	○				

WB502P series

Work Material	Alloy Steels, Carbon Steels (SCM, SNCM, S45C)		Prehardened Steels (NAK, CENA, KP4)		Hardened Steels (SKD, SKT, STAVAX)	
Hardness	≤ 35 HRc		35 ~ 45 HRc		45 ~ 55 HRc	
Strength	≤ 1100N / mm²		1100~1500N / mm²		1500~2000N / mm²	
Cutting Diameter (metric)	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
1.0	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
2.0	29,820	3,420	28,680	2,880	24,000	2,400
3.0	19,860	3,600	19,080	3,180	15,900	2,400
4.0	14,940	3,600	14,340	3,180	12,000	2,400
5.0	11,160	3,480	10,680	2,940	9,000	2,250
6.0	8,340	2,910	8,040	2,460	6,600	1,860
8.0	6,660	2,520	6,420	2,100	5,400	1,620
10.0	5,580	2,220	5,340	1,860	4,500	1,440
12.0	4,170	1,770	4,008	1,500	3,360	1,140
16.0	3,340	1,590	3,210	1,320	2,700	1,020
20.0	2,670	1,410	2,580	1,170	2,160	900
25.0	2,130	1,150	2,060	950	1,730	730

RPM = rev. / min.
FEED = mm / min.

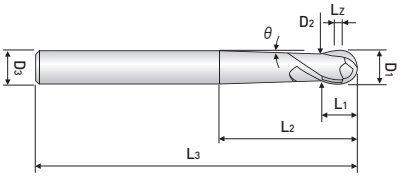


WINNER

WB532 Series

MMC BALL / 2 FLUTES / REGULAR / W-COATING

ULTRA FINE | Plunge | Profile



TOLERANCE (metric)

D_1 = +0 / -0.03
D_2 = h6

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO. 2 Flute W Coating Helix 30°	Cutting Diameter (metric)	Cutting Length (metric)	Neck Diameter (metric)	Neck Length (metric)	Taper Degree°	Overall Length (metric)	Shank Diameter (metric)
WB532	D1	L1	D2	L2	θ	L3	D3
WB532030	3.00	2.30	2.50	16.00	1°30`	80.00	6.00
WB532040	4.00	3.10	3.30	20.00	1°30`	80.00	6.00
WB532050	4.00	3.90	4.10	25.00	1°30`	80.00	6.00
WB532060	6.00	4.90	4.70	30.00	1°30`	100.00	6.00
WB532080	8.00	6.30	6.50	35.00	1°30`	100.00	8.00
WB532100	10.00	7.90	8.20	40.00	1°30`	100.00	10.00
WB532120	12.00	9.50	9.80	50.00	1°30`	100.00	12.00

Applicable Working Material

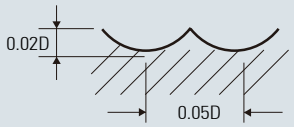
○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
WB532	○	○	○	○	◎	○	○	○	○					◎	◎	◎	○				

WB532 series

Work Material	Alloy Steels, Carbon Steels (SCM, SNCM, S45C)		Prehardened Steels (NAK, CENA, KP4)		Hardened Steels (SKD, SKT, STAVAX)	
Hardness	≤ 35 HRc		35 ~ 45 HRc		45 ~ 55 HRc	
Strength	≤ 1100N / mm²		1100~1500N / mm²		1500~2000N / mm²	
Cutting Diameter (metric)	RPM	FEED	RPM	FEED	RPM	FEED
3.0	35,000	2,800	33,000	2,600	12,000	900
4.0	26,000	2,300	25,000	2,200	9,000	800
5.0	21,000	2,100	20,000	2,000	7,000	700
6.0	17,000	1,900	16,000	1,800	6,000	650
8.0	13,000	1,700	12,000	1,600	4,500	550
10.0	10,500	1,450	10,000	1,400	3,500	500
12.0	9,000	1,400	8,000	1,300	3,000	450

RPM = rev. / min.
FEED = mm / min.



WINNER

WSB502 Series

ULTRA FINE | Plunge | Profile

STRAIGHT FLUTE BALL / 2 FLUTES / REGULAR / W-COATING

TOLERANCE (metric)

D_1 = +0 / -0.012 (D1≤6.0)
D_1 = +0 / -0.015 (D1≥7.0)
D_2 = h6

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO. 2 Flute W Coating	Cutting Diameter (metric)	Cutting Length (metric)	Overall Length (metric)	Shank Diameter (metric)
WSB502	D1	L1	L2	D2
WSB502030	3.00	10.00	70.00	6.00
WSB502040	4.00	12.00	70.00	6.00
WSB502050	5.00	18.00	90.00	6.00
WSB502060	6.00	20.00	90.00	6.00
WSB502080	8.00	25.00	100.00	8.00
WSB502100	10.00	30.00	100.00	10.00
WSB502120	12.00	32.00	110.00	12.00
WSB502160	16.00	35.00	150.00	16.00
WSB502200	20.00	40.00	150.00	20.00

Applicable Working Material

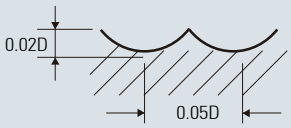
○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
WSB502	○	○	○	○	◎	○	○	○	○					◎	◎	◎	○				

WSB502 series

Work Material	Alloy Steels, Carbon Steels (SCM, SNCM, S45C)		Prehardened Steels (NAK, CENA, KP4)		Hardened Steels (SKD, SKT, STAVAX)	
Hardness	≤ 35 HRc		35 ~ 45 HRc		45 ~ 55 HRc	
Strength	≤ 1100N / mm²		1100~1500N / mm²		1500~2000N / mm²	
Cutting Diameter (metric)	RPM	FEED	RPM	FEED	RPM	FEED
3.0	13,500	1,700	13,200	1,620	12,500	860
4.0	10,600	1,700	10,300	1,620	9,800	860
5.0	9,400	1,650	9,050	1,570	8,600	860
6.0	8,600	1,750	8,250	1,670	7,850	865
8.0	7,000	1,550	6,700	1,460	6,350	890
10.0	6,050	1,450	5,800	1,360	5,450	870
12.0	5,450	1,420	5,200	1,330	4,900	785
16.0	4,300	1,200	4,000	1,100	3,700	650
20.0	3,600	1,050	3,200	900	3,000	550

RPM = rev. / min.
FEED = mm / min.

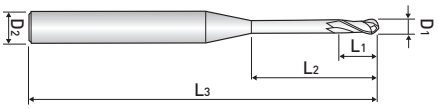


WINNER

WB512, WB512xxS6 Series

RIB BALL / 2 FLUTES / REGULAR / W-COATING

ULTRA FINE | Plunge | Profile



TOLERANCE (metric)

D_1 = +0 / -0.012 (D1≤6.0)
D_1 = +0 / -0.015 (D1≥7.0)
D_2 = h6

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO. / 2 Flute / W Coating / Helix 30°		Cutting Diameter (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
WB512	WB512xxS6	D1	L1	L2	L3	D2
WB512001002	-	0.10	0.10	0.20	40.00	4.00
WB512001003	-	0.10	0.10	0.30	40.00	4.00
WB512001005	-	0.10	0.10	0.50	40.00	4.00
WB51200101	-	0.10	0.10	1.00	40.00	4.00
WB512002005	-	0.20	0.20	0.50	40.00	4.00
WB51200201	-	0.20	0.20	1.00	40.00	4.00
WB512002015	-	0.20	0.20	1.50	40.00	4.00
WB51200202	-	0.20	0.20	2.00	40.00	4.00
WB51200203	-	0.20	0.20	3.00	40.00	4.00
WB51200301	-	0.30	0.30	1.00	40.00	4.00
WB512003015	-	0.30	0.30	1.50	40.00	4.00
WB51200302	-	0.30	0.30	2.00	40.00	4.00
WB512003025	-	0.30	0.30	2.50	40.00	4.00
WB51200303	-	0.30	0.30	3.00	40.00	4.00
WB51200304	-	0.30	0.30	4.00	40.00	4.00
WB51200305	-	0.30	0.30	5.00	40.00	4.00
WB51200401	-	0.40	0.40	1.00	40.00	4.00
WB512004015	-	0.40	0.40	1.50	40.00	4.00
WB51200402	-	0.40	0.40	2.00	40.00	4.00
WB512004025	-	0.40	0.40	2.50	40.00	4.00
WB51200403	-	0.40	0.40	3.00	40.00	4.00
WB51200404	-	0.40	0.40	4.00	40.00	4.00
WB51200405	-	0.40	0.40	5.00	40.00	4.00
WB51200406	-	0.40	0.40	6.00	40.00	4.00
WB51200408	-	0.40	0.40	8.00	40.00	4.00
WB51200410	-	0.40	0.40	10.00	40.00	4.00
WB51200501	-	0.50	0.50	1.00	45.00	4.00
-	WB5120050 1S6	0.50	0.50	1.00	45.00	6.00
WB512005015	-	0.50	0.50	1.50	45.00	4.00
WB51200502	-	0.50	0.50	2.00	45.00	4.00
-	WB5120050 2S6	0.50	0.50	2.00	45.00	6.00
WB512005025	-	0.50	0.50	2.50	45.00	4.00
WB51200503	-	0.50	0.50	3.00	45.00	4.00
WB51200504	-	0.50	0.50	4.00	45.00	4.00
-	WB5120050 4S6	0.50	0.50	4.00	45.00	6.00
WB512005050	-	0.50	0.50	5.00	45.00	4.00

Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
All	○	○	○	○	◎	○	○	○	○					◎	◎	◎	○				

>>Continue

EDP NO. 2 Flute W Coating Helix 30°		Cutting Diameter (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
WB512	WB512xxS6	D1	L1	L2	L3	D2
WB51200506	-	0.50	0.50	6.00	45.00	4.00
WB51200508	-	0.50	0.50	8.00	45.00	4.00
WB51200510	-	0.50	0.50	10.00	45.00	4.00
WB51200512	-	0.50	0.50	12.00	45.00	4.00
WB51200514	-	0.50	0.50	14.00	45.00	4.00
WB51200516	-	0.50	0.50	16.00	45.00	4.00
WB51200601	-	0.60	0.60	1.00	45.00	4.00
-	WB5120601S6	0.60	0.60	1.00	45.00	6.00
WB51200602	-	0.60	0.60	2.00	45.00	4.00
-	WB5120602S6	0.60	0.60	2.00	45.00	6.00
WB51200603	-	0.60	0.60	3.00	45.00	4.00
-	WB5120603S6	0.60	0.60	3.00	45.00	6.00
WB51200604	-	0.60	0.60	4.00	45.00	4.00
-	WB5120604S6	0.60	0.60	4.00	45.00	6.00
WB51200605	-	0.60	0.60	5.00	45.00	4.00
-	WB5120605S6	0.60	0.60	5.00	45.00	6.00
WB51200606	-	0.60	0.60	6.00	45.00	4.00
-	WB5120606S6	0.60	0.60	6.00	45.00	6.00
WB51200608	-	0.60	0.60	8.00	45.00	4.00
-	WB5120608S6	0.60	0.60	8.00	45.00	6.00
WB51200610	-	0.60	0.60	10.00	45.00	4.00
-	WB5120610S6	0.60	0.60	10.00	45.00	6.00
WB51200612	-	0.60	0.60	12.00	45.00	4.00
-	WB5120612S6	0.60	0.60	12.00	45.00	6.00
WB51200614	-	0.60	0.60	14.00	50.00	4.00
-	WB5120614S6	0.60	0.60	14.00	50.00	6.00
WB51200616	-	0.60	0.60	16.00	50.00	4.00
-	WB5120616S6	0.60	0.60	16.00	50.00	6.00
WB51200702	-	0.70	0.70	2.00	45.00	4.00
WB51200704	-	0.70	0.70	4.00	45.00	4.00
WB51200706	-	0.70	0.70	6.00	45.00	4.00
WB51200708	-	0.70	0.70	8.00	45.00	4.00
WB51200710	-	0.70	0.70	10.00	45.00	4.00
WB51200712	-	0.70	0.70	12.00	45.00	4.00
WB51200801	-	0.80	0.80	1.00	45.00	4.00
-	WB5120801S6	0.80	0.80	1.00	45.00	6.00
WB51200802	-	0.80	0.80	2.00	45.00	4.00
-	WB5120802S6	0.80	0.80	2.00	45.00	6.00
WB51200803	-	0.80	0.80	3.00	45.00	4.00
-	WB5120803S6	0.80	0.80	3.00	45.00	6.00
WB51200804	-	0.80	0.80	4.00	45.00	4.00
-	WB5120804S6	0.80	0.80	4.00	45.00	6.00
WB51200805	-	0.80	0.80	5.00	45.00	4.00
-	WB5120805S6	0.80	0.80	5.00	45.00	6.00
WB51200806	-	0.80	0.80	6.00	45.00	4.00
-	WB5120806S6	0.80	0.80	6.00	45.00	6.00

WB512, WB512xxS6 Series

>>Continue

EDP NO. 2 Flute W Coating Helix 30°		Cutting Diameter (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
WB512	WB512xxS6	D1	L1	L2	L3	D2
WB51200808	-	0.80	0.80	8.00	45.00	4.00
-	WB5120808S6	0.80	0.80	8.00	45.00	6.00
WB51200810	-	0.80	0.80	10.00	45.00	4.00
-	WB5120810S6	0.80	0.80	10.00	45.00	6.00
WB51200812	-	0.80	0.80	12.00	45.00	4.00
-	WB5120812S6	0.80	0.80	12.00	45.00	6.00
WB51200814	-	0.80	0.80	14.00	50.00	4.00
-	WB5120814S6	0.80	0.80	14.00	50.00	6.00
WB51200816	-	0.80	0.80	16.00	50.00	4.00
-	WB5120816S6	0.80	0.80	16.00	50.00	6.00
WB51200820	-	0.80	0.80	20.00	55.00	4.00
-	WB5120820S6	0.80	0.80	20.00	55.00	6.00
WB51200904	-	0.90	0.90	4.00	45.00	4.00
WB51200906	-	0.90	0.90	6.00	45.00	4.00
WB51200908	-	0.90	0.90	8.00	45.00	4.00
WB51200910	-	0.90	0.90	10.00	45.00	4.00
WB51201002	-	1.00	1.00	2.00	50.00	4.00
-	WB5120100 2S6	1.00	1.00	2.00	50.00	6.00
WB51201003	-	1.00	1.00	3.00	50.00	4.00
-	WB5120100 3S6	1.00	1.00	3.00	50.00	6.00
WB51201004	-	1.00	1.00	4.00	50.00	4.00
-	WB5120100 4S6	1.00	1.00	4.00	50.00	6.00
WB51201005	-	1.00	1.00	5.00	50.00	4.00
-	WB5120100 5S6	1.00	1.00	5.00	50.00	6.00
WB51201006	-	1.00	1.00	6.00	50.00	4.00
-	WB5120100 6S6	1.00	1.00	6.00	50.00	6.00
WB51201007	-	1.00	1.00	7.00	50.00	4.00
-	WB5120100 7S6	1.00	1.00	7.00	50.00	6.00
WB51201008	-	1.00	1.00	8.00	50.00	4.00
-	WB5120100 8S6	1.00	1.00	8.00	50.00	6.00
WB51201009	-	1.00	1.00	9.00	50.00	4.00
-	WB5120100 9S6	1.00	1.00	9.00	50.00	6.00
WB51201010	-	1.00	1.00	10.00	50.00	4.00
-	WB5120101 0S6	1.00	1.00	10.00	50.00	6.00
WB51201012	-	1.00	1.00	12.00	50.00	4.00
-	WB5120101 2S6	1.00	1.00	12.00	50.00	6.00
WB51201014	-	1.00	1.00	14.00	50.00	4.00
-	WB5120101 4S6	1.00	1.00	14.00	50.00	6.00
WB51201016	-	1.00	1.00	16.00	50.00	4.00
-	WB5120101 6S6	1.00	1.00	16.00	50.00	6.00
WB51201018	-	1.00	1.00	18.00	50.00	4.00
-	WB5120101 8S6	1.00	1.00	18.00	50.00	6.00
WB51201020	-	1.00	1.00	20.00	55.00	4.00
-	WB5120102 0S6	1.00	1.00	20.00	55.00	6.00
WB51201022	-	1.00	1.00	22.00	60.00	4.00
-	WB5120102 2S6	1.00	1.00	22.00	60.00	6.00

WB512, WB512xxS6 Series

>>Continue

EDP NO. 2 Flute W Coating Helix 30°		Cutting Diameter (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
WB512	WB512xxS6	D1	L1	L2	L3	D2
WB51201026	-	1.00	1.00	26.00	60.00	4.00
-	WB51201026S6	1.00	1.00	26.00	60.00	6.00
WB51201030	-	1.00	1.00	30.00	70.00	4.00
-	WB51201030S6	1.00	1.00	30.00	70.00	6.00
WB51201040	-	1.00	1.00	40.00	80.00	4.00
WB51201050	-	1.00	1.00	50.00	100.00	4.00
WB51201204	-	1.20	1.20	4.00	50.00	4.00
WB51201206	-	1.20	1.20	6.00	50.00	4.00
WB51201208	-	1.20	1.20	8.00	50.00	4.00
WB51201210	-	1.20	1.20	10.00	50.00	4.00
WB51201212	-	1.20	1.20	12.00	50.00	4.00
WB51201216	-	1.20	1.20	16.00	50.00	4.00
WB51201220	-	1.20	1.20	20.00	55.00	4.00
WB51201226	-	1.20	1.20	26.00	60.00	4.00
WB51201406	-	1.40	1.40	6.00	50.00	4.00
WB51201408	-	1.40	1.40	8.00	50.00	4.00
WB51201410	-	1.40	1.40	10.00	50.00	4.00
WB51201412	-	1.40	1.40	12.00	50.00	4.00
WB51201416	-	1.40	1.40	16.00	50.00	4.00
WB51201503	-	1.50	1.50	3.00	50.00	4.00
-	WB51201503S6	1.50	1.50	3.00	50.00	6.00
WB51201504	-	1.50	1.50	4.00	50.00	4.00
-	WB51201504S6	1.50	1.50	4.00	50.00	6.00
WB51201505	-	1.50	1.50	5.00	50.00	4.00
WB51201506	-	1.50	1.50	6.00	50.00	4.00
-	WB51201506S6	1.50	1.50	6.00	50.00	6.00
WB51201507	-	1.50	1.50	7.00	50.00	4.00
WB51201508	-	1.50	1.50	8.00	50.00	4.00
-	WB51201508S6	1.50	1.50	8.00	50.00	6.00
WB51201510	-	1.50	1.50	10.00	50.00	4.00
-	WB51201510S6	1.50	1.50	10.00	50.00	6.00
WB51201512	-	1.50	1.50	12.00	50.00	4.00
-	WB51201512S6	1.50	1.50	12.00	50.00	6.00
WB51201514	-	1.50	1.50	14.00	50.00	4.00
-	WB51201514S6	1.50	1.50	14.00	50.00	6.00
WB51201516	-	1.50	1.50	16.00	50.00	4.00
-	WB51201516S6	1.50	1.50	16.00	50.00	6.00
WB51201518	-	1.50	1.50	18.00	50.00	4.00
-	WB51201518S6	1.50	1.50	18.00	50.00	6.00
WB51201520	-	1.50	1.50	20.00	55.00	4.00
-	WB51201520S6	1.50	1.50	20.00	55.00	6.00
WB51201522	-	1.50	1.50	22.00	60.00	4.00
-	WB51201522S6	1.50	1.50	22.00	60.00	6.00
WB51201526	-	1.50	1.50	26.00	60.00	4.00
-	WB51201526S6	1.50	1.50	26.00	60.00	6.00
WB51201530	-	1.50	1.50	30.00	70.00	4.00

WB512, WB512xxS6 Series

>>Continue

EDP NO. 2 Flute W Coating Helix 30°		Cutting Diameter (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
WB512	WB512xxS6	D1	L1	L2	L3	D2
-	WB5120153OS6	1.50	1.50	30.00	70.00	6.00
WB51201535	-	1.50	1.50	35.00	70.00	4.00
-	WB5120153SS6	1.50	1.50	35.00	70.00	6.00
WB51201540	-	1.50	1.50	40.00	80.00	4.00
-	WB5120154OS6	1.50	1.50	40.00	80.00	6.00
WB51201604	-	1.60	1.60	4.00	50.00	4.00
WB51201606	-	1.60	1.60	6.00	50.00	4.00
WB51201608	-	1.60	1.60	8.00	50.00	4.00
WB51201610	-	1.60	1.60	10.00	50.00	4.00
WB51201612	-	1.60	1.60	12.00	50.00	4.00
WB51201616	-	1.60	1.60	16.00	50.00	4.00
WB51201620	-	1.60	1.60	20.00	55.00	4.00
WB51201804	-	1.80	1.80	4.00	50.00	4.00
WB51201806	-	1.80	1.80	6.00	50.00	4.00
WB51201808	-	1.80	1.80	8.00	50.00	4.00
WB51201810	-	1.80	1.80	10.00	50.00	4.00
WB51201812	-	1.80	1.80	12.00	50.00	4.00
WB51201816	-	1.80	1.80	16.00	50.00	4.00
WB51201820	-	1.80	1.80	20.00	55.00	4.00
WB51202004	-	2.00	2.00	4.00	50.00	4.00
-	WB5120200 4S6	2.00	2.00	4.00	50.00	6.00
WB51202006	-	2.00	2.00	6.00	50.00	4.00
-	WB5120200 6S6	2.00	2.00	6.00	50.00	6.00
WB51202008	-	2.00	2.00	8.00	50.00	4.00
-	WB5120200 8S6	2.00	2.00	8.00	50.00	6.00
WB51202010	-	2.00	2.00	10.00	50.00	4.00
-	WB5120201 0S6	2.00	2.00	10.00	50.00	6.00
WB51202012	-	2.00	2.00	12.00	50.00	4.00
-	WB5120201 2S6	2.00	2.00	12.00	50.00	6.00
WB51202014	-	2.00	2.00	14.00	50.00	4.00
-	WB5120201 4S6	2.00	2.00	14.00	50.00	6.00
WB51202016	-	2.00	2.00	16.00	50.00	4.00
-	WB5120201 6S6	2.00	2.00	16.00	50.00	6.00
WB51202018	-	2.00	2.00	18.00	55.00	4.00
-	WB5120201 8S6	2.00	2.00	18.00	55.00	6.00
WB51202020	-	2.00	2.00	20.00	55.00	4.00
-	WB5120202 0S6	2.00	2.00	20.00	55.00	6.00
WB51202022	-	2.00	2.00	22.00	60.00	4.00
-	WB5120202 2S6	2.00	2.00	22.00	60.00	6.00
WB51202026	-	2.00	2.00	26.00	60.00	4.00
-	WB5120202 6S6	2.00	2.00	26.00	60.00	6.00
WB51202030	-	2.00	2.00	30.00	70.00	4.00
-	WB5120203 0S6	2.00	2.00	30.00	70.00	6.00
WB51202035	-	2.00	2.00	35.00	70.00	4.00
-	WB5120203 5S6	2.00	2.00	35.00	70.00	6.00
WB51202040	-	2.00	2.00	40.00	80.00	4.00

WB512, WB512xxS6 Series

>>Continue

EDP NO. / 2 Flute / W Coating / Helix 30°		Cutting Diameter (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
WB512	WB512xxS6	D1	L1	L2	L3	D2
-	WB51202040S6	2.00	2.00	40.00	80.00	6.00
WB51202045	-	2.00	2.00	45.00	90.00	4.00
-	WB51202045S6	2.00	2.00	45.00	90.00	6.00
WB51202050	-	2.00	2.00	50.00	100.00	4.00
-	WB51202050S6	2.00	2.00	50.00	100.00	6.00
WB51202060	-	2.00	2.00	60.00	110.00	4.00
WB51202508	-	2.50	2.50	8.00	50.00	4.00
WB51202510	-	2.50	2.50	10.00	50.00	4.00
WB51202512	-	2.50	2.50	12.00	50.00	4.00
WB51202516	-	2.50	2.50	16.00	50.00	4.00
WB51202520	-	2.50	2.50	20.00	50.00	4.00
WB51202522	-	2.50	2.50	22.00	60.00	4.00
WB51202526	-	2.50	2.50	26.00	60.00	4.00
WB51202530	-	2.50	2.50	30.00	70.00	4.00
WB51202535	-	2.50	2.50	35.00	70.00	4.00
WB51202540	-	2.50	2.50	40.00	80.00	4.00
WB51202545	-	2.50	2.50	45.00	90.00	4.00
WB51202550	-	2.50	2.50	50.00	100.00	4.00
WB51203006	-	3.00	3.00	6.00	50.00	6.00
WB51203008	-	3.00	3.00	8.00	50.00	6.00
WB51203010	-	3.00	3.00	10.00	50.00	6.00
WB51203012	-	3.00	3.00	12.00	50.00	6.00
WB51203014	-	3.00	3.00	14.00	60.00	6.00
WB51203016	-	3.00	3.00	16.00	60.00	6.00
WB51203018	-	3.00	3.00	18.00	60.00	6.00
WB51203020	-	3.00	3.00	20.00	60.00	6.00
WB51203022	-	3.00	3.00	22.00	65.00	6.00
WB51203026	-	3.00	3.00	26.00	65.00	6.00
WB51203030	-	3.00	3.00	30.00	70.00	6.00
WB51203035	-	3.00	3.00	35.00	70.00	6.00
WB51203040	-	3.00	3.00	40.00	80.00	6.00
WB51203045	-	3.00	3.00	45.00	90.00	6.00
WB51203050	-	3.00	3.00	50.00	100.00	6.00
WB51203060	-	3.00	3.00	60.00	100.00	6.00
WB51204008	-	4.00	4.00	8.00	50.00	6.00
WB51204010	-	4.00	4.00	10.00	50.00	6.00
WB51204012	-	4.00	4.00	12.00	50.00	6.00
WB51204014	-	4.00	4.00	14.00	60.00	6.00
WB51204016	-	4.00	4.00	16.00	60.00	6.00
WB51204018	-	4.00	4.00	18.00	60.00	6.00
WB51204020	-	4.00	4.00	20.00	60.00	6.00
WB51204022	-	4.00	4.00	22.00	65.00	6.00
WB51204026	-	4.00	4.00	26.00	65.00	6.00
WB51204030	-	4.00	4.00	30.00	70.00	6.00
WB51204035	-	4.00	4.00	35.00	70.00	6.00
WB51204040	-	4.00	4.00	40.00	80.00	6.00

WB512, WB512xxS6 Series

EDP NO. 2 Flute W Coating Helix 30°		Cutting Diameter (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
WB512	WB512xxS6	D1	L1	L2	L3	D2
WB51204045	-	4.00	4.00	45.00	90.00	6.00
WB51204050	-	4.00	4.00	50.00	100.00	6.00
WB51204055	-	4.00	4.00	55.00	100.00	6.00
WB51204060	-	4.00	4.00	60.00	100.00	6.00
WB51205015	-	5.00	6.00	15.00	60.00	6.00
WB51205020	-	5.00	6.00	20.00	60.00	6.00
WB51205026	-	5.00	6.00	26.00	65.00	6.00
WB51205030	-	5.00	6.00	30.00	70.00	6.00
WB51205035	-	5.00	6.00	35.00	70.00	6.00
WB51205040	-	5.00	6.00	40.00	80.00	6.00
WB51205045	-	5.00	6.00	45.00	90.00	6.00
WB51205050	-	5.00	6.00	50.00	100.00	6.00
WB51205055	-	5.00	6.00	55.00	100.00	6.00
WB51205060	-	5.00	6.00	60.00	100.00	6.00
WB51206020	-	6.00	8.00	20.00	60.00	6.00
WB51206030	-	6.00	8.00	30.00	60.00	6.00
WB5120602090	-	6.00	12.00	20.00	90.00	6.00
WB5120603090	-	6.00	12.00	30.00	90.00	6.00
WB51208025	-	8.00	10.00	25.00	70.00	8.00
WB51208035	-	8.00	10.00	35.00	70.00	8.00
WB51208025100	-	8.00	14.00	25.00	100.00	8.00
WB51208035100	-	8.00	14.00	35.00	100.00	8.00
WB51210030	-	10.00	12.00	30.00	75.00	10.00
WB51210040	-	10.00	12.00	40.00	75.00	10.00
WB51210030100	-	10.00	18.00	30.00	100.00	10.00
WB51210040100	-	10.00	18.00	40.00	100.00	10.00
WB51212032	-	12.00	14.00	32.00	80.00	12.00
WB51212045	-	12.00	14.00	45.00	80.00	12.00
WB51212032110	-	12.00	22.00	32.00	110.00	12.00
WB51212045110	-	12.00	22.00	45.00	110.00	12.00

WB512, WB512xxS6 Series

>>Continue

Work Material		Alloy Steels, Carbon Steels (SCM, SNCM, S45C)			Prehardened Steels (NAK, CENA, KP4)			Hardened Steels (SKD, SKT, STAVAX)		
Hardness		≤ 35 HRc			35 ~ 45 HRc			45 ~ 55 HRc		
Strength		≤ 1100N / mm²			1100~1500N / mm²			1500~2000N / mm²		
Cutting Diameter (metric)	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
0.1	0.3	50,000	240	0.009	50,000	215	0.007	50,000	190	0.005
0.1	0.5	50,000	240	0.006	50,000	215	0.005	50,000	190	0.004
0.1	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
0.2	1	50,000	335	0.013	50,000	310	0.010	43,200	260	0.007
0.2	1.5	45,000	270	0.007	45,000	250	0.006	38,880	210	0.004
0.2	2	45,000	270	0.005	45,000	250	0.004	38,880	210	0.003
0.2	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
0.3	1.5	50,000	475	0.019	50,000	430	0.015	42,800	365	0.011
0.3	2	45,000	385	0.011	45,000	350	0.008	38,520	295	0.006
0.3	2.5	45,000	385	0.007	45,000	350	0.005	38,520	295	0.004
0.3	3	45,000	385	0.007	45,000	350	0.005	38,520	295	0.004
0.3	4	40,000	305	0.004	40,000	275	0.003	34,240	235	0.002
0.3	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
0.4	1.5	41,000	490	0.025	38,800	425	0.020	34,200	340	0.014
0.4	2	41,000	490	0.025	38,800	425	0.020	34,200	340	0.014
0.4	2.5	36,900	395	0.014	34,920	345	0.011	30,780	275	0.008
0.4	3	36,900	395	0.014	34,920	345	0.011	30,780	275	0.008
0.4	4	36,900	395	0.009	34,920	345	0.007	30,780	275	0.005
0.4	5	32,800	315	0.009	31,040	270	0.007	27,360	220	0.005
0.4	6	32,800	315	0.005	31,040	270	0.004	27,360	220	0.003
0.4	8	24,600	205	0.004	23,280	180	0.003	20,520	145	0.002
0.4	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
0.5	1.5	34,200	685	0.045	32,300	580	0.035	28,500	515	0.025
0.5	2	34,200	685	0.032	32,300	580	0.025	28,500	515	0.018
0.5	2.5	34,200	685	0.032	32,300	580	0.025	28,500	515	0.018
0.5	3	30,780	555	0.018	29,070	470	0.014	25,650	415	0.010
0.5	4	30,780	555	0.018	29,070	470	0.014	25,650	415	0.010
0.5	5	30,780	555	0.011	29,070	470	0.009	25,650	415	0.006
0.5	6	27,360	440	0.011	25,840	370	0.009	22,800	330	0.006
0.5	8	20,520	290	0.007	19,380	245	0.005	17,100	215	0.004
0.5	10	20,520	290	0.005	19,380	245	0.004	17,100	215	0.003
0.5	12	10,260	125	0.005	9,690	105	0.004	8,550	95	0.003
0.5	14	10,260	125	0.005	9,690	105	0.004	8,550	95	0.003
0.5	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
0.6	2	34,200	1,025	0.038	32,300	840	0.029	28,500	685	0.021
0.6	3	34,200	1,025	0.038	32,300	840	0.029	28,500	685	0.021
0.6	4	30,780	830	0.022	29,070	680	0.017	25,650	555	0.012
0.6	5	30,780	830	0.014	29,070	680	0.011	25,650	555	0.008
0.6	6	30,780	830	0.014	29,070	680	0.011	25,650	555	0.008
0.6	8	27,360	655	0.008	25,840	540	0.006	22,800	440	0.005
0.6	10	20,520	430	0.005	19,380	355	0.004	17,100	290	0.003
0.6	12	20,520	430	0.005	19,380	355	0.004	17,100	290	0.003
0.6	14	10,260	185	0.005	9,690	150	0.004	8,550	125	0.003
0.6	16	10,260	185	0.005	9,690	150	0.004	8,550	125	0.003

WB512, WB512xxS6 Series

>>Continue

Work Material		Alloy Steels, Carbon Steels (SCM, SNCM, S45C)			Prehardened Steels (NAK, CENA, KP4)			Hardened Steels (SKD, SKT, STAVAX)		
Hardness		≤ 35 HRc			35 ~ 45 HRc			45 ~ 55 HRc		
Strength		≤ 1100N / mm²			1100~1500N / mm²			1500~2000N / mm²		
Cutting Diameter (metric)	Effective Length	RPM	FEED	Ap(mm)	RPM	FEED	Ap(mm)	RPM	FEED	Ap(mm)
0.7	2	34,200	1,130	0.063	32,300	930	0.049	28,500	765	0.035
0.7	4	30,780	915	0.025	29,070	755	0.020	25,650	620	0.014
0.7	6	30,780	915	0.016	29,070	755	0.012	25,650	620	0.009
0.7	8	27,360	725	0.016	25,840	595	0.012	22,800	490	0.009
0.7	10	27,360	725	0.009	25,840	595	0.007	22,800	490	0.005
0.7	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
0.8	3	34,200	1,230	0.050	32,300	1,035	0.039	28,500	855	0.028
0.8	4	34,200	1,230	0.050	32,300	1,035	0.039	28,500	855	0.028
0.8	5	30,780	995	0.029	29,070	840	0.022	25,650	695	0.016
0.8	6	30,780	995	0.029	29,070	840	0.022	25,650	695	0.016
0.8	8	30,780	995	0.018	29,070	840	0.014	25,650	695	0.010
0.8	10	27,360	785	0.018	25,840	660	0.014	22,800	545	0.010
0.8	12	27,360	785	0.011	25,840	660	0.008	22,800	545	0.006
0.8	14	20,520	515	0.007	19,380	435	0.006	17,100	360	0.004
0.8	16	20,520	515	0.007	19,380	435	0.006	17,100	360	0.004
0.8	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
0.9	6	29,250	1,120	0.032	27,630	935	0.025	24,390	775	0.018
0.9	8	29,250	1,120	0.020	27,630	935	0.016	24,390	775	0.011
0.9	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
1.0	3	30,800	1,540	0.090	29,100	1,310	0.070	25,700	1,075	0.050
1.0	4	30,800	1,540	0.063	29,100	1,310	0.049	25,700	1,075	0.035
1.0	5	30,800	1,540	0.063	29,100	1,310	0.049	25,700	1,075	0.035
1.0	6	27,720	1,245	0.036	26,190	1,060	0.028	23,130	870	0.020
1.0	7	27,720	1,245	0.036	26,190	1,060	0.028	23,130	870	0.020
1.0	8	27,720	1,245	0.036	26,190	1,060	0.028	23,130	870	0.020
1.0	10	27,720	1,245	0.023	26,190	1,060	0.018	23,130	870	0.013
1.0	12	24,640	985	0.023	23,280	840	0.018	20,560	690	0.013
1.0	14	24,640	985	0.014	23,280	840	0.011	20,560	690	0.008
1.0	16	18,480	645	0.014	17,460	550	0.011	15,420	450	0.008
1.0	18	18,480	645	0.009	17,460	550	0.007	15,420	450	0.005
1.0	20	18,480	645	0.009	17,460	550	0.007	15,420	450	0.005
1.0	22	9,240	275	0.009	8,730	235	0.007	7,710	195	0.005
1.0	26	9,240	275	0.009	8,730	235	0.007	7,710	195	0.005
1.0	30	9,240	275	0.009	8,730	235	0.007	7,710	195	0.005
1.0	40	3,080	75	0.009	2,910	65	0.007	2,570	55	0.005
1.0	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
1.2	6	26,300	1,375	0.076	24,800	1,150	0.059	21,900	950	0.042
1.2	8	23,670	1,115	0.043	22,320	930	0.034	19,710	770	0.024
1.2	10	23,670	1,115	0.027	22,320	930	0.021	19,710	770	0.015
1.2	12.0	23,670	1,115	0.027	22,320	930	0.021	19,710	770	0.015
1.2	16.0	21,040	880	0.016	19,840	735	0.013	17,520	610	0.009
1.2	20.0	15,780	580	0.011	14,880	485	0.008	13,140	400	0.006
1.2	26.0	7,890	245	0.011	7,440	205	0.008	6,570	170	0.006
1.4	6.0	21,500	1,295	0.088	20,300	1,100	0.069	18,000	935	0.049
1.4	8.0	19,350	1,050	0.050	18,270	890	0.039	16,200	755	0.028
1.4	10.0	19,350	1,050	0.050	18,270	890	0.039	16,200	755	0.028

WB512, WB512xxS6 Series

>>Continue

Work Material		Alloy Steels, Carbon Steels (SCM, SNCM, S45C)			Prehardened Steels (NAK, CENA, KP4)			Hardened Steels (SKD, SKT, STAVAX)		
Hardness		≤ 35 HRc			35 ~ 45 HRc			45 ~ 55 HRc		
Strength		≤ 1100N / mm²			1100~1500N / mm²			1500~2000N / mm²		
Cutting Diameter (metric)	Effective Length	RPM	FEED	Ap(mm)	RPM	FEED	Ap(mm)	RPM	FEED	Ap(mm)
1.4	16.0	17,200	830	0.032	16,240	705	0.025	14,400	600	0.018
1.5	4.0	23,900	1,580	0.135	22,600	1,355	0.105	20,000	1,075	0.075
1.5	5.0	23,900	1,580	0.095	22,600	1,355	0.074	20,000	1,075	0.053
1.5	6.0	23,900	1,580	0.095	22,600	1,355	0.074	20,000	1,075	0.053
1.5	7.0	23,900	1,580	0.095	22,600	1,355	0.074	20,000	1,075	0.053
1.5	8.0	21,510	1,280	0.054	20,340	1,100	0.042	18,000	870	0.030
1.5	10.0	21,510	1,280	0.054	20,340	1,100	0.042	18,000	870	0.030
1.5	12.0	21,510	1,280	0.054	20,340	1,100	0.042	18,000	870	0.030
1.5	14.0	21,510	1,280	0.034	20,340	1,100	0.026	18,000	870	0.019
1.5	16.0	19,120	1,010	0.034	18,080	865	0.026	16,000	690	0.019
1.5	18.0	19,120	1,010	0.034	18,080	865	0.026	16,000	690	0.019
1.5	20.0	19,120	1,010	0.020	18,080	865	0.016	16,000	690	0.011
1.5	22.0	19,120	1,010	0.020	18,080	865	0.016	16,000	690	0.011
1.5	26.0	14,340	665	0.014	13,560	570	0.011	12,000	450	0.008
1.5	30.0	14,340	665	0.014	13,560	570	0.011	12,000	450	0.008
1.5	35.0	7,170	285	0.010	6,780	245	0.008	6,000	195	0.005
1.5	40.0	7,170	285	0.010	6,780	245	0.008	6,000	195	0.005
1.6	4.0	22,200	1,555	0.101	21,000	1,300	0.078	18,500	1,110	0.056
1.6	6.0	22,200	1,555	0.101	21,000	1,300	0.078	18,500	1,110	0.056
1.6	8.0	22,200	1,555	0.101	21,000	1,300	0.078	18,500	1,110	0.056
1.6	10.0	19,980	1,260	0.058	18,900	1,055	0.045	16,650	900	0.032
1.6	12.0	19,980	1,260	0.058	18,900	1,055	0.045	16,650	900	0.032
1.6	16.0	19,980	1,260	0.036	18,900	1,055	0.028	16,650	900	0.020
1.6	20.0	17,760	995	0.036	16,800	830	0.028	14,800	710	0.020
1.8	4.0	22,200	1,780	0.113	21,000	1,470	0.088	18,500	1,225	0.063
1.8	6.0	22,200	1,780	0.113	21,000	1,470	0.088	18,500	1,225	0.063
1.8	8.0	22,200	1,780	0.113	21,000	1,470	0.088	18,500	1,225	0.063
1.8	10.0	19,980	1,440	0.065	18,900	1,190	0.050	16,650	990	0.036
1.8	12.0	19,980	1,440	0.065	18,900	1,190	0.050	16,650	990	0.036
1.8	16.0	19,980	1,440	0.041	18,900	1,190	0.032	16,650	990	0.023
1.8	20.0	17,760	1,140	0.041	16,800	940	0.032	14,800	785	0.023
2.0	6.0	18,000	1,795	0.180	17,000	1,525	0.140	15,000	1,285	0.100
2.0	8.0	18,000	1,795	0.126	17,000	1,525	0.098	15,000	1,285	0.070
2.0	10.0	18,000	1,795	0.126	17,000	1,525	0.098	15,000	1,285	0.070
2.0	12.0	16,200	1,455	0.072	15,300	1,235	0.056	13,500	1,040	0.040
2.0	14.0	16,200	1,455	0.072	15,300	1,235	0.056	13,500	1,040	0.040
2.0	16.0	16,200	1,455	0.072	15,300	1,235	0.056	13,500	1,040	0.040
2.0	18.0	16,200	1,455	0.045	15,300	1,235	0.035	13,500	1,040	0.025
2.0	20.0	16,200	1,455	0.045	15,300	1,235	0.035	13,500	1,040	0.025
2.0	22.0	14,400	1,150	0.045	13,600	975	0.035	12,000	820	0.025
2.0	26.0	14,400	1,150	0.045	13,600	975	0.035	12,000	820	0.025
2.0	30.0	14,400	1,150	0.027	13,600	975	0.021	12,000	820	0.015
2.0	35.0	10,800	755	0.018	10,200	640	0.014	9,000	540	0.010
2.0	40.0	10,800	755	0.018	10,200	640	0.014	9,000	540	0.010
2.0	45.0	5,400	325	0.018	5,100	275	0.014	4,500	230	0.010
2.0	50.0	5,400	325	0.018	5,100	275	0.014	4,500	230	0.010
2.0	60.0	5,400	325	0.018	5,100	275	0.014	4,500	230	0.010
2.5	8.0	15,800	1,925	0.158	14,900	1,605	0.123	13,200	1,305	0.088
2.5	10.0	15,800	1,925	0.158	14,900	1,605	0.123	13,200	1,305	0.088
2.5	12.0	15,800	1,925	0.158	14,900	1,605	0.123	13,200	1,305	0.088

WB512, WB512xxS6 Series

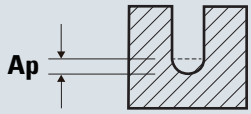
>>Continue

Work Material		Alloy Steels, Carbon Steels (SCM, SNCM, S45C)			Prehardened Steels (NAK, CENA, KP4)			Hardened Steels (SKD, SKT, STAVAX)		
Hardness		≤ 35 HRc			35 ~ 45 HRc			45 ~ 55 HRc		
Strength		≤ 1100N / mm²			1100~1500N / mm²			1500~2000N / mm²		
Cutting Diameter (metric)	Effective Length	RPM	FEED	Ap(mm)	RPM	FEED	Ap(mm)	RPM	FEED	Ap(mm)
2.5	16.0	14,220	1,560	0.090	13,410	1,300	0.070	11,880	1,055	0.050
2.5	20.0	14,220	1,560	0.090	13,410	1,300	0.070	11,880	1,055	0.050
2.5	22.0	14,220	1,560	0.056	13,410	1,300	0.044	11,880	1,055	0.031
2.5	26.0	12,640	1,230	0.056	11,920	1,025	0.044	10,560	835	0.031
2.5	30.0	12,640	1,230	0.056	11,920	1,025	0.044	10,560	835	0.031
2.5	35.0	12,640	1,230	0.034	11,920	1,025	0.026	10,560	835	0.019
2.5	40.0	9,480	810	0.034	8,940	675	0.026	7,920	550	0.019
2.5	45.0	9,480	810	0.023	8,940	675	0.018	7,920	550	0.013
2.5	50.0	9,480	810	0.023	8,940	675	0.018	7,920	550	0.013
3.0	6.0	13,700	2,050	0.270	12,900	1,730	0.210	11,400	1,435	0.150
3.0	8.0	13,700	2,050	0.270	12,900	1,730	0.210	11,400	1,435	0.150
3.0	10.0	13,700	2,050	0.189	12,900	1,730	0.147	11,400	1,435	0.105
3.0	12.0	13,700	2,050	0.189	12,900	1,730	0.147	11,400	1,435	0.105
3.0	14.0	13,700	2,050	0.189	12,900	1,730	0.147	11,400	1,435	0.105
3.0	16.0	12,330	1,660	0.108	11,610	1,400	0.084	10,260	1,160	0.060
3.0	18.0	12,330	1,660	0.108	11,610	1,400	0.084	10,260	1,160	0.060
3.0	20.0	12,330	1,660	0.108	11,610	1,400	0.084	10,260	1,160	0.060
3.0	22.0	12,330	1,660	0.108	11,610	1,400	0.084	10,260	1,160	0.060
3.0	26.0	12,330	1,660	0.068	11,610	1,400	0.053	10,260	1,160	0.038
3.0	30.0	12,330	1,660	0.068	11,610	1,400	0.053	10,260	1,160	0.038
3.0	35.0	10,960	1,310	0.068	10,320	1,105	0.053	9,120	920	0.038
3.0	40.0	10,960	1,310	0.041	10,320	1,105	0.032	9,120	920	0.023
3.0	45.0	10,960	1,310	0.041	10,320	1,105	0.032	9,120	920	0.023
3.0	50.0	8,220	860	0.027	7,740	725	0.021	6,840	605	0.015
3.0	60.0	8,220	860	0.027	7,740	725	0.021	6,840	605	0.015
4.0	8.0	9,800	1,965	0.360	9,300	1,670	0.280	8,200	1,395	0.200
4.0	10.0	9,800	1,965	0.360	9,300	1,670	0.280	8,200	1,395	0.200
4.0	12.0	9,800	1,965	0.360	9,300	1,670	0.280	8,200	1,395	0.200
4.0	14.0	9,800	1,965	0.252	9,300	1,670	0.196	8,200	1,395	0.140
4.0	16.0	9,800	1,965	0.252	9,300	1,670	0.196	8,200	1,395	0.140
4.0	18.0	9,800	1,965	0.252	9,300	1,670	0.196	8,200	1,395	0.140
4.0	20.0	9,800	1,965	0.252	9,300	1,670	0.196	8,200	1,395	0.140
4.0	22.0	8,820	1,590	0.144	8,370	1,355	0.112	7,380	1,130	0.080
4.0	26.0	8,820	1,590	0.144	8,370	1,355	0.112	7,380	1,130	0.080
4.0	30.0	8,820	1,590	0.144	8,370	1,355	0.112	7,380	1,130	0.080
4.0	35.0	8,820	1,590	0.090	8,370	1,355	0.070	7,380	1,130	0.050
4.0	40.0	8,820	1,590	0.090	8,370	1,355	0.070	7,380	1,130	0.050
4.0	45.0	7,840	1,260	0.090	7,440	1,070	0.070	6,560	895	0.050
4.0	50.0	7,840	1,260	0.090	7,440	1,070	0.070	6,560	895	0.050
4.0	60.0	7,840	1,260	0.054	7,440	1,070	0.042	6,560	895	0.030
5.0	15.0	7,700	1,845	0.315	7,300	1,455	0.245	6,400	1,285	0.175
5.0	20.0	7,700	1,845	0.315	7,300	1,455	0.245	6,400	1,285	0.175
5.0	26.0	6,930	1,495	0.180	6,570	1,180	0.140	5,760	1,040	0.100
5.0	30.0	6,930	1,495	0.180	6,570	1,180	0.140	5,760	1,040	0.100
5.0	35.0	6,930	1,495	0.180	6,570	1,180	0.140	5,760	1,040	0.100
5.0	40.0	6,930	1,495	0.180	6,570	1,180	0.140	5,760	1,040	0.100
5.0	50.0	6,930	1,495	0.113	6,570	1,180	0.088	5,760	1,040	0.063
5.0	60.0	6,160	1,180	0.113	5,840	930	0.088	5,120	820	0.063
6.0	20.0	6,500	1,900	0.378	6,200	1,600	0.294	5,500	1,330	0.210
6.0	30.0	6,500	1,900	0.378	6,200	1,600	0.294	5,500	1,330	0.210

WB512, WB512xxS6 Series

Work Material		Alloy Steels, Carbon Steels (SCM, SNCM, S45C)			Prehardened Steels (NAK, CENA, KP4)			Hardened Steels (SKD, SKT, STAVAX)		
Hardness		≤ 35 HRc			35 ~ 45 HRc			45 ~ 55 HRc		
Strength		≤ 1100N / mm²			1100~1500N / mm²			1500~2000N / mm²		
Cutting Diameter (metric)	Effective Length	RPM	FEED	Ap(mm)	RPM	FEED	Ap(mm)	RPM	FEED	Ap(mm)
8.0	25.0	4,850	1,800	0.504	4,600	1,500	0.392	4,000	1,280	0.280
8.0	30.0	4,850	1,800	0.504	4,600	1,500	0.392	4,000	1,280	0.280
10.0	30.0	3,850	1,650	0.900	3,680	1,400	0.700	3,200	1,200	0.500
10.0	40.0	3,850	1,650	0.630	3,680	1,400	0.490	3,200	1,200	0.350
12.0	32.0	3,200	1,520	1.080	3,050	1,300	0.840	2,650	1,100	0.600
12.0	45.0	3,200	1,520	0.756	3,050	1,300	0.588	2,650	1,100	0.420

RPM = rev. / min.
FEED = mm / min.

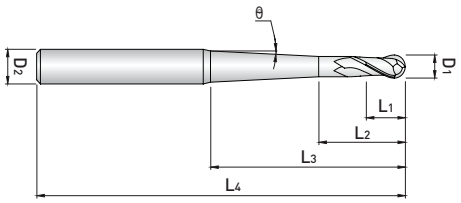


WINNER

WB542 Series

ULTRA FINE | Plunge | Profile

TAPER NECK BALL / 2 FLUTES / REGULAR / W-COATING



TOLERANCE (metric)

D_1 = +0 / -0.012 (D1≤6.0)
D_1 = +0 / -0.015 (D1≥7.0)
D_2 = h6

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO. 2 Flute W Coating Helix 30°	Cutting Diameter (metric)	Cutting Length (metric)	Neck Length (metric)	Taper Degree°	Taper Length (metric)	Overall Length (metric)	Shank Diameter (metric)
WB542	D1	L1	L2	θ	L3	L4	D2
WB54200110005	0.10	0.10	-	1°	0.50	40.00	4.00
WB5420011001	0.10	0.10	-	1°	1.00	40.00	4.00
WB54200115005	0.10	0.10	-	1°30`	0.50	40.00	4.00
WB5420011501	0.10	0.10	-	1°30`	1.00	40.00	4.00
WB54200120005	0.10	0.10	-	2°	0.50	40.00	4.00
WB5420012001	0.10	0.10	-	2°	1.00	40.00	4.00
WB54200130005	0.10	0.10	-	3°	0.50	40.00	4.00
WB5420013001	0.10	0.10	-	3°	1.00	40.00	4.00
WB54200105005	0.10	0.10	-	30`	0.50	40.00	4.00
WB5420010501	0.10	0.10	-	30`	1.00	40.00	4.00
WB5420021001	0.20	0.20	0.40	1°	1.00	40.00	4.00
WB5420021002	0.20	0.20	0.40	1°	2.00	40.00	4.00
WB5420021003	0.20	0.20	0.40	1°	3.00	40.00	4.00
WB5420021501	0.20	0.20	0.40	1°30`	1.00	40.00	4.00
WB5420021502	0.20	0.20	0.40	1°30`	2.00	40.00	4.00
WB5420021503	0.20	0.20	0.40	1°30`	3.00	40.00	4.00
WB5420022001	0.20	0.20	0.40	2°	1.00	40.00	4.00
WB5420022002	0.20	0.20	0.40	2°	2.00	40.00	4.00
WB5420022003	0.20	0.20	0.40	2°	3.00	40.00	4.00
WB5420023001	0.20	0.20	0.40	3°	1.00	40.00	4.00
WB5420023002	0.20	0.20	0.40	3°	2.00	40.00	4.00
WB5420023003	0.20	0.20	0.40	3°	3.00	40.00	4.00
WB5420020501	0.20	0.20	0.40	30`	1.00	40.00	4.00
WB5420020502	0.20	0.20	0.40	30`	2.00	40.00	4.00
WB5420020503	0.20	0.20	0.40	30`	3.00	40.00	4.00
WB5420025002	0.20	0.20	0.40	5°	2.00	40.00	4.00
WB5420025003	0.20	0.20	0.40	5°	3.00	40.00	4.00
WB5420031002	0.30	0.30	0.60	1°	2.00	40.00	4.00
WB5420031003	0.30	0.30	0.60	1°	3.00	40.00	4.00
WB5420031004	0.30	0.30	0.60	1°	4.00	40.00	4.00
WB5420031005	0.30	0.30	0.60	1°	5.00	40.00	4.00
WB5420031505	0.30	0.30	0.60	1°30`	5.00	40.00	4.00
WB5420031502	0.30	0.30	0.60	1°30′	2.00	40.00	4.00
WB5420031503	0.30	0.30	0.60	1°30′	3.00	40.00	4.00
WB5420031504	0.30	0.30	0.60	1°30′	4.00	40.00	4.00
WB5420032002	0.30	0.30	0.60	2°	2.00	40.00	4.00

Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
WB542	○	○	○	○	◎	○	○	○	○					◎	◎	◎	○				

>>Continue

EDP NO. 2 Flute W Coating Helix 30°	Cutting Diameter (metric)	Cutting Length (metric)	Neck Length (metric)	Taper Degree°	Taper Length (metric)	Overall Length (metric)	Shank Diameter (metric)
WB542	D1	L1	L2	θ	L3	L4	D2
WB5420032003	0.30	0.30	0.60	2°	3.00	40.00	4.00
WB5420032004	0.30	0.30	0.60	2°	4.00	40.00	4.00
WB5420032005	0.30	0.30	0.60	2°	5.00	40.00	4.00
WB5420033002	0.30	0.30	0.60	3°	2.00	40.00	4.00
WB5420033003	0.30	0.30	0.60	3°	3.00	40.00	4.00
WB5420033004	0.30	0.30	0.60	3°	4.00	40.00	4.00
WB5420033005	0.30	0.30	0.60	3°	5.00	40.00	4.00
WB5420030502	0.30	0.30	0.60	30`	2.00	40.00	4.00
WB5420030503	0.30	0.30	0.60	30`	3.00	40.00	4.00
WB5420030504	0.30	0.30	0.60	30`	4.00	40.00	4.00
WB5420030505	0.30	0.30	0.60	30`	5.00	40.00	4.00
WB5420035005	0.30	0.30	0.60	5°	5.00	40.00	4.00
WB5420041002	0.40	0.40	0.80	1°	2.00	50.00	4.00
WB5420041003	0.40	0.40	0.80	1°	3.00	50.00	4.00
WB5420041004	0.40	0.40	0.80	1°	4.00	50.00	4.00
WB5420041005	0.40	0.40	0.80	1°	5.00	50.00	4.00
WB5420041006	0.40	0.40	0.80	1°	6.00	50.00	4.00
WB5420041502	0.40	0.40	0.80	1°30`	2.00	50.00	4.00
WB5420041503	0.40	0.40	0.80	1°30`	3.00	50.00	4.00
WB5420041504	0.40	0.40	0.80	1°30`	4.00	50.00	4.00
WB5420041505	0.40	0.40	0.80	1°30`	5.00	50.00	4.00
WB5420041506	0.40	0.40	0.80	1°30`	6.00	50.00	4.00
WB5420042002	0.40	0.40	0.80	2°	2.00	50.00	4.00
WB5420042003	0.40	0.40	0.80	2°	3.00	50.00	4.00
WB5420042004	0.40	0.40	0.80	2°	4.00	50.00	4.00
WB5420042005	0.40	0.40	0.80	2°	5.00	50.00	4.00
WB5420042006	0.40	0.40	0.80	2°	6.00	50.00	4.00
WB5420043002	0.40	0.40	0.80	3°	2.00	50.00	4.00
WB5420043003	0.40	0.40	0.80	3°	3.00	50.00	4.00
WB5420043004	0.40	0.40	0.80	3°	4.00	50.00	4.00
WB5420043005	0.40	0.40	0.80	3°	5.00	50.00	4.00
WB5420043006	0.40	0.40	0.80	3°	6.00	50.00	4.00
WB5420040502	0.40	0.40	0.80	30`	2.00	50.00	4.00
WB5420040503	0.40	0.40	0.80	30`	3.00	50.00	4.00
WB5420040504	0.40	0.40	0.80	30`	4.00	50.00	4.00
WB5420040505	0.40	0.40	0.80	30`	5.00	50.00	4.00
WB5420040506	0.40	0.40	0.80	30`	6.00	50.00	4.00
WB5420045004	0.40	0.40	0.80	5°	4.00	50.00	4.00
WB5420045006	0.40	0.40	0.80	5°	6.00	50.00	4.00
WB5420051004	0.50	0.50	1.00	1°	4.00	50.00	4.00
WB5420051006	0.50	0.50	1.00	1°	6.00	50.00	4.00
WB5420051008	0.50	0.50	1.00	1°	8.00	50.00	4.00
WB5420051010	0.50	0.50	1.00	1°	10.00	50.00	4.00
WB5420051504	0.50	0.50	1.00	1°30`	4.00	50.00	4.00
WB5420051506	0.50	0.50	1.00	1°30`	6.00	50.00	4.00
WB5420051508	0.50	0.50	1.00	1°30`	8.00	50.00	4.00
WB5420051510	0.50	0.50	1.00	1°30`	10.00	50.00	4.00

>>Continue

EDP NO. 2 Flute W Coating Helix 30°	Cutting Diameter (metric)	Cutting Length (metric)	Neck Length (metric)	Taper Degree°	Taper Length (metric)	Overall Length (metric)	Shank Diameter (metric)
WB542	D1	L1	L2	θ	L3	L4	D2
WB5420052004	0.50	0.50	1.00	2°	4.00	50.00	4.00
WB5420052006	0.50	0.50	1.00	2°	6.00	50.00	4.00
WB5420052008	0.50	0.50	1.00	2°	8.00	50.00	4.00
WB5420052010	0.50	0.50	1.00	2°	10.00	50.00	4.00
WB5420053004	0.50	0.50	1.00	3°	4.00	50.00	4.00
WB5420053006	0.50	0.50	1.00	3°	6.00	50.00	4.00
WB5420053008	0.50	0.50	1.00	3°	8.00	50.00	4.00
WB5420053010	0.50	0.50	1.00	3°	10.00	50.00	4.00
WB5420050504	0.50	0.50	1.00	30`	4.00	50.00	4.00
WB5420050506	0.50	0.50	1.00	30`	6.00	50.00	4.00
WB5420050508	0.50	0.50	1.00	30`	8.00	50.00	4.00
WB5420050510	0.50	0.50	1.00	30`	10.00	50.00	4.00
WB5420061004	0.60	0.60	1.20	1°	4.00	50.00	4.00
WB5420061006	0.60	0.60	1.20	1°	6.00	50.00	4.00
WB5420061008	0.60	0.60	1.20	1°	8.00	50.00	4.00
WB5420061010	0.60	0.60	1.20	1°	10.00	50.00	4.00
WB5420061012	0.60	0.60	1.20	1°	12.00	50.00	4.00
WB5420061504	0.60	0.60	1.20	1°30`	4.00	50.00	4.00
WB5420061506	0.60	0.60	1.20	1°30`	6.00	50.00	4.00
WB5420061508	0.60	0.60	1.20	1°30`	8.00	50.00	4.00
WB5420061510	0.60	0.60	1.20	1°30`	10.00	50.00	4.00
WB5420061512	0.60	0.60	1.20	1°30`	12.00	50.00	4.00
WB5420062004	0.60	0.60	1.20	2°	4.00	50.00	4.00
WB5420062006	0.60	0.60	1.20	2°	6.00	50.00	4.00
WB5420062008	0.60	0.60	1.20	2°	8.00	50.00	4.00
WB5420062010	0.60	0.60	1.20	2°	10.00	50.00	4.00
WB5420062012	0.60	0.60	1.20	2°	12.00	50.00	4.00
WB5420063004	0.60	0.60	1.20	3°	4.00	50.00	4.00
WB5420063006	0.60	0.60	1.20	3°	6.00	50.00	4.00
WB5420063008	0.60	0.60	1.20	3°	8.00	50.00	4.00
WB5420063010	0.60	0.60	1.20	3°	10.00	50.00	4.00
WB5420063012	0.60	0.60	1.20	3°	12.00	50.00	4.00
WB5420060504	0.60	0.60	1.20	30`	4.00	50.00	4.00
WB5420060506	0.60	0.60	1.20	30`	6.00	50.00	4.00
WB5420060508	0.60	0.60	1.20	30`	8.00	50.00	4.00
WB5420060510	0.60	0.60	1.20	30`	10.00	50.00	4.00
WB5420060512	0.60	0.60	1.20	30`	12.00	50.00	4.00
WB5420081004	0.80	0.80	1.60	1°	4.00	50.00	4.00
WB5420081006	0.80	0.80	1.60	1°	6.00	50.00	4.00
WB5420081008	0.80	0.80	1.60	1°	8.00	50.00	4.00
WB5420081010	0.80	0.80	1.60	1°	10.00	50.00	4.00
WB5420081012	0.80	0.80	1.60	1°	12.00	50.00	4.00
WB5420081016	0.80	0.80	1.60	1°	16.00	50.00	4.00
WB5420081504	0.80	0.80	1.60	1°30`	4.00	50.00	4.00
WB5420081506	0.80	0.80	1.60	1°30`	6.00	50.00	4.00
WB5420081508	0.80	0.80	1.60	1°30`	8.00	50.00	4.00
WB5420081510	0.80	0.80	1.60	1°30`	10.00	50.00	4.00

>>Continue

EDP NO. 2 Flute W Coating Helix 30°	Cutting Diameter (metric)	Cutting Length (metric)	Neck Length (metric)	Taper Degree°	Taper Length (metric)	Overall Length (metric)	Shank Diameter (metric)
WB542	D1	L1	L2	θ	L3	L4	D2
WB5420081512	0.80	0.80	1.60	1°30`	12.00	50.00	4.00
WB5420081516	0.80	0.80	1.60	1°30`	16.00	50.00	4.00
WB5420082004	0.80	0.80	1.60	2°	4.00	50.00	4.00
WB5420082006	0.80	0.80	1.60	2°	6.00	50.00	4.00
WB5420082008	0.80	0.80	1.60	2°	8.00	50.00	4.00
WB5420082010	0.80	0.80	1.60	2°	10.00	50.00	4.00
WB5420082012	0.80	0.80	1.60	2°	12.00	50.00	4.00
WB5420082016	0.80	0.80	1.60	2°	16.00	50.00	4.00
WB5420083004	0.80	0.80	1.60	3°	4.00	50.00	4.00
WB5420083006	0.80	0.80	1.60	3°	6.00	50.00	4.00
WB5420083008	0.80	0.80	1.60	3°	8.00	50.00	4.00
WB5420083010	0.80	0.80	1.60	3°	10.00	50.00	4.00
WB5420083012	0.80	0.80	1.60	3°	12.00	50.00	4.00
WB5420083016	0.80	0.80	1.60	3°	16.00	50.00	4.00
WB5420080504	0.80	0.80	1.60	30`	4.00	50.00	4.00
WB5420080506	0.80	0.80	1.60	30`	6.00	50.00	4.00
WB5420080508	0.80	0.80	1.60	30`	8.00	50.00	4.00
WB5420080510	0.80	0.80	1.60	30`	10.00	50.00	4.00
WB5420080512	0.80	0.80	1.60	30`	12.00	50.00	4.00
WB5420080516	0.80	0.80	1.60	30`	16.00	50.00	4.00
WB5420101006	1.00	1.00	2.50	1°	6.00	50.00	4.00
WB5420101008	1.00	1.00	2.50	1°	8.00	50.00	4.00
WB5420101010	1.00	1.00	2.50	1°	10.00	50.00	4.00
WB5420101012	1.00	1.00	2.50	1°	12.00	50.00	4.00
WB5420101016	1.00	1.00	2.50	1°	16.00	50.00	4.00
WB5420101020	1.00	1.00	2.50	1°	20.00	50.00	4.00
WB5420101506	1.00	1.00	2.50	1°30`	6.00	50.00	4.00
WB5420101508	1.00	1.00	2.50	1°30`	8.00	50.00	4.00
WB5420101510	1.00	1.00	2.50	1°30`	10.00	50.00	4.00
WB5420101512	1.00	1.00	2.50	1°30`	12.00	50.00	4.00
WB5420101516	1.00	1.00	2.50	1°30`	16.00	50.00	4.00
WB5420101520	1.00	1.00	2.50	1°30`	20.00	50.00	4.00
WB5420102006	1.00	1.00	2.50	2°	6.00	50.00	4.00
WB5420102008	1.00	1.00	2.50	2°	8.00	50.00	4.00
WB5420102010	1.00	1.00	2.50	2°	10.00	50.00	4.00
WB5420102012	1.00	1.00	2.50	2°	12.00	50.00	4.00
WB5420102016	1.00	1.00	2.50	2°	16.00	50.00	4.00
WB5420102020	1.00	1.00	2.50	2°	20.00	50.00	4.00
WB5420103006	1.00	1.00	2.50	3°	6.00	50.00	4.00
WB5420103008	1.00	1.00	2.50	3°	8.00	50.00	4.00
WB5420103010	1.00	1.00	2.50	3°	10.00	50.00	4.00
WB5420103012	1.00	1.00	2.50	3°	12.00	50.00	4.00
WB5420103016	1.00	1.00	2.50	3°	16.00	50.00	4.00
WB5420103020	1.00	1.00	2.50	3°	20.00	50.00	4.00
WB5420100506	1.00	1.00	2.50	30`	6.00	50.00	4.00
WB5420100508	1.00	1.00	2.50	30`	8.00	50.00	4.00
WB5420100510	1.00	1.00	2.50	30`	10.00	50.00	4.00

>>Continue

EDP NO. 2 Flute W Coating Helix 30°	Cutting Diameter (metric)	Cutting Length (metric)	Neck Length (metric)	Taper Degree°	Taper Length (metric)	Overall Length (metric)	Shank Diameter (metric)
WB542	D1	L1	L2	θ	L3	L4	D2
WB5420100512	1.00	1.00	2.50	30`	12.00	50.00	4.00
WB5420100516	1.00	1.00	2.50	30`	16.00	50.00	4.00
WB5420100520	1.00	1.00	2.50	30`	20.00	50.00	4.00
WB5420101025	1.00	1.00	2.50	1°	25.00	60.00	4.00
WB5420101525	1.00	1.00	2.50	1°30`	25.00	60.00	4.00
WB5420102025	1.00	1.00	2.50	2°	25.00	60.00	4.00
WB5420103025	1.00	1.00	2.50	3°	25.00	60.00	4.00
WB5420100525	1.00	1.00	2.50	30`	25.00	60.00	4.00
WB5420101030	1.00	1.00	2.50	1°	30.00	70.00	4.00
WB5420101530	1.00	1.00	2.50	1°30`	30.00	70.00	4.00
WB5420102030	1.00	1.00	2.50	2°	30.00	70.00	4.00
WB5420103030	1.00	1.00	2.50	3°	30.00	70.00	6.00
WB5420100530	1.00	1.00	2.50	30`	30.00	70.00	4.00
WB5420105030	1.00	1.00	2.50	5°	30.00	70.00	6.00
WB5420101040	1.00	1.00	2.50	1°	40.00	80.00	4.00
WB5420101540	1.00	1.00	2.50	1°30`	40.00	80.00	4.00
WB5420102040	1.00	1.00	2.50	2°	40.00	80.00	4.00
WB5420103040	1.00	1.00	2.50	3°	40.00	80.00	6.00
WB5420100540	1.00	1.00	2.50	30`	40.00	80.00	4.00
WB5420101050	1.00	1.00	2.50	1°	50.00	90.00	4.00
WB5420101550	1.00	1.00	2.50	1°30`	50.00	90.00	4.00
WB5420102050	1.00	1.00	2.50	2°	50.00	90.00	6.00
WB5420103050	1.00	1.00	2.50	3°	50.00	90.00	6.00
WB5420100550	1.00	1.00	2.50	30`	50.00	90.00	4.00
WB5420121008	1.20	1.20	3.00	1°	8.00	50.00	4.00
WB5420121012	1.20	1.20	3.00	1°	12.00	50.00	4.00
WB5420121016	1.20	1.20	3.00	1°	16.00	50.00	4.00
WB5420121020	1.20	1.20	3.00	1°	20.00	50.00	4.00
WB5420121508	1.20	1.20	3.00	1°30`	8.00	50.00	4.00
WB5420121512	1.20	1.20	3.00	1°30`	12.00	50.00	4.00
WB5420121516	1.20	1.20	3.00	1°30`	16.00	50.00	4.00
WB5420121520	1.20	1.20	3.00	1°30`	20.00	50.00	4.00
WB5420122008	1.20	1.20	3.00	2°	8.00	50.00	4.00
WB5420122012	1.20	1.20	3.00	2°	12.00	50.00	4.00
WB5420122016	1.20	1.20	3.00	2°	16.00	50.00	4.00
WB5420122020	1.20	1.20	3.00	2°	20.00	50.00	4.00
WB5420123008	1.20	1.20	3.00	3°	8.00	50.00	4.00
WB5420123012	1.20	1.20	3.00	3°	12.00	50.00	4.00
WB5420123016	1.20	1.20	3.00	3°	16.00	50.00	4.00
WB5420123020	1.20	1.20	3.00	3°	20.00	50.00	4.00
WB5420120508	1.20	1.20	3.00	30`	8.00	50.00	4.00
WB5420120512	1.20	1.20	3.00	30`	12.00	50.00	4.00
WB5420120516	1.20	1.20	3.00	30`	16.00	50.00	4.00
WB5420120520	1.20	1.20	3.00	30`	20.00	50.00	4.00
WB5420121025	1.20	1.20	3.00	1°	25.00	60.00	4.00
WB5420121525	1.20	1.20	3.00	1°30`	25.00	60.00	4.00
WB5420122025	1.20	1.20	3.00	2°	25.00	60.00	4.00

>>Continue

EDP NO. 2 Flute W Coating Helix 30°	Cutting Diameter (metric)	Cutting Length (metric)	Neck Length (metric)	Taper Degree°	Taper Length (metric)	Overall Length (metric)	Shank Diameter (metric)
WB542	D1	L1	L2	θ	L3	L4	D2
WB5420123025	1.20	1.20	3.00	3°	25.00	60.00	4.00
WB5420120525	1.20	1.20	3.00	30`	25.00	60.00	4.00
WB5420121030	1.20	1.20	3.00	1°	30.00	70.00	4.00
WB5420121530	1.20	1.20	3.00	1°30`	30.00	70.00	4.00
WB5420122030	1.20	1.20	3.00	2°	30.00	70.00	4.00
WB5420123030	1.20	1.20	3.00	3°	30.00	70.00	6.00
WB5420120530	1.20	1.20	3.00	30`	30.00	70.00	4.00
WB5420151008	1.50	1.50	4.00	1°	8.00	50.00	4.00
WB5420151010	1.50	1.50	4.00	1°	10.00	50.00	4.00
WB5420151012	1.50	1.50	4.00	1°	12.00	50.00	4.00
WB5420151016	1.50	1.50	4.00	1°	16.00	50.00	4.00
WB5420151020	1.50	1.50	4.00	1°	20.00	50.00	4.00
WB5420151508	1.50	1.50	4.00	1°30`	8.00	50.00	4.00
WB5420151510	1.50	1.50	4.00	1°30`	10.00	50.00	4.00
WB5420151512	1.50	1.50	4.00	1°30`	12.00	50.00	4.00
WB5420151516	1.50	1.50	4.00	1°30`	16.00	50.00	4.00
WB5420151520	1.50	1.50	4.00	1°30`	20.00	50.00	4.00
WB5420152008	1.50	1.50	4.00	2°	8.00	50.00	4.00
WB5420152010	1.50	1.50	4.00	2°	10.00	50.00	4.00
WB5420152012	1.50	1.50	4.00	2°	12.00	50.00	4.00
WB5420152016	1.50	1.50	4.00	2°	16.00	50.00	4.00
WB5420152020	1.50	1.50	4.00	2°	20.00	50.00	4.00
WB5420153020	1.50	1.50	4.00	3°	20.00	50.00	6.00
WB5420150508	1.50	1.50	4.00	30`	8.00	50.00	4.00
WB5420150510	1.50	1.50	4.00	30`	10.00	50.00	4.00
WB5420150512	1.50	1.50	4.00	30`	12.00	50.00	4.00
WB5420150516	1.50	1.50	4.00	30`	16.00	50.00	4.00
WB5420150520	1.50	1.50	4.00	30`	20.00	50.00	4.00
WB5420151025	1.50	1.50	4.00	1°	25.00	60.00	4.00
WB5420151525	1.50	1.50	4.00	1°30`	25.00	60.00	4.00
WB5420152025	1.50	1.50	4.00	2°	25.00	60.00	4.00
WB5420150525	1.50	1.50	4.00	30`	25.00	60.00	4.00
WB5420151030	1.50	1.50	4.00	1°	30.00	70.00	4.00
WB5420151530	1.50	1.50	4.00	1°30`	30.00	70.00	4.00
WB5420152030	1.50	1.50	4.00	2°	30.00	70.00	4.00
WB5420153030	1.50	1.50	4.00	3°	30.00	70.00	6.00
WB5420150530	1.50	1.50	4.00	30`	30.00	70.00	4.00
WB5420155030	1.50	1.50	4.00	5°	30.00	70.00	8.00
WB5420151040	1.50	1.50	4.00	1°	40.00	80.00	4.00
WB5420151540	1.50	1.50	4.00	1°30`	40.00	80.00	4.00
WB5420152040	1.50	1.50	4.00	2°	40.00	80.00	6.00
WB5420153040	1.50	1.50	4.00	3°	40.00	80.00	6.00
WB5420150540	1.50	1.50	4.00	30`	40.00	80.00	4.00
WB5420151050	1.50	1.50	4.00	1°	50.00	90.00	4.00
WB5420151550	1.50	1.50	4.00	1°30`	50.00	90.00	4.00
WB5420152050	1.50	1.50	4.00	2°	50.00	90.00	6.00
WB5420153050	1.50	1.50	4.00	3°	50.00	90.00	8.00

WB542 Series

>>Continue

EDP NO. 2 Flute W Coating Helix 30°	Cutting Diameter (metric)	Cutting Length (metric)	Neck Length (metric)	Taper Degree°	Taper Length (metric)	Overall Length (metric)	Shank Diameter (metric)
WB542	D1	L1	L2	θ	L3	L4	D2
WB5420150550	1.50	1.50	4.00	30`	50.00	90.00	4.00
WB5420201010	2.00	2.00	5.00	1°	10.00	50.00	4.00
WB5420201012	2.00	2.00	5.00	1°	12.00	50.00	4.00
WB5420201016	2.00	2.00	5.00	1°	16.00	50.00	4.00
WB5420201020	2.00	2.00	5.00	1°	20.00	50.00	4.00
WB5420201510	2.00	2.00	5.00	1°30`	10.00	50.00	4.00
WB5420201512	2.00	2.00	5.00	1°30`	12.00	50.00	4.00
WB5420201516	2.00	2.00	5.00	1°30`	16.00	50.00	4.00
WB5420201520	2.00	2.00	5.00	1°30`	20.00	50.00	4.00
WB5420202010	2.00	2.00	5.00	2°	10.00	50.00	4.00
WB5420202012	2.00	2.00	5.00	2°	12.00	50.00	4.00
WB5420202016	2.00	2.00	5.00	2°	16.00	50.00	4.00
WB5420200510	2.00	2.00	5.00	30`	10.00	50.00	4.00
WB5420200512	2.00	2.00	5.00	30`	12.00	50.00	4.00
WB5420200516	2.00	2.00	5.00	30`	16.00	50.00	4.00
WB5420200520	2.00	2.00	5.00	30`	20.00	50.00	4.00
WB5420202020	2.00	2.00	5.00	2°	20.00	55.00	4.00
WB5420201025	2.00	2.00	5.00	1°	25.00	60.00	4.00
WB5420201525	2.00	2.00	5.00	1°30`	25.00	60.00	4.00
WB5420202025	2.00	2.00	5.00	2°	25.00	60.00	4.00
WB5420200525	2.00	2.00	5.00	30`	25.00	60.00	4.00
WB5420201030	2.00	2.00	5.00	1°	30.00	70.00	4.00
WB5420201530	2.00	2.00	5.00	1°30`	30.00	70.00	6.00
WB5420202030	2.00	2.00	5.00	2°	30.00	70.00	4.00
WB5420203030	2.00	2.00	5.00	3°	30.00	70.00	6.00
WB5420200530	2.00	2.00	5.00	30`	30.00	70.00	4.00
WB5420205030	2.00	2.00	5.00	5°	30.00	70.00	8.00
WB5420201040	2.00	2.00	5.00	1°	40.00	80.00	6.00
WB5420201540	2.00	2.00	5.00	1°30`	40.00	80.00	6.00
WB5420202040	2.00	2.00	5.00	2°	40.00	80.00	6.00
WB5420203040	2.00	2.00	5.00	3°	40.00	80.00	6.00
WB5420200540	2.00	2.00	5.00	30`	40.00	80.00	4.00
WB5420202050	2.00	2.00	5.00	2°	50.00	90.00	6.00
WB5420203050	2.00	2.00	5.00	3°	50.00	90.00	8.00
WB5420205040	2.00	2.00	5.00	5°	40.00	90.00	10.00
WB5420201050	2.00	2.00	5.00	1°	50.00	100.00	6.00
WB5420201060	2.00	2.00	5.00	1°	60.00	100.00	6.00
WB5420201550	2.00	2.00	5.00	1°30`	50.00	100.00	6.00
WB5420201560	2.00	2.00	5.00	1°30`	60.00	100.00	6.00
WB5420202060	2.00	2.00	5.00	2°	60.00	100.00	6.00
WB5420203060	2.00	2.00	5.00	3°	60.00	100.00	8.00
WB5420200550	2.00	2.00	5.00	30`	50.00	100.00	6.00
WB5420200560	2.00	2.00	5.00	30`	60.00	100.00	6.00
WB5420201080	2.00	2.00	5.00	1°	80.00	140.00	6.00
WB5420201580	2.00	2.00	5.00	1°30`	80.00	140.00	6.00
WB5420202080	2.00	2.00	5.00	2°	80.00	140.00	8.00
WB5420203080	2.00	2.00	5.00	3°	80.00	140.00	10.00

>>Continue

EDP NO. 2 Flute W Coating Helix 30°	Cutting Diameter (metric)	Cutting Length (metric)	Neck Length (metric)	Taper Degree°	Taper Length (metric)	Overall Length (metric)	Shank Diameter (metric)
WB542	D1	L1	L2	θ	L3	L4	D2
WB5420200580	2.00	2.00	5.00	30`	80.00	140.00	6.00
WB5420301016	3.00	4.50	6.00	1°	16.00	60.00	6.00
WB5420301516	3.00	4.50	6.00	1°30`	16.00	60.00	6.00
WB5420302016	3.00	4.50	6.00	2°	16.00	60.00	6.00
WB5420300516	3.00	4.50	6.00	30`	16.00	60.00	6.00
WB5420301020	3.00	4.50	6.00	1°	20.00	65.00	6.00
WB5420301520	3.00	4.50	6.00	1°30`	20.00	65.00	6.00
WB5420302020	3.00	4.50	6.00	2°	20.00	65.00	6.00
WB5420300520	3.00	4.50	6.00	30`	20.00	65.00	6.00
WB5420301030	3.00	4.50	6.00	1°	30.00	70.00	6.00
WB5420301530	3.00	4.50	6.00	1°30`	30.00	70.00	6.00
WB5420302030	3.00	4.50	6.00	2°	30.00	70.00	6.00
WB5420303030	3.00	4.50	6.00	3°	30.00	70.00	6.00
WB5420300530	3.00	4.50	6.00	30`	30.00	70.00	6.00
WB5420305030	3.00	4.50	6.00	5°	30.00	70.00	8.00
WB5420301040	3.00	4.50	6.00	1°	40.00	80.00	6.00
WB5420301540	3.00	4.50	6.00	1°30`	40.00	80.00	6.00
WB5420302040	3.00	4.50	6.00	2°	40.00	80.00	6.00
WB5420300540	3.00	4.50	6.00	30`	40.00	80.00	6.00
WB5420301050	3.00	4.50	6.00	1°	50.00	90.00	6.00
WB5420301550	3.00	4.50	6.00	1°30`	50.00	90.00	6.00
WB5420302050	3.00	4.50	6.00	2°	50.00	90.00	8.00
WB5420303040	3.00	4.50	6.00	3°	40.00	90.00	8.00
WB5420300550	3.00	4.50	6.00	30`	50.00	90.00	6.00
WB5420305040	3.00	4.50	6.00	5°	40.00	90.00	10.00
WB5420301060	3.00	4.50	6.00	1°	60.00	100.00	6.00
WB5420301560	3.00	4.50	6.00	1°30`	60.00	100.00	6.00
WB5420300560	3.00	4.50	6.00	30`	60.00	100.00	6.00
WB5420301070	3.00	4.50	6.00	1°	70.00	120.00	6.00
WB5420401040	4.00	6.00	8.00	1°	40.00	90.00	6.00
WB5420401540	4.00	6.00	8.00	1°30`	40.00	90.00	6.00
WB5420400540	4.00	6.00	8.00	30`	40.00	90.00	6.00
WB5420401050	4.00	6.00	8.00	1°	50.00	100.00	6.00
WB5420401550	4.00	6.00	8.00	1°30`	50.00	100.00	8.00
WB5420403050	4.00	6.00	8.00	3°	50.00	100.00	10.00
WB5420400550	4.00	6.00	8.00	30`	50.00	100.00	6.00
WB5420405050	4.00	6.00	8.00	5°	50.00	100.00	12.00
WB5420401060	4.00	6.00	8.00	1°	60.00	110.00	8.00
WB5420401560	4.00	6.00	8.00	1°30`	60.00	110.00	8.00
WB5420400560	4.00	6.00	8.00	30`	60.00	110.00	6.00
WB5420401070	4.00	6.00	8.00	1°	70.00	120.00	8.00
WB5420401570	4.00	6.00	8.00	1°30`	70.00	120.00	8.00
WB5420400570	4.00	6.00	8.00	30`	70.00	120.00	6.00
WB5420501060	5.00	10.00	13.00	1°	60.00	120.00	8.00
WB5420501560	5.00	10.00	13.00	1°30`	60.00	120.00	8.00
WB5420503040	5.00	10.00	13.00	3°	40.00	120.00	8.00
WB5420601060	6.00	12.00	15.00	1°	60.00	120.00	8.00

WINNER

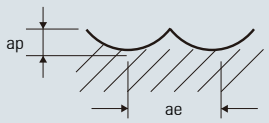
WB542 Series

EDP NO. 2 Flute W Coating Helix 30°	Cutting Diameter (metric)	Cutting Length (metric)	Neck Length (metric)	Taper Degree°	Taper Length (metric)	Overall Length (metric)	Shank Diameter (metric)
WB542	D1	L1	L2	θ	L3	L4	D2
WB5420601560	6.00	12.00	15.00	1°30`	60.00	120.00	10.00
WB5420602060	6.00	12.00	15.00	2°	60.00	120.00	10.00
WB5420603060	6.00	12.00	15.00	3°	60.00	120.00	12.00
WB5420601090	6.00	12.00	15.00	1°	90.00	150.00	10.00
WB5420601590	6.00	12.00	15.00	1°30`	90.00	150.00	10.00
WB5420602090	6.00	12.00	15.00	2°	90.00	150.00	12.00
WB5420603090	6.00	12.00	15.00	3°	90.00	150.00	14.00
WB5420801070	8.00	14.00	18.00	1°	70.00	130.00	10.00
WB5420801570	8.00	14.00	18.00	1°30`	70.00	130.00	12.00
WB5420802070	8.00	14.00	18.00	2°	70.00	130.00	12.00
WB5420803070	8.00	14.00	18.00	3°	70.00	130.00	14.00
WB54208010100	8.00	14.00	18.00	1°	100.00	150.00	12.00
WB54208015100	8.00	14.00	18.00	1°30`	100.00	150.00	14.00
WB54208020100	8.00	14.00	18.00	2°	100.00	150.00	14.00
WB54208030100	8.00	14.00	18.00	3°	100.00	150.00	18.00
WB5421001070	10.00	18.00	22.00	1°	70.00	130.00	12.00
WB5421001570	10.00	18.00	22.00	1°30`	70.00	130.00	14.00
WB5421002070	10.00	18.00	22.00	2°	70.00	130.00	14.00
WB5421003070	10.00	18.00	22.00	3°	70.00	130.00	16.00
WB5421001080	10.00	18.00	22.00	1°	80.00	150.00	14.00
WB5421001580	10.00	18.00	22.00	1°30`	80.00	150.00	14.00
WB5421002080	10.00	18.00	22.00	2°	80.00	150.00	16.00
WB5421003080	10.00	18.00	22.00	3°	80.00	150.00	18.00
WB54210010100	10.00	18.00	22.00	1°	100.00	200.00	14.00
WB54210015100	10.00	18.00	22.00	1°30`	100.00	200.00	16.00
WB54210020100	10.00	18.00	22.00	2°	100.00	200.00	16.00
WB54210030100	10.00	18.00	22.00	3°	100.00	200.00	20.00
WB5421201060	12.00	22.00	25.00	1°	60.00	130.00	14.00
WB5421201560	12.00	22.00	25.00	1°30`	60.00	130.00	14.00
WB5421202060	12.00	22.00	25.00	2°	60.00	130.00	16.00
WB5421203060	12.00	22.00	25.00	3°	60.00	130.00	16.00
WB5421201080	12.00	22.00	25.00	1°	80.00	150.00	14.00
WB5421201580	12.00	22.00	25.00	1°30`	80.00	150.00	16.00
WB5421202080	12.00	22.00	25.00	2°	80.00	150.00	16.00
WB5421203080	12.00	22.00	25.00	3°	80.00	150.00	18.00
WB5421201090	12.00	22.00	25.00	1°	90.00	180.00	16.00
WB5421201590	12.00	22.00	25.00	1°30`	90.00	180.00	16.00
WB5421202090	12.00	22.00	25.00	2°	90.00	180.00	18.00
WB5421203090	12.00	22.00	25.00	3°	90.00	180.00	20.00
WB54212010100	12.00	22.00	25.00	1°	100.00	200.00	16.00
WB54212015100	12.00	22.00	25.00	1°30`	100.00	200.00	16.00
WB54212020100	12.00	22.00	25.00	2°	100.00	200.00	18.00
WB54212030100	12.00	22.00	25.00	3°	100.00	200.00	20.00

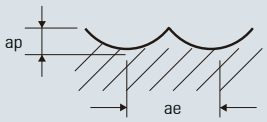
WB542 series

Feed Rate	General Cutting Speed					
Work Material	Alloy Steels, Carbon Steels (SCM, SNCM, S45C)		Prehardened Steels (NAK, CENA, KP4)		Hardened Steels (SKD, SKT, STAVAX)	
Hardness	≤ 35 HRc		35 ~ 45 HRc		45 ~ 55 HRc	
Strength	≤ 1100N / mm²		1100~1500N / mm²		1500~2000N / mm²	
Cutting Diameter (metric)	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
10.0	4,070	820	4,850	800	4,650	770
12.0	3,700	890	4,350	800	4,150	770

RPM = rev. / min.
FEED = mm / min.



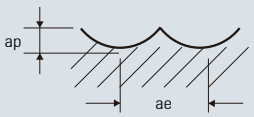
ap : D1~D6=0.2mm
D8~D12=0.3mm
ae : 0.2×D



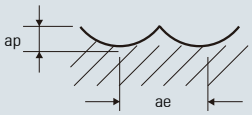
ap : D1~D4=0.05×D
D5~D8=0.25mm
D10~D12=0.3mm
ae : 0.1×D

Feed Rate	High Cutting Speed					
Work Material	Alloy Steels, Carbon Steels (SCM, SNCM, S45C)		Prehardened Steels (NAK, CENA, KP4)		Hardened Steels (SKD, SKT, STAVAX)	
Hardness	≤ 35 HRc		35 ~ 45 HRc		45 ~ 55 HRc	
Strength	≤ 1100N / mm²		1100~1500N / mm²		1500~2000N / mm²	
Cutting Diameter (metric)	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
10.0	4,070	820	4,850	800	4,650	770
12.0	3,700	890	4,350	800	4,150	770

RPM = rev. / min.
FEED = mm / min.



ap : D1~D6=0.2mm
D8~D12=0.3mm
ae : 0.05×D



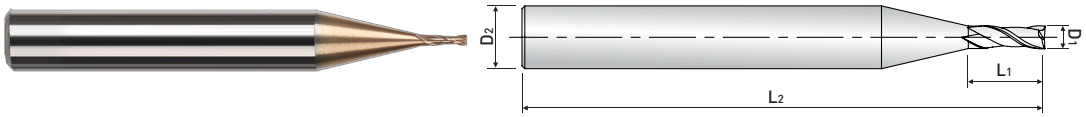
ap : D1~D4=0.05×D
D5~D8=0.25mm
D10~D12=0.3mm
ae : 0.05×D

ULTRA FINE | Slotting | Side milling

WINNER

WME502 Series

MINATURE SQUARE / 2 FLUTES / REGULAR / W-COATING



TOLERANCE (metric)

D_1 = +0 / -0.012 (D1≤6.0)
D_1 = +0 / -0.015 (D1≥7.0)
D_2 = h6

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO. 2 Flute W Coating Helix 30°	Cutting Diameter (metric)	Cutting Length (metric)	Overall Length (metric)	Shank Diameter (metric)
WME502	D1	L1	L2	D2
WME5020003	0.03	0.04	40.00	4.00
WME5020004	0.04	0.06	40.00	4.00
WME5020005	0.05	0.07	40.00	4.00
WME5020006	0.06	0.09	40.00	4.00
WME5020007	0.07	0.10	40.00	4.00
WME5020008	0.08	0.12	40.00	4.00
WME5020009	0.09	0.13	40.00	4.00
WME502001	0.10	0.20	40.00	4.00
WME5020015	0.15	0.30	40.00	4.00
WME502002	0.20	0.40	40.00	4.00
WME5020025	0.25	0.50	40.00	4.00
WME502003	0.30	0.60	40.00	4.00
WME5020035	0.35	0.70	40.00	4.00
WME502004	0.40	0.80	40.00	4.00
WME5020045	0.45	0.90	40.00	4.00
WME502005	0.50	1.00	40.00	4.00
WME5020055	0.55	1.10	40.00	4.00
WME502006	0.60	1.20	40.00	4.00
WME5020065	0.65	1.30	40.00	4.00
WME502007	0.70	1.40	40.00	4.00
WME5020075	0.75	1.50	40.00	4.00
WME502008	0.80	1.60	40.00	4.00
WME5020085	0.85	1.70	40.00	4.00
WME502009	0.90	1.80	40.00	4.00
WME5020095	0.95	2.00	40.00	4.00
WME502010	1.00	2.50	50.00	6.00
WME502012	1.20	3.00	50.00	6.00
WME502015	1.50	4.00	50.00	6.00
WME502020	2.00	6.00	50.00	6.00
WME502025	2.50	7.00	50.00	6.00
WME502030	3.00	8.00	50.00	6.00
WME502035	3.50	10.00	50.00	6.00
WME502040	4.00	10.00	50.00	6.00
WME502045	4.50	14.00	50.00	6.00
WME502050	5.00	15.00	60.00	6.00

Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
WME502	○	○	○	○	◎	○	○	○	○					◎	◎	◎	○				

WINNER

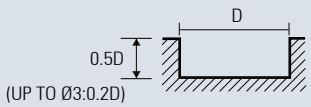
WME502 Series

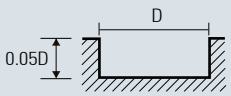
EDP NO. 2 Flute W Coating Helix 30°	Cutting Diameter (metric)	Cutting Length (metric)	Overall Length (metric)	Shank Diameter (metric)
WME502	D1	L1	L2	D2
WME502055	5.50	15.00	60.00	6.00
WME502060	6.00	15.00	60.00	6.00
WME502065	6.50	18.00	60.00	8.00
WME502070	7.00	20.00	60.00	8.00
WME502075	7.50	20.00	60.00	8.00
WME502080	8.00	20.00	70.00	8.00
WME502085	8.50	22.00	70.00	10.00
WME502090	9.00	22.00	70.00	10.00
WME502095	9.50	24.00	70.00	10.00
WME502100	10.00	25.00	75.00	10.00
WME502105	10.50	26.00	75.00	12.00
WME502110	11.00	30.00	75.00	12.00
WME502115	11.50	30.00	80.00	12.00
WME502120	12.00	30.00	80.00	12.00
WME502130	13.00	35.00	100.00	12.00
WME502140S16	14.00	35.00	100.00	16.00
WME502140	14.00	35.00	100.00	14.00
WME502140S12	14.00	35.00	100.00	12.00
WME502150	15.00	38.00	100.00	16.00
WME502160	16.00	40.00	100.00	16.00
WME502170	17.00	42.00	100.00	16.00
WME502180	18.00	45.00	100.00	18.00
WME502180S16	18.00	45.00	100.00	16.00
WME502190	19.00	45.00	100.00	20.00
WME502200	20.00	45.00	100.00	20.00
WME502210	21.00	45.00	100.00	20.00
WME502220	22.00	45.00	100.00	20.00
WME502230	23.00	50.00	120.00	25.00
WME502240	24.00	50.00	120.00	25.00
WME502250	25.00	50.00	120.00	25.00

WME502 series

Work Material	Alloy Steels, Carbon Steels (SCM, SNCM, S45C)		Prehardened Steels (NAK, CENA, KP4)		Stainless Steels (SUS)		Hardened Steels (SKD, SKT, STAVAX)	
Hardness	≤ 35 HRc		35 ~ 45 HRc		-		45 ~ 55 HRc	
Strength	≤ 1100N / mm²		1100~1500N / mm²		-		1500~2000N / mm²	
Cutting Diameter (metric)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2.0	11,560	190	7,560	120	6,300	90	5,040	35
3.0	8,920	210	5,560	140	4,620	120	3,360	40
4.0	7,560	300	4,620	180	3,880	150	2,940	40
5.0	6,300	320	3,780	190	3,160	160	2,320	50
6.0	5,560	350	3,360	220	2,840	180	2,000	55
8.0	4,200	380	2,520	200	2,100	180	1,680	75
10.0	3,260	330	2,000	160	1,680	160	1,360	60
12.0	2,740	280	1,680	130	1,360	130	1,160	55
16.0	2,200	220	1,360	110	1,060	110	900	40
20.0	1,680	170	1,060	80	840	80	680	30
25.0	1,360	130	840	70	680	60	540	20

RPM = rev. / min.
FEED = mm / min.



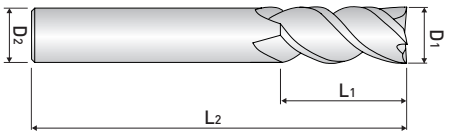


WINNER

WE504H, WE506 Series

ULTRA FINE | Slotting | Side milling

HIGH HELIX SQUARE / 4 & 6 FLUTES / REGULAR & LONG / W-COATING



TOLERANCE (metric)

D_1 = +0 / -0.03
D_2 = h6

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO.		Cutting Diameter (metric)	Cutting Length (metric)	Overall Length (metric)	Shank Diameter (metric)
4 Flute	6 Flute				
W Coating	W Coating				
Helix 45°	Helix 45°				
WE504H	WE506	D1	L1	L2	D2
WE504H010	-	1.00	2.50	50.00	6.00
WE504H01004	-	1.00	4.00	60.00	6.00
WE504H01006	-	1.00	6.00	60.00	6.00
WE504H015	-	1.50	4.00	50.00	6.00
WE504H01506	-	1.50	6.00	60.00	6.00
WE504H01508	-	1.50	8.00	60.00	6.00
WE504H020	-	2.00	6.00	50.00	6.00
WE504H02008	-	2.00	8.00	60.00	6.00
WE504H02010	-	2.00	10.00	60.00	6.00
WE504H030	-	3.00	8.00	50.00	6.00
WE504H03010	-	3.00	10.00	70.00	6.00
WE504H03012	-	3.00	12.00	70.00	6.00
WE504H03016	-	3.00	16.00	70.00	6.00
WE504H040	-	4.00	10.00	50.00	6.00
WE504H04012	-	4.00	12.00	70.00	6.00
WE504H04016	-	4.00	16.00	70.00	6.00
WE504H04020	-	4.00	20.00	70.00	6.00
WE504H050	-	5.00	15.00	50.00	6.00
WE504H05030	-	5.00	30.00	80.00	6.00
WE504H060	WE506060	6.00	15.00	60.00	6.00
WE504H06020	WE50606020	6.00	20.00	70.00	6.00
WE504H06030	WE50606030	6.00	30.00	80.00	6.00
-	WE50606030110	6.00	30.00	110.00	6.00
WE504H080	WE506080	8.00	20.00	70.00	8.00
WE504H08030	WE50608030	8.00	30.00	80.00	8.00
WE504H08035	WE50608035	8.00	35.00	90.00	8.00
WE504H08040	WE50608040	8.00	40.00	90.00	8.00
-	WE50608040130	8.00	40.00	130.00	8.00
WE504H100	WE506100	10.00	25.00	75.00	10.00
WE504H10030	WE50610030	10.00	30.00	80.00	10.00
WE504H10040	WE50610040	10.00	40.00	90.00	10.00
WE504H10050	WE50610050	10.00	50.00	100.00	10.00
-	WE50610050150	10.00	50.00	150.00	10.00
WE504H120	WE506120	12.00	30.00	80.00	12.00
WE504H12040	WE50612040	12.00	40.00	90.00	12.00

Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
All	○	○	○	○	◎	○	○	○	○					◎	◎	◎	○				

WINNER

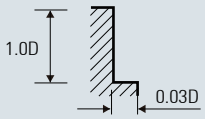
WE504H, WE506 Series

EDP NO.		Cutting Diameter (metric)	Cutting Length (metric)	Overall Length (metric)	Shank Diameter (metric)
4 Flute	6 Flute				
W Coating	W Coating				
Helix 45°	Helix 45°				
WE504H	WE506	D1	L1	L2	D2
WE504H12050	WE50612050	12.00	50.00	100.00	12.00
WE504H12060	WE50612060	12.00	60.00	110.00	12.00
-	WE50612060150	12.00	60.00	150.00	12.00
WE504H160	WE506160	16.00	40.00	100.00	16.00
WE504H16050	WE50616050	16.00	50.00	110.00	16.00
WE504H16060	WE50616060	16.00	60.00	120.00	16.00
-	WE50616090	16.00	90.00	150.00	16.00
WE504H160110	WE506160110	16.00	110.00	200.00	16.00
-	WE506160110250	16.00	110.00	250.00	16.00
WE504H200	WE506200	20.00	45.00	100.00	20.00
WE504H20060	WE50620060	20.00	60.00	120.00	20.00
WE504H20070	WE50620070	20.00	70.00	130.00	20.00
WE504H200110	WE506200110	20.00	110.00	200.00	20.00
-	WE506200110250	20.00	110.00	250.00	20.00
-	WE506200110300	20.00	110.00	300.00	20.00

WE504H Series

Work Material	Alloy Steels, Carbon Steels (SCM, SNCM, S45C)		Prehardened Steels (NAK, CENA, KP4)		Hardened Steels (SKD, SKT, STAVAX)	
Hardness	≤ 35 HRc		35 ~ 45 HRc		45 ~ 55 HRc	
Strength	≤ 1100N / mm²		1100~1500N / mm²		1500~2000N / mm²	
Cutting Diameter (metric)	RPM	FEED	RPM	FEED	RPM	FEED
1.0	6,300	100	5,040	80	3,150	45
2.0	4,410	115	3,570	100	2,200	55
3.0	3,570	140	2,840	115	1,790	60
4.0	3,050	180	2,420	140	1,580	70
6.0	2,630	215	2,100	180	1,370	90
8.0	2,000	230	1,580	180	1,050	90
10.0	1,680	230	1,370	180	840	90
12.0	1,370	180	1,160	160	700	70
16.0	1,160	160	890	125	560	60
20.0	840	115	680	90	420	45

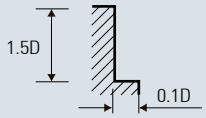
RPM = rev. / min.
FEED = mm / min.

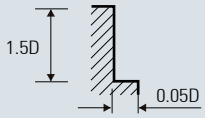


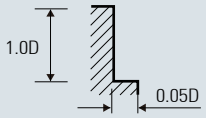
WE506 Series

Feed Rate	High Cutting Speed					
Work Material	Alloy Steels, Carbon Steels (SCM, SNCM, S45C)		Prehardened Steels (NAK, CENA, KP4)		Hardened Steels (SKD, SKT, STAVAX)	
Hardness	≤ 35 HRc		35 ~ 45 HRc		45 ~ 55 HRc	
Strength	≤ 1100N / mm²		1100~1500N / mm²		1500~2000N / mm²	
Cutting Diameter (metric)	RPM	FEED	RPM	FEED	RPM	FEED
6.0	5,560	2,000	3,880	1,370	1,580	210
8.0	4,200	2,000	2,940	1,370	1,160	210
10.0	3,360	2,000	2,320	1,370	1,000	210
12.0	2,840	1,680	2,000	1,160	840	180
16.0	2,100	1,260	1,480	880	640	130
20.0	1,680	1,010	1,160	690	500	110
25.0	1,500	90	1,100	600	430	90

RPM = rev. / min.
FEED = mm / min.

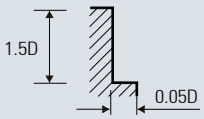


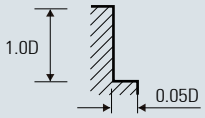




Feed Rate	High Cutting Speed			
Work Material	Prehardened Steels (NAK, CENA, KP4)		Hardened Steels (SKD, SKT, STAVAX)	
Hardness	35 ~ 45 HRc		45 ~ 55 HRc	
Strength	1100~1500N / mm²		1500~2000N / mm²	
Cutting Diameter (metric)	RPM	FEED	RPM	FEED
6.0	16,800	6,090	8,400	3,050
8.0	12,600	6,090	6,300	3,050
10.0	9,980	5,990	5,040	3,050
12.0	8,400	5,040	4,200	2,520
16.0	6,300	3,780	3,160	1,890
20.0	5,040	3,050	2,520	1,470
25.0	4,500	2,700	2,200	1,300

RPM = rev. / min.
FEED = mm / min.



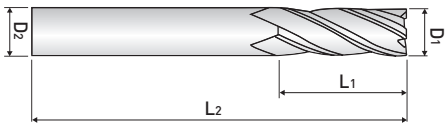


WINNER

WME504, WXE504 Series

ULTRA FINE | Slotting | Side milling

SQUARE / 2 FLUTES / REGULAR & LONG / VARIABLE INDEX / W-COATING



TOLERANCE (metric)

D_1 = +0 / -0.03
D_2 = h6

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO. / 4 Flute / W Coating / Variable Helix		Cutting Diameter (metric)	Cutting Length (metric)	Overall Length (metric)	Shank Diameter (metric)
WME504	WXE504	D1	L1	L2	D2
WME504008	-	0.80	1.60	40.00	4.00
WME504009	-	0.90	1.80	40.00	4.00
-	WXE50401001	1.00	1.00	40.00	6.00
-	WXE50401002	1.00	2.00	40.00	6.00
WME504010	WXE504010	1.00	2.50	50.00	6.00
-	WXE50401003	1.00	3.00	50.00	6.00
-	WXE50401004	1.00	4.00	50.00	6.00
-	WXE50401006	1.00	6.00	50.00	6.00
-	WXE50401202	1.20	2.00	40.00	6.00
WME504012	WXE504012	1.20	3.00	50.00	6.00
-	WXE50401204	1.20	4.00	50.00	6.00
-	WXE50401206	1.20	6.00	50.00	6.00
-	WXE504015015	1.50	1.50	40.00	6.00
-	WXE50401503	1.50	3.00	40.00	6.00
WME504015	WXE504015	1.50	4.00	50.00	6.00
-	WXE50401506	1.50	6.00	50.00	6.00
-	WXE50401508	1.50	8.00	50.00	6.00
-	WXE50401510	1.50	10.00	50.00	6.00
-	WXE50402002	2.00	2.00	40.00	6.00
-	WXE50402004	2.00	4.00	40.00	6.00
WME504020	WXE504020	2.00	6.00	50.00	6.00
-	WXE50402008	2.00	8.00	50.00	6.00
-	WXE50402010	2.00	10.00	50.00	6.00
-	WXE50402012	2.00	12.00	50.00	6.00
-	WXE504025025	2.50	2.50	40.00	6.00
-	WXE50402505	2.50	5.00	40.00	6.00
WME504025	WXE504025	2.50	7.00	50.00	6.00
-	WXE50402510	2.50	10.00	50.00	6.00
-	WXE50402512	2.50	12.00	50.00	6.00
-	WXE50403003	3.00	3.00	40.00	6.00
-	WXE50403006	3.00	6.00	40.00	6.00
WME504030	WXE504030	3.00	8.00	50.00	6.00
-	WXE50403010	3.00	10.00	50.00	6.00
-	WXE50403012	3.00	12.00	50.00	6.00
-	WXE50403014	3.00	14.00	50.00	6.00

Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
All	○	○	○	○	◎	○	○	○	○					◎	◎	◎	○				

>>Continue

EDP NO. 4 Flute W Coating Variable Helix		Cutting Diameter (metric)	Cutting Length (metric)	Overall Length (metric)	Shank Diameter (metric)
WME504	WXE504	D1	L1	L2	D2
WME504035	-	3.50	10.00	50.00	6.00
-	WXE50404004	4.00	4.00	40.00	6.00
-	WXE50404008	4.00	8.00	40.00	6.00
WME504040	WXE504040	4.00	10.00	50.00	6.00
-	WXE50404012	4.00	12.00	50.00	6.00
-	WXE50404014	4.00	14.00	50.00	6.00
-	WXE50404016	4.00	16.00	50.00	6.00
WME504045	-	4.50	14.00	50.00	6.00
-	WXE50405005	5.00	5.00	50.00	6.00
-	WXE50405010	5.00	10.00	50.00	6.00
WME504050	WXE504050	5.00	15.00	60.00	6.00
-	WXE50405020	5.00	20.00	60.00	6.00
-	WXE50405025	5.00	25.00	60.00	6.00
WME504055	-	5.50	15.00	60.00	6.00
-	WXE50406006	6.00	6.00	50.00	6.00
-	WXE50406012	6.00	12.00	50.00	6.00
WME504060	WXE504060	6.00	15.00	60.00	6.00
-	WXE50406020	6.00	20.00	60.00	6.00
-	WXE50406025	6.00	25.00	60.00	6.00
WME504065	-	6.50	18.00	60.00	8.00
WME504070	-	7.00	20.00	60.00	8.00
WME504075	-	7.50	20.00	60.00	8.00
-	WXE50408016	8.00	16.00	60.00	8.00
WME504080	WXE504080	8.00	20.00	70.00	8.00
-	WXE50408025	8.00	25.00	70.00	8.00
-	WXE50408030	8.00	30.00	70.00	8.00
WME504085	-	8.50	22.00	70.00	10.00
WME504090	-	9.00	22.00	70.00	10.00
WME504095	-	9.50	24.00	70.00	10.00
-	WXE50410022	10.00	22.00	65.00	10.00
WME504100	WXE504100	10.00	25.00	75.00	10.00
-	WXE50410030	10.00	30.00	75.00	10.00
-	WXE50410035	10.00	35.00	75.00	10.00
WME504105	-	10.50	26.00	75.00	12.00
WME504110	-	11.00	30.00	75.00	12.00
WME504115	-	11.50	30.00	80.00	12.00
-	WXE50412026	12.00	26.00	70.00	12.00
WME504120	WXE504120	12.00	30.00	80.00	12.00
-	WXE50412035	12.00	35.00	80.00	12.00
-	WXE50412040	12.00	40.00	80.00	12.00
WME504130	-	13.00	35.00	100.00	12.00
WME504140S12	-	14.00	35.00	100.00	12.00
WME504140S14	-	14.00	35.00	100.00	14.00
WME504140	WXE504140	14.00	35.00	100.00	16.00
WME504150	-	15.00	38.00	100.00	16.00
-	WXE50416032	16.00	32.00	100.00	16.00

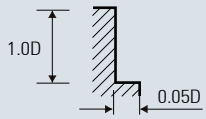
WME504, WXE504 Series

EDP NO. 4 Flute W Coating Variable Helix		Cutting Diameter (metric)	Cutting Length (metric)	Overall Length (metric)	Shank Diameter (metric)
WME504	WXE504	D1	L1	L2	D2
WME504160	WXE504160	16.00	40.00	100.00	16.00
WME504170	-	17.00	42.00	100.00	16.00
WME504180	-	18.00	45.00	100.00	18.00
WME504180S16	-	18.00	45.00	100.00	16.00
-	WXE504180	18.00	45.00	100.00	20.00
WME504190	-	19.00	45.00	100.00	20.00
WME504200	WXE504200	20.00	45.00	100.00	20.00
WME504210	-	21.00	45.00	100.00	20.00
WME504220	-	22.00	45.00	100.00	20.00
WME504230	-	23.00	50.00	120.00	25.00
WME504240	-	24.00	50.00	120.00	25.00
WME504250	-	25.00	50.00	120.00	25.00

WME504, WXE504 series

Work Material	Alloy Steels, Carbon Steels (SCM, SNCM, S45C)		Prehardened Steels (NAK, CENA, KP4)		Stainless Steels (SUS)		Hardened Steels (SKD, SKT, STAVAX)	
Hardness	≤ 35 HRc		35 ~ 45 HRc		-		45 ~ 55 HRc	
Strength	≤ 1100N / mm²		1100~1500N / mm²		-		1500~2000N / mm²	
Cutting Diameter (metric)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2.0	11,560	280	7,560	170	6,300	140	5,040	50
3.0	8,920	320	5,560	200	4,620	170	3,360	60
4.0	7,560	570	4,620	350	3,880	280	2,940	60
5.0	6,300	600	3,780	360	3,160	300	2,320	70
6.0	5,560	660	3,360	410	2,840	330	2,000	80
8.0	4,200	710	2,520	380	2,100	350	1,680	110
10.0	3,260	610	2,000	300	1,680	300	1,360	90
12.0	2,740	520	1,680	250	1,360	240	1,160	80
16.0	2,200	410	1,360	200	1,100	300	900	60
20.0	1,680	320	1,060	160	840	150	680	40
25.0	1,360	250	840	130	680	120	540	30

RPM = rev. / min.
FEED = mm / min.

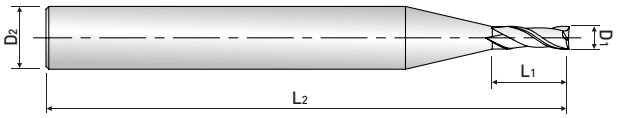


WINNER

WE502, WE502xxS3 & WE502xxS4 Series

SQUARE / 2 FLUTES / REGULAR & LONG / W-COATING

ULTRA FINE | Slotting | Side milling



TOLERANCE (metric)

D_1 = +0 / -0.012 (D1≤6.0)
D_1 = +0 / -0.015 (D1≥8.0)
D_2 = h6

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO. / 2 Flute / W Coating / Helix 30°			Cutting Diameter (metric)	Cutting Length (metric)	Overall Length (metric)	Shank Diameter (metric)
WE502	WE502xxS3	WE502xxS4	D1	L1	L2	D2
WE502001001	-	-	0.10	0.10	40.00	4.00
-	WE502001S3	-	0.10	0.20	40.00	3.00
WE502001	-	-	0.10	0.20	40.00	4.00
WE502001003	-	-	0.10	0.30	40.00	4.00
WE502002002	-	-	0.20	0.20	40.00	4.00
-	WE502002S3	-	0.20	0.40	40.00	3.00
WE502002	-	-	0.20	0.40	40.00	4.00
WE502002006	-	-	0.20	0.60	40.00	4.00
WE502003003	-	-	0.30	0.30	40.00	4.00
-	WE502003S3	-	0.30	0.60	40.00	3.00
WE502003	-	-	0.30	0.60	40.00	4.00
WE502003009	-	-	0.30	0.90	40.00	4.00
WE502004004	-	-	0.40	0.40	40.00	4.00
-	WE502004S3	-	0.40	0.80	40.00	3.00
WE502004	-	-	0.40	0.80	40.00	4.00
WE502004012	-	-	0.40	1.20	40.00	4.00
WE502005005	-	-	0.50	0.50	40.00	4.00
-	WE502005S3	-	0.50	1.00	40.00	3.00
WE502005	-	-	0.50	1.00	40.00	4.00
WE502005015	-	-	0.50	1.50	40.00	4.00
WE502006006	-	-	0.60	0.60	40.00	4.00
-	WE502006S3	-	0.60	1.20	40.00	3.00
WE502006	-	-	0.60	1.20	40.00	4.00
WE502006018	-	-	0.60	1.80	40.00	4.00
WE502007007	-	-	0.70	0.70	40.00	4.00
-	WE502007S3	-	0.70	1.40	40.00	3.00
WE502007	-	-	0.70	1.40	40.00	4.00
WE502007021	-	-	0.70	2.10	40.00	4.00
WE502008008	-	-	0.80	0.80	40.00	4.00
-	WE502008S3	-	0.80	1.60	40.00	3.00
WE502008	-	-	0.80	1.60	40.00	4.00
WE502008024	-	-	0.80	2.40	40.00	4.00
WE502009009	-	-	0.90	0.90	40.00	4.00
-	WE502009S3	-	0.90	1.80	40.00	3.00
WE502009	-	-	0.90	1.80	40.00	4.00
WE502009027	-	-	0.90	2.70	40.00	4.00
WE50201001	-	-	1.00	1.00	40.00	6.00

Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
All	○	○	○	○	◎	○	○	○	○					◎	◎	◎	○				

>>Continue

EDP NO.			Cutting Diameter (metric)	Cutting Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute						
W Coating						
Helix 30°						
WE502	WE502xxS3	WE502xxS4	D1	L1	L2	D2
WE50201002	-	-	1.00	2.00	40.00	6.00
-	WE502010S3	-	1.00	2.50	50.00	3.00
-	-	WE502010S4	1.00	2.50	50.00	4.00
WE502010	-	-	1.00	2.50	50.00	6.00
WE50201003	-	-	1.00	3.00	50.00	6.00
WE50201004	-	-	1.00	4.00	50.00	6.00
WE50201006	-	-	1.00	6.00	50.00	6.00
-	-	WE502011S4	1.10	3.00	50.00	4.00
WE50201202	-	-	1.20	2.00	40.00	6.00
-	WE502012S3	-	1.20	3.00	50.00	3.00
-	-	WE502012S4	1.20	3.00	50.00	4.00
WE502012	-	-	1.20	3.00	50.00	6.00
WE50201204	-	-	1.20	4.00	50.00	6.00
WE50201206	-	-	1.20	6.00	50.00	6.00
-	-	WE502013S4	1.30	3.00	50.00	4.00
-	-	WE502014S4	1.40	4.00	50.00	4.00
WE502015015	-	-	1.50	1.50	40.00	6.00
WE50201503	-	-	1.50	3.00	40.00	6.00
-	WE502015S3	-	1.50	4.00	50.00	3.00
-	-	WE502015S4	1.50	4.00	50.00	4.00
WE502015	-	-	1.50	4.00	50.00	6.00
WE50201506	-	-	1.50	6.00	50.00	6.00
WE50201508	-	-	1.50	8.00	50.00	6.00
WE50201510	-	-	1.50	10.00	50.00	6.00
-	-	WE502016S4	1.60	4.00	50.00	4.00
-	-	WE502017S4	1.70	4.00	50.00	4.00
-	-	WE502018S4	1.80	5.00	50.00	4.00
-	-	WE502019S4	1.90	5.00	50.00	4.00
WE50202002	-	-	2.00	2.00	40.00	6.00
WE50202004	-	-	2.00	4.00	40.00	6.00
-	WE502020S3	-	2.00	6.00	50.00	3.00
-	-	WE502020S4	2.00	6.00	50.00	4.00
WE502020	-	-	2.00	6.00	50.00	6.00
WE50202008	-	-	2.00	8.00	50.00	6.00
WE50202010	-	-	2.00	10.00	50.00	6.00
WE50202012	-	-	2.00	12.00	50.00	6.00
-	-	WE502021S4	2.10	6.00	50.00	4.00
-	-	WE502022S4	2.20	6.00	50.00	4.00
-	-	WE502023S4	2.30	6.00	50.00	4.00
-	-	WE502024S4	2.40	6.00	50.00	4.00
WE502025025	-	-	2.50	2.50	40.00	6.00
WE50202505	-	-	2.50	5.00	40.00	6.00
-	WE502025S3	-	2.50	7.00	50.00	3.00
WE502025	-	-	2.50	7.00	50.00	6.00
-	-	WE502025S4	2.50	8.00	50.00	4.00
WE50202510	-	-	2.50	10.00	50.00	6.00
WE50202512	-	-	2.50	12.00	50.00	6.00
-	-	WE502026S4	2.60	8.00	50.00	4.00

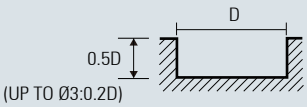
WE502, WE502xxS3 & WE502xxS4 Series

EDP NO.			Cutting Diameter (metric)	Cutting Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute						
W Coating						
Helix 30°						
WE502	WE502xxS3	WE502xxS4	D1	L1	L2	D2
-	-	WE502027S4	2.70	8.00	50.00	4.00
-	-	WE502028S4	2.80	8.00	50.00	4.00
-	-	WE502029S4	2.90	8.00	50.00	4.00
WE50203003	-	-	3.00	3.00	40.00	6.00
WE50203006	-	-	3.00	6.00	40.00	6.00
-	WE502030S3	-	3.00	8.00	50.00	3.00
-	-	WE502030S4	3.00	8.00	50.00	4.00
WE502030	-	-	3.00	8.00	50.00	6.00
WE50203010	-	-	3.00	10.00	50.00	6.00
WE50203012	-	-	3.00	12.00	50.00	6.00
WE50203014	-	-	3.00	14.00	50.00	6.00
-	-	WE502035S4	3.50	10.00	50.00	4.00
WE50204004	-	-	4.00	4.00	40.00	6.00
WE50204008	-	-	4.00	8.00	40.00	6.00
-	-	WE502040S4	4.00	10.00	50.00	4.00
WE502040	-	-	4.00	10.00	50.00	6.00
-	-	WE502040080S4	4.00	10.00	80.00	4.00
WE50204012	-	-	4.00	12.00	50.00	6.00
WE50204014	-	-	4.00	14.00	50.00	6.00
WE50204016	-	-	4.00	16.00	50.00	6.00
WE50205005	-	-	5.00	5.00	50.00	6.00
WE50205010	-	-	5.00	10.00	50.00	6.00
WE502050	-	-	5.00	15.00	60.00	6.00
WE50205020	-	-	5.00	20.00	60.00	6.00
WE50205025	-	-	5.00	25.00	60.00	6.00
WE50206006	-	-	6.00	6.00	50.00	6.00
WE50206012	-	-	6.00	12.00	50.00	6.00
WE502060	-	-	6.00	15.00	60.00	6.00
WE50206020	-	-	6.00	20.00	60.00	6.00
WE50206025	-	-	6.00	25.00	60.00	6.00
WE50208016	-	-	8.00	16.00	60.00	8.00
WE502080	-	-	8.00	20.00	70.00	8.00
WE50208025	-	-	8.00	25.00	70.00	8.00
WE50208030	-	-	8.00	30.00	70.00	8.00
WE50210022	-	-	10.00	22.00	65.00	10.00
WE502100	-	-	10.00	25.00	75.00	10.00
WE50210030	-	-	10.00	30.00	75.00	10.00
WE50210035	-	-	10.00	35.00	75.00	10.00
WE50212026	-	-	12.00	26.00	70.00	12.00
WE502120	-	-	12.00	30.00	80.00	12.00
WE50212035	-	-	12.00	35.00	80.00	12.00
WE50212040	-	-	12.00	40.00	80.00	12.00
WE502140	-	-	14.00	35.00	100.00	16.00
WE502160	-	-	16.00	32.00	100.00	16.00
WE50216040	-	-	16.00	40.00	100.00	16.00
WE502180	-	-	18.00	45.00	100.00	20.00
WE502200	-	-	20.00	45.00	100.00	20.00

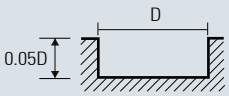
WE502, WE502xxS3 & WE502xxS4 Series

Work Material	Alloy Steels, Carbon Steels (SCM, SNCM, S45C)		Prehardened Steels (NAK, CENA, KP4)		Stainless Steels (SUS)		Hardened Steels (SKD, SKT, STAVAX)	
Hardness	≤ 35 HRc		35 ~ 45 HRc		-		45 ~ 55 HRc	
Strength	≤ 1100N / mm²		1100~1500N / mm²		-		1500~2000N / mm²	
Cutting Diameter (metric)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2.0	11,560	190	7,560	120	6,300	90	5,040	35
3.0	8,920	210	5,560	140	4,620	120	3,360	40
4.0	7,560	300	4,620	180	3,880	150	2,940	40
5.0	6,300	320	3,780	190	3,160	160	2,320	50
6.0	5,560	350	3,360	220	2,840	180	2,000	55
8.0	4,200	380	2,520	200	2,100	180	1,680	75
10.0	3,260	330	2,000	160	1,680	160	1,360	60
12.0	2,740	280	1,680	130	1,360	130	1,160	55
16.0	2,200	220	1,360	110	1,060	110	900	40
20.0	1,680	170	1,060	80	840	80	680	30
25.0	1,360	130	840	70	680	60	540	20

RPM = rev. / min.
FEED = mm / min.



(UP TO Ø3:0.2D)

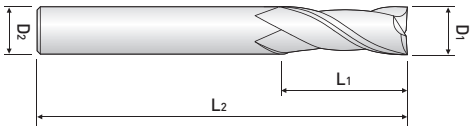


WINNER

WE522, WE524 Series

SQUARE / 2 & 4 FLUTES / REGULAR & LONG / W-COATING

ULTRA FINE | Slotting | Side milling



TOLERANCE (metric)

D_1 = +0 / -0.012 (WE522)
D_1 = +0 / -0.03 (WE524)
D_2 = h6

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO.		Cutting Diameter (metric)	Cutting Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute W Coating Helix 30°	4 Flute W Coating Helix 30°				
WE522	WE524	D1	L1	L2	D2
WE52201003	WE52401003	1.00	3.00	60.00	6.00
WE52201004	WE52401004	1.00	4.00	60.00	6.00
WE52201005	WE52401005	1.00	5.00	60.00	6.00
WE52201006	WE52401006	1.00	6.00	60.00	6.00
WE52201007	WE52401007	1.00	7.00	60.00	6.00
WE52201008	WE52401008	1.00	8.00	60.00	6.00
WE52201010	WE52401010	1.00	10.00	60.00	6.00
WE52201012	WE52401012	1.00	12.00	60.00	6.00
WE52201204	WE52401204	1.20	4.00	60.00	6.00
WE52201206	WE52401206	1.20	6.00	60.00	6.00
WE52201208	WE52401208	1.20	8.00	60.00	6.00
WE52201210	WE52401210	1.20	10.00	60.00	6.00
WE52201212	WE52401212	1.20	12.00	60.00	6.00
WE52201506	WE52401506	1.50	6.00	60.00	6.00
WE52201508	WE52401508	1.50	8.00	60.00	6.00
WE52201510	WE52401510	1.50	10.00	60.00	6.00
WE52201512	WE52401512	1.50	12.00	60.00	6.00
WE52201514	WE52401514	1.50	14.00	60.00	6.00
WE52201516	WE52401516	1.50	16.00	60.00	6.00
WE52202008	WE52402008	2.00	8.00	60.00	6.00
WE52202010	WE52402010	2.00	10.00	60.00	6.00
WE52202012	WE52402012	2.00	12.00	60.00	6.00
WE52202014	WE52402014	2.00	14.00	60.00	6.00
WE52202016	WE52402016	2.00	16.00	60.00	6.00
WE52202510	WE52402510	2.50	10.00	60.00	6.00
WE52202512	WE52402512	2.50	12.00	60.00	6.00
WE52202516	WE52402516	2.50	16.00	60.00	6.00
WE52202520	WE52401520	2.50	20.00	60.00	6.00
WE52202526	WE52401526	2.50	26.00	60.00	6.00
WE52203010	WE52403010	3.00	10.00	70.00	6.00
WE52203012	WE52403012	3.00	12.00	70.00	6.00
WE52203014	WE52403014	3.00	14.00	70.00	6.00
WE52203016	WE52403016	3.00	16.00	70.00	6.00
WE52203016S3	WE5240316S3	3.00	16.00	100.00	3.00
WE52203020	WE52403020	3.00	20.00	70.00	6.00
WE52203026	WE52403026	3.00	26.00	70.00	6.00

Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
All	○	○	○	○	◎	○	○	○	○					◎	◎	◎	○				

>>Continue

EDP NO.		Cutting Diameter (metric)	Cutting Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute	4 Flute				
W Coating	W Coating				
Helix 30°	Helix 30°				
WE522	WE524	D1	L1	L2	D2
WE52203030	WE52403030	3.00	30.00	70.00	6.00
-	WE52403035	3.00	35.00	90.00	6.00
WE52204012	WE52404012	4.00	12.00	70.00	6.00
WE52204016	WE52404016	4.00	16.00	70.00	6.00
WE52204020	WE52404020	4.00	20.00	70.00	6.00
WE52204020S4	WE52404020S4	4.00	20.00	100.00	4.00
WE52204026	WE52404026	4.00	26.00	70.00	6.00
WE52204030	WE52404030	4.00	30.00	70.00	6.00
WE52205020	WE52405020	5.00	20.00	70.00	6.00
WE52205025	WE52405025	5.00	25.00	70.00	6.00
WE52205025100	WE52405025100	5.00	25.00	100.00	6.00
WE52205030	WE52405030	5.00	30.00	80.00	6.00
WE52205035	WE52405035	5.00	35.00	90.00	6.00
WE52205040	WE52405040	5.00	40.00	100.00	6.00
WE52206015	WE52406015	6.00	15.00	60.00	6.00
WE52206015080	WE52406015080	6.00	15.00	80.00	6.00
WE52206020	WE52406020	6.00	20.00	70.00	6.00
WE52206020090	WE52406020090	6.00	20.00	90.00	6.00
WE52206025	WE52406025	6.00	25.00	75.00	6.00
WE52206030	WE52406030	6.00	30.00	80.00	6.00
WE52206030100	WE52406030100	6.00	30.00	100.00	6.00
WE52206030150	WE52406030150	6.00	30.00	150.00	6.00
WE52206035	-	6.00	35.00	90.00	6.00
WE52206040	WE52406040	6.00	40.00	90.00	6.00
WE52206040120	WE52406040120	6.00	40.00	120.00	6.00
WE52206045	WE52406045	6.00	45.00	150.00	6.00
WE52208025	WE52408025	8.00	25.00	80.00	8.00
WE52208030	WE52408030	8.00	30.00	80.00	8.00
WE52208030100	WE52408030100	8.00	30.00	100.00	8.00
WE52208035	WE52408035	8.00	35.00	90.00	8.00
WE52208040	WE52408040	8.00	40.00	90.00	8.00
WE52208040120	WE52408040120	8.00	40.00	120.00	8.00
WE52208040150	WE52408040150	8.00	40.00	150.00	8.00
WE52208045	WE52408045	8.00	45.00	100.00	8.00
WE52208050	WE52408050	8.00	50.00	100.00	8.00
WE52208050150	WE52408050150	8.00	50.00	150.00	8.00
WE52210030	WE52410030	10.00	30.00	80.00	10.00
WE52210030100	WE524100100	10.00	30.00	100.00	10.00
WE52210035	WE52410035	10.00	35.00	90.00	10.00
WE52210040	WE52410040	10.00	40.00	90.00	10.00
WE52210040120	WE52410040120	10.00	40.00	120.00	10.00
WE52210045	WE52410045	10.00	45.00	100.00	10.00
WE52210050	WE52410050	10.00	50.00	100.00	10.00
WE52210050150	WE52410050150	10.00	50.00	150.00	10.00
WE52210050200	WE52410050200	10.00	50.00	200.00	10.00
WE52210055	WE52410055	10.00	55.00	150.00	10.00
WE52210060	WE52410060	10.00	60.00	110.00	10.00

WINNER

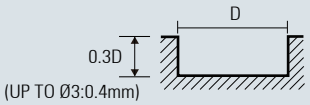
WE522, WE524 Series

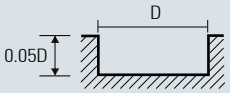
EDP NO.		Cutting Diameter (metric)	Cutting Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute W Coating Helix 30°	4 Flute W Coating Helix 30°				
WE522	WE524	D1	L1	L2	D2
WE52210060200	WE52410060200	10.00	60.00	200.00	10.00
WE52212035	WE52412035	12.00	35.00	90.00	12.00
WE52212040	WE52412040	12.00	40.00	100.00	12.00
WE52212040120	WE52412040120	12.00	40.00	120.00	12.00
WE52212045	WE52412045	12.00	45.00	130.00	12.00
WE52212050	WE52412050	12.00	50.00	100.00	12.00
WE52212050150	WE52412050150	12.00	50.00	150.00	12.00
WE52212055	WE52412055	12.00	55.00	110.00	12.00
WE52212060	WE52412060	12.00	60.00	110.00	12.00
WE52212060150	WE52412060150	12.00	60.00	150.00	12.00
WE52212060200	WE52412060200	12.00	60.00	200.00	12.00
WE52212065	WE52412065	12.00	65.00	150.00	12.00
WE52212070	WE52412070	12.00	70.00	120.00	12.00
WE52212070200	WE52412070200	12.00	70.00	200.00	12.00
WE52214050	WE52414050	14.00	50.00	110.00	16.00
WE52214060	WE52414060	14.00	60.00	150.00	16.00
WE52216040	WE52416040	16.00	40.00	150.00	16.00
WE52216050	WE52416050	16.00	50.00	110.00	16.00
WE52216050150	WE52416050150	16.00	50.00	150.00	16.00
WE52216060	WE52416060	16.00	60.00	120.00	16.00
WE52216070	WE52416070	16.00	70.00	130.00	16.00
WE52216070150	WE52416070150	16.00	70.00	150.00	16.00
WE52216070200	WE52416070200	16.00	70.00	200.00	16.00
WE52216080	WE52416080	16.00	80.00	150.00	16.00
WE52216090	WE52416090	16.00	90.00	150.00	16.00
WE522160110	WE524160110	16.00	110.00	200.00	16.00
WE522160120	WE524160120	16.00	120.00	250.00	16.00
WE52218050	WE52418050	18.00	50.00	120.00	20.00
WE52218070	WE52418070	18.00	70.00	130.00	20.00
WE522180100	WE524180100	18.00	100.00	200.00	20.00
WE52220050	WE52420050	20.00	50.00	110.00	20.00
WE52220050150	WE52420050150	20.00	50.00	150.00	20.00
WE52220060	WE52420060	20.00	60.00	130.00	20.00
WE52220070	WE52420070	20.00	70.00	130.00	20.00
WE52220080	WE52420080	20.00	80.00	150.00	20.00
WE52220090	WE52420090	20.00	90.00	150.00	20.00
WE52220090200	WE52420090200	20.00	90.00	200.00	20.00
WE522200110	WE524200110	20.00	110.00	200.00	20.00
WE522200120	WE524200120	20.00	120.00	250.00	20.00
WE52222075	WE52422075	22.00	75.00	150.00	20.00
WE522220110	WE524220110	22.00	110.00	200.00	20.00
WE52225070	WE52425070	25.00	70.00	150.00	25.00
WE52225090	WE52425090	25.00	90.00	150.00	25.00
WE522250110	WE524250110	25.00	110.00	200.00	25.00
WE522250120	WE524250120	25.00	120.00	250.00	25.00

WE522 Series

Work Material	Alloy Steels, Carbon Steels (SCM, SNCM, S45C)		Prehardened Steels (NAK, CENA, KP4)		Hardened Steels (SKD, SKT, STAVAX)	
Hardness	≤ 35 HRc		35 ~ 45 HRc		45 ~ 55 HRc	
Strength	≤ 1100N / mm²		1100~1500N / mm²		1500~2000N / mm²	
Cutting Diameter (metric)	RPM	FEED	RPM	FEED	RPM	FEED
2.0	6,300	60	5,040	50	3,150	25
3.0	4,410	70	3,570	60	2,200	30
4.0	3,570	85	2,840	70	1,790	35
5.0	3,050	105	2,420	85	1,580	40
6.0	2,630	125	2,100	105	1,370	50
8.0	2,000	135	1,580	105	1,050	50
10.0	1,680	135	1,370	105	840	50
12.0	1,370	105	1,160	95	700	40
16.0	1,160	95	890	75	560	35
20.0	840	70	680	50	420	25

RPM = rev. / min.
FEED = mm / min.

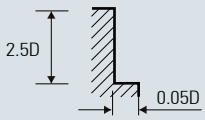


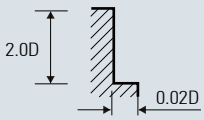


WE524 Series

Work Material	Alloy Steels, Carbon Steels (SCM, SNCM, S45C)		Prehardened Steels (NAK, CENA, KP4)		Hardened Steels (SKD, SKT, STAVAX)	
Hardness	≤ 35 HRc		35 ~ 45 HRc		45 ~ 55 HRc	
Strength	≤ 1100N / mm²		1100~1500N / mm²		1500~2000N / mm²	
Cutting Diameter (metric)	RPM	FEED	RPM	FEED	RPM	FEED
2.0	6,300	100	5,040	80	3,150	45
3.0	4,410	115	3,570	100	2,200	55
4.0	3,570	140	2,840	115	1,790	60
5.0	3,050	180	2,420	140	1,580	70
6.0	2,630	215	2,100	180	1,370	90
8.0	2,000	230	1,580	180	1,050	90
10.0	1,680	230	1,370	180	840	90
12.0	1,370	180	1,160	160	700	70
16.0	1,160	160	890	125	560	60
20.0	840	115	680	90	420	45

RPM = rev. / min.
FEED = mm / min.



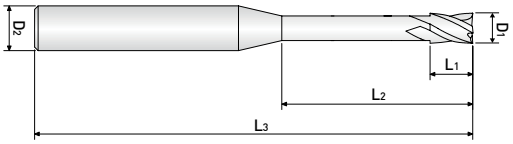


WINNER

WE512, WE514 Series

ULTRA FINE | Slotting | Side milling

LONG NECK SQUARE / 2 & 4 FLUTES / REGULAR / W-COATING



TOLERANCE (metric)

D_1 = +0 / -0.012 (WE512 D1≤6.0)
D_1 = +0 / -0.015 (WE512 D1≥8.0)
D_1 = +0 / -0.03 (WE514)
D_2 = h6

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO.		Cutting Diameter (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute W Coating Helix 30°	4 Flute W Coating Helix 30°					
WE512	WE514	D1	L1	L2	L3	D2
WE512001003	-	0.10	0.15	0.30	40.00	4.00
WE512001005	-	0.10	0.15	0.50	40.00	4.00
WE51200101	-	0.10	0.15	1.00	40.00	4.00
WE512002005	-	0.20	0.30	0.50	40.00	4.00
WE51200201	-	0.20	0.30	1.00	40.00	4.00
WE512002015	-	0.20	0.30	1.50	40.00	4.00
WE51200202	-	0.20	0.30	2.00	40.00	4.00
WE51200301	-	0.30	0.50	1.00	40.00	4.00
WE512003015	-	0.30	0.50	1.50	40.00	4.00
WE51200302	-	0.30	0.50	2.00	40.00	4.00
WE512003025	-	0.30	0.50	2.50	40.00	4.00
WE51200303	-	0.30	0.50	3.00	40.00	4.00
WE51200304	-	0.30	0.50	4.00	40.00	4.00
WE51200305	-	0.30	0.50	5.00	40.00	4.00
WE512004015	-	0.40	0.60	1.50	40.00	4.00
WE51200402	-	0.40	0.60	2.00	40.00	4.00
WE512004025	-	0.40	0.60	2.50	40.00	4.00
WE51200403	-	0.40	0.60	3.00	40.00	4.00
WE51200404	-	0.40	0.60	4.00	40.00	4.00
WE51200405	-	0.40	0.60	5.00	40.00	4.00
WE51200406	-	0.40	0.60	6.00	40.00	4.00
WE51200408	-	0.40	0.60	8.00	40.00	4.00
WE51200410	-	0.40	0.60	10.00	40.00	4.00
WE51200401	-	0.40	0.60	1.00	45.00	4.00
WE51200501	-	0.50	0.70	1.00	45.00	4.00
WE512005015	-	0.50	0.70	1.50	45.00	4.00
WE51200502	-	0.50	0.70	2.00	45.00	4.00
WE512005025	-	0.50	0.70	2.50	45.00	4.00
WE51200503	-	0.50	0.70	3.00	45.00	4.00
WE51200504	-	0.50	0.70	4.00	45.00	4.00
WE51200505	-	0.50	0.70	5.00	45.00	4.00
WE51200506	-	0.50	0.70	6.00	45.00	4.00
WE51200508	-	0.50	0.70	8.00	45.00	4.00
WE51200510	-	0.50	0.70	10.00	45.00	4.00
WE51200512	-	0.50	0.70	12.00	45.00	4.00

Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
All	○	○	○	○	◎	○	○	○	○					◎	◎	◎	○				

>>Continue

EDP NO.		Cutting Diameter (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute	4 Flute					
W Coating	W Coating					
Helix 30°	Helix 30°					
WE512	WE514	D1	L1	L2	L3	D2
WE51200514	-	0.50	0.70	14.00	45.00	4.00
WE51200516	-	0.50	0.70	16.00	45.00	4.00
WE51200602	-	0.60	0.90	2.00	45.00	4.00
WE51200603	-	0.60	0.90	3.00	45.00	4.00
WE51200604	-	0.60	0.90	4.00	45.00	4.00
WE51200605	-	0.60	0.90	5.00	45.00	4.00
WE51200606	-	0.60	0.90	6.00	45.00	4.00
WE51200608	-	0.60	0.90	8.00	45.00	4.00
WE51200610	-	0.60	0.90	10.00	45.00	4.00
WE51200612	-	0.60	0.90	12.00	45.00	4.00
WE51200614	-	0.60	0.90	14.00	45.00	4.00
WE51200616	-	0.60	0.90	16.00	45.00	4.00
WE51200702	-	0.70	1.20	2.00	45.00	4.00
WE51200704	-	0.70	1.20	4.00	45.00	4.00
WE51200706	-	0.70	1.20	6.00	45.00	4.00
WE51200708	-	0.70	1.20	8.00	45.00	4.00
WE51200710	-	0.70	1.20	10.00	45.00	4.00
WE51200712	-	0.70	1.20	12.00	45.00	4.00
WE51200802	-	0.80	1.20	2.00	45.00	4.00
WE51200803	-	0.80	1.20	3.00	45.00	4.00
WE51200804	-	0.80	1.20	4.00	45.00	4.00
WE51200805	-	0.80	1.20	5.00	45.00	4.00
WE51200806	-	0.80	1.20	6.00	45.00	4.00
WE51200808	-	0.80	1.20	8.00	45.00	4.00
WE51200810	-	0.80	1.20	10.00	45.00	4.00
WE51200812	-	0.80	1.20	12.00	45.00	4.00
WE51200814	-	0.80	1.20	14.00	45.00	4.00
WE51200816	-	0.80	1.20	16.00	45.00	4.00
WE51200820	-	0.80	1.20	20.00	45.00	4.00
WE51200906	-	0.90	1.30	6.00	45.00	4.00
WE51200908	-	0.90	1.30	8.00	45.00	4.00
WE51200910	-	0.90	1.30	10.00	45.00	4.00
WE51201002	WE51401002	1.00	1.50	2.00	50.00	4.00
WE51201003	WE51401003	1.00	1.50	3.00	50.00	4.00
WE51201004	WE51401004	1.00	1.50	4.00	50.00	4.00
WE51201005	WE51401005	1.00	1.50	5.00	50.00	4.00
WE51201006	WE51401006	1.00	1.50	6.00	50.00	4.00
WE51201007	WE51401007	1.00	1.50	7.00	50.00	4.00
WE51201008	WE51401008	1.00	1.50	8.00	50.00	4.00
WE51201010	WE51401010	1.00	1.50	10.00	50.00	4.00
WE51201012	WE51401012	1.00	1.50	12.00	50.00	4.00
WE51201014	WE51401014	1.00	1.50	14.00	50.00	4.00
WE51201016	WE51401016	1.00	1.50	16.00	50.00	4.00
WE51201018	WE51401018	1.00	1.50	18.00	50.00	4.00
WE51201020	WE51401020	1.00	1.50	20.00	50.00	4.00

>>Continue

EDP NO.		Cutting Diameter (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute W Coating Helix 30°	4 Flute W Coating Helix 30°					
WE512	WE514	D1	L1	L2	L3	D2
WE51201022	WE51401022	1.00	1.50	22.00	60.00	4.00
WE51201026	WE51401026	1.00	1.50	26.00	60.00	4.00
WE51201030	WE51401030	1.00	1.50	30.00	70.00	4.00
WE51201040	WE51401040	1.00	1.50	40.00	80.00	4.00
WE51201050	WE51401050	1.00	1.50	50.00	100.00	4.00
WE51201204	WE51401204	1.20	1.80	4.00	50.00	4.00
WE51201206	WE51401206	1.20	1.80	6.00	50.00	4.00
WE51201208	WE51401208	1.20	1.80	8.00	50.00	4.00
WE51201210	WE51401210	1.20	1.80	10.00	50.00	4.00
WE51201212	WE51401212	1.20	1.80	12.00	50.00	4.00
WE51201214	WE51401214	1.20	1.80	14.00	50.00	4.00
WE51201216	WE51401216	1.20	1.80	16.00	50.00	4.00
WE51201220	WE51401220	1.20	1.80	20.00	50.00	4.00
WE51201226	WE51401226	1.20	1.80	26.00	60.00	4.00
WE51201230	WE51401230	1.20	1.80	30.00	70.00	4.00
WE51201406	-	1.40	2.10	6.00	50.00	4.00
WE51201408	-	1.40	2.10	8.00	50.00	4.00
WE51201410	-	1.40	2.10	10.00	50.00	4.00
WE51201414	-	1.40	2.10	14.00	50.00	4.00
WE51201416	-	1.40	2.10	16.00	50.00	4.00
WE51201420	-	1.40	2.10	20.00	50.00	4.00
WE51201504	WE51401504	1.50	2.30	4.00	50.00	4.00
WE51201505	WE51401505	1.50	2.30	5.00	50.00	4.00
WE51201506	WE51401506	1.50	2.30	6.00	50.00	4.00
WE51201507	WE51401507	1.50	2.30	7.00	50.00	4.00
WE51201508	WE51401508	1.50	2.30	8.00	50.00	4.00
WE51201510	WE51401510	1.50	2.30	10.00	50.00	4.00
WE51201512	WE51401512	1.50	2.30	12.00	50.00	4.00
WE51201514	WE51401514	1.50	2.30	14.00	50.00	4.00
WE51201516	WE51401516	1.50	2.30	16.00	50.00	4.00
WE51201518	WE51401518	1.50	2.30	18.00	50.00	4.00
WE51201520	WE51401520	1.50	2.30	20.00	50.00	4.00
WE51201522	WE51401522	1.50	2.30	22.00	60.00	4.00
WE51201526	WE51401526	1.50	2.30	26.00	60.00	4.00
WE51201530	WE51401530	1.50	2.30	30.00	70.00	4.00
WE51201608	-	1.60	2.30	8.00	50.00	4.00
WE51201610	-	1.60	2.30	10.00	50.00	4.00
WE51201612	-	1.60	2.30	12.00	50.00	4.00
WE51201616	-	1.60	2.30	16.00	50.00	4.00
WE51201620	-	1.60	2.30	20.00	50.00	4.00
WE51201808	-	1.80	2.70	8.00	50.00	4.00
WE51201810	-	1.80	2.70	10.00	50.00	4.00
WE51201812	-	1.80	2.70	12.00	50.00	4.00
WE51201816	-	1.80	2.70	16.00	50.00	4.00
WE51201820	-	1.80	2.70	20.00	50.00	4.00

>>Continue

EDP NO.		Cutting Diameter (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute	4 Flute					
W Coating	W Coating					
Helix 30°	Helix 30°					
WE512	WE514	D1	L1	L2	L3	D2
WE51202006	WE51402006	2.00	3.00	6.00	50.00	4.00
WE51202008	WE51402008	2.00	3.00	8.00	50.00	4.00
WE51202010	WE51402010	2.00	3.00	10.00	50.00	4.00
WE51202012	WE51402012	2.00	3.00	12.00	50.00	4.00
WE51202014	WE51402014	2.00	3.00	14.00	50.00	4.00
WE51202016	WE51402016	2.00	3.00	16.00	50.00	4.00
WE51202018	WE51402018	2.00	3.00	18.00	50.00	4.00
WE51202020	WE51402020	2.00	3.00	20.00	50.00	4.00
WE51202022	WE51402022	2.00	3.00	22.00	60.00	4.00
WE51202026	WE51402026	2.00	3.00	26.00	60.00	4.00
WE51202030	WE51402030	2.00	3.00	30.00	70.00	4.00
WE51202035	WE51402035	2.00	3.00	35.00	70.00	4.00
WE51202040	WE51402040	2.00	3.00	40.00	80.00	4.00
WE51202045	WE51402045	2.00	3.00	45.00	90.00	4.00
WE51202050	WE51402050	2.00	3.00	50.00	100.00	4.00
WE51202060	WE51402060	2.00	3.00	60.00	110.00	4.00
WE51202508	WE51402508	2.50	4.00	8.00	50.00	4.00
WE51202510	WE51402510	2.50	4.00	10.00	50.00	4.00
WE51202512	WE51402512	2.50	4.00	12.00	50.00	4.00
WE51202514	WE51402514	2.50	4.00	14.00	50.00	4.00
WE51202516	WE51402516	2.50	4.00	16.00	50.00	4.00
WE51202518	WE51402518	2.50	4.00	18.00	50.00	4.00
WE51202520	WE51402520	2.50	4.00	20.00	50.00	4.00
WE51202522	WE51402522	2.50	4.00	22.00	60.00	4.00
WE51202526	WE51402526	2.50	4.00	26.00	60.00	4.00
WE51202530	WE51402530	2.50	4.00	30.00	70.00	4.00
WE51202535	WE51402535	2.50	4.00	35.00	70.00	4.00
WE51202540	WE51402540	2.50	4.00	40.00	80.00	4.00
WE51202545	WE51402545	2.50	4.00	45.00	90.00	4.00
WE51202550	WE51402550	2.50	4.00	50.00	100.00	4.00
WE51203006	WE51403006	3.00	4.50	6.00	50.00	6.00
WE51203008	WE51403008	3.00	4.50	8.00	50.00	6.00
WE51203010	WE51403010	3.00	4.50	10.00	50.00	6.00
WE51203012	WE51403012	3.00	4.50	12.00	50.00	6.00
WE51203014	WE51403014	3.00	4.50	14.00	60.00	6.00
WE51203016	WE51403016	3.00	4.50	16.00	60.00	6.00
WE51203018	WE51403018	3.00	4.50	18.00	60.00	6.00
WE51203020	WE51403020	3.00	4.50	20.00	60.00	6.00
WE51203022	WE51403022	3.00	4.50	22.00	65.00	6.00
WE51203026	WE51403026	3.00	4.50	26.00	65.00	6.00
WE51203030	WE51403030	3.00	4.50	30.00	70.00	6.00
WE51203035	WE51403035	3.00	4.50	35.00	70.00	6.00
WE51203040	WE51403040	3.00	4.50	40.00	80.00	6.00
WE51203045	WE51403045	3.00	4.50	45.00	90.00	6.00
WE51203050	WE51403050	3.00	4.50	50.00	100.00	6.00

WE512, WE514 Series

EDP NO.		Cutting Diameter (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute	4 Flute					
W Coating	W Coating					
Helix 30°	Helix 30°					
WE512	WE514	D1	L1	L2	L3	D2
WE51203060	WE51403060	3.00	4.50	60.00	100.00	6.00
WE51204008	WE51404008	4.00	6.00	8.00	50.00	6.00
WE51204010	WE51404010	4.00	6.00	10.00	50.00	6.00
WE51204012	WE51404012	4.00	6.00	12.00	50.00	6.00
WE51204014	WE51404014	4.00	6.00	14.00	60.00	6.00
WE51204016	WE51404016	4.00	6.00	16.00	60.00	6.00
WE51204018	WE51404018	4.00	6.00	18.00	60.00	6.00
WE51204020	WE51404020	4.00	6.00	20.00	60.00	6.00
WE51204022	WE51404022	4.00	6.00	22.00	65.00	6.00
WE51204026	WE51404026	4.00	6.00	26.00	65.00	6.00
WE51204030	WE51404030	4.00	6.00	30.00	70.00	6.00
WE51204035	WE51404035	4.00	6.00	35.00	70.00	6.00
WE51204040	WE51404040	4.00	6.00	40.00	80.00	6.00
WE51204045	WE51404045	4.00	6.00	45.00	90.00	6.00
WE51204050	WE51404050	4.00	6.00	50.00	100.00	6.00
WE51204060	WE51404060	4.00	6.00	60.00	100.00	6.00
WE51205016	WE51405016	5.00	8.00	16.00	60.00	6.00
WE51205020	WE51405020	5.00	8.00	20.00	60.00	6.00
WE51205026	WE51405026	5.00	8.00	26.00	65.00	6.00
WE51205030	WE51405030	5.00	8.00	30.00	70.00	6.00
WE51205035	WE51405035	5.00	8.00	35.00	75.00	6.00
WE51205040	WE51405040	5.00	8.00	40.00	80.00	6.00
WE51205050	WE51405050	5.00	8.00	50.00	90.00	6.00
WE51205060	WE51405060	5.00	8.00	60.00	100.00	6.00
WE51206015	WE51406015	6.00	9.00	15.00	60.00	6.00
WE51206020	WE51406020	6.00	9.00	20.00	60.00	6.00
WE51206030	WE51406030	6.00	9.00	30.00	70.00	6.00
WE51206032	WE51406032	6.00	9.00	32.00	90.00	6.00
WE51208025	WE51408025	8.00	12.00	25.00	70.00	8.00
WE51208030	WE51408030	8.00	12.00	30.00	80.00	8.00
WE51208042	WE51408042	8.00	12.00	42.00	100.00	8.00
WE51210030	WE51410030	10.00	15.00	30.00	75.00	10.00
WE51210035	WE51410035	10.00	15.00	35.00	80.00	10.00
WE51210045	WE51410045	10.00	15.00	45.00	100.00	10.00
WE51212035	WE51412035	12.00	20.00	35.00	80.00	12.00
WE51212040	WE51412040	12.00	20.00	40.00	90.00	12.00
WE51212050	WE51412050	12.00	20.00	50.00	110.00	12.00

WE512 Series

Work Material		Alloy Steels, Carbon Steels (SCM, SNCM, S45C)			Prehardened Steels (NAK, CENA, KP4)			Hardened Steels (SKD, SKT, STAVAX)		
Hardness		≤ 35 HRc			35 ~ 45 HRc			45 ~ 55 HRc		
Strength		≤ 1100N / mm²			1100~1500N / mm²			1500~2000N / mm²		
Cutting Diameter (metric)	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
0.1	0.5	50,000	315	0.006	46,200	230	0.005	40,600	170	0.004
0.1	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	0.010
0.2	1	38,500	380	0.013	36,300	270	0.010	32,100	200	0.007
0.2	1.5	34,650	310	0.007	32,670	220	0.006	28,890	160	0.004
0.2	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
0.3	1.5	34,200	390	0.019	32,300	270	0.015	25,800	230	0.011
0.3	2	30,780	315	0.011	29,070	220	0.008	25,650	185	0.006
0.3	2.5	30,780	315	0.007	29,070	220	0.005	25,650	185	0.004
0.3	3	30,780	315	0.007	29,070	220	0.005	25,650	185	0.004
0.3	4	27,360	250	0.004	25,840	175	0.003	22,800	145	0.002
0.3	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	0.020
0.4	1.5	27,400	540	0.025	25,800	380	0.020	22,800	280	0.014
0.4	2	27,400	540	0.025	25,800	380	0.020	22,800	280	0.014
0.4	2.5	24,660	435	0.014	23,220	310	0.011	20,520	225	0.008
0.4	3	24,660	435	0.014	23,220	310	0.011	20,520	225	0.008
0.4	4	24,660	435	0.009	23,220	310	0.007	20,520	225	0.005
0.4	5	21,920	345	0.009	20,640	245	0.007	18,240	180	0.005
0.4	6	21,920	345	0.005	20,640	245	0.004	18,240	180	0.003
0.4	8	16,440	225	0.004	15,480	160	0.003	13,680	120	0.002
0.4	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
0.5	1.5	27,400	540	0.045	25,800	425	0.035	22,800	285	0.025
0.5	2	27,400	540	0.032	25,800	425	0.025	22,800	285	0.018
0.5	2.5	27,400	540	0.032	25,800	425	0.025	22,800	285	0.018
0.5	3	24,660	435	0.018	23,220	345	0.014	20,520	230	0.010
0.5	4	24,660	435	0.018	23,220	345	0.014	20,520	230	0.010
0.5	5	24,660	435	0.011	23,220	345	0.009	20,520	230	0.006
0.5	6	21,920	345	0.011	20,640	270	0.009	18,240	180	0.006
0.5	8	16,440	225	0.007	15,480	180	0.005	13,680	120	0.004
0.5	10	16,440	225	0.005	15,480	180	0.004	13,680	120	0.003
0.5	12	8,220	95	0.005	7,740	75	0.004	6,840	50	0.003
0.5	14	8,220	95	0.005	7,740	75	0.004	6,840	50	0.003
0.5	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
0.6	3	27,400	775	0.038	25,800	545	0.029	22,800	405	0.021
0.6	4	24,660	630	0.022	23,220	440	0.017	20,520	330	0.012
0.6	5	24,660	630	0.014	23,220	440	0.011	20,520	330	0.008
0.6	6	24,660	630	0.014	23,220	440	0.011	20,520	330	0.008
0.6	8	21,920	495	0.008	20,640	350	0.006	18,240	260	0.005
0.6	10	16,440	325	0.005	15,480	230	0.004	13,680	170	0.003
0.6	12	16,440	325	0.005	15,480	230	0.004	13,680	170	0.003
0.6	14	8,220	140	0.005	7,740	100	0.004	6,840	75	0.003
0.6	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
0.7	4	24,660	630	0.025	23,220	440	0.020	20,520	330	0.014
0.7	6	24,660	630	0.016	23,220	440	0.012	20,520	330	0.009

WE512 Series

>>Continue

Work Material		Alloy Steels, Carbon Steels (SCM, SNCM, S45C)			Prehardened Steels (NAK, CENA, KP4)			Hardened Steels (SKD, SKT, STAVAX)		
Hardness		≤ 35 HRc			35 ~ 45 HRc			45 ~ 55 HRc		
Strength		≤ 1100N / mm²			1100~1500N / mm²			1500~2000N / mm²		
Cutting Diameter (metric)	Effective Length	RPM	FEED	Ap(mm)	RPM	FEED	Ap(mm)	RPM	FEED	Ap(mm)
0.7	8	21,920	495	0.016	20,640	350	0.012	18,240	260	0.009
0.7	10	21,920	495	0.009	20,640	350	0.007	18,240	260	0.005
0.7	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
0.8	3	27,400	775	0.050	25,800	605	0.039	22,800	450	0.028
0.8	4	27,400	775	0.050	25,800	605	0.039	22,800	450	0.028
0.8	5	24,660	630	0.029	23,220	490	0.022	20,520	365	0.016
0.8	6	24,660	630	0.029	23,220	490	0.022	20,520	365	0.016
0.8	8	24,660	630	0.018	23,220	490	0.014	20,520	365	0.010
0.8	10	21,920	495	0.018	20,640	385	0.014	18,240	290	0.010
0.8	12	21,920	495	0.011	20,640	385	0.008	18,240	290	0.006
0.8	14	16,440	325	0.007	15,480	255	0.006	13,680	190	0.004
0.8	16	16,440	325	0.007	15,480	255	0.006	13,680	190	0.004
0.8	20	8,220	140	0.007	7,740	110	0.006	6,840	80	0.004
0.9	6	22,140	575	0.032	20,970	440	0.025	18,450	330	0.018
0.9	8	22,140	575	0.020	20,970	440	0.016	18,450	330	0.011
0.9	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
1.0	3	24,600	1,045	0.090	23,300	890	0.070	20,500	665	0.050
1.0	4	24,600	1,045	0.063	23,300	890	0.049	20,500	665	0.035
1.0	5	24,600	1,045	0.063	23,300	890	0.049	20,500	665	0.035
1.0	6	22,140	845	0.036	20,970	720	0.028	18,450	540	0.020
1.0	7	22,140	845	0.036	20,970	720	0.028	18,450	540	0.020
1.0	8	22,140	845	0.036	20,970	720	0.028	18,450	540	0.020
1.0	10	22,140	845	0.023	20,970	720	0.018	18,450	540	0.013
1.0	12	19,680	670	0.023	18,640	570	0.018	16,400	425	0.013
1.0	14	19,680	670	0.014	18,640	570	0.011	16,400	425	0.008
1.0	16	14,760	440	0.014	13,980	375	0.011	12,300	280	0.008
1.0	18	14,760	440	0.009	13,980	375	0.007	12,300	280	0.005
1.0	20	14,760	440	0.009	13,980	375	0.007	12,300	280	0.005
1.0	22	7,380	190	0.009	6,990	160	0.007	6,150	120	0.005
1.0	26	7,380	190	0.009	6,990	160	0.007	6,150	120	0.005
1.0	30	7,380	190	0.009	6,990	160	0.007	6,150	120	0.005
1.0	40	2,460	50	0.009	2,330	45	0.007	2,050	35	0.005
1.0	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
1.2	6	21,900	930	0.076	20,700	720	0.059	18,200	485	0.042
1.2	8	19,710	755	0.043	18,630	585	0.034	16,380	395	0.024
1.2	10	19,710	755	0.027	18,630	585	0.021	16,380	395	0.015
1.2	12	19,710	755	0.027	18,630	585	0.021	16,380	395	0.015
1.2	14	17,520	595	0.027	16,560	460	0.021	14,560	310	0.015
1.2	16	17,520	595	0.016	16,560	460	0.013	14,560	310	0.009
1.2	20	13,140	390	0.011	12,420	300	0.008	10,920	205	0.006
1.2	26.0	6,570	165	0.011	6,210	130	0.008	5,460	85	0.006
1.2	30.0	6,570	165	0.011	6,210	130	0.008	5,460	85	0.006
1.4	6.0	19,200	815	0.088	18,100	570	0.069	16,000	425	0.049
1.4	8.0	17,280	660	0.050	16,290	460	0.039	14,400	345	0.028
1.4	10.0	17,280	660	0.050	16,290	460	0.039	14,400	345	0.028
1.4	14.0	17,280	660	0.032	16,290	460	0.025	14,400	345	0.018
1.4	16.0	15,360	520	0.032	14,480	365	0.025	12,800	270	0.018

WE512 Series

>>Continue

Work Material		Alloy Steels, Carbon Steels (SCM, SNCM, S45C)			Prehardened Steels (NAK, CENA, KP4)			Hardened Steels (SKD, SKT, STAVAX)		
Hardness		≤ 35 HRc			35 ~ 45 HRc			45 ~ 55 HRc		
Strength		≤ 1100N / mm²			1100~1500N / mm²			1500~2000N / mm²		
Cutting Diameter (metric)	Effective Length	RPM	FEED	Ap(mm)	RPM	FEED	Ap(mm)	RPM	FEED	Ap(mm)
1.4	20.0	15,360	520	0.019	14,480	365	0.015	12,800	270	0.011
1.5	4.0	19,200	905	0.135	18,100	635	0.105	16,000	475	0.075
1.5	5.0	19,200	905	0.095	18,100	635	0.074	16,000	475	0.053
1.5	6.0	19,200	905	0.095	18,100	635	0.074	16,000	475	0.053
1.5	7.0	19,200	905	0.095	18,100	635	0.074	16,000	475	0.053
1.5	8.0	17,280	735	0.054	16,290	515	0.042	14,400	385	0.030
1.5	10.0	17,280	735	0.054	16,290	515	0.042	14,400	385	0.030
1.5	12.0	17,280	735	0.054	16,290	515	0.042	14,400	385	0.030
1.5	14.0	17,280	735	0.034	16,290	515	0.026	14,400	385	0.019
1.5	16.0	15,360	580	0.034	14,480	405	0.026	12,800	305	0.019
1.5	18.0	15,360	580	0.034	14,480	405	0.026	12,800	305	0.019
1.5	20.0	15,360	580	0.020	14,480	405	0.016	12,800	305	0.011
1.5	22.0	15,360	580	0.020	14,480	405	0.016	12,800	305	0.011
1.5	26.0	11,520	380	0.014	10,860	265	0.011	9,600	200	0.008
1.5	30.0	11,520	380	0.014	10,860	265	0.011	9,600	200	0.008
1.6	8.0	17,800	840	0.101	16,800	655	0.078	14,800	490	0.056
1.6	10.0	16,020	680	0.058	15,120	530	0.045	13,320	395	0.032
1.6	12.0	16,020	680	0.058	15,120	530	0.045	13,320	395	0.032
1.6	16.0	16,020	680	0.036	15,120	530	0.028	13,320	395	0.020
1.6	20.0	14,240	540	0.036	13,440	420	0.028	11,840	315	0.020
1.8	8.0	17,800	840	0.113	16,800	655	0.088	14,800	490	0.063
1.8	10.0	16,020	680	0.065	15,120	530	0.050	13,320	395	0.036
1.8	12.0	16,020	680	0.065	15,120	530	0.050	13,320	395	0.036
1.8	16.0	16,020	680	0.041	15,120	530	0.032	13,320	395	0.023
1.8	20.0	14,240	540	0.041	13,440	420	0.032	11,840	315	0.023
2.0	6.0	14,400	820	0.180	13,600	620	0.140	12,000	475	0.100
2.0	8.0	14,400	820	0.126	13,600	620	0.098	12,000	475	0.070
2.0	10.0	14,400	820	0.126	13,600	620	0.098	12,000	475	0.070
2.0	12.0	12,960	665	0.072	12,240	500	0.056	10,800	385	0.040
2.0	14.0	12,960	665	0.072	12,240	500	0.056	10,800	385	0.040
2.0	16.0	12,960	665	0.072	12,240	500	0.056	10,800	385	0.040
2.0	18.0	12,960	665	0.045	12,240	500	0.035	10,800	385	0.025
2.0	20.0	12,960	665	0.045	12,240	500	0.035	10,800	385	0.025
2.0	22.0	11,520	525	0.045	10,880	395	0.035	9,600	305	0.025
2.0	26.0	11,520	525	0.045	10,880	395	0.035	9,600	305	0.025
2.0	30.0	11,520	525	0.027	10,880	395	0.021	9,600	305	0.015
2.0	35.0	8,640	345	0.018	8,160	260	0.014	7,200	200	0.010
2.0	40.0	8,640	345	0.018	8,160	260	0.014	7,200	200	0.010
2.0	45.0	4,320	150	0.018	4,080	110	0.014	3,600	85	0.010
2.0	50.0	4,320	150	0.018	4,080	110	0.014	3,600	85	0.010
2.0	60.0	4,320	150	0.018	4,080	110	0.014	3,600	85	0.010
2.5	8.0	12,300	970	0.158	11,600	680	0.123	10,300	510	0.088
2.5	10.0	12,300	970	0.158	11,600	680	0.123	10,300	510	0.088
2.5	12.0	12,300	970	0.158	11,600	680	0.123	10,300	510	0.088
2.5	14.0	11,070	785	0.090	10,440	550	0.070	9,270	415	0.050
2.5	16.0	11,070	785	0.090	10,440	550	0.070	9,270	415	0.050
2.5	18.0	11,070	785	0.090	10,440	550	0.070	9,270	415	0.050
2.5	20.0	11,070	785	0.090	10,440	550	0.070	9,270	415	0.050
2.5	22.0	11,070	785	0.056	10,440	550	0.044	9,270	415	0.031
2.5	26.0	9,840	620	0.056	9,280	435	0.044	8,240	325	0.031

WE512 Series

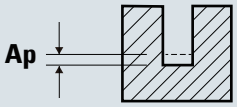
>>Continue

Work Material		Alloy Steels, Carbon Steels (SCM, SNCM, S45C)			Prehardened Steels (NAK, CENA, KP4)			Hardened Steels (SKD, SKT, STAVAX)		
Hardness		≤ 35 HRc			35 ~ 45 HRc			45 ~ 55 HRc		
Strength		≤ 1100N / mm²			1100~1500N / mm²			1500~2000N / mm²		
Cutting Diameter (metric)	Effective Length	RPM	FEED	Ap(mm)	RPM	FEED	Ap(mm)	RPM	FEED	Ap(mm)
2.5	30.0	9,840	620	0.056	9,280	435	0.044	8,240	325	0.031
2.5	35.0	9,840	620	0.034	9,280	435	0.026	8,240	325	0.019
2.5	40.0	7,380	405	0.034	6,960	285	0.026	6,180	215	0.019
2.5	45.0	7,380	405	0.023	6,960	285	0.018	6,180	215	0.013
2.5	50.0	7,380	405	0.023	6,960	285	0.018	6,180	215	0.013
3.0	6.0	10,900	860	0.270	10,300	605	0.210	6,600	450	0.150
3.0	8.0	10,900	860	0.270	10,300	605	0.210	6,600	450	0.150
3.0	10.0	10,900	860	0.189	10,300	605	0.147	6,600	450	0.105
3.0	12.0	10,900	860	0.189	10,300	605	0.147	6,600	450	0.105
3.0	14.0	10,900	860	0.189	10,300	605	0.147	6,600	450	0.105
3.0	16.0	9,810	695	0.108	9,270	490	0.084	5,940	365	0.060
3.0	18.0	9,810	695	0.108	9,270	490	0.084	5,940	365	0.060
3.0	20.0	9,810	695	0.108	9,270	490	0.084	5,940	365	0.060
3.0	22.0	9,810	695	0.108	9,270	490	0.084	5,940	365	0.060
3.0	26.0	9,810	695	0.068	9,270	490	0.053	5,940	365	0.038
3.0	30.0	9,810	695	0.068	9,270	490	0.053	5,940	365	0.038
3.0	35.0	8,720	550	0.068	8,240	385	0.053	5,280	290	0.038
3.0	40.0	8,720	550	0.041	8,240	385	0.032	5,280	290	0.023
3.0	45.0	8,720	550	0.041	8,240	385	0.032	5,280	290	0.023
3.0	50.0	6,540	360	0.027	6,180	255	0.021	3,960	190	0.015
3.0	60.0	6,540	360	0.027	6,180	255	0.021	3,960	190	0.015
4.0	8.0	8,000	1,300	0.360	7,600	1,160	0.280	6,700	770	0.200
4.0	10.0	8,000	1,300	0.360	7,600	1,160	0.280	6,700	770	0.200
4.0	12.0	8,000	1,300	0.360	7,600	1,160	0.280	6,700	770	0.200
4.0	14.0	8,000	1,300	0.252	7,600	1,160	0.196	6,700	770	0.140
4.0	16.0	8,000	1,300	0.252	7,600	1,160	0.196	6,700	770	0.140
4.0	18.0	8,000	1,300	0.252	7,600	1,160	0.196	6,700	770	0.140
4.0	20.0	8,000	1,300	0.252	7,600	1,160	0.196	6,700	770	0.140
4.0	22.0	7,200	1,055	0.144	6,840	940	0.112	6,030	625	0.080
4.0	26.0	7,200	1,055	0.144	6,840	940	0.112	6,030	625	0.080
4.0	30.0	7,200	1,055	0.144	6,840	940	0.112	6,030	625	0.080
4.0	35.0	7,200	1,055	0.090	6,840	940	0.070	6,030	625	0.050
4.0	40.0	7,200	1,055	0.090	6,840	940	0.070	6,030	625	0.050
4.0	45.0	6,400	830	0.090	6,080	740	0.070	5,360	495	0.050
4.0	50.0	6,400	830	0.090	6,080	740	0.070	5,360	495	0.050
4.0	60.0	6,400	830	0.054	6,080	740	0.042	5,360	495	0.030
5.0	16.0	6,400	1,155	0.315	6,100	900	0.245	5,400	605	0.175
5.0	20.0	6,400	1,155	0.315	6,100	900	0.245	5,400	605	0.175
5.0	26.0	5,760	935	0.180	5,490	730	0.140	4,860	490	0.100
5.0	30.0	5,760	935	0.180	5,490	730	0.140	4,860	490	0.100
5.0	35.0	5,760	935	0.180	5,490	730	0.140	4,860	490	0.100
5.0	40.0	5,760	935	0.180	5,490	730	0.140	4,860	490	0.100
5.0	50.0	5,760	935	0.113	5,490	730	0.088	4,860	490	0.063
5.0	60.0	5,120	740	0.113	4,880	575	0.088	4,320	385	0.063
6.0	15.0	5,300	1,055	0.540	5,000	820	0.420	4,400	550	0.300
6.0	20.0	5,300	1,055	0.378	5,000	820	0.294	4,400	550	0.210
6.0	30.0	5,300	1,055	0.378	5,000	820	0.294	4,400	550	0.210
6.0	32.0	4,770	855	0.216	4,500	665	0.168	3,960	445	0.120
8.0	25.0	4,000	950	0.504	3,800	750	0.392	3,300	500	0.280
8.0	30.0	4,000	950	0.504	3,800	750	0.392	3,300	500	0.280

WE512 Series

Work Material		Alloy Steels, Carbon Steels (SCM, SNCM, S45C)			Prehardened Steels (NAK, CENA, KP4)			Hardened Steels (SKD, SKT, STAVAX)		
Hardness		≤ 35 HRc			35 ~ 45 HRc			45 ~ 55 HRc		
Strength		≤ 1100N / mm²			1100~1500N / mm²			1500~2000N / mm²		
Cutting Diameter (metric)	Effective Length	RPM	FEED	Ap(mm)	RPM	FEED	Ap(mm)	RPM	FEED	Ap(mm)
8.0	42.0	3,600	770	0.288	3,400	605	0.224	2,950	405	0.160
10.0	30.0	3,200	900	0.900	3,050	680	0.700	2,630	400	0.500
10.0	35.0	3,200	900	0.630	3,050	680	0.490	2,630	400	0.350
10.0	45.0	3,200	900	0.630	3,050	680	0.490	2,630	400	0.350
12.0	35.0	2,650	800	1.080	2,520	600	0.840	2,180	350	0.600
12.0	40.0	2,650	800	0.756	2,520	600	0.588	2,180	350	0.420
12.0	50.0	2,650	800	0.756	2,520	600	0.588	2,180	350	0.420

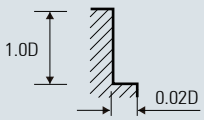
RPM = rev. / min.
FEED = mm / min.



WE514 Series

Work Material	Alloy Steels, Carbon Steels (SCM, SNCM, S45C)		Prehardened Steels (NAK, CENA, KP4)		Stainless Steels (SUS)		Hardened Steels (SKD, SKT, STAVAX)	
Hardness	≤ 35 HRc		35 ~ 45 HRc		-		45 ~ 55 HRc	
Strength	≤ 1100N / mm²		1100~1500N / mm²		-		1500~2000N / mm²	
Cutting Diameter (metric)	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
10.0	3,910	730	2,400	360	2,010	360	1,630	105
12.0	3,300	620	2,010	300	1,630	280	1,400	95

RPM = rev. / min.
FEED = mm / min.

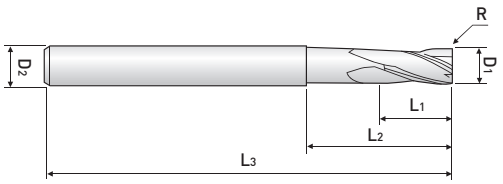


WINNER

WR502, WR504, WR514 Series

ULTRA FINE | Slotting | Side milling | Variable index

CORNER RADIUS / 2 FLUTES / REGULAR / W-COATING



TOLERANCE (metric)

D_1 = +0 / -0.012 (WR502 D1≤6.0)
D_1 = +0 / -0.015 (WR502 D1≥7.0)
D_1 = +0 / -0.03 D_2 = h6
R = ±0.010 (WR502 D1≤6.0)
R = ±0.015 (WR502 D1>6.0)
R = ±0.020

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO.	EDP NO.		Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute	4 Flute							
W Coating	W Coating							
Helix 30°	Helix 38°							
WR502	WR504	WR514	D1	R	L1	L2	L3	D2
WR502002002	-	-	0.20	0.02	0.40	-	40.00	4.00
WR502002005	-	-	0.20	0.05	0.40	-	40.00	4.00
WR502003002	-	-	0.30	0.02	0.60	-	40.00	4.00
WR502003005	-	-	0.30	0.05	0.60	-	40.00	4.00
WR502004005	-	-	0.40	0.05	0.80	-	40.00	4.00
WR50200401	-	-	0.40	0.10	0.80	-	40.00	4.00
WR502005005	-	-	0.50	0.05	1.00	-	40.00	4.00
WR50200501	-	-	0.50	0.10	1.00	-	40.00	4.00
WR502006005	-	-	0.60	0.05	1.20	-	40.00	4.00
WR50200601	-	-	0.60	0.10	1.20	-	40.00	4.00
WR50200602	-	-	0.60	0.20	1.20	-	40.00	4.00
WR502007005	-	-	0.70	0.05	1.40	-	40.00	4.00
WR50200701	-	-	0.70	0.10	1.40	-	40.00	4.00
WR50200702	-	-	0.70	0.20	1.40	-	40.00	4.00
WR502008005	-	-	0.80	0.05	1.60	-	40.00	4.00
WR50200801	-	-	0.80	0.10	1.60	-	40.00	4.00
WR50200802	-	-	0.80	0.20	1.60	-	40.00	4.00
WR502009005	-	-	0.90	0.05	1.80	-	40.00	4.00
WR50200901	-	-	0.90	0.10	1.80	-	40.00	4.00
WR502010005	-	-	1.00	0.05	2.50	-	50.00	6.00
WR50201001	-	-	1.00	0.10	2.50	-	50.00	6.00
WR50201002	-	-	1.00	0.20	2.50	-	50.00	6.00
WR50201003	-	-	1.00	0.30	2.50	-	50.00	6.00
WR502012005	-	-	1.20	0.05	3.00	-	50.00	6.00
WR50201201	-	-	1.20	0.10	3.00	-	50.00	6.00
WR50201202	-	-	1.20	0.20	3.00	-	50.00	6.00
WR50201203	-	-	1.20	0.30	3.00	-	50.00	6.00
WR502015005	-	-	1.50	0.05	4.00	-	50.00	6.00
WR50201501	-	-	1.50	0.10	4.00	-	50.00	6.00
WR50201502	-	-	1.50	0.20	4.00	-	50.00	6.00
WR50201503	-	-	1.50	0.30	4.00	-	50.00	6.00
WR50201505	-	-	1.50	0.50	4.00	-	50.00	6.00
WR50202001	-	-	2.00	0.10	6.00	-	50.00	6.00
WR50202002	-	-	2.00	0.20	6.00	-	50.00	6.00
WR50202003	-	-	2.00	0.30	6.00	-	50.00	6.00

Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
All	○	○	○	○	◎	○	○	○	○					◎	◎	◎	○				

>>Continue

EDP NO.	EDP NO.		Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute	4 Flute							
W Coating	W Coating							
Helix 30°	Helix 38°							
WR502	WR504	WR514	D1	R	L1	L2	L3	D2
WR50202005	-	-	2.00	0.50	6.00	-	50.00	6.00
WR50202501	-	-	2.50	0.10	7.00	-	60.00	6.00
WR50202502	-	-	2.50	0.20	7.00	-	60.00	6.00
WR50202503	-	-	2.50	0.30	7.00	-	60.00	6.00
WR50202505	-	-	2.50	0.50	7.00	-	60.00	6.00
WR50203001	-	-	3.00	0.10	8.00	-	60.00	6.00
-	WR50403002	-	3.00	0.20	8.00	-	60.00	6.00
WR50203002	-	-	3.00	0.20	8.00	-	60.00	6.00
-	WR50403003	-	3.00	0.30	8.00	-	60.00	6.00
WR50203003	-	-	3.00	0.30	8.00	-	60.00	6.00
-	WR50403005	-	3.00	0.50	8.00	-	60.00	6.00
WR50203005	-	-	3.00	0.50	8.00	-	60.00	6.00
WR50203010	-	-	3.00	1.00	8.00	-	60.00	6.00
WR50203501	-	-	3.50	0.10	10.00	-	70.00	6.00
WR50203502	-	-	3.50	0.20	10.00	-	70.00	6.00
WR50203503	-	-	3.50	0.30	10.00	-	70.00	6.00
WR50203505	-	-	3.50	0.50	10.00	-	70.00	6.00
WR50204001	-	-	4.00	0.10	10.00	-	70.00	6.00
WR50204001S4	-	-	4.00	0.10	10.00	-	70.00	4.00
WR50204002	WR50404002	-	4.00	0.20	10.00	-	70.00	6.00
WR50204002S4	-	-	4.00	0.20	10.00	-	70.00	4.00
WR50204003	WR50404003	-	4.00	0.30	10.00	-	70.00	6.00
WR50204003S4	-	-	4.00	0.30	10.00	-	70.00	4.00
WR50204005	WR50404005	-	4.00	0.50	10.00	-	70.00	6.00
WR50204005S4	-	-	4.00	0.50	10.00	-	70.00	4.00
WR50204010	WR50404010	-	4.00	1.00	10.00	-	70.00	6.00
WR50204010S4	-	-	4.00	1.00	10.00	-	70.00	4.00
WR502040011 00S4	-	-	4.00	0.10	10.00	-	100.00	4.00
WR502040021 00S4	-	-	4.00	0.20	10.00	-	100.00	4.00
WR502040031 00S4	-	-	4.00	0.30	10.00	-	100.00	4.00
WR502040051 00S4	-	-	4.00	0.50	10.00	-	100.00	4.00
WR502040101 00S4	-	-	4.00	1.00	10.00	-	100.00	4.00
WR50204501	-	-	4.50	0.10	11.00	-	80.00	6.00
WR50204502	-	-	4.50	0.20	11.00	-	80.00	6.00
WR50204503	-	-	4.50	0.30	11.00	-	80.00	6.00
WR50204505	-	-	4.50	0.50	11.00	-	80.00	6.00
-	WR50405003060	-	5.00	0.30	13.00	-	60.00	6.00
-	WR50405005060	-	5.00	0.50	13.00	-	60.00	6.00
WR50205001	-	-	5.00	0.10	13.00	-	90.00	6.00
WR50205002	-	-	5.00	0.20	13.00	-	90.00	6.00
WR50205003	WR50405003	-	5.00	0.30	13.00	-	90.00	6.00
WR50205005	WR50405005	-	5.00	0.50	13.00	-	90.00	6.00
WR50205010	-	-	5.00	1.00	13.00	-	90.00	6.00
WR50205501	-	-	5.50	0.10	13.00	-	90.00	6.00
WR50205502	-	-	5.50	0.20	13.00	-	90.00	6.00
WR50205503	-	-	5.50	0.30	13.00	-	90.00	6.00

>>Continue

EDP NO.	EDP NO.		Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute	4 Flute							
W Coating	W Coating							
Helix 30°	Helix 38°							
WR502	WR504	WR514	D1	R	L1	L2	L3	D2
WR50205505	-	-	5.50	0.50	13.00	-	90.00	6.00
WR50205510	-	-	5.50	1.00	13.00	-	90.00	6.00
-	-	WR51406005	6.00	0.50	10.00	30.00	90.00	6.00
-	-	WR51406010	6.00	1.00	10.00	30.00	90.00	6.00
WR5020600360	WR50406003060	-	6.00	0.30	15.00	-	60.00	6.00
-	WR50406005060	-	6.00	0.50	15.00	-	60.00	6.00
-	WR50406010060	-	6.00	1.00	15.00	-	60.00	6.00
WR50206001	-	-	6.00	0.10	15.00	-	90.00	6.00
WR50206002	-	-	6.00	0.20	15.00	-	90.00	6.00
WR50206003	WR50406003	-	6.00	0.30	15.00	-	90.00	6.00
WR50206005	WR50406005	-	6.00	0.50	15.00	-	90.00	6.00
WR50206010	WR50406010	-	6.00	1.00	15.00	-	90.00	6.00
WR50206015	-	-	6.00	1.50	15.00	-	90.00	6.00
WR50206020	-	-	6.00	2.00	15.00	-	90.00	6.00
WR50206005110	-	-	6.00	0.50	15.00	-	110.00	6.00
WR50206010110	-	-	6.00	1.00	15.00	-	110.00	6.00
WR50206005130	-	-	6.00	0.50	15.00	-	130.00	6.00
WR50206010130	-	-	6.00	1.00	15.00	-	130.00	6.00
WR50207001	-	-	7.00	0.10	16.00	-	90.00	8.00
WR50207002	-	-	7.00	0.20	16.00	-	90.00	8.00
WR50207003	-	-	7.00	0.30	16.00	-	90.00	8.00
WR50207005	-	-	7.00	0.50	16.00	-	90.00	8.00
WR50207010	-	-	7.00	1.00	16.00	-	90.00	8.00
WR50207020	-	-	7.00	2.00	16.00	-	90.00	8.00
-	-	WR51408005	8.00	0.50	12.00	35.00	100.00	8.00
-	-	WR51408010	8.00	1.00	12.00	35.00	100.00	8.00
WR5020800370	WR50408003070	-	8.00	0.30	20.00	-	70.00	8.00
WR5020800570	WR50408005070	-	8.00	0.50	20.00	-	70.00	8.00
WR5020801070	WR50408010070	-	8.00	1.00	20.00	-	70.00	8.00
WR50208001	-	-	8.00	0.10	20.00	-	100.00	8.00
WR50208002	-	-	8.00	0.20	20.00	-	100.00	8.00
WR50208003	WR50408003	-	8.00	0.30	20.00	-	100.00	8.00
WR50208005	WR50408005	-	8.00	0.50	20.00	-	100.00	8.00
WR50208010	WR50408010	-	8.00	1.00	20.00	-	100.00	8.00
WR50208015	-	-	8.00	1.50	20.00	-	100.00	8.00
WR50208020	-	-	8.00	2.00	20.00	-	100.00	8.00
WR50208025	-	-	8.00	2.50	20.00	-	100.00	8.00
WR50208030	-	-	8.00	3.00	20.00	-	100.00	8.00
WR50208005120	-	-	8.00	0.50	20.00	-	120.00	8.00
WR50208010120	-	-	8.00	1.00	20.00	-	120.00	8.00
WR50208005150	-	-	8.00	0.50	20.00	-	150.00	8.00
WR50208010150	-	-	8.00	1.00	20.00	-	150.00	8.00
-	-	WR51410005	10.00	0.50	15.00	40.00	100.00	10.00
-	-	WR51410010	10.00	1.00	15.00	40.00	100.00	10.00
WR5021000375	WR50410003075	-	10.00	0.30	25.00	-	75.00	10.00
WR5021000575	WR50410005075	-	10.00	0.50	25.00	-	75.00	10.00

>>Continue

EDP NO.	EDP NO.		Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute	4 Flute							
W Coating	W Coating							
Helix 30°	Helix 38°							
WR502	WR504	WR514	D1	R	L1	L2	L3	D2
WR5021001075	WR50410010075	-	10.00	1.00	25.00	-	75.00	10.00
WR50210001	-	-	10.00	0.10	25.00	-	100.00	10.00
WR50210002	-	-	10.00	0.20	25.00	-	100.00	10.00
WR50210003	WR50410003	-	10.00	0.30	25.00	-	100.00	10.00
WR50210005	WR50410005	-	10.00	0.50	25.00	-	100.00	10.00
WR50210010	WR50410010	-	10.00	1.00	25.00	-	100.00	10.00
WR50210015	-	-	10.00	1.50	25.00	-	100.00	10.00
WR50210020	-	-	10.00	2.00	25.00	-	100.00	10.00
WR50210025	-	-	10.00	2.50	25.00	-	100.00	10.00
WR50210030	-	-	10.00	3.00	25.00	-	100.00	10.00
WR50210040	-	-	10.00	4.00	25.00	-	100.00	10.00
WR50210005130	-	-	10.00	0.50	25.00	-	130.00	10.00
WR50210010130	-	-	10.00	1.00	25.00	-	130.00	10.00
WR50210005150	-	-	10.00	0.50	25.00	-	150.00	10.00
WR50210010150	-	-	10.00	1.00	25.00	-	150.00	10.00
WR50211002	-	-	11.00	0.20	25.00	-	110.00	12.00
WR50211003	-	-	11.00	0.30	25.00	-	110.00	12.00
WR50211005	-	-	11.00	0.50	25.00	-	110.00	12.00
WR50211010	-	-	11.00	1.00	25.00	-	110.00	12.00
WR50211020	-	-	11.00	2.00	25.00	-	110.00	12.00
-	-	WR51412005	12.00	0.50	20.00	45.00	110.00	12.00
-	-	WR51412010	12.00	1.00	20.00	45.00	110.00	12.00
WR5021200380	WR50412003080	-	12.00	0.30	30.00	-	80.00	12.00
WR5021200580	WR50412005080	-	12.00	0.50	30.00	-	80.00	12.00
WR5021201080	WR50412010080	-	12.00	1.00	30.00	-	80.00	12.00
WR50212001	-	-	12.00	0.10	30.00	-	110.00	12.00
WR50212002	-	-	12.00	0.20	30.00	-	110.00	12.00
WR50212003	WR50412003	-	12.00	0.30	30.00	-	110.00	12.00
WR50212005	WR50412005	-	12.00	0.50	30.00	-	110.00	12.00
WR50212010	WR50412010	-	12.00	1.00	30.00	-	110.00	12.00
WR50212015	-	-	12.00	1.50	30.00	-	110.00	12.00
WR50212020	-	-	12.00	2.00	30.00	-	110.00	12.00
WR50212025	-	-	12.00	2.50	30.00	-	110.00	12.00
WR50212030	-	-	12.00	3.00	30.00	-	110.00	12.00
WR50212040	-	-	12.00	4.00	30.00	-	110.00	12.00
WR50212050	-	-	12.00	5.00	30.00	-	110.00	12.00
WR50212005130	-	-	12.00	0.50	30.00	-	130.00	12.00
WR50212010130	-	-	12.00	1.00	30.00	-	130.00	12.00
WR50212005150	-	-	12.00	0.50	30.00	-	150.00	12.00
WR50212010150	-	-	12.00	1.00	30.00	-	150.00	12.00
WR50214005	-	-	14.00	0.50	30.00	-	150.00	16.00
WR50214010	-	-	14.00	1.00	30.00	-	150.00	16.00
WR50214020	-	-	14.00	2.00	30.00	-	150.00	16.00
-	WR50416005100	-	16.00	0.50	32.00	-	100.00	16.00
-	WR50416010100	-	16.00	1.00	32.00	-	100.00	16.00
-	WR50416015100	-	16.00	1.50	32.00	-	100.00	16.00

WINNER

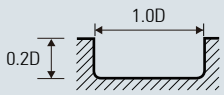
WR502, WR504, WR514 Series

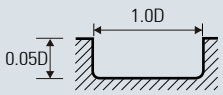
EDP NO.	EDP NO.		Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute	4 Flute							
W Coating	W Coating							
Helix 30°	Helix 38°							
WR502	WR504	WR514	D1	R	L1	L2	L3	D2
-	WR50416020100	-	16.00	2.00	32.00	-	100.00	16.00
WR50216005	WR50416005	-	16.00	0.50	32.00	-	150.00	16.00
WR50216010	WR50416010	-	16.00	1.00	32.00	-	150.00	16.00
WR50216015	WR50416015	-	16.00	1.50	32.00	-	150.00	16.00
WR50216020	WR50416020	-	16.00	2.00	32.00	-	150.00	16.00
-	WR50420005100	-	20.00	0.50	38.00	-	100.00	20.00
-	WR50420010100	-	20.00	1.00	38.00	-	100.00	20.00
-	WR50420015100	-	20.00	1.50	38.00	-	100.00	20.00
-	WR50420020100	-	20.00	2.00	38.00	-	100.00	20.00
WR50220005	WR50420005	-	20.00	0.50	38.00	-	150.00	20.00
WR50220010	WR50420010	-	20.00	1.00	38.00	-	150.00	20.00
WR50220015	WR50420015	-	20.00	1.50	38.00	-	150.00	20.00
WR50220020	WR50420020	-	20.00	2.00	38.00	-	150.00	20.00

WR502 Series

Work Material	Alloy Steels, Carbon Steels (SCM, SNCM, S45C)		Prehardened Steels (NAK, CENA, KP4)		Hardened Steels (SKD, SKT, STAVAX)	
Hardness	≤ 35 HRc		35 ~ 45 HRc		45 ~ 55 HRc	
Strength	≤ 1100N / mm²		1100~1500N / mm²		1500~2000N / mm²	
Cutting Diameter (metric)	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
1.0	27,600	240	18,000	100	11,000	60
1.5	22,000	250	13,500	110	8,500	60
2.0	18,000	260	11,560	120	7,200	70
2.5	15,000	270	9,500	130	6,100	70
3.0	13,240	280	8,560	140	5,280	70
4.0	10,720	340	6,820	170	4,300	80
5.0	9,160	420	5,800	200	3,800	100
6.0	7,900	500	5,040	250	3,280	120
8.0	6,000	540	3,800	250	2,520	120
10.0	5,040	540	3,280	250	2,020	120
12.0	4,120	420	2,780	230	1,680	100
16.0	3,100	360	2,100	170	1,280	80
20.0	2,520	280	1,640	120	1,000	60

RPM = rev. / min.
FEED = mm / min.

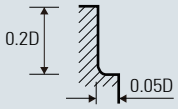


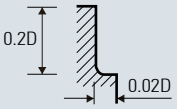


WR504 Series

Work Material	Alloy Steels, Carbon Steels (SCM, SNCM, S45C)		Prehardened Steels (NAK, CENA, KP4)		Hardened Steels (SKD, SKT, STAVAX)	
Hardness	≤ 35 HRc		35 ~ 45 HRc		45 ~ 55 HRc	
Strength	≤ 1100N / mm²		1100~1500N / mm²		1500~2000N / mm²	
Cutting Diameter (metric)	RPM	FEED	RPM	FEED	RPM	FEED
3.0	4,410	115	3,570	100	2,200	55
4.0	3,570	140	2,840	115	1,790	60
5.0	3,050	180	2,420	140	1,580	70
6.0	2,630	215	2,100	180	1,370	85
8.0	2,000	230	1,580	180	1,050	85
10.0	1,680	230	1,370	180	840	85
12.0	1,370	180	1,160	160	700	70
16.0	1,160	160	890	125	560	60
20.0	840	115	680	90	420	45

RPM = rev. / min.
FEED = mm / min.

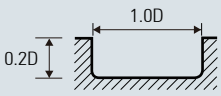


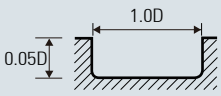


WR514 Series

Work Material	Alloy Steels, Carbon Steels (SCM, SNCM, S45C)		Prehardened Steels (NAK, CENA, KP4)		Hardened Steels (SKD, SKT, STAVAX)	
Hardness	≤ 35 HRc		35 ~ 45 HRc		45 ~ 55 HRc	
Strength	≤ 1100N / mm²		1100~1500N / mm²		1500~2000N / mm²	
Cutting Diameter (metric)	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
1.0	33,100	280	21,600	120	13,200	70
1.5	26,400	300	16,200	130	10,200	70
2.0	21,600	310	13,800	140	8,640	80
2.5	18,000	320	11,400	150	7,320	80
3.0	15,900	330	10,300	160	6,300	80
4.0	12,800	400	8,200	200	5,150	95
5.0	11,000	500	7,000	240	4,560	120
6.0	9,500	600	6,000	300	3,930	140
8.0	7,200	640	4,550	300	3,020	140
10.0	6,000	640	4,000	300	2,420	140
12.0	5,000	500	3,340	270	2,000	120
16.0	3,720	450	2,520	210	1,540	95
20.0	3,000	330	1,950	140	1,200	70

RPM = rev. / min.
FEED = mm / min.



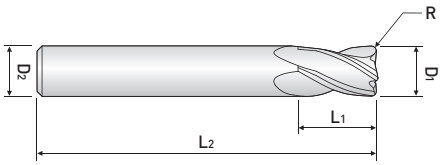


ULTRA FINE | Slotting | Side milling

WINNER

WDR5xx Series

CORNER RADIUS / 3, 6 FLUTES / REGULAR / W-COATING



TOLERANCE (metric)

D_1 = +0 / -0.02 (WDR503)
D_1 = +0 / -0.03 (WR506)
D_2 = h6
R = ±0.015 (WR506)
R = ±0.020 (WDR503)

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO. 3 Flute W Coating Helix 45°	EDP NO. 6 Flute W Coating Helix 45°	Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Overall Length (metric)	Shank Diameter (metric)
WDR503	WR506	D1	R	L1	L2	D2
WDR50306005	-	6.00	0.50	10.00	90.00	6.00
WDR50306010	-	6.00	1.00	10.00	90.00	6.00
WDR50306020	-	6.00	2.00	10.00	90.00	6.00
-	WR50606003	6.00	0.30	15.00	90.00	6.00
-	WR50606005	6.00	0.50	15.00	90.00	6.00
-	WR50606010	6.00	1.00	15.00	90.00	6.00
WDR50308005	-	8.00	0.50	16.00	100.00	8.00
WDR50308010	-	8.00	1.00	16.00	100.00	8.00
WDR50308020	-	8.00	2.00	16.00	100.00	8.00
-	WR50608003	8.00	0.30	20.00	100.00	8.00
-	WR50608005	8.00	0.50	20.00	100.00	8.00
-	WR50608010	8.00	1.00	20.00	100.00	8.00
WDR50310005	-	10.00	0.50	20.00	100.00	10.00
WDR50310010	-	10.00	1.00	20.00	100.00	10.00
WDR50310020	-	10.00	2.00	20.00	100.00	10.00
-	WR50610003	10.00	0.30	25.00	100.00	10.00
-	WR50610005	10.00	0.50	25.00	100.00	10.00
-	WR50610010	10.00	1.00	25.00	100.00	10.00
WDR50312005	-	12.00	0.50	24.00	110.00	12.00
WDR50312010	-	12.00	1.00	24.00	110.00	12.00
WDR50312020	-	12.00	2.00	24.00	110.00	12.00
-	WR50612003	12.00	0.30	30.00	110.00	12.00
-	WR50612005	12.00	0.50	30.00	110.00	12.00
-	WR50612010	12.00	1.00	30.00	110.00	12.00
WDR50316005	WR50616005	16.00	0.50	32.00	150.00	16.00
WDR50316010	WR50616010	16.00	1.00	32.00	150.00	16.00
-	WR50616015	16.00	1.50	32.00	150.00	16.00
-	WR50616020	16.00	2.00	32.00	150.00	16.00
-	WR50620005	20.00	0.50	38.00	150.00	20.00
-	WR50620010	20.00	1.00	38.00	150.00	20.00
-	WR50620015	20.00	1.50	38.00	150.00	20.00
-	WR50620020	20.00	2.00	38.00	150.00	20.00
WDR50320005	-	20.00	0.50	40.00	150.00	20.00
WDR50320010	-	20.00	1.00	40.00	150.00	20.00

Applicable Working Material

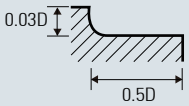
○ : GOOD ◎ : BEST

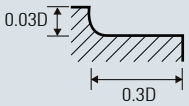
SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
All	○	○	○	○	◎	○	○	○	○					◎	◎	◎	○				

WDR503 Series

Feed Rate	General Cutting Speed					
Work Material	Alloy Steels, Carbon Steels (SCM, SNCM, S45C)		Prehardened Steels (NAK, CENA, KP4)		Hardened Steels (SKD, SKT, STAVAX)	
Hardness	≤ 35 HRc		35 ~ 45 HRc		45 ~ 55 HRc	
Strength	≤ 1100N / mm²		1100~1500N / mm²		1500~2000N / mm²	
Cutting Diameter (metric)	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
10.0	3,800	3,750	3,600	3,500	2,700	2,700
12.0	3,200	4,200	3,250	4,250	2,250	2,300
16.0	2,400	3,100	2,250	2,900	1,700	1,750
20.0	1,900	2,500	1,800	2,350	1,350	1,400

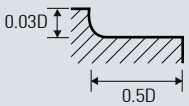
RPM = rev. / min.
FEED = mm / min.

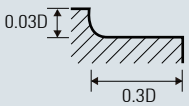




Feed Rate	High Cutting Speed					
Work Material	Alloy Steels, Carbon Steels (SCM, SNCM, S45C)		Prehardened Steels (NAK, CENA, KP4)		Hardened Steels (SKD, SKT, STAVAX)	
Hardness	≤ 35 HRc		35 ~ 45 HRc		45 ~ 55 HRc	
Strength	≤ 1100N / mm²		1100~1500N / mm²		1500~2000N / mm²	
Cutting Diameter (metric)	RPM	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
10.0	3,800	3,750	3,600	3,500	2,700	2,700
12.0	3,200	4,200	3,250	4,250	2,250	2,300
16.0	2,400	3,100	2,250	2,900	1,700	1,750
20.0	1,900	2,500	1,800	2,350	1,350	1,400

RPM = rev. / min.
FEED = mm / min.

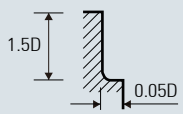


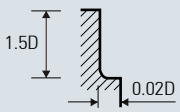


WR506 Series

Feed Rate	General Cutting Speed					
Work Material	Alloy Steels, Carbon Steels (SCM, SNCM, S45C)		Prehardened Steels (NAK, CENA, KP4)		Hardened Steels (SKD, SKT, STAVAX)	
Hardness	≤ 35 HRc		35 ~ 45 HRc		45 ~ 55 HRc	
Strength	≤ 1100N / mm²		1100~1500N / mm²		1500~2000N / mm²	
Cutting Diameter (metric)	RPM	FEED	RPM	FEED	RPM	FEED
6.0	14,880	3,210	1,410	2,940	9,600	2,940
8.0	12,000	3,300	11,400	3,000	7,200	2,760
10.0	9,600	2,940	9,300	2,700	5,700	2,460
12.0	7,800	2,700	7,500	2,460	4,800	2,280
16.0	6,000	2,400	5,820	2,220	3,600	2,040
20.0	4,800	2,010	4,680	2,040	2,880	1,920

RPM = rev. / min.
FEED = mm / min.



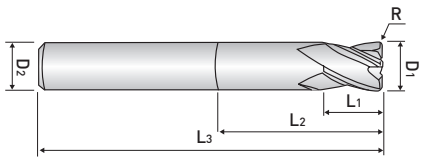


ULTRA FINE | Slotting | Side milling | Variable index

WINNER

WXR504, WXR514 Series

CORNER RADIUS / 4 FLUTES / STUB & REGULAR / VARIABLE INDEX / W-COATING



TOLERANCE (metric)

D_1 = +0 / -0.03
D_2 = h6
R = ±0.020

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO. / 4 Flute / W Coating / Variable Helix		Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
WXR504	WXR514	D1	R	L1	L2	L3	D2
-	WXR51401000503	1.00	0.05	1.50	3.00	50.00	4.00
-	WXR51401000504	1.00	0.05	1.50	4.00	50.00	4.00
-	WXR51401000506	1.00	0.05	1.50	6.00	50.00	4.00
-	WXR51401000508	1.00	0.05	1.50	8.00	50.00	4.00
-	WXR51401000510	1.00	0.05	1.50	10.00	50.00	4.00
-	WXR51401000512	1.00	0.05	1.50	12.00	50.00	4.00
-	WXR51401000514	1.00	0.05	1.50	14.00	50.00	4.00
-	WXR51401000516	1.00	0.05	1.50	16.00	50.00	4.00
-	WXR51401000520	1.00	0.05	1.50	20.00	50.00	4.00
-	WXR5140100103	1.00	0.10	1.50	3.00	50.00	4.00
-	WXR5140100104	1.00	0.10	1.50	4.00	50.00	4.00
-	WXR5140100106	1.00	0.10	1.50	6.00	50.00	4.00
-	WXR5140100108	1.00	0.10	1.50	8.00	50.00	4.00
-	WXR5140100110	1.00	0.10	1.50	10.00	50.00	4.00
-	WXR5140100112	1.00	0.10	1.50	12.00	50.00	4.00
-	WXR5140100114	1.00	0.10	1.50	14.00	50.00	4.00
-	WXR5140100116	1.00	0.10	1.50	16.00	50.00	4.00
-	WXR5140100120	1.00	0.10	1.50	20.00	50.00	4.00
-	WXR5140100203	1.00	0.20	1.50	3.00	50.00	4.00
-	WXR5140100204	1.00	0.20	1.50	4.00	50.00	4.00
-	WXR5140100206	1.00	0.20	1.50	6.00	50.00	4.00
-	WXR5140100208	1.00	0.20	1.50	8.00	50.00	4.00
-	WXR5140100210	1.00	0.20	1.50	10.00	50.00	4.00
-	WXR5140100212	1.00	0.20	1.50	12.00	50.00	4.00
-	WXR5140100214	1.00	0.20	1.50	14.00	50.00	4.00
-	WXR5140100216	1.00	0.20	1.50	16.00	50.00	4.00
-	WXR5140100220	1.00	0.20	1.50	20.00	50.00	4.00
-	WXR5140100303	1.00	0.30	1.50	3.00	50.00	4.00
-	WXR5140100304	1.00	0.30	1.50	4.00	50.00	4.00
-	WXR5140100306	1.00	0.30	1.50	6.00	50.00	4.00
-	WXR5140100308	1.00	0.30	1.50	8.00	50.00	4.00
-	WXR5140100310	1.00	0.30	1.50	10.00	50.00	4.00
-	WXR5140100312	1.00	0.30	1.50	12.00	50.00	4.00
-	WXR5140100314	1.00	0.30	1.50	14.00	50.00	4.00
-	WXR5140100316	1.00	0.30	1.50	16.00	50.00	4.00

Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
All	○	○	○	○	◎	○	○	○	○					◎	◎	◎	○				

WXR504, WXR514 Series

>>Continue

EDP NO. 4 Flute W Coating Variable Helix		Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
WXR504	WXR514	D1	R	L1	L2	L3	D2
-	WXR5140100320	1.00	0.30	1.50	20.00	50.00	4.00
WXR504010005	-	1.00	0.05	2.50	-	50.00	6.00
WXR50401001	-	1.00	0.10	2.50	-	50.00	6.00
WXR50401002	-	1.00	0.20	2.50	-	50.00	6.00
WXR50401003	-	1.00	0.30	2.50	-	50.00	6.00
-	WXR51401200503	1.20	0.05	1.80	3.00	50.00	4.00
-	WXR51401200504	1.20	0.05	1.80	4.00	50.00	4.00
-	WXR51401200506	1.20	0.05	1.80	6.00	50.00	4.00
-	WXR51401200508	1.20	0.05	1.80	8.00	50.00	4.00
-	WXR51401200510	1.20	0.05	1.80	10.00	50.00	4.00
-	WXR51401200512	1.20	0.05	1.80	12.00	50.00	4.00
-	WXR51401200516	1.20	0.05	1.80	16.00	50.00	4.00
-	WXR51401200520	1.20	0.05	1.80	20.00	50.00	4.00
-	WXR5140120103	1.20	0.10	1.80	3.00	50.00	4.00
-	WXR5140120104	1.20	0.10	1.80	4.00	50.00	4.00
-	WXR5140120106	1.20	0.10	1.80	6.00	50.00	4.00
-	WXR5140120108	1.20	0.10	1.80	8.00	50.00	4.00
-	WXR5140120110	1.20	0.10	1.80	10.00	50.00	4.00
-	WXR5140120112	1.20	0.10	1.80	12.00	50.00	4.00
-	WXR5140120116	1.20	0.10	1.80	16.00	50.00	4.00
-	WXR5140120120	1.20	0.10	1.80	20.00	50.00	4.00
-	WXR5140120203	1.20	0.20	1.80	3.00	50.00	4.00
-	WXR5140120204	1.20	0.20	1.80	4.00	50.00	4.00
-	WXR5140120206	1.20	0.20	1.80	6.00	50.00	4.00
-	WXR5140120208	1.20	0.20	1.80	8.00	50.00	4.00
-	WXR5140120210	1.20	0.20	1.80	10.00	50.00	4.00
-	WXR5140120212	1.20	0.20	1.80	12.00	50.00	4.00
-	WXR5140120216	1.20	0.20	1.80	16.00	50.00	4.00
-	WXR5140120220	1.20	0.20	1.80	20.00	50.00	4.00
-	WXR5140120303	1.20	0.30	1.80	3.00	50.00	4.00
-	WXR5140120304	1.20	0.30	1.80	4.00	50.00	4.00
-	WXR5140120306	1.20	0.30	1.80	6.00	50.00	4.00
-	WXR5140120308	1.20	0.30	1.80	8.00	50.00	4.00
-	WXR5140120310	1.20	0.30	1.80	10.00	50.00	4.00
-	WXR5140120312	1.20	0.30	1.80	12.00	50.00	4.00
-	WXR5140120316	1.20	0.30	1.80	16.00	50.00	4.00
-	WXR5140120320	1.20	0.30	1.80	20.00	50.00	4.00
WXR504012005	-	1.20	0.05	3.00	-	50.00	6.00
WXR50401201	-	1.20	0.10	3.00	-	50.00	6.00
WXR50401202	-	1.20	0.20	3.00	-	50.00	6.00
WXR50401203	-	1.20	0.30	3.00	-	50.00	6.00
-	WXR51401500504	1.50	0.05	2.30	4.00	50.00	4.00
-	WXR51401500506	1.50	0.05	2.30	6.00	50.00	4.00
-	WXR51401500508	1.50	0.05	2.30	8.00	50.00	4.00
-	WXR51401500510	1.50	0.05	2.30	10.00	50.00	4.00
-	WXR51401500512	1.50	0.05	2.30	12.00	50.00	4.00

>>Continue

EDP NO. 4 Flute W Coating Variable Helix		Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
WXR504	WXR514	D1	R	L1	L2	L3	D2
-	WXR51401500514	1.50	0.05	2.30	14.00	50.00	4.00
-	WXR51401500516	1.50	0.05	2.30	16.00	50.00	4.00
-	WXR51401500520	1.50	0.05	2.30	20.00	50.00	4.00
-	WXR5140150104	1.50	0.10	2.30	4.00	50.00	4.00
-	WXR5140150106	1.50	0.10	2.30	6.00	50.00	4.00
-	WXR5140150108	1.50	0.10	2.30	8.00	50.00	4.00
-	WXR5140150110	1.50	0.10	2.30	10.00	50.00	4.00
-	WXR5140150112	1.50	0.10	2.30	12.00	50.00	4.00
-	WXR5140150114	1.50	0.10	2.30	14.00	50.00	4.00
-	WXR5140150116	1.50	0.10	2.30	16.00	50.00	4.00
-	WXR5140150120	1.50	0.10	2.30	20.00	50.00	4.00
-	WXR5140150204	1.50	0.20	2.30	4.00	50.00	4.00
-	WXR5140150206	1.50	0.20	2.30	6.00	50.00	4.00
-	WXR5140150208	1.50	0.20	2.30	8.00	50.00	4.00
-	WXR5140150210	1.50	0.20	2.30	10.00	50.00	4.00
-	WXR5140150212	1.50	0.20	2.30	12.00	50.00	4.00
-	WXR5140150214	1.50	0.20	2.30	14.00	50.00	4.00
-	WXR5140150216	1.50	0.20	2.30	16.00	50.00	4.00
-	WXR5140150220	1.50	0.20	2.30	20.00	50.00	4.00
-	WXR5140150304	1.50	0.30	2.30	4.00	50.00	4.00
-	WXR5140150306	1.50	0.30	2.30	6.00	50.00	4.00
-	WXR5140150308	1.50	0.30	2.30	8.00	50.00	4.00
-	WXR5140150310	1.50	0.30	2.30	10.00	50.00	4.00
-	WXR5140150312	1.50	0.30	2.30	12.00	50.00	4.00
-	WXR5140150314	1.50	0.30	2.30	14.00	50.00	4.00
-	WXR5140150316	1.50	0.30	2.30	16.00	50.00	4.00
-	WXR5140150320	1.50	0.30	2.30	20.00	50.00	4.00
-	WXR5140150504	1.50	0.50	2.30	4.00	50.00	4.00
-	WXR5140150506	1.50	0.50	2.30	6.00	50.00	4.00
-	WXR5140150508	1.50	0.50	2.30	8.00	50.00	4.00
-	WXR5140150510	1.50	0.50	2.30	10.00	50.00	4.00
-	WXR5140150512	1.50	0.50	2.30	12.00	50.00	4.00
-	WXR5140150514	1.50	0.50	2.30	14.00	50.00	4.00
-	WXR5140150516	1.50	0.50	2.30	16.00	50.00	4.00
-	WXR5140150520	1.50	0.50	2.30	20.00	50.00	4.00
-	WXR51401500522	1.50	0.05	2.30	22.00	60.00	4.00
-	WXR51401500526	1.50	0.05	2.30	26.00	60.00	4.00
-	WXR5140150122	1.50	0.10	2.30	22.00	60.00	4.00
-	WXR5140150126	1.50	0.10	2.30	26.00	60.00	4.00
-	WXR5140150222	1.50	0.20	2.30	22.00	60.00	4.00
-	WXR5140150226	1.50	0.20	2.30	26.00	60.00	4.00
-	WXR5140150322	1.50	0.30	2.30	22.00	60.00	4.00
-	WXR5140150326	1.50	0.30	2.30	26.00	60.00	4.00
-	WXR5140150522	1.50	0.50	2.30	22.00	60.00	4.00
-	WXR5140150526	1.50	0.50	2.30	26.00	60.00	4.00
WXR504015005	-	1.50	0.05	4.00	-	50.00	6.00

>>Continue

EDP NO. 4 Flute W Coating Variable Helix		Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
WXR504	WXR514	D1	R	L1	L2	L3	D2
WXR50401501	-	1.50	0.10	4.00	-	50.00	6.00
WXR50401502	-	1.50	0.20	4.00	-	50.00	6.00
WXR50401503	-	1.50	0.30	4.00	-	50.00	6.00
WXR50401505	-	1.50	0.50	4.00	-	50.00	6.00
-	WXR5140200106	2.00	0.10	3.00	6.00	50.00	4.00
-	WXR5140200108	2.00	0.10	3.00	8.00	50.00	4.00
-	WXR5140200110	2.00	0.10	3.00	10.00	50.00	4.00
-	WXR5140200112	2.00	0.10	3.00	12.00	50.00	4.00
-	WXR5140200114	2.00	0.10	3.00	14.00	50.00	4.00
-	WXR5140200116	2.00	0.10	3.00	16.00	50.00	4.00
-	WXR5140200120	2.00	0.10	3.00	20.00	50.00	4.00
-	WXR5140200206	2.00	0.20	3.00	6.00	50.00	4.00
-	WXR5140200208	2.00	0.20	3.00	8.00	50.00	4.00
-	WXR5140200210	2.00	0.20	3.00	10.00	50.00	4.00
-	WXR5140200212	2.00	0.20	3.00	12.00	50.00	4.00
-	WXR5140200214	2.00	0.20	3.00	14.00	50.00	4.00
-	WXR5140200216	2.00	0.20	3.00	16.00	50.00	4.00
-	WXR5140200220	2.00	0.20	3.00	20.00	50.00	4.00
-	WXR5140200306	2.00	0.30	3.00	6.00	50.00	4.00
-	WXR5140200308	2.00	0.30	3.00	8.00	50.00	4.00
-	WXR5140200310	2.00	0.30	3.00	10.00	50.00	4.00
-	WXR5140200312	2.00	0.30	3.00	12.00	50.00	4.00
-	WXR5140200314	2.00	0.30	3.00	14.00	50.00	4.00
-	WXR5140200316	2.00	0.30	3.00	16.00	50.00	4.00
-	WXR5140200320	2.00	0.30	3.00	20.00	50.00	4.00
-	WXR5140200506	2.00	0.50	3.00	6.00	50.00	4.00
-	WXR5140200508	2.00	0.50	3.00	8.00	50.00	4.00
-	WXR5140200510	2.00	0.50	3.00	10.00	50.00	4.00
-	WXR5140200512	2.00	0.50	3.00	12.00	50.00	4.00
-	WXR5140200514	2.00	0.50	3.00	14.00	50.00	4.00
-	WXR5140200516	2.00	0.50	3.00	16.00	50.00	4.00
-	WXR5140200520	2.00	0.50	3.00	20.00	50.00	4.00
-	WXR5140200122	2.00	0.10	3.00	22.00	60.00	4.00
-	WXR5140200126	2.00	0.10	3.00	26.00	60.00	4.00
-	WXR5140200222	2.00	0.20	3.00	22.00	60.00	4.00
-	WXR5140200226	2.00	0.20	3.00	26.00	60.00	4.00
-	WXR5140200322	2.00	0.30	3.00	22.00	60.00	4.00
-	WXR5140200326	2.00	0.30	3.00	26.00	60.00	4.00
-	WXR5140200522	2.00	0.50	3.00	22.00	60.00	4.00
-	WXR5140200526	2.00	0.50	3.00	26.00	60.00	4.00
-	WXR5140200130	2.00	0.10	3.00	30.00	70.00	4.00
-	WXR5140200230	2.00	0.20	3.00	30.00	70.00	4.00
-	WXR5140200330	2.00	0.30	3.00	30.00	70.00	4.00
-	WXR5140200530	2.00	0.50	3.00	30.00	70.00	4.00
WXR50402001	-	2.00	0.10	6.00	-	50.00	6.00
WXR50402002	-	2.00	0.20	6.00	-	50.00	6.00

>>Continue

EDP NO. 4 Flute W Coating Variable Helix		Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
WXR504	WXR514	D1	R	L1	L2	L3	D2
WXR50402003	-	2.00	0.30	6.00	-	50.00	6.00
WXR50402005	-	2.00	0.50	6.00	-	50.00	6.00
-	WXR5140250108	2.50	0.10	4.00	8.00	50.00	4.00
-	WXR5140250110	2.50	0.10	4.00	10.00	50.00	4.00
-	WXR5140250112	2.50	0.10	4.00	12.00	50.00	4.00
-	WXR5140250114	2.50	0.10	4.00	14.00	50.00	4.00
-	WXR5140250116	2.50	0.10	4.00	16.00	50.00	4.00
-	WXR5140250120	2.50	0.10	4.00	20.00	50.00	4.00
-	WXR5140250208	2.50	0.20	4.00	8.00	50.00	4.00
-	WXR5140250210	2.50	0.20	4.00	10.00	50.00	4.00
-	WXR5140250212	2.50	0.20	4.00	12.00	50.00	4.00
-	WXR5140250214	2.50	0.20	4.00	14.00	50.00	4.00
-	WXR5140250216	2.50	0.20	4.00	16.00	50.00	4.00
-	WXR5140250220	2.50	0.20	4.00	20.00	50.00	4.00
-	WXR5140250308	2.50	0.30	4.00	8.00	50.00	4.00
-	WXR5140250310	2.50	0.30	4.00	10.00	50.00	4.00
-	WXR5140250312	2.50	0.30	4.00	12.00	50.00	4.00
-	WXR5140250314	2.50	0.30	4.00	14.00	50.00	4.00
-	WXR5140250316	2.50	0.30	4.00	16.00	50.00	4.00
-	WXR5140250320	2.50	0.30	4.00	20.00	50.00	4.00
-	WXR5140250508	2.50	0.50	4.00	8.00	50.00	4.00
-	WXR5140250510	2.50	0.50	4.00	10.00	50.00	4.00
-	WXR5140250512	2.50	0.50	4.00	12.00	50.00	4.00
-	WXR5140250514	2.50	0.50	4.00	14.00	50.00	4.00
-	WXR5140250516	2.50	0.50	4.00	16.00	50.00	4.00
-	WXR5140250520	2.50	0.50	4.00	20.00	50.00	4.00
-	WXR5140250126	2.50	0.10	4.00	26.00	60.00	4.00
-	WXR5140250226	2.50	0.20	4.00	26.00	60.00	4.00
-	WXR5140250326	2.50	0.30	4.00	26.00	60.00	4.00
-	WXR5140250526	2.50	0.50	4.00	26.00	60.00	4.00
-	WXR5140250130	2.50	0.10	4.00	30.00	70.00	4.00
-	WXR5140250230	2.50	0.20	4.00	30.00	70.00	4.00
-	WXR5140250330	2.50	0.30	4.00	30.00	70.00	4.00
-	WXR5140250530	2.50	0.50	4.00	30.00	70.00	4.00
WXR50402501	-	2.50	0.10	7.00	-	60.00	6.00
WXR50402502	-	2.50	0.20	7.00	-	60.00	6.00
WXR50402503	-	2.50	0.30	7.00	-	60.00	6.00
WXR50402505	-	2.50	0.50	7.00	-	60.00	6.00
-	WXR5140300108	3.00	0.10	4.50	8.00	50.00	6.00
-	WXR5140300110	3.00	0.10	4.50	10.00	50.00	6.00
-	WXR5140300112	3.00	0.10	4.50	12.00	50.00	6.00
-	WXR5140300208	3.00	0.20	4.50	8.00	50.00	6.00
-	WXR5140300210	3.00	0.20	4.50	10.00	50.00	6.00
-	WXR5140300212	3.00	0.20	4.50	12.00	50.00	6.00
-	WXR5140300308	3.00	0.30	4.50	8.00	50.00	6.00
-	WXR5140300310	3.00	0.30	4.50	10.00	50.00	6.00

>>Continue

EDP NO. 4 Flute W Coating Variable Helix		Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
WXR504	WXR514	D1	R	L1	L2	L3	D2
-	WXR5140300312	3.00	0.30	4.50	12.00	50.00	6.00
-	WXR5140300508	3.00	0.50	4.50	8.00	50.00	6.00
-	WXR5140300510	3.00	0.50	4.50	10.00	50.00	6.00
-	WXR5140300512	3.00	0.50	4.50	12.00	50.00	6.00
-	WXR5140301008	3.00	1.00	4.50	8.00	50.00	6.00
-	WXR5140301010	3.00	1.00	4.50	10.00	50.00	6.00
-	WXR5140301012	3.00	1.00	4.50	12.00	50.00	6.00
-	WXR5140300114	3.00	0.10	4.50	14.00	60.00	6.00
-	WXR5140300116	3.00	0.10	4.50	16.00	60.00	6.00
-	WXR5140300120	3.00	0.10	4.50	20.00	60.00	6.00
-	WXR5140300214	3.00	0.20	4.50	14.00	60.00	6.00
-	WXR5140300216	3.00	0.20	4.50	16.00	60.00	6.00
-	WXR5140300220	3.00	0.20	4.50	20.00	60.00	6.00
-	WXR5140300314	3.00	0.30	4.50	14.00	60.00	6.00
-	WXR5140300316	3.00	0.30	4.50	16.00	60.00	6.00
-	WXR5140300320	3.00	0.30	4.50	20.00	60.00	6.00
-	WXR5140300514	3.00	0.50	4.50	14.00	60.00	6.00
-	WXR5140300516	3.00	0.50	4.50	16.00	60.00	6.00
-	WXR5140300520	3.00	0.50	4.50	20.00	60.00	6.00
-	WXR5140301014	3.00	1.00	4.50	14.00	60.00	6.00
-	WXR5140301016	3.00	1.00	4.50	16.00	60.00	6.00
-	WXR5140301020	3.00	1.00	4.50	20.00	60.00	6.00
-	WXR5140300126	3.00	0.10	4.50	26.00	65.00	6.00
-	WXR5140300226	3.00	0.20	4.50	26.00	65.00	6.00
-	WXR5140300326	3.00	0.30	4.50	26.00	65.00	6.00
-	WXR5140300526	3.00	0.50	4.50	26.00	65.00	6.00
-	WXR5140301026	3.00	1.00	4.50	26.00	65.00	6.00
-	WXR5140300130	3.00	0.10	4.50	30.00	70.00	6.00
-	WXR5140300135	3.00	0.10	4.50	35.00	70.00	6.00
-	WXR5140300230	3.00	0.20	4.50	30.00	70.00	6.00
-	WXR5140300235	3.00	0.20	4.50	35.00	70.00	6.00
-	WXR5140300330	3.00	0.30	4.50	30.00	70.00	6.00
-	WXR5140300335	3.00	0.30	4.50	35.00	70.00	6.00
-	WXR5140300530	3.00	0.50	4.50	30.00	70.00	6.00
-	WXR5140300535	3.00	0.50	4.50	35.00	70.00	6.00
-	WXR5140301030	3.00	1.00	4.50	30.00	70.00	6.00
-	WXR5140301035	3.00	1.00	4.50	35.00	70.00	6.00
-	WXR5140300140	3.00	0.10	4.50	40.00	80.00	6.00
-	WXR5140300240	3.00	0.20	4.50	40.00	80.00	6.00
-	WXR5140300340	3.00	0.30	4.50	40.00	80.00	6.00
-	WXR5140300540	3.00	0.50	4.50	40.00	80.00	6.00
-	WXR5140301040	3.00	1.00	4.50	40.00	80.00	6.00
WXR50403001	-	3.00	0.10	8.00	-	60.00	6.00
WXR50403002	-	3.00	0.20	8.00	-	60.00	6.00
WXR50403003	-	3.00	0.30	8.00	-	60.00	6.00
WXR50403005	-	3.00	0.50	8.00	-	60.00	6.00

>>Continue

EDP NO. 4 Flute W Coating Variable Helix		Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
WXR504	WXR514	D1	R	L1	L2	L3	D2
WXR50403010	-	3.00	1.00	8.00	-	60.00	6.00
WXR50403501	-	3.50	0.10	10.00	-	70.00	6.00
WXR50403502	-	3.50	0.20	10.00	-	70.00	6.00
WXR50403503	-	3.50	0.30	10.00	-	70.00	6.00
WXR50403505	-	3.50	0.50	10.00	-	70.00	6.00
-	WXR5140400110	4.00	0.10	6.00	10.00	50.00	6.00
-	WXR5140400112	4.00	0.10	6.00	12.00	50.00	6.00
-	WXR5140400210	4.00	0.20	6.00	10.00	50.00	6.00
-	WXR5140400212	4.00	0.20	6.00	12.00	50.00	6.00
-	WXR5140400310	4.00	0.30	6.00	10.00	50.00	6.00
-	WXR5140400312	4.00	0.30	6.00	12.00	50.00	6.00
-	WXR5140400510	4.00	0.50	6.00	10.00	50.00	6.00
-	WXR5140400512	4.00	0.50	6.00	12.00	50.00	6.00
-	WXR5140401010	4.00	1.00	6.00	10.00	50.00	6.00
-	WXR5140401012	4.00	1.00	6.00	12.00	50.00	6.00
-	WXR5140400114	4.00	0.10	6.00	14.00	60.00	6.00
-	WXR5140400116	4.00	0.10	6.00	16.00	60.00	6.00
-	WXR5140400120	4.00	0.10	6.00	20.00	60.00	6.00
-	WXR5140400214	4.00	0.20	6.00	14.00	60.00	6.00
-	WXR5140400216	4.00	0.20	6.00	16.00	60.00	6.00
-	WXR5140400220	4.00	0.20	6.00	20.00	60.00	6.00
-	WXR5140400314	4.00	0.30	6.00	14.00	60.00	6.00
-	WXR5140400316	4.00	0.30	6.00	16.00	60.00	6.00
-	WXR5140400320	4.00	0.30	6.00	20.00	60.00	6.00
-	WXR5140400514	4.00	0.50	6.00	14.00	60.00	6.00
-	WXR5140400516	4.00	0.50	6.00	16.00	60.00	6.00
-	WXR5140400520	4.00	0.50	6.00	20.00	60.00	6.00
-	WXR5140401014	4.00	1.00	6.00	14.00	60.00	6.00
-	WXR5140401016	4.00	1.00	6.00	16.00	60.00	6.00
-	WXR5140401020	4.00	1.00	6.00	20.00	60.00	6.00
-	WXR5140400126	4.00	0.10	6.00	26.00	65.00	6.00
-	WXR5140400226	4.00	0.20	6.00	26.00	65.00	6.00
-	WXR5140400326	4.00	0.30	6.00	26.00	65.00	6.00
-	WXR5140400526	4.00	0.50	6.00	26.00	65.00	6.00
-	WXR5140401026	4.00	1.00	6.00	26.00	65.00	6.00
-	WXR5140400130	4.00	0.10	6.00	30.00	70.00	6.00
-	WXR5140400135	4.00	0.10	6.00	35.00	70.00	6.00
-	WXR5140400230	4.00	0.20	6.00	30.00	70.00	6.00
-	WXR5140400235	4.00	0.20	6.00	35.00	70.00	6.00
-	WXR5140400330	4.00	0.30	6.00	30.00	70.00	6.00
-	WXR5140400335	4.00	0.30	6.00	35.00	70.00	6.00
-	WXR5140400530	4.00	0.50	6.00	30.00	70.00	6.00
-	WXR5140400535	4.00	0.50	6.00	35.00	70.00	6.00
-	WXR5140401030	4.00	1.00	6.00	30.00	70.00	6.00
-	WXR5140401035	4.00	1.00	6.00	35.00	70.00	6.00
-	WXR5140400140	4.00	0.10	6.00	40.00	80.00	6.00

WXR504, WXR514 Series

>>Continue

EDP NO. 4 Flute W Coating Variable Helix		Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
WXR504	WXR514	D1	R	L1	L2	L3	D2
-	WXR5140400240	4.00	0.20	6.00	40.00	80.00	6.00
-	WXR5140400340	4.00	0.30	6.00	40.00	80.00	6.00
-	WXR5140400540	4.00	0.50	6.00	40.00	80.00	6.00
-	WXR5140401040	4.00	1.00	6.00	40.00	80.00	6.00
-	WXR5140400145	4.00	0.10	6.00	45.00	90.00	6.00
-	WXR5140400245	4.00	0.20	6.00	45.00	90.00	6.00
-	WXR5140400345	4.00	0.30	6.00	45.00	90.00	6.00
-	WXR5140400545	4.00	0.50	6.00	45.00	90.00	6.00
-	WXR5140401045	4.00	1.00	6.00	45.00	90.00	6.00
-	WXR5140400150	4.00	0.10	6.00	50.00	100.00	6.00
-	WXR5140400250	4.00	0.20	6.00	50.00	100.00	6.00
-	WXR5140400350	4.00	0.30	6.00	50.00	100.00	6.00
-	WXR5140400550	4.00	0.50	6.00	50.00	100.00	6.00
-	WXR5140401050	4.00	1.00	6.00	50.00	100.00	6.00
WXR50404001S4	-	4.00	0.10	10.00	-	70.00	4.00
WXR50404001	-	4.00	0.10	10.00	-	70.00	6.00
WXR50404002S4	-	4.00	0.20	10.00	-	70.00	4.00
WXR50404002	-	4.00	0.20	10.00	-	70.00	6.00
WXR50404003S4	-	4.00	0.30	10.00	-	70.00	4.00
WXR50404003	-	4.00	0.30	10.00	-	70.00	6.00
WXR50404005S4	-	4.00	0.50	10.00	-	70.00	4.00
WXR50404005	-	4.00	0.50	10.00	-	70.00	6.00
WXR50404010S4	-	4.00	1.00	10.00	-	70.00	4.00
WXR50404010	-	4.00	1.00	10.00	-	70.00	6.00
WXR5040400100S4	-	4.00	0.10	10.00	-	100.00	4.00
WXR5040400200S4	-	4.00	0.20	10.00	-	100.00	4.00
WXR5040400300S4	-	4.00	0.30	10.00	-	100.00	4.00
WXR5040400500S4	-	4.00	0.50	10.00	-	100.00	4.00
WXR5040401000S4	-	4.00	1.00	10.00	-	100.00	4.00
WXR50404501	-	4.50	0.10	11.00	-	80.00	6.00
WXR50404502	-	4.50	0.20	11.00	-	80.00	6.00
WXR50404503	-	4.50	0.30	11.00	-	80.00	6.00
WXR50404505	-	4.50	0.50	11.00	-	80.00	6.00
-	WXR51405001	5.00	0.10	8.00	15.00	60.00	6.00
-	WXR51405002	5.00	0.20	8.00	15.00	60.00	6.00
-	WXR51405003	5.00	0.30	8.00	15.00	60.00	6.00
-	WXR51405005	5.00	0.50	8.00	15.00	60.00	6.00
-	WXR51405010	5.00	1.00	8.00	15.00	60.00	6.00
-	WXR51405015	5.00	1.50	8.00	15.00	60.00	6.00
-	WXR51405020	5.00	2.00	8.00	15.00	60.00	6.00
WXR50405001	-	5.00	0.10	13.00	-	90.00	6.00
WXR50405002	-	5.00	0.20	13.00	-	90.00	6.00
WXR50405003	-	5.00	0.30	13.00	-	90.00	6.00
WXR50405005	-	5.00	0.50	13.00	-	90.00	6.00
WXR50405010	-	5.00	1.00	13.00	-	90.00	6.00
WXR50405501	-	5.50	0.10	13.00	-	90.00	6.00

>>Continue

EDP NO. 4 Flute W Coating Variable Helix		Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
WXR504	WXR514	D1	R	L1	L2	L3	D2
WXR50405502	-	5.50	0.20	13.00	-	90.00	6.00
WXR50405503	-	5.50	0.30	13.00	-	90.00	6.00
WXR50405505	-	5.50	0.50	13.00	-	90.00	6.00
WXR50405510	-	5.50	1.00	13.00	-	90.00	6.00
-	WXR51406001	6.00	0.10	9.00	20.00	60.00	6.00
-	WXR51406002	6.00	0.20	9.00	20.00	60.00	6.00
-	WXR51406003	6.00	0.30	9.00	20.00	60.00	6.00
-	WXR51406005	6.00	0.50	9.00	20.00	60.00	6.00
-	WXR51406010	6.00	1.00	9.00	20.00	60.00	6.00
-	WXR51406015	6.00	1.50	9.00	20.00	60.00	6.00
-	WXR51406020	6.00	2.00	9.00	20.00	60.00	6.00
WXR50406001060	-	6.00	0.10	15.00	-	60.00	6.00
WXR50406002060	-	6.00	0.20	15.00	-	60.00	6.00
WXR50406001	-	6.00	0.10	15.00	-	90.00	6.00
WXR50406002	-	6.00	0.20	15.00	-	90.00	6.00
-	WXR51406003090	6.00	0.30	15.00	30.00	90.00	6.00
WXR50406003	-	6.00	0.30	15.00	-	90.00	6.00
-	WXR51406005090	6.00	0.50	15.00	30.00	90.00	6.00
WXR50406005	-	6.00	0.50	15.00	-	90.00	6.00
-	WXR51406010090	6.00	1.00	15.00	30.00	90.00	6.00
WXR50406010	-	6.00	1.00	15.00	-	90.00	6.00
WXR50406015	-	6.00	1.50	15.00	-	90.00	6.00
WXR50406020	-	6.00	2.00	15.00	-	90.00	6.00
WXR50406005110	-	6.00	0.50	15.00	-	110.00	6.00
WXR50406010110	-	6.00	1.00	15.00	-	110.00	6.00
WXR50406005130	-	6.00	0.50	15.00	-	130.00	6.00
WXR50406010130	-	6.00	1.00	15.00	-	130.00	6.00
WXR50407001	-	7.00	0.10	16.00	-	90.00	8.00
WXR50407002	-	7.00	0.20	16.00	-	90.00	8.00
WXR50407003	-	7.00	0.30	16.00	-	90.00	8.00
WXR50407005	-	7.00	0.50	16.00	-	90.00	8.00
WXR50407010	-	7.00	1.00	16.00	-	90.00	8.00
WXR50407020	-	7.00	2.00	16.00	-	90.00	8.00
-	WXR51408001	8.00	0.10	12.00	25.00	70.00	8.00
-	WXR51408002	8.00	0.20	12.00	25.00	70.00	8.00
-	WXR51408003	8.00	0.30	12.00	25.00	70.00	8.00
-	WXR51408005	8.00	0.50	12.00	25.00	70.00	8.00
-	WXR51408010	8.00	1.00	12.00	25.00	70.00	8.00
-	WXR51408015	8.00	1.50	12.00	25.00	70.00	8.00
-	WXR51408020	8.00	2.00	12.00	25.00	70.00	8.00
WXR50408003070	-	8.00	0.30	20.00	-	70.00	8.00
WXR50408005070	-	8.00	0.50	20.00	-	70.00	8.00
WXR50408010070	-	8.00	1.00	20.00	-	70.00	8.00
WXR50408001	-	8.00	0.10	20.00	-	100.00	8.00
WXR50408002	-	8.00	0.20	20.00	-	100.00	8.00
-	WXR51408003100	8.00	0.30	20.00	35.00	100.00	8.00

WXR504, WXR514 Series

>>Continue

EDP NO. 4 Flute W Coating Variable Helix		Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
WXR504	WXR514	D1	R	L1	L2	L3	D2
WXR50408003	-	8.00	0.30	20.00	-	100.00	8.00
-	WXR51408005100	8.00	0.50	20.00	35.00	100.00	8.00
WXR50408005	-	8.00	0.50	20.00	-	100.00	8.00
-	WXR51408010100	8.00	1.00	20.00	35.00	100.00	8.00
WXR50408010	-	8.00	1.00	20.00	-	100.00	8.00
WXR50408015	-	8.00	1.50	20.00	-	100.00	8.00
WXR50408020	-	8.00	2.00	20.00	-	100.00	8.00
WXR50408025	-	8.00	2.50	20.00	-	100.00	8.00
WXR50408030	-	8.00	3.00	20.00	-	100.00	8.00
WXR50408005120	-	8.00	0.50	20.00	-	120.00	8.00
WXR50408010120	-	8.00	1.00	20.00	-	120.00	8.00
WXR50408005150	-	8.00	0.50	20.00	-	150.00	8.00
WXR50408010150	-	8.00	1.00	20.00	-	150.00	8.00
-	WXR51410001	10.00	0.10	15.00	30.00	75.00	10.00
-	WXR51410002	10.00	0.20	15.00	30.00	75.00	10.00
-	WXR51410003	10.00	0.30	15.00	30.00	75.00	10.00
-	WXR51410005	10.00	0.50	15.00	30.00	75.00	10.00
-	WXR51410010	10.00	1.00	15.00	30.00	75.00	10.00
-	WXR51410015	10.00	1.50	15.00	30.00	75.00	10.00
-	WXR51410020	10.00	2.00	15.00	30.00	75.00	10.00
WXR50410005130	-	10.00	0.50	22.00	-	130.00	10.00
WXR50410010130	-	10.00	1.00	22.00	-	130.00	10.00
WXR50410005150	-	10.00	0.50	22.00	-	150.00	10.00
WXR50410010150	-	10.00	1.00	22.00	-	150.00	10.00
WXR50410003075	-	10.00	0.30	25.00	-	75.00	10.00
WXR50410005075	-	10.00	0.50	25.00	-	75.00	10.00
WXR50410010075	-	10.00	1.00	25.00	-	75.00	10.00
WXR50410001	-	10.00	0.10	25.00	-	100.00	10.00
WXR50410002	-	10.00	0.20	25.00	-	100.00	10.00
-	WXR51410003100	10.00	0.30	25.00	40.00	100.00	10.00
WXR50410003	-	10.00	0.30	25.00	-	100.00	10.00
-	WXR51410005100	10.00	0.50	25.00	40.00	100.00	10.00
WXR50410005	-	10.00	0.50	25.00	-	100.00	10.00
-	WXR51410010100	10.00	1.00	25.00	40.00	100.00	10.00
WXR50410010	-	10.00	1.00	25.00	-	100.00	10.00
WXR50410015	-	10.00	1.50	25.00	-	100.00	10.00
WXR50410020	-	10.00	2.00	25.00	-	100.00	10.00
WXR50410025	-	10.00	2.50	25.00	-	100.00	10.00
WXR50410030	-	10.00	3.00	25.00	-	100.00	10.00
WXR50410040	-	10.00	4.00	25.00	-	100.00	10.00
WXR50411002	-	11.00	0.20	25.00	-	110.00	12.00
WXR50411003	-	11.00	0.30	25.00	-	110.00	12.00
WXR50411005	-	11.00	0.50	25.00	-	110.00	12.00
WXR50411010	-	11.00	1.00	25.00	-	110.00	12.00
WXR50411020	-	11.00	2.00	25.00	-	110.00	12.00
-	WXR51412002	12.00	0.20	18.00	32.00	80.00	12.00

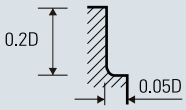
WXR504, WXR514 Series

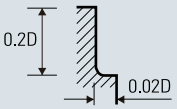
EDP NO. / 4 Flute / W Coating / Variable Helix		Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
WXR504	WXR514	D1	R	L1	L2	L3	D2
-	WXR51412003	12.00	0.30	18.00	32.00	80.00	12.00
-	WXR51412005	12.00	0.50	18.00	32.00	80.00	12.00
-	WXR51412010	12.00	1.00	18.00	32.00	80.00	12.00
-	WXR51412015	12.00	1.50	18.00	32.00	80.00	12.00
-	WXR51412020	12.00	2.00	18.00	32.00	80.00	12.00
WXR50412003080	-	12.00	0.30	30.00	-	80.00	12.00
WXR50412005080	-	12.00	0.50	30.00	-	80.00	12.00
WXR50412010080	-	12.00	1.00	30.00	-	80.00	12.00
WXR50412001	-	12.00	0.10	30.00	-	110.00	12.00
WXR50412002	-	12.00	0.20	30.00	-	110.00	12.00
-	WXR51412003110	12.00	0.30	30.00	45.00	110.00	12.00
WXR50412003	-	12.00	0.30	30.00	-	110.00	12.00
-	WXR51412005110	12.00	0.50	30.00	45.00	110.00	12.00
WXR50412005	-	12.00	0.50	30.00	-	110.00	12.00
-	WXR51412010110	12.00	1.00	30.00	45.00	110.00	12.00
WXR50412010	-	12.00	1.00	30.00	-	110.00	12.00
WXR50412015	-	12.00	1.50	30.00	-	110.00	12.00
WXR50412020	-	12.00	2.00	30.00	-	110.00	12.00
WXR50412025	-	12.00	2.50	30.00	-	110.00	12.00
WXR50412030	-	12.00	3.00	30.00	-	110.00	12.00
WXR50412040	-	12.00	4.00	30.00	-	110.00	12.00
WXR50412050	-	12.00	5.00	30.00	-	110.00	12.00
WXR50412005130	-	12.00	0.50	30.00	-	130.00	12.00
WXR50412010130	-	12.00	1.00	30.00	-	130.00	12.00
WXR50412005150	-	12.00	0.50	30.00	-	150.00	12.00
WXR50412010150	-	12.00	1.00	30.00	-	150.00	12.00
WXR50414005	-	14.00	0.50	35.00	-	150.00	16.00
WXR50414010	-	14.00	1.00	35.00	-	150.00	16.00
WXR50414020	-	14.00	2.00	35.00	-	150.00	16.00
-	WXR51416005	16.00	0.50	20.00	35.00	100.00	16.00
-	WXR51416010	16.00	1.00	20.00	35.00	100.00	16.00
WXR50416005	-	16.00	0.50	32.00	-	150.00	16.00
WXR50416010	-	16.00	1.00	32.00	-	150.00	16.00
WXR50416015	-	16.00	1.50	32.00	-	150.00	16.00
WXR50416020	-	16.00	2.00	32.00	-	150.00	16.00
-	WXR51416005150	16.00	0.50	35.00	50.00	150.00	20.00
-	WXR51416010150	16.00	1.00	35.00	50.00	150.00	20.00
-	WXR51420005	20.00	0.50	25.00	40.00	100.00	20.00
-	WXR51420010	20.00	1.00	25.00	40.00	100.00	20.00
WXR50420005	-	20.00	0.50	38.00	-	150.00	20.00
WXR50420010	-	20.00	1.00	38.00	-	150.00	20.00
WXR50420015	-	20.00	1.50	38.00	-	150.00	20.00
WXR50420020	-	20.00	2.00	38.00	-	150.00	20.00
-	WXR51420005150	20.00	0.50	40.00	55.00	150.00	20.00
-	WXR51420010150	20.00	1.00	40.00	55.00	150.00	20.00

WXR504 Series

Work Material	Alloy Steels, Carbon Steels (SCM, SNCM, S45C)		Prehardened Steels (NAK, CENA, KP4)		Hardened Steels (SKD, SKT, STAVAX)	
Hardness	≤ 35 HRc		35 ~ 45 HRc		45 ~ 55 HRc	
Strength	≤ 1100N / mm²		1100~1500N / mm²		1500~2000N / mm²	
Cutting Diameter (metric)	RPM	FEED	RPM	FEED	RPM	FEED
1.0	27,600	300	18,000	220	11,000	120
1.5	22,000	310	13,500	230	8,500	120
2.0	18,000	320	11,560	240	7,200	130
2.5	15,000	330	9,500	250	6,100	130
3.0	13,240	340	8,560	260	5,280	130
4.0	10,720	420	6,820	300	4,300	140
5.0	9,160	430	5,800	360	3,800	170
6.0	7,900	430	5,040	360	3,280	170
8.0	6,000	460	3,800	360	2,520	170
10.0	5,040	460	3,280	360	2,020	170
12.0	4,120	360	2,780	320	1,680	140
16.0	3,100	280	2,100	230	1,280	115
20.0	2,520	230	1,640	180	1,000	90

RPM = rev. / min.
FEED = mm / min.

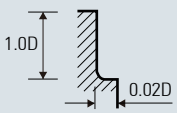




WXR514 Series

Work Material	Alloy Steels, Carbon Steels (SCM, SNCM, S45C)		Prehardened Steels (NAK, CENA, KP4)		Hardened Steels (SKD, SKT, STAVAX)	
Hardness	≤ 35 HRc		35 ~ 45 HRc		45 ~ 55 HRc	
Strength	≤ 1100N / mm²		1100~1500N / mm²		1500~2000N / mm²	
Cutting Diameter (metric)	RPM	FEED	RPM	FEED	RPM	FEED
1.0	33,100	360	21,600	260	13,200	140
1.5	26,400	370	16,200	270	10,200	140
2.0	21,600	380	13,800	280	8,640	150
2.5	18,000	390	11,400	300	7,320	150
3.0	15,900	400	10,300	310	6,300	150
4.0	12,800	500	8,200	360	5,150	160
5.0	11,000	510	7,000	430	4,560	200
6.0	9,500	510	6,000	430	3,930	200
8.0	7,200	550	4,550	430	3,020	200
10.0	6,000	550	4,000	430	2,420	200
12.0	5,000	430	3,340	380	2,000	160
16.0	3,720	330	2,520	280	1,540	135
20.0	3,000	270	1,950	210	1,200	100

RPM = rev. / min.
FEED = mm / min.

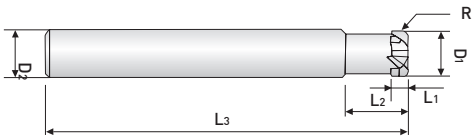


ULTRA FINE | Slotting | Side milling

WINNER

WSPM4 Series

POWER HIGH FEED MILL / 4 FLUTE / W-COATING



TOLERANCE (metric)

D_1 = +0 / -0.03
D_2 = h6
R = ±0.020

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO. 4 Flute W Coating Helix 10°	Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
WSPM4	D1	R	L1	L2	L3	D2
WSPM4010-01	1.00	0.10	1.00	2.50	50.00	6.00
WSPM4010-02	1.00	0.20	1.00	2.50	50.00	6.00
WSPM4010-03	1.00	0.30	1.00	2.50	50.00	6.00
WSPM4015-02	1.50	0.20	1.50	4.00	50.00	6.00
WSPM4015-03	1.50	0.30	1.50	4.00	50.00	6.00
WSPM4015-05	1.50	0.50	1.50	4.00	50.00	6.00
WSPM4020-02	2.00	0.20	2.00	6.00	50.00	6.00
WSPM4020-03	2.00	0.30	2.00	6.00	50.00	6.00
WSPM4020-05	2.00	0.50	2.00	6.00	50.00	6.00
WSPM4030-02	3.00	0.20	3.00	8.00	50.00	6.00
WSPM4030-03	3.00	0.30	3.00	8.00	50.00	6.00
WSPM4030-05	3.00	0.50	3.00	8.00	50.00	6.00
WSPM4040-02	4.00	0.20	4.00	10.00	50.00	6.00
WSPM4040-03	4.00	0.30	4.00	10.00	50.00	6.00
WSPM4040-05	4.00	0.50	4.00	10.00	50.00	6.00
WSPM4040-10	4.00	1.00	4.00	10.00	50.00	6.00
WSPM4060-02	6.00	0.20	6.00	15.00	60.00	6.00
WSPM4060-03	6.00	0.30	6.00	15.00	60.00	6.00
WSPM4060-05	6.00	0.50	6.00	15.00	60.00	6.00
WSPM4060-10	6.00	1.00	6.00	15.00	60.00	6.00
WSPM4060-20	6.00	2.00	6.00	15.00	60.00	6.00
WSPM4060-02L	6.00	0.20	6.00	15.00	90.00	6.00
WSPM4060-03L	6.00	0.30	6.00	15.00	90.00	6.00
WSPM4060-05L	6.00	0.50	6.00	15.00	90.00	6.00
WSPM4060-10L	6.00	1.00	6.00	15.00	90.00	6.00
WSPM4060-20L	6.00	2.00	6.00	15.00	90.00	6.00
WSPM4080-02	8.00	0.20	8.00	20.00	70.00	8.00
WSPM4080-03	8.00	0.30	8.00	20.00	70.00	8.00
WSPM4080-05	8.00	0.50	8.00	20.00	70.00	8.00
WSPM4080-10	8.00	1.00	8.00	20.00	70.00	8.00
WSPM4080-20	8.00	2.00	8.00	20.00	70.00	8.00
WSPM4080-02L	8.00	0.20	8.00	20.00	100.00	8.00
WSPM4080-03L	8.00	0.30	8.00	20.00	100.00	8.00
WSPM4080-05L	8.00	0.50	8.00	20.00	100.00	8.00
WSPM4080-10L	8.00	1.00	8.00	20.00	100.00	8.00

Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
WSPM4	○	○	○	○	◎	○	○	○	○					◎	◎	◎	○				

WINNER

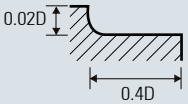
WSPM4 Series

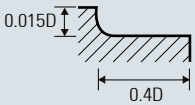
EDP NO. 4 Flute W Coating Helix 10°	Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
WSPM4	D1	R	L1	L2	L3	D2
WSPM4080-20L	8.00	2.00	8.00	20.00	100.00	8.00
WSPM4100-02	10.00	0.20	10.00	25.00	75.00	10.00
WSPM4100-03	10.00	0.30	10.00	25.00	75.00	10.00
WSPM4100-05	10.00	0.50	10.00	25.00	75.00	10.00
WSPM4100-10	10.00	1.00	10.00	25.00	75.00	10.00
WSPM4100-15	10.00	1.50	10.00	25.00	75.00	10.00
WSPM4100-20	10.00	2.00	10.00	25.00	75.00	10.00
WSPM4100-02L	10.00	0.20	10.00	25.00	100.00	10.00
WSPM4100-03L	10.00	0.30	10.00	25.00	100.00	10.00
WSPM4100-05L	10.00	0.50	10.00	25.00	100.00	10.00
WSPM4100-10L	10.00	1.00	10.00	25.00	100.00	10.00
WSPM4100-15L	10.00	1.50	10.00	25.00	100.00	10.00
WSPM4100-20L	10.00	2.00	10.00	25.00	100.00	10.00
WSPM4120-03	12.00	0.30	12.00	30.00	80.00	12.00
WSPM4120-05	12.00	0.50	12.00	30.00	80.00	12.00
WSPM4120-10	12.00	1.00	12.00	30.00	80.00	12.00
WSPM4120-15	12.00	1.50	12.00	30.00	80.00	12.00
WSPM4120-20	12.00	2.00	12.00	30.00	80.00	12.00
WSPM4120-30	12.00	3.00	12.00	30.00	80.00	12.00
WSPM4120-03L	12.00	0.30	12.00	30.00	110.00	12.00
WSPM4120-05L	12.00	0.50	12.00	30.00	110.00	12.00
WSPM4120-10L	12.00	1.00	12.00	30.00	110.00	12.00
WSPM4120-15L	12.00	1.50	12.00	30.00	110.00	12.00
WSPM4120-20L	12.00	2.00	12.00	30.00	110.00	12.00
WSPM4120-30L	12.00	3.00	12.00	30.00	110.00	12.00
WSPM4160-05	16.00	0.50	16.00	35.00	100.00	16.00
WSPM4160-10	16.00	1.00	16.00	35.00	100.00	16.00
WSPM4160-20	16.00	2.00	16.00	35.00	100.00	16.00
WSPM4160-05L	16.00	0.50	16.00	35.00	150.00	16.00
WSPM4160-10L	16.00	1.00	16.00	35.00	150.00	16.00
WSPM4160-20L	16.00	2.00	16.00	35.00	150.00	16.00
WSPM4200-05	20.00	0.50	20.00	40.00	100.00	20.00
WSPM4200-10	20.00	1.00	20.00	40.00	100.00	20.00
WSPM4200-20	20.00	2.00	20.00	40.00	100.00	20.00
WSPM4200-05L	20.00	0.50	20.00	40.00	150.00	20.00
WSPM4200-10L	20.00	1.00	20.00	40.00	150.00	20.00
WSPM4200-20L	20.00	2.00	20.00	40.00	150.00	20.00

WSPM4 Series

Work Material	Alloy Steels, Carbon Steels (SCM, SNCM, S45C)		Prehardened Steels (NAK, CENA, KP4)		Hardened Steels (SKD, SKT, STAVAX)	
Hardness	≤ 35 HRc		35 ~ 45 HRc		45 ~ 55 HRc	
Strength	≤ 1100N / mm²		1100~1500N / mm²		1500~2000N / mm²	
Cutting Diameter (metric)	RPM	FEED	RPM	FEED	RPM	FEED
1.0	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
2.0	29,700	9,000	24,300	7,560	21,600	6,750
3.0	19,800	9,900	16,200	8,100	14,400	7,650
4.0	15,300	10,800	12,600	8,550	10,800	7,920
6.0	9,900	11,700	8,100	9,900	7,200	8,640
8.0	7,380	11,700	6,300	9,900	5,400	8,640
10.0	5,850	10,800	4,950	9,000	4,320	8,550
12.0	4,950	10,800	4,140	9,000	3,690	8,100
16.0	3,690	9,000	3,060	7,920	2,700	7,020
20.0	2,970	7,200	2,430	6,300	2,160	5,670

RPM = rev. / min.
FEED = mm / min.



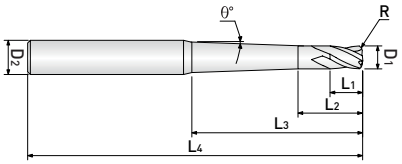


WINNER

WR542, WR544 Series

ULTRA FINE | Slotting | Side milling

TAPER NECK CORNER RADIUS / 2 & 4 FLUTES / REGULAR / W-COATING



TOLERANCE (metric)

D_1 = +0 / -0.012 (WR542)
D_1 = +0 / -0.012 (WR544)
D_2 = h6
R = ±0.01

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO.		Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Neck Length (metric)	Taper Degree°	Taper Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute W Coating Helix 30°	4 Flute W Coating Helix 30°								
WR542	WR544	D1	R	L1	L2	θ	L3	L4	D2
WR5420020050101	-	0.20	0.05	0.30	0.40	1°	1.00	40.00	4.00
WR5420020050102	-	0.20	0.05	0.30	0.40	1°	2.00	40.00	4.00
WR5420020050103	-	0.20	0.05	0.30	0.40	1°	3.00	40.00	4.00
WR5420020050201	-	0.20	0.05	0.30	0.40	2°	1.00	40.00	4.00
WR5420020050202	-	0.20	0.05	0.30	0.40	2°	2.00	40.00	4.00
WR5420020050203	-	0.20	0.05	0.30	0.40	2°	3.00	40.00	4.00
WR5420030050102	-	0.30	0.05	0.50	0.60	1°	2.00	40.00	4.00
WR5420030050103	-	0.30	0.05	0.50	0.60	1°	3.00	40.00	4.00
WR5420030050104	-	0.30	0.05	0.50	0.60	1°	4.00	40.00	4.00
WR5420030050105	-	0.30	0.05	0.50	0.60	1°	5.00	40.00	4.00
WR5420030050202	-	0.30	0.05	0.50	0.60	2°	2.00	40.00	4.00
WR5420030050203	-	0.30	0.05	0.50	0.60	2°	3.00	40.00	4.00
WR5420030050204	-	0.30	0.05	0.50	0.60	2°	4.00	40.00	4.00
WR5420030050205	-	0.30	0.05	0.50	0.60	2°	5.00	40.00	4.00
WR5420040050102	-	0.40	0.05	0.60	0.80	1°	2.00	50.00	4.00
WR5420040050103	-	0.40	0.05	0.60	0.80	1°	3.00	50.00	4.00
WR5420040050104	-	0.40	0.05	0.60	0.80	1°	4.00	50.00	4.00
WR5420040050105	-	0.40	0.05	0.60	0.80	1°	5.00	50.00	4.00
WR5420040050106	-	0.40	0.05	0.60	0.80	1°	6.00	50.00	4.00
WR5420040050202	-	0.40	0.05	0.60	0.80	2°	2.00	50.00	4.00
WR5420040050203	-	0.40	0.05	0.60	0.80	2°	3.00	50.00	4.00
WR5420040050204	-	0.40	0.05	0.60	0.80	2°	4.00	50.00	4.00
WR5420040050205	-	0.40	0.05	0.60	0.80	2°	5.00	50.00	4.00
WR5420040050206	-	0.40	0.05	0.60	0.80	2°	6.00	50.00	4.00
WR542004010102	-	0.40	0.10	0.60	0.80	1°	2.00	50.00	4.00
WR542004010103	-	0.40	0.10	0.60	0.80	1°	3.00	50.00	4.00
WR542004010104	-	0.40	0.10	0.60	0.80	1°	4.00	50.00	4.00
WR542004010105	-	0.40	0.10	0.60	0.80	1°	5.00	50.00	4.00
WR542004010106	-	0.40	0.10	0.60	0.80	1°	6.00	50.00	4.00
WR542004010202	-	0.40	0.10	0.60	0.80	2°	2.00	50.00	4.00
WR542004010203	-	0.40	0.10	0.60	0.80	2°	3.00	50.00	4.00
WR542004010204	-	0.40	0.10	0.60	0.80	2°	4.00	50.00	4.00
WR542004010205	-	0.40	0.10	0.60	0.80	2°	5.00	50.00	4.00
WR542004010206	-	0.40	0.10	0.60	0.80	2°	6.00	50.00	4.00
WR5420050050104	-	0.50	0.05	0.70	1.00	1°	4.00	50.00	4.00

Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
All	○	○	○	○	◎	○	○	○	○					◎	◎	◎	○				

>>Continue

EDP NO.		Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Neck Length (metric)	Taper Degree°	Taper Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute	4 Flute								
W Coating	W Coating								
Helix 30°	Helix 30°								
WR542	WR544	D1	R	L1	L2	θ	L3	L4	D2
WR5420050050106	-	0.50	0.05	0.70	1.00	1°	6.00	50.00	4.00
WR5420050050108	-	0.50	0.05	0.70	1.00	1°	8.00	50.00	4.00
WR5420050050110	-	0.50	0.05	0.70	1.00	1°	10.00	50.00	4.00
WR5420050050204	-	0.50	0.05	0.70	1.00	2°	4.00	50.00	4.00
WR5420050050206	-	0.50	0.05	0.70	1.00	2°	6.00	50.00	4.00
WR5420050050208	-	0.50	0.05	0.70	1.00	2°	8.00	50.00	4.00
WR5420050050210	-	0.50	0.05	0.70	1.00	2°	10.00	50.00	4.00
WR542005010104	-	0.50	0.10	0.70	1.00	1°	4.00	50.00	4.00
WR542005010106	-	0.50	0.10	0.70	1.00	1°	6.00	50.00	4.00
WR542005010108	-	0.50	0.10	0.70	1.00	1°	8.00	50.00	4.00
WR542005010110	-	0.50	0.10	0.70	1.00	1°	10.00	50.00	4.00
WR542005010204	-	0.50	0.10	0.70	1.00	2°	4.00	50.00	4.00
WR542005010206	-	0.50	0.10	0.70	1.00	2°	6.00	50.00	4.00
WR542005010208	-	0.50	0.10	0.70	1.00	2°	8.00	50.00	4.00
WR542005010210	-	0.50	0.10	0.70	1.00	2°	10.00	50.00	4.00
WR542006010104	-	0.60	0.10	0.90	1.20	1°	4.00	50.00	4.00
WR542006010106	-	0.60	0.10	0.90	1.20	1°	6.00	50.00	4.00
WR542006010108	-	0.60	0.10	0.90	1.20	1°	8.00	50.00	4.00
WR542006010110	-	0.60	0.10	0.90	1.20	1°	10.00	50.00	4.00
WR542006010112	-	0.60	0.10	0.90	1.20	1°	12.00	50.00	4.00
WR542006010204	-	0.60	0.10	0.90	1.20	2°	4.00	50.00	4.00
WR542006010206	-	0.60	0.10	0.90	1.20	2°	6.00	50.00	4.00
WR542006010208	-	0.60	0.10	0.90	1.20	2°	8.00	50.00	4.00
WR542006010210	-	0.60	0.10	0.90	1.20	2°	10.00	50.00	4.00
WR542006010212	-	0.60	0.10	0.90	1.20	2°	12.00	50.00	4.00
WR542006020104	-	0.60	0.20	0.90	1.20	1°	4.00	50.00	4.00
WR542006020106	-	0.60	0.20	0.90	1.20	1°	6.00	50.00	4.00
WR542006020108	-	0.60	0.20	0.90	1.20	1°	8.00	50.00	4.00
WR542006020110	-	0.60	0.20	0.90	1.20	1°	10.00	50.00	4.00
WR542006020112	-	0.60	0.20	0.90	1.20	1°	12.00	50.00	4.00
WR542006020204	-	0.60	0.20	0.90	1.20	2°	4.00	50.00	4.00
WR542006020206	-	0.60	0.20	0.90	1.20	2°	6.00	50.00	4.00
WR542006020208	-	0.60	0.20	0.90	1.20	2°	8.00	50.00	4.00
WR542006020210	-	0.60	0.20	0.90	1.20	2°	10.00	50.00	4.00
WR542006020212	-	0.60	0.20	0.90	1.20	2°	12.00	50.00	4.00
WR542008010104	-	0.80	0.10	1.20	1.60	1°	4.00	50.00	4.00
WR542008010106	-	0.80	0.10	1.20	1.60	1°	6.00	50.00	4.00
WR542008010108	-	0.80	0.10	1.20	1.60	1°	8.00	50.00	4.00
WR542008010110	-	0.80	0.10	1.20	1.60	1°	10.00	50.00	4.00
wr542008010112	-	0.80	0.10	1.20	1.60	1°	12.00	50.00	4.00
wr542008010116	-	0.80	0.10	1.20	1.60	1°	16.00	50.00	4.00
WR542008010204	-	0.80	0.10	1.20	1.60	2°	4.00	50.00	4.00
WR542008010206	-	0.80	0.10	1.20	1.60	2°	6.00	50.00	4.00
WR542008010208	-	0.80	0.10	1.20	1.60	2°	8.00	50.00	4.00
WR542008010210	-	0.80	0.10	1.20	1.60	2°	10.00	50.00	4.00
WR542008010212	-	0.80	0.10	1.20	1.60	2°	12.00	50.00	4.00

>>Continue

EDP NO.		Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Neck Length (metric)	Taper Degree°	Taper Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute	4 Flute								
W Coating	W Coating								
Helix 30°	Helix 30°								
WR542	WR544	D1	R	L1	L2	θ	L3	L4	D2
WR542008010216	-	0.80	0.10	1.20	1.60	2°	16.00	50.00	4.00
WR542008020104	-	0.80	0.20	1.20	1.60	1°	4.00	50.00	4.00
WR542008020106	-	0.80	0.20	1.20	1.60	1°	6.00	50.00	4.00
WR542008020108	-	0.80	0.20	1.20	1.60	1°	8.00	50.00	4.00
WR542008020110	-	0.80	0.20	1.20	1.60	1°	10.00	50.00	4.00
WR542008020112	-	0.80	0.20	1.20	1.60	1°	12.00	50.00	4.00
WR542008020116	-	0.80	0.20	1.20	1.60	1°	16.00	50.00	4.00
WR542008020204	-	0.80	0.20	1.20	1.60	2°	4.00	50.00	4.00
WR542008020206	-	0.80	0.20	1.20	1.60	2°	6.00	50.00	4.00
WR542008020208	-	0.80	0.20	1.20	1.60	2°	8.00	50.00	4.00
WR542008020210	-	0.80	0.20	1.20	1.60	2°	10.00	50.00	4.00
WR542008020212	-	0.80	0.20	1.20	1.60	2°	12.00	50.00	4.00
WR542008020216	-	0.80	0.20	1.20	1.60	2°	16.00	50.00	4.00
WR542010010106	WR544010010106	1.00	0.10	1.50	2.50	1°	6.00	50.00	4.00
WR542010010108	WR544010010108	1.00	0.10	1.50	2.50	1°	8.00	50.00	4.00
WR542010010110	WR544010010110	1.00	0.10	1.50	2.50	1°	10.00	50.00	4.00
WR542010010112	WR544010010112	1.00	0.10	1.50	2.50	1°	12.00	50.00	4.00
WR542010010116	WR544010010116	1.00	0.10	1.50	2.50	1°	16.00	50.00	4.00
WR542010010120	WR544010010120	1.00	0.10	1.50	2.50	1°	20.00	50.00	4.00
WR542010010206	WR544010010206	1.00	0.10	1.50	2.50	2°	6.00	50.00	4.00
WR542010010208	WR544010010208	1.00	0.10	1.50	2.50	2°	8.00	50.00	4.00
WR542010010210	WR544010010210	1.00	0.10	1.50	2.50	2°	10.00	50.00	4.00
WR542010010212	WR544010010212	1.00	0.10	1.50	2.50	2°	12.00	50.00	4.00
WR542010010216	WR544010010216	1.00	0.10	1.50	2.50	2°	16.00	50.00	4.00
WR542010010220	WR544010010220	1.00	0.10	1.50	2.50	2°	20.00	50.00	4.00
WR542010020106	WR544010020106	1.00	0.20	1.50	2.50	1°	6.00	50.00	4.00
WR542010020108	WR544010020108	1.00	0.20	1.50	2.50	1°	8.00	50.00	4.00
WR542010020110	WR544010020110	1.00	0.20	1.50	2.50	1°	10.00	50.00	4.00
WR542010020112	WR544010020112	1.00	0.20	1.50	2.50	1°	12.00	50.00	4.00
WR542010020116	WR544010020116	1.00	0.20	1.50	2.50	1°	16.00	50.00	4.00
WR542010020120	WR544010020120	1.00	0.20	1.50	2.50	1°	20.00	50.00	4.00
WR542010020206	WR544010020206	1.00	0.20	1.50	2.50	2°	6.00	50.00	4.00
WR542010020208	WR544010020208	1.00	0.20	1.50	2.50	2°	8.00	50.00	4.00
WR542010020210	WR544010020210	1.00	0.20	1.50	2.50	2°	10.00	50.00	4.00
WR542010020212	WR544010020212	1.00	0.20	1.50	2.50	2°	12.00	50.00	4.00
WR542010020216	WR544010020216	1.00	0.20	1.50	2.50	2°	16.00	50.00	4.00
WR542010020220	WR544010020220	1.00	0.20	1.50	2.50	2°	20.00	50.00	4.00
WR542010010125	WR544010010125	1.00	0.10	1.50	2.50	1°	25.00	60.00	4.00
WR542010010225	WR544010010225	1.00	0.10	1.50	2.50	2°	25.00	60.00	4.00
WR542010020125	WR544010020125	1.00	0.20	1.50	2.50	1°	25.00	60.00	4.00
WR542010020225	WR544010020225	1.00	0.20	1.50	2.50	2°	25.00	60.00	4.00
WR542010010130	WR544010010130	1.00	0.10	1.50	2.50	1°	30.00	70.00	4.00
WR542010010230	WR544010010230	1.00	0.10	1.50	2.50	2°	30.00	70.00	4.00
WR542010020130	WR544010020130	1.00	0.20	1.50	2.50	1°	30.00	70.00	4.00
WR542010020230	WR544010020230	1.00	0.20	1.50	2.50	2°	30.00	70.00	4.00
WR542010010140	WR544010010140	1.00	0.10	1.50	2.50	1°	40.00	80.00	4.00

>>Continue

EDP NO.		Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Neck Length (metric)	Taper Degree°	Taper Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute	4 Flute								
W Coating	W Coating								
Helix 30°	Helix 30°								
WR542	WR544	D1	R	L1	L2	θ	L3	L4	D2
WR542010010240	WR544010010240	1.00	0.10	1.50	2.50	2°	40.00	80.00	4.00
WR542010020140	WR544010020140	1.00	0.20	1.50	2.50	1°	40.00	80.00	4.00
WR542010020240	WR544010020240	1.00	0.20	1.50	2.50	2°	40.00	80.00	4.00
-	WR544010010150	1.00	0.10	1.50	2.50	1°	50.00	90.00	4.00
WR542010010150	-	1.00	0.10	1.50	2.50	1°	50.00	90.00	6.00
WR542010010250	WR544010010250	1.00	0.10	1.50	2.50	2°	50.00	90.00	6.00
-	WR544010020150	1.00	0.20	1.50	2.50	1°	50.00	90.00	4.00
WR542010020150	-	1.00	0.20	1.50	2.50	1°	50.00	90.00	6.00
WR542010020250	WR544010020250	1.00	0.20	1.50	2.50	2°	50.00	90.00	6.00
WR542012010108	WR544012010108	1.20	0.10	1.80	3.00	1°	8.00	50.00	4.00
WR542012010112	WR544012010112	1.20	0.10	1.80	3.00	1°	12.00	50.00	4.00
WR542012010116	WR544012010116	1.20	0.10	1.80	3.00	1°	16.00	50.00	4.00
WR542012010120	WR544012010120	1.20	0.10	1.80	3.00	1°	20.00	50.00	4.00
WR542012010208	WR544012010208	1.20	0.10	1.80	3.00	2°	8.00	50.00	4.00
WR542012010212	WR544012010212	1.20	0.10	1.80	3.00	2°	12.00	50.00	4.00
WR542012010216	WR544012010216	1.20	0.10	1.80	3.00	2°	16.00	50.00	4.00
WR542012010220	WR544012010220	1.20	0.10	1.80	3.00	2°	20.00	50.00	4.00
WR542012020108	WR544012020108	1.20	0.20	1.80	3.00	1°	8.00	50.00	4.00
WR542012020112	WR544012020112	1.20	0.20	1.80	3.00	1°	12.00	50.00	4.00
WR542012020116	WR544012020116	1.20	0.20	1.80	3.00	1°	16.00	50.00	4.00
WR542012020120	WR544012020120	1.20	0.20	1.80	3.00	1°	20.00	50.00	4.00
WR542012020208	WR544012020208	1.20	0.20	1.80	3.00	2°	8.00	50.00	4.00
WR542012020212	WR544012020212	1.20	0.20	1.80	3.00	2°	12.00	50.00	4.00
WR542012020216	WR544012020216	1.20	0.20	1.80	3.00	2°	16.00	50.00	4.00
WR542012020220	WR544012020220	1.20	0.20	1.80	3.00	2°	20.00	50.00	4.00
WR542012010125	WR544012010125	1.20	0.10	1.80	3.00	1°	25.00	60.00	4.00
WR542012010225	WR544012010225	1.20	0.10	1.80	3.00	2°	25.00	60.00	4.00
WR542012020125	WR544012020125	1.20	0.20	1.80	3.00	1°	25.00	60.00	4.00
WR542012020225	WR544012020225	1.20	0.20	1.80	3.00	2°	25.00	60.00	4.00
WR542012010130	WR544012010130	1.20	0.10	1.80	3.00	1°	30.00	70.00	4.00
WR542012010230	WR544012010230	1.20	0.10	1.80	3.00	2°	30.00	70.00	4.00
WR542012020130	WR544012020130	1.20	0.20	1.80	3.00	1°	30.00	70.00	4.00
WR542012020230	WR544012020230	1.20	0.20	1.80	3.00	2°	30.00	70.00	4.00
WR542015010108	WR544015010108	1.50	0.10	2.30	3.00	1°	8.00	50.00	4.00
WR542015010110	WR544015010110	1.50	0.10	2.30	3.00	1°	10.00	50.00	4.00
WR542015010112	WR544015010112	1.50	0.10	2.30	3.00	1°	12.00	50.00	4.00
WR542015010116	WR544015010116	1.50	0.10	2.30	3.00	1°	16.00	50.00	4.00
WR542015010120	WR544015010120	1.50	0.10	2.30	3.00	1°	20.00	50.00	4.00
WR542015010208	WR544015010208	1.50	0.10	2.30	3.00	2°	8.00	50.00	4.00
WR542015010210	WR544015010210	1.50	0.10	2.30	3.00	2°	10.00	50.00	4.00
WR542015010212	WR544015010212	1.50	0.10	2.30	3.00	2°	12.00	50.00	4.00
WR542015010216	WR544015010216	1.50	0.10	2.30	3.00	2°	16.00	50.00	4.00
WR542015010220	WR544015010220	1.50	0.10	2.30	3.00	2°	20.00	50.00	4.00
WR542015020108	WR544015020108	1.50	0.20	2.30	3.00	1°	8.00	50.00	4.00
WR542015020110	WR544015020110	1.50	0.20	2.30	3.00	1°	10.00	50.00	4.00
WR542015020112	WR544015020112	1.50	0.20	2.30	3.00	1°	12.00	50.00	4.00

>>Continue

EDP NO.		Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Neck Length (metric)	Taper Degree°	Taper Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute	4 Flute								
W Coating	W Coating								
Helix 30°	Helix 30°								
WR542	WR544	D1	R	L1	L2	θ	L3	L4	D2
WR542015020116	WR544015020116	1.50	0.20	2.30	3.00	1°	16.00	50.00	4.00
WR542015020120	WR544015020120	1.50	0.20	2.30	3.00	1°	20.00	50.00	4.00
WR542015020208	WR544015020208	1.50	0.20	2.30	3.00	2°	8.00	50.00	4.00
WR542015020210	WR544015020210	1.50	0.20	2.30	3.00	2°	10.00	50.00	4.00
WR542015020212	WR544015020212	1.50	0.20	2.30	3.00	2°	12.00	50.00	4.00
WR542015020216	WR544015020216	1.50	0.20	2.30	3.00	2°	16.00	50.00	4.00
WR542015020220	WR544015020220	1.50	0.20	2.30	3.00	2°	20.00	50.00	4.00
WR542015030108	WR544015030108	1.50	0.30	2.30	3.00	1°	8.00	50.00	4.00
WR542015030110	WR544015030110	1.50	0.30	2.30	3.00	1°	10.00	50.00	4.00
WR542015030112	WR544015030112	1.50	0.30	2.30	3.00	1°	12.00	50.00	4.00
WR542015030116	WR544015030116	1.50	0.30	2.30	3.00	1°	16.00	50.00	4.00
WR542015030120	WR544015030120	1.50	0.30	2.30	3.00	1°	20.00	50.00	4.00
WR542015030208	WR544015030208	1.50	0.30	2.30	3.00	2°	8.00	50.00	4.00
WR542015030210	WR544015030210	1.50	0.30	2.30	3.00	2°	10.00	50.00	4.00
WR542015030212	WR544015030212	1.50	0.30	2.30	3.00	2°	12.00	50.00	4.00
WR542015030216	WR544015030216	1.50	0.30	2.30	3.00	2°	16.00	50.00	4.00
WR542015030220	WR544015030220	1.50	0.30	2.30	3.00	2°	20.00	50.00	4.00
WR542015010125	WR544015010125	1.50	0.10	2.30	3.00	1°	25.00	60.00	4.00
WR542015010225	WR544015010225	1.50	0.10	2.30	3.00	2°	25.00	60.00	4.00
WR542015020125	WR544015020125	1.50	0.20	2.30	3.00	1°	25.00	60.00	4.00
WR542015020225	WR544015020225	1.50	0.20	2.30	3.00	2°	25.00	60.00	4.00
WR542015030125	WR544015030125	1.50	0.30	2.30	3.00	1°	25.00	60.00	4.00
WR542015030225	WR544015030225	1.50	0.30	2.30	3.00	2°	25.00	60.00	4.00
WR542015010130	WR544015010130	1.50	0.10	2.30	3.00	1°	30.00	70.00	4.00
WR542015010230	WR544015010230	1.50	0.10	2.30	3.00	2°	30.00	70.00	4.00
WR542015020130	WR544015020130	1.50	0.20	2.30	3.00	1°	30.00	70.00	4.00
WR542015020230	WR544015020230	1.50	0.20	2.30	3.00	2°	30.00	70.00	4.00
WR542015030130	WR544015030130	1.50	0.30	2.30	3.00	1°	30.00	70.00	4.00
WR542015030230	WR544015030230	1.50	0.30	2.30	3.00	2°	30.00	70.00	4.00
WR542015010140	WR544015010140	1.50	0.10	2.30	3.00	1°	40.00	80.00	4.00
WR542015010240	WR544015010240	1.50	0.10	2.30	3.00	2°	40.00	80.00	6.00
WR542015020140	WR544015020140	1.50	0.20	2.30	3.00	1°	40.00	80.00	4.00
WR542015020240	WR544015020240	1.50	0.20	2.30	3.00	2°	40.00	80.00	6.00
WR542015030140	WR544015030140	1.50	0.30	2.30	3.00	1°	40.00	80.00	4.00
WR542015030240	WR544015030240	1.50	0.30	2.30	3.00	2°	40.00	80.00	6.00
WR542015010150	WR544015010150	1.50	0.10	2.30	3.00	1°	50.00	90.00	4.00
WR542015010250	WR544015010250	1.50	0.10	2.30	3.00	2°	50.00	90.00	6.00
WR542015020150	WR544015020150	1.50	0.20	2.30	3.00	1°	50.00	90.00	4.00
WR542015020250	WR544015020250	1.50	0.20	2.30	3.00	2°	50.00	90.00	6.00
WR542015030150	WR544015030150	1.50	0.30	2.30	3.00	1°	50.00	90.00	4.00
WR542015030250	WR544015030250	1.50	0.30	2.30	3.00	2°	50.00	90.00	6.00
WR542020010110	WR544020010110	2.00	0.10	2.00	5.00	1°	10.00	50.00	4.00
WR542020010112	WR544020010112	2.00	0.10	2.00	5.00	1°	12.00	50.00	4.00
WR542020010116	WR544020010116	2.00	0.10	2.00	5.00	1°	16.00	50.00	4.00
WR542020010120	WR544020010120	2.00	0.10	2.00	5.00	1°	20.00	50.00	4.00
WR542020010210	WR544020010210	2.00	0.10	2.00	5.00	2°	10.00	50.00	4.00

>>Continue

EDP NO.		Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Neck Length (metric)	Taper Degree°	Taper Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute	4 Flute								
W Coating	W Coating								
Helix 30°	Helix 30°								
WR542	WR544	D1	R	L1	L2	θ	L3	L4	D2
WR542020010212	WR544020010212	2.00	0.10	2.00	5.00	2°	12.00	50.00	4.00
WR542020010216	WR544020010216	2.00	0.10	2.00	5.00	2°	16.00	50.00	4.00
WR542020010220	WR544020010220	2.00	0.10	2.00	5.00	2°	20.00	50.00	4.00
WR542020020110	WR544020020110	2.00	0.20	2.00	5.00	1°	10.00	50.00	4.00
WR542020020112	WR544020020112	2.00	0.20	2.00	5.00	1°	12.00	50.00	4.00
WR542020020116	WR544020020116	2.00	0.20	2.00	5.00	1°	16.00	50.00	4.00
WR542020020120	WR544020020120	2.00	0.20	2.00	5.00	1°	20.00	50.00	4.00
WR542020020210	WR544020020210	2.00	0.20	2.00	5.00	2°	10.00	50.00	4.00
WR542020020212	WR544020020212	2.00	0.20	2.00	5.00	2°	12.00	50.00	4.00
WR542020020216	WR544020020216	2.00	0.20	2.00	5.00	2°	16.00	50.00	4.00
WR542020020220	WR544020020220	2.00	0.20	2.00	5.00	2°	20.00	50.00	4.00
WR542020030110	WR544020030110	2.00	0.30	2.00	5.00	1°	10.00	50.00	4.00
WR542020030112	WR544020030112	2.00	0.30	2.00	5.00	1°	12.00	50.00	4.00
WR542020030116	WR544020030116	2.00	0.30	2.00	5.00	1°	16.00	50.00	4.00
WR542020030120	WR544020030120	2.00	0.30	2.00	5.00	1°	20.00	50.00	4.00
WR542020030210	WR544020030210	2.00	0.30	2.00	5.00	2°	10.00	50.00	4.00
WR542020030212	WR544020030212	2.00	0.30	2.00	5.00	2°	12.00	50.00	4.00
WR542020030216	WR544020030216	2.00	0.30	2.00	5.00	2°	16.00	50.00	4.00
WR542020030220	WR544020030220	2.00	0.30	2.00	5.00	2°	20.00	50.00	4.00
-	WR544020050110	2.00	0.50	2.00	5.00	1°	10.00	50.00	4.00
WR542020050110	-	2.00	0.50	2.00	5.00	1°	10.00	50.00	4.00
-	WR544020050112	2.00	0.50	2.00	5.00	1°	12.00	50.00	4.00
WR542020050112	-	2.00	0.50	2.00	5.00	1°	12.00	50.00	4.00
-	WR544020050116	2.00	0.50	2.00	5.00	1°	16.00	50.00	4.00
WR542020050116	-	2.00	0.50	2.00	5.00	1°	16.00	50.00	4.00
-	WR544020050120	2.00	0.50	2.00	5.00	1°	20.00	50.00	4.00
WR542020050120	-	2.00	0.50	2.00	5.00	1°	20.00	50.00	4.00
-	WR544020050210	2.00	0.50	2.00	5.00	2°	10.00	50.00	4.00
WR542020050210	-	2.00	0.50	2.00	5.00	2°	10.00	50.00	4.00
-	WR544020050212	2.00	0.50	2.00	5.00	2°	12.00	50.00	4.00
WR542020050212	-	2.00	0.50	2.00	5.00	2°	12.00	50.00	4.00
-	WR544020050216	2.00	0.50	2.00	5.00	2°	16.00	50.00	4.00
WR542020050216	-	2.00	0.50	2.00	5.00	2°	16.00	50.00	4.00
-	WR544020050220	2.00	0.50	2.00	5.00	2°	20.00	50.00	4.00
WR542020050220	-	2.00	0.50	2.00	5.00	2°	20.00	50.00	4.00
WR542020010125	WR544020010125	2.00	0.10	2.00	5.00	1°	25.00	60.00	4.00
WR542020010225	WR544020010225	2.00	0.10	2.00	5.00	2°	25.00	60.00	4.00
WR542020020125	WR544020020125	2.00	0.20	2.00	5.00	1°	25.00	60.00	4.00
WR542020020225	WR544020020225	2.00	0.20	2.00	5.00	2°	25.00	60.00	4.00
WR542020030125	WR544020030125	2.00	0.30	2.00	5.00	1°	25.00	60.00	4.00
WR542020030225	WR544020030225	2.00	0.30	2.00	5.00	2°	25.00	60.00	4.00
-	WR544020050125	2.00	0.50	2.00	5.00	1°	25.00	60.00	4.00
WR542020050125	-	2.00	0.50	2.00	5.00	1°	25.00	60.00	4.00
WR542020050225	WR544020050225	2.00	0.50	2.00	5.00	2°	25.00	60.00	4.00
WR542020010130	WR544020010130	2.00	0.10	2.00	5.00	1°	30.00	70.00	4.00
WR542020010230	WR544020010230	2.00	0.10	2.00	5.00	2°	30.00	70.00	4.00

WR542, WR544 Series

>>Continue

EDP NO.		Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Neck Length (metric)	Taper Degree°	Taper Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute	4 Flute								
W Coating	W Coating								
Helix 30°	Helix 30°								
WR542	WR544	D1	R	L1	L2	θ	L3	L4	D2
WR542020020130	WR544020020130	2.00	0.20	2.00	5.00	1°	30.00	70.00	4.00
WR542020020230	WR544020020230	2.00	0.20	2.00	5.00	2°	30.00	70.00	4.00
WR542020030130	WR544020030130	2.00	0.30	2.00	5.00	1°	30.00	70.00	4.00
WR542020030230	WR544020030230	2.00	0.30	2.00	5.00	2°	30.00	70.00	4.00
-	WR544020050130	2.00	0.50	2.00	5.00	1°	30.00	70.00	4.00
WR542020050130	-	2.00	0.50	2.00	5.00	1°	30.00	70.00	4.00
WR542020050230	WR544020050230	2.00	0.50	2.00	5.00	2°	30.00	70.00	4.00
WR542020010140	WR544020010140	2.00	0.10	2.00	5.00	1°	40.00	80.00	6.00
WR542020010240	WR544020010240	2.00	0.10	2.00	5.00	2°	40.00	80.00	6.00
WR542020020140	WR544020020140	2.00	0.20	2.00	5.00	1°	40.00	80.00	6.00
WR542020020240	WR544020020240	2.00	0.20	2.00	5.00	2°	40.00	80.00	6.00
WR542020030140	WR544020030140	2.00	0.30	2.00	5.00	1°	40.00	80.00	6.00
WR542020030240	WR544020030240	2.00	0.30	2.00	5.00	2°	40.00	80.00	6.00
WR542020050140	WR544020050140	2.00	0.50	2.00	5.00	1°	40.00	80.00	6.00
-	WR544020050240	2.00	0.50	2.00	5.00	2°	40.00	80.00	6.00
WR542020050240	-	2.00	0.50	2.00	5.00	2°	40.00	80.00	6.00
WR542020010150	WR544020010150	2.00	0.10	2.00	5.00	1°	50.00	100.00	6.00
WR542020010160	WR544020010160	2.00	0.10	2.00	5.00	1°	60.00	100.00	6.00
WR542020010250	WR544020010250	2.00	0.10	2.00	5.00	2°	50.00	100.00	6.00
WR542020010260	WR544020010260	2.00	0.10	2.00	5.00	2°	60.00	100.00	6.00
-	WR544020020150	2.00	0.20	2.00	5.00	1°	50.00	100.00	6.00
WR542020020150	-	2.00	0.20	2.00	5.00	1°	50.00	100.00	6.00
WR542020020160	WR544020020160	2.00	0.20	2.00	5.00	1°	60.00	100.00	6.00
WR542020020250	WR544020020250	2.00	0.20	2.00	5.00	2°	50.00	100.00	6.00
WR542020020260	WR544020020260	2.00	0.20	2.00	5.00	2°	60.00	100.00	6.00
WR542020030150	WR544020030150	2.00	0.30	2.00	5.00	1°	50.00	100.00	6.00
WR542020030160	WR544020030160	2.00	0.30	2.00	5.00	1°	60.00	100.00	6.00
WR542020030250	WR544020030250	2.00	0.30	2.00	5.00	2°	50.00	100.00	6.00
WR542020030260	WR544020030260	2.00	0.30	2.00	5.00	2°	60.00	100.00	6.00
WR542020050150	WR544020050150	2.00	0.50	2.00	5.00	1°	50.00	100.00	6.00
WR542020050160	WR544020050160	2.00	0.50	2.00	5.00	1°	60.00	100.00	6.00
-	WR544020050250	2.00	0.50	2.00	5.00	2°	50.00	100.00	6.00
WR542020050250	-	2.00	0.50	2.00	5.00	2°	50.00	100.00	6.00
-	WR544020050260	2.00	0.50	2.00	5.00	2°	60.00	100.00	6.00
WR542020050260	-	2.00	0.50	2.00	5.00	2°	60.00	100.00	6.00
WR542020010180	WR544020010180	2.00	0.10	2.00	5.00	1°	80.00	140.00	6.00
WR542020010280	WR544020010280	2.00	0.10	2.00	5.00	2°	80.00	140.00	8.00
WR542020020180	-	2.00	0.20	2.00	5.00	1°	80.00	140.00	6.00
-	WR544020020180	2.00	0.20	2.00	5.00	1°	80.00	140.00	6.00
WR542020020280	WR544020020280	2.00	0.20	2.00	5.00	2°	80.00	140.00	8.00
WR542020030180	WR544020030180	2.00	0.30	2.00	5.00	1°	80.00	140.00	6.00
WR542020030280	WR544020030280	2.00	0.30	2.00	5.00	2°	80.00	140.00	8.00
WR542020050180	WR544020050180	2.00	0.50	2.00	5.00	1°	80.00	140.00	6.00
-	WR544020050280	2.00	0.50	2.00	5.00	2°	80.00	140.00	8.00
WR542020050280	-	2.00	0.50	2.00	5.00	2°	80.00	140.00	8.00
WR542030020116	WR544030020116	3.00	0.20	4.50	6.00	1°	16.00	60.00	6.00

>>Continue

EDP NO.		Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Neck Length (metric)	Taper Degree°	Taper Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute	4 Flute								
W Coating	W Coating								
Helix 30°	Helix 30°								
WR542	WR544	D1	R	L1	L2	θ	L3	L4	D2
WR542030020216	WR544030020216	3.00	0.20	4.50	6.00	2°	16.00	60.00	6.00
WR542030030116	WR544030030116	3.00	0.30	4.50	6.00	1°	16.00	60.00	6.00
WR542030030216	WR544030030216	3.00	0.30	4.50	6.00	2°	16.00	60.00	6.00
WR542030050116	WR544030050116	3.00	0.50	4.50	6.00	1°	16.00	60.00	6.00
WR542030050216	WR544030050216	3.00	0.50	4.50	6.00	2°	16.00	60.00	6.00
WR542030020120	WR544030020120	3.00	0.20	4.50	6.00	1°	20.00	65.00	6.00
WR542030020220	WR544030020220	3.00	0.20	4.50	6.00	2°	20.00	65.00	6.00
WR542030030120	WR544030030120	3.00	0.30	4.50	6.00	1°	20.00	65.00	6.00
WR542030030220	WR544030030220	3.00	0.30	4.50	6.00	2°	20.00	65.00	6.00
WR542030050120	WR544030050120	3.00	0.50	4.50	6.00	1°	20.00	65.00	6.00
WR542030050220	WR544030050220	3.00	0.50	4.50	6.00	2°	20.00	65.00	6.00
WR542030020130	WR544030020130	3.00	0.20	4.50	6.00	1°	30.00	70.00	6.00
WR542030020230	WR544030020230	3.00	0.20	4.50	6.00	2°	30.00	70.00	6.00
WR542030030130	WR544030030130	3.00	0.30	4.50	6.00	1°	30.00	70.00	6.00
WR542030030230	WR544030030230	3.00	0.30	4.50	6.00	2°	30.00	70.00	6.00
WR542030050130	WR544030050130	3.00	0.50	4.50	6.00	1°	30.00	70.00	6.00
WR542030050230	WR544030050230	3.00	0.50	4.50	6.00	2°	30.00	70.00	6.00
WR542030020140	WR544030020140	3.00	0.20	4.50	6.00	1°	40.00	80.00	6.00
WR542030020240	WR544030020240	3.00	0.20	4.50	6.00	2°	40.00	80.00	6.00
WR542030030140	WR544030030140	3.00	0.30	4.50	6.00	1°	40.00	80.00	6.00
WR542030030240	WR544030030240	3.00	0.30	4.50	6.00	2°	40.00	80.00	6.00
WR542030050140	WR544030050140	3.00	0.50	4.50	6.00	1°	40.00	80.00	6.00
WR542030050240	WR544030050240	3.00	0.50	4.50	6.00	2°	40.00	80.00	6.00
WR542030020150	WR544030020150	3.00	0.20	4.50	6.00	1°	50.00	90.00	6.00
WR542030020250	WR544030020250	3.00	0.20	4.50	6.00	2°	50.00	90.00	8.00
WR542030030150	WR544030030150	3.00	0.30	4.50	6.00	1°	50.00	90.00	6.00
WR542030030250	WR544030030250	3.00	0.30	4.50	6.00	2°	50.00	90.00	8.00
WR542030050150	WR544030050150	3.00	0.50	4.50	6.00	1°	50.00	90.00	6.00
WR542030050250	WR544030050250	3.00	0.50	4.50	6.00	2°	50.00	90.00	8.00
WR542030020160	WR544030020160	3.00	0.20	4.50	6.00	1°	60.00	100.00	6.00
WR542030020260	WR544030020260	3.00	0.20	4.50	6.00	2°	60.00	100.00	8.00
WR542030030160	WR544030030160	3.00	0.30	4.50	6.00	1°	60.00	100.00	6.00
WR542030030260	WR544030030260	3.00	0.30	4.50	6.00	2°	60.00	100.00	8.00
WR542030050160	WR544030050160	3.00	0.50	4.50	6.00	1°	60.00	100.00	6.00
WR542030050260	WR544030050260	3.00	0.50	4.50	6.00	2°	60.00	100.00	8.00
WR542030020270	WR544030020270	3.00	0.20	4.50	6.00	2°	70.00	120.00	8.00
WR542030030270	WR544030030270	3.00	0.30	4.50	6.00	2°	70.00	120.00	8.00
WR542030050270	WR544030050270	3.00	0.50	4.50	6.00	2°	70.00	120.00	8.00
WR542040020140	WR544040020140	4.00	0.20	6.00	8.00	1°	40.00	90.00	6.00
WR542040020240	WR544040020240	4.00	0.20	6.00	8.00	2°	40.00	90.00	8.00
WR542040030140	WR544040030140	4.00	0.30	6.00	8.00	1°	40.00	90.00	6.00
WR542040030240	WR544040030240	4.00	0.30	6.00	8.00	2°	40.00	90.00	8.00
WR542040050140	WR544040050140	4.00	0.50	6.00	8.00	1°	40.00	90.00	6.00
WR542040050240	WR544040050240	4.00	0.50	6.00	8.00	2°	40.00	90.00	8.00
WR542040020150	WR544040020150	4.00	0.20	6.00	8.00	1°	50.00	100.00	6.00
WR542040020250	WR544040020250	4.00	0.20	6.00	8.00	2°	50.00	100.00	8.00

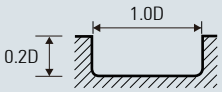
WR542, WR544 Series

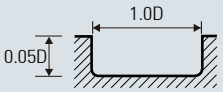
EDP NO.		Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Neck Length (metric)	Taper Degree°	Taper Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute	4 Flute								
W Coating	W Coating								
Helix 30°	Helix 30°								
WR542	WR544	D1	R	L1	L2	θ	L3	L4	D2
WR542040030150	WR544040030150	4.00	0.30	6.00	8.00	1°	50.00	100.00	6.00
WR542040030250	WR544040030250	4.00	0.30	6.00	8.00	2°	50.00	100.00	8.00
WR542040050150	WR544040050150	4.00	0.50	6.00	8.00	1°	50.00	100.00	6.00
WR542040050250	WR544040050250	4.00	0.50	6.00	8.00	2°	50.00	100.00	8.00
WR542040020160	WR544040020160	4.00	0.20	6.00	8.00	1°	60.00	110.00	6.00
WR542040020260	WR544040020260	4.00	0.20	6.00	8.00	2°	60.00	110.00	8.00
WR542040030160	WR544040030160	4.00	0.30	6.00	8.00	1°	60.00	110.00	6.00
WR542040030260	WR544040030260	4.00	0.30	6.00	8.00	2°	60.00	110.00	8.00
WR542040050160	WR544040050160	4.00	0.50	6.00	8.00	1°	60.00	110.00	6.00
WR542040050260	WR544040050260	4.00	0.50	6.00	8.00	2°	60.00	110.00	8.00
WR542040020170	WR544040020170	4.00	0.20	6.00	8.00	1°	70.00	120.00	8.00
WR542040020270	WR544040020270	4.00	0.20	6.00	8.00	2°	70.00	120.00	10.00
WR542040030170	WR544040030170	4.00	0.30	6.00	8.00	1°	70.00	120.00	8.00
WR542040030270	WR544040030270	4.00	0.30	6.00	8.00	2°	70.00	120.00	10.00
WR542040050170	WR544040050170	4.00	0.50	6.00	8.00	1°	70.00	120.00	8.00
WR542040050270	WR544040050270	4.00	0.50	6.00	8.00	2°	70.00	120.00	10.00

WR542 Series

Work Material	Alloy Steels, Carbon Steels (SCM, SNCM, S45C)		Prehardened Steels (NAK, CENA, KP4)		Hardened Steels (SKD, SKT, STAVAX)	
Hardness	≤ 35 HRc		35 ~ 45 HRc		45 ~ 55 HRc	
Strength	≤ 1100N / mm²		1100~1500N / mm²		1500~2000N / mm²	
Cutting Diameter (metric)	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
1.0	33,100	280	21,600	120	13,200	70
1.5	26,400	300	16,200	130	10,200	70
2.0	21,600	310	13,800	140	8,640	80
2.5	18,000	320	11,400	150	7,320	80
3.0	15,900	330	10,300	160	6,300	80
4.0	12,800	400	8,200	200	5,150	95
5.0	11,000	500	7,000	240	4,560	120
6.0	9,500	600	6,000	300	3,930	140
8.0	7,200	640	4,550	300	3,020	140
10.0	6,000	640	4,000	300	2,420	140
12.0	5,000	500	3,340	270	2,000	120
16.0	3,720	450	2,520	210	1,540	95
20.0	3,000	330	1,950	140	1,200	70

RPM = rev. / min.
FEED = mm / min.

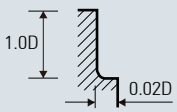




WR544 Series

Work Material	Alloy Steels, Carbon Steels (SCM, SNCM, S45C)		Prehardened Steels (NAK, CENA, KP4)		Hardened Steels (SKD, SKT, STAVAX)	
Hardness	≤ 35 HRc		35 ~ 45 HRc		45 ~ 55 HRc	
Strength	≤ 1100N / mm²		1100~1500N / mm²		1500~2000N / mm²	
Cutting Diameter (metric)	RPM	FEED	RPM	FEED	RPM	FEED
1.0	33,100	360	21,600	260	13,200	140
1.5	26,400	370	16,200	270	10,200	140
2.0	21,600	380	13,800	280	8,640	150
2.5	18,000	390	11,400	300	7,320	150
3.0	15,900	400	10,300	310	6,300	150
4.0	12,800	500	8,200	360	5,150	160
5.0	11,000	510	7,000	430	4,560	200
6.0	9,500	510	6,000	430	3,930	200
8.0	7,200	550	4,550	430	3,020	200
10.0	6,000	550	4,000	430	2,420	200
12.0	5,000	430	3,340	380	2,000	160
16.0	3,720	330	2,520	280	1,540	135
20.0	3,000	270	1,950	210	1,200	100

RPM = rev. / min.
FEED = mm / min.

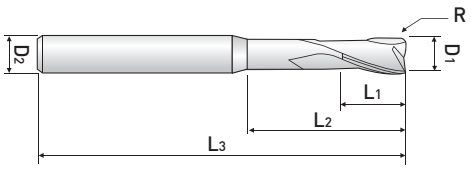


WINNER

WR512 Series

ULTRA FINE | Slotting | Side milling

LONG NECK CORNER RADIUS / 2 FLUTES / STUB & REGULAR / W-COATING



TOLERANCE (metric)

D_1 = +0 / -0.012 (D1≤6.0)
D_1 = +0 / -0.015 (D1>6.0)
D_2 = h6
R = ±0.010 (D1≤6.0)
R = ±0.015 (D1>6.0)

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO. 2 Flute W Coating Helix 30°	Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
WR512	D1	R	L1	L2	L3	D2
WR512002002005	0.20	0.02	0.30	0.50	40.00	4.00
WR51200200201	0.20	0.02	0.30	1.00	40.00	4.00
WR512002002015	0.20	0.02	0.30	1.50	40.00	4.00
WR51200200202	0.20	0.02	0.30	2.00	40.00	4.00
WR512002005005	0.20	0.05	0.30	0.50	40.00	4.00
WR51200200501	0.20	0.05	0.30	1.00	40.00	4.00
WR512002005015	0.20	0.05	0.30	1.50	40.00	4.00
WR51200200502	0.20	0.05	0.30	2.00	40.00	4.00
WR51200300201	0.30	0.02	0.50	1.00	40.00	4.00
WR51200300202	0.30	0.02	0.50	2.00	40.00	4.00
WR51200300203	0.30	0.02	0.50	3.00	40.00	4.00
WR51200300501	0.30	0.05	0.50	1.00	40.00	4.00
WR51200300502	0.30	0.05	0.50	2.00	40.00	4.00
WR51200300503	0.30	0.05	0.50	3.00	40.00	4.00
WR51200400501	0.40	0.05	0.60	1.00	40.00	4.00
WR512004005015	0.40	0.05	0.60	1.50	40.00	4.00
WR51200400502	0.40	0.05	0.60	2.00	40.00	4.00
WR512004005025	0.40	0.05	0.60	2.50	40.00	4.00
WR51200400503	0.40	0.05	0.60	3.00	40.00	4.00
WR51200400504	0.40	0.05	0.60	4.00	40.00	4.00
WR5120040101	0.40	0.10	0.60	1.00	40.00	4.00
WR51200401015	0.40	0.10	0.60	1.50	40.00	4.00
WR5120040102	0.40	0.10	0.60	2.00	40.00	4.00
WR51200401025	0.40	0.10	0.60	2.50	40.00	4.00
WR5120040103	0.40	0.10	0.60	3.00	40.00	4.00
WR5120040104	0.40	0.10	0.60	4.00	40.00	4.00
WR51200500501	0.50	0.05	0.70	1.00	45.00	4.00
WR512005005015	0.50	0.05	0.70	1.50	45.00	4.00
WR51200500502	0.50	0.05	0.70	2.00	45.00	4.00
WR512005005025	0.50	0.05	0.70	2.50	45.00	4.00
WR51200500503	0.50	0.05	0.70	3.00	45.00	4.00
WR51200500504	0.50	0.05	0.70	4.00	45.00	4.00
WR51200500505	0.50	0.05	0.70	5.00	45.00	4.00
WR51200500506	0.50	0.05	0.70	6.00	45.00	4.00
WR5120050101	0.50	0.10	0.70	1.00	45.00	4.00

Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
WR512	○	○	○	○	◎	○	○	○	○					◎	◎	◎	○				

>>Continue

EDP NO. 2 Flute W Coating Helix 30°	Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
WR512	D1	R	L1	L2	L3	D2
WR51200501015	0.50	0.10	0.70	1.50	45.00	4.00
WR5120050102	0.50	0.10	0.70	2.00	45.00	4.00
WR51200501025	0.50	0.10	0.70	2.50	45.00	4.00
WR5120050103	0.50	0.10	0.70	3.00	45.00	4.00
WR5120050104	0.50	0.10	0.70	4.00	45.00	4.00
WR5120050105	0.50	0.10	0.70	5.00	45.00	4.00
WR5120050106	0.50	0.10	0.70	6.00	45.00	4.00
WR51200600502	0.60	0.05	0.90	2.00	45.00	4.00
WR51200600503	0.60	0.05	0.90	3.00	45.00	4.00
WR51200600504	0.60	0.05	0.90	4.00	45.00	4.00
WR51200600506	0.60	0.05	0.90	6.00	45.00	4.00
WR51200600508	0.60	0.05	0.90	8.00	45.00	4.00
WR51200600510	0.60	0.05	0.90	10.00	45.00	4.00
WR5120060102	0.60	0.10	0.90	2.00	45.00	4.00
WR5120060103	0.60	0.10	0.90	3.00	45.00	4.00
WR5120060104	0.60	0.10	0.90	4.00	45.00	4.00
WR5120060106	0.60	0.10	0.90	6.00	45.00	4.00
WR5120060108	0.60	0.10	0.90	8.00	45.00	4.00
WR5120060110	0.60	0.10	0.90	10.00	45.00	4.00
WR5120060202	0.60	0.20	0.90	2.00	45.00	4.00
WR5120060203	0.60	0.20	0.90	3.00	45.00	4.00
WR5120060204	0.60	0.20	0.90	4.00	45.00	4.00
WR5120060206	0.60	0.20	0.90	6.00	45.00	4.00
WR5120060208	0.60	0.20	0.90	8.00	45.00	4.00
WR5120060210	0.60	0.20	0.90	10.00	45.00	4.00
WR51200700502	0.70	0.05	1.20	2.00	45.00	4.00
WR51200700504	0.70	0.05	1.20	4.00	45.00	4.00
WR51200700506	0.70	0.05	1.20	6.00	45.00	4.00
WR51200700508	0.70	0.05	1.20	8.00	45.00	4.00
WR51200700510	0.70	0.05	1.20	10.00	45.00	4.00
WR5120070102	0.70	0.10	1.20	2.00	45.00	4.00
WR5120070104	0.70	0.10	1.20	4.00	45.00	4.00
WR5120070106	0.70	0.10	1.20	6.00	45.00	4.00
WR5120070108	0.70	0.10	1.20	8.00	45.00	4.00
WR5120070110	0.70	0.10	1.20	10.00	45.00	4.00
WR5120070202	0.70	0.20	1.20	2.00	45.00	4.00
WR5120070204	0.70	0.20	1.20	4.00	45.00	4.00
WR5120070206	0.70	0.20	1.20	6.00	45.00	4.00
WR5120070208	0.70	0.20	1.20	8.00	45.00	4.00
WR5120070210	0.70	0.20	1.20	10.00	45.00	4.00
WR51200800502	0.80	0.05	1.20	2.00	45.00	4.00
WR51200800503	0.80	0.05	1.20	3.00	45.00	4.00
WR51200800504	0.80	0.05	1.20	4.00	45.00	4.00
WR51200800506	0.80	0.05	1.20	6.00	45.00	4.00
WR51200800508	0.80	0.05	1.20	8.00	45.00	4.00
WR51200800510	0.80	0.05	1.20	10.00	45.00	4.00

>>Continue

EDP NO. 2 Flute W Coating Helix 30°	Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
WR512	D1	R	L1	L2	L3	D2
WR5120080102	0.80	0.10	1.20	2.00	45.00	4.00
WR5120080103	0.80	0.10	1.20	3.00	45.00	4.00
WR5120080104	0.80	0.10	1.20	4.00	45.00	4.00
WR5120080106	0.80	0.10	1.20	6.00	45.00	4.00
WR5120080108	0.80	0.10	1.20	8.00	45.00	4.00
WR5120080110	0.80	0.10	1.20	10.00	45.00	4.00
WR5120080202	0.80	0.20	1.20	2.00	45.00	4.00
WR5120080203	0.80	0.20	1.20	3.00	45.00	4.00
WR5120080204	0.80	0.20	1.20	4.00	45.00	4.00
WR5120080206	0.80	0.20	1.20	6.00	45.00	4.00
WR5120080208	0.80	0.20	1.20	8.00	45.00	4.00
WR5120080210	0.80	0.20	1.20	10.00	45.00	4.00
WR51201000503	1.00	0.05	1.50	3.00	50.00	4.00
WR51201000504	1.00	0.05	1.50	4.00	50.00	4.00
WR51201000506	1.00	0.05	1.50	6.00	50.00	4.00
WR51201000508	1.00	0.05	1.50	8.00	50.00	4.00
WR51201000510	1.00	0.05	1.50	10.00	50.00	4.00
WR51201000512	1.00	0.05	1.50	12.00	50.00	4.00
WR51201000514	1.00	0.05	1.50	14.00	50.00	4.00
WR51201000516	1.00	0.05	1.50	16.00	50.00	4.00
WR51201000520	1.00	0.05	1.50	20.00	50.00	4.00
WR5120100103	1.00	0.10	1.50	3.00	50.00	4.00
WR5120100104	1.00	0.10	1.50	4.00	50.00	4.00
WR5120100106	1.00	0.10	1.50	6.00	50.00	4.00
WR5120100108	1.00	0.10	1.50	8.00	50.00	4.00
WR5120100110	1.00	0.10	1.50	10.00	50.00	4.00
WR5120100112	1.00	0.10	1.50	12.00	50.00	4.00
WR5120100114	1.00	0.10	1.50	14.00	50.00	4.00
WR5120100116	1.00	0.10	1.50	16.00	50.00	4.00
WR5120100120	1.00	0.10	1.50	20.00	50.00	4.00
WR5120100203	1.00	0.20	1.50	3.00	50.00	4.00
WR5120100204	1.00	0.20	1.50	4.00	50.00	4.00
WR5120100206	1.00	0.20	1.50	6.00	50.00	4.00
WR5120100208	1.00	0.20	1.50	8.00	50.00	4.00
WR5120100210	1.00	0.20	1.50	10.00	50.00	4.00
WR5120100212	1.00	0.20	1.50	12.00	50.00	4.00
WR5120100214	1.00	0.20	1.50	14.00	50.00	4.00
WR5120100216	1.00	0.20	1.50	16.00	50.00	4.00
WR5120100220	1.00	0.20	1.50	20.00	50.00	4.00
WR5120100303	1.00	0.30	1.50	3.00	50.00	4.00
WR5120100304	1.00	0.30	1.50	4.00	50.00	4.00
WR5120100306	1.00	0.30	1.50	6.00	50.00	4.00
WR5120100308	1.00	0.30	1.50	8.00	50.00	4.00
WR5120100310	1.00	0.30	1.50	10.00	50.00	4.00
WR5120100312	1.00	0.30	1.50	12.00	50.00	4.00
WR5120100314	1.00	0.30	1.50	14.00	50.00	4.00

>>Continue

EDP NO. 2 Flute W Coating Helix 30°	Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
WR512	D1	R	L1	L2	L3	D2
WR5120100316	1.00	0.30	1.50	16.00	50.00	4.00
WR5120100320	1.00	0.30	1.50	20.00	50.00	4.00
WR51201200503	1.20	0.05	1.80	3.00	50.00	4.00
WR51201200504	1.20	0.05	1.80	4.00	50.00	4.00
WR51201200506	1.20	0.05	1.80	6.00	50.00	4.00
WR51201200508	1.20	0.05	1.80	8.00	50.00	4.00
WR51201200510	1.20	0.05	1.80	10.00	50.00	4.00
WR51201200512	1.20	0.05	1.80	12.00	50.00	4.00
WR51201200516	1.20	0.05	1.80	16.00	50.00	4.00
WR51201200520	1.20	0.05	1.80	20.00	50.00	4.00
WR5120120103	1.20	0.10	1.80	3.00	50.00	4.00
WR5120120104	1.20	0.10	1.80	4.00	50.00	4.00
WR5120120106	1.20	0.10	1.80	6.00	50.00	4.00
WR5120120108	1.20	0.10	1.80	8.00	50.00	4.00
WR5120120110	1.20	0.10	1.80	10.00	50.00	4.00
WR5120120112	1.20	0.10	1.80	12.00	50.00	4.00
WR5120120116	1.20	0.10	1.80	16.00	50.00	4.00
WR5120120120	1.20	0.10	1.80	20.00	50.00	4.00
WR5120120203	1.20	0.20	1.80	3.00	50.00	4.00
WR5120120204	1.20	0.20	1.80	4.00	50.00	4.00
WR5120120206	1.20	0.20	1.80	6.00	50.00	4.00
WR5120120208	1.20	0.20	1.80	8.00	50.00	4.00
WR5120120210	1.20	0.20	1.80	10.00	50.00	4.00
WR5120120212	1.20	0.20	1.80	12.00	50.00	4.00
WR5120120216	1.20	0.20	1.80	16.00	50.00	4.00
WR5120120220	1.20	0.20	1.80	20.00	50.00	4.00
WR5120120303	1.20	0.30	1.80	3.00	50.00	4.00
WR5120120304	1.20	0.30	1.80	4.00	50.00	4.00
WR5120120306	1.20	0.30	1.80	6.00	50.00	4.00
WR5120120308	1.20	0.30	1.80	8.00	50.00	4.00
WR5120120310	1.20	0.30	1.80	10.00	50.00	4.00
WR5120120312	1.20	0.30	1.80	12.00	50.00	4.00
WR5120120316	1.20	0.30	1.80	16.00	50.00	4.00
WR5120120320	1.20	0.30	1.80	20.00	50.00	4.00
WR51201500504	1.50	0.05	2.30	4.00	50.00	4.00
WR51201500506	1.50	0.05	2.30	6.00	50.00	4.00
WR51201500508	1.50	0.05	2.30	8.00	50.00	4.00
WR51201500510	1.50	0.05	2.30	10.00	50.00	4.00
WR51201500512	1.50	0.05	2.30	12.00	50.00	4.00
WR51201500514	1.50	0.05	2.30	14.00	50.00	4.00
WR51201500516	1.50	0.05	2.30	16.00	50.00	4.00
WR51201500520	1.50	0.05	2.30	20.00	50.00	4.00
WR5120150104	1.50	0.10	2.30	4.00	50.00	4.00
WR5120150106	1.50	0.10	2.30	6.00	50.00	4.00
WR5120150108	1.50	0.10	2.30	8.00	50.00	4.00
WR5120150110	1.50	0.10	2.30	10.00	50.00	4.00

>>Continue

EDP NO. 2 Flute W Coating Helix 30°	Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
WR512	D1	R	L1	L2	L3	D2
WR5120150112	1.50	0.10	2.30	12.00	50.00	4.00
WR5120150114	1.50	0.10	2.30	14.00	50.00	4.00
WR5120150116	1.50	0.10	2.30	16.00	50.00	4.00
WR5120150120	1.50	0.10	2.30	20.00	50.00	4.00
WR5120150204	1.50	0.20	2.30	4.00	50.00	4.00
WR5120150206	1.50	0.20	2.30	6.00	50.00	4.00
WR5120150208	1.50	0.20	2.30	8.00	50.00	4.00
WR5120150210	1.50	0.20	2.30	10.00	50.00	4.00
WR5120150212	1.50	0.20	2.30	12.00	50.00	4.00
WR5120150214	1.50	0.20	2.30	14.00	50.00	4.00
WR5120150216	1.50	0.20	2.30	16.00	50.00	4.00
WR5120150220	1.50	0.20	2.30	20.00	50.00	4.00
WR5120150304	1.50	0.30	2.30	4.00	50.00	4.00
WR5120150306	1.50	0.30	2.30	6.00	50.00	4.00
WR5120150308	1.50	0.30	2.30	8.00	50.00	4.00
WR5120150310	1.50	0.30	2.30	10.00	50.00	4.00
WR5120150312	1.50	0.30	2.30	12.00	50.00	4.00
WR5120150314	1.50	0.30	2.30	14.00	50.00	4.00
WR5120150316	1.50	0.30	2.30	16.00	50.00	4.00
WR5120150320	1.50	0.30	2.30	20.00	50.00	4.00
WR5120150504	1.50	0.50	2.30	4.00	50.00	4.00
WR5120150506	1.50	0.50	2.30	6.00	50.00	4.00
WR5120150508	1.50	0.50	2.30	8.00	50.00	4.00
WR5120150510	1.50	0.50	2.30	10.00	50.00	4.00
WR5120150512	1.50	0.50	2.30	12.00	50.00	4.00
WR5120150514	1.50	0.50	2.30	14.00	50.00	4.00
WR5120150516	1.50	0.50	2.30	16.00	50.00	4.00
WR5120150520	1.50	0.50	2.30	20.00	50.00	4.00
WR51201500522	1.50	0.05	2.30	22.00	60.00	4.00
WR51201500526	1.50	0.05	2.30	26.00	60.00	4.00
WR5120150122	1.50	0.10	2.30	22.00	60.00	4.00
WR5120150126	1.50	0.10	2.30	26.00	60.00	4.00
WR5120150222	1.50	0.20	2.30	22.00	60.00	4.00
WR5120150226	1.50	0.20	2.30	26.00	60.00	4.00
WR5120150322	1.50	0.30	2.30	22.00	60.00	4.00
WR5120150326	1.50	0.30	2.30	26.00	60.00	4.00
WR5120150522	1.50	0.50	2.30	22.00	60.00	4.00
WR5120150526	1.50	0.50	2.30	26.00	60.00	4.00
WR5120200106	2.00	0.10	3.00	6.00	50.00	4.00
WR5120200108	2.00	0.10	3.00	8.00	50.00	4.00
WR5120200110	2.00	0.10	3.00	10.00	50.00	4.00
WR5120200112	2.00	0.10	3.00	12.00	50.00	4.00
WR5120200114	2.00	0.10	3.00	14.00	50.00	4.00
WR5120200116	2.00	0.10	3.00	16.00	50.00	4.00
WR5120200120	2.00	0.10	3.00	20.00	50.00	4.00
WR5120200206	2.00	0.20	3.00	6.00	50.00	4.00

>>Continue

EDP NO. 2 Flute W Coating Helix 30°	Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
WR512	D1	R	L1	L2	L3	D2
WR5120200208	2.00	0.20	3.00	8.00	50.00	4.00
WR5120200210	2.00	0.20	3.00	10.00	50.00	4.00
WR5120200212	2.00	0.20	3.00	12.00	50.00	4.00
WR5120200214	2.00	0.20	3.00	14.00	50.00	4.00
WR5120200216	2.00	0.20	3.00	16.00	50.00	4.00
WR5120200220	2.00	0.20	3.00	20.00	50.00	4.00
WR5120200306	2.00	0.30	3.00	6.00	50.00	4.00
WR5120200308	2.00	0.30	3.00	8.00	50.00	4.00
WR5120200310	2.00	0.30	3.00	10.00	50.00	4.00
WR5120200312	2.00	0.30	3.00	12.00	50.00	4.00
WR5120200314	2.00	0.30	3.00	14.00	50.00	4.00
WR5120200316	2.00	0.30	3.00	16.00	50.00	4.00
WR5120200320	2.00	0.30	3.00	20.00	50.00	4.00
WR5120200506	2.00	0.50	3.00	6.00	50.00	4.00
WR5120200508	2.00	0.50	3.00	8.00	50.00	4.00
WR5120200510	2.00	0.50	3.00	10.00	50.00	4.00
WR5120200512	2.00	0.50	3.00	12.00	50.00	4.00
WR5120200514	2.00	0.50	3.00	14.00	50.00	4.00
WR5120200516	2.00	0.50	3.00	16.00	50.00	4.00
WR5120200520	2.00	0.50	3.00	20.00	50.00	4.00
WR5120200122	2.00	0.10	3.00	22.00	60.00	4.00
WR5120200126	2.00	0.10	3.00	26.00	60.00	4.00
WR5120200222	2.00	0.20	3.00	22.00	60.00	4.00
WR5120200226	2.00	0.20	3.00	26.00	60.00	4.00
WR5120200322	2.00	0.30	3.00	22.00	60.00	4.00
WR5120200326	2.00	0.30	3.00	26.00	60.00	4.00
WR5120200522	2.00	0.50	3.00	22.00	60.00	4.00
WR5120200526	2.00	0.50	3.00	26.00	60.00	4.00
WR5120200130	2.00	0.10	3.00	30.00	70.00	4.00
WR5120200230	2.00	0.20	3.00	30.00	70.00	4.00
WR5120200330	2.00	0.30	3.00	30.00	70.00	4.00
WR5120200530	2.00	0.50	3.00	30.00	70.00	4.00
WR5120250108	2.50	0.10	4.00	8.00	50.00	4.00
WR5120250110	2.50	0.10	4.00	10.00	50.00	4.00
WR5120250112	2.50	0.10	4.00	12.00	50.00	4.00
WR5120250114	2.50	0.10	4.00	14.00	50.00	4.00
WR5120250116	2.50	0.10	4.00	16.00	50.00	4.00
WR5120250120	2.50	0.10	4.00	20.00	50.00	4.00
WR5120250208	2.50	0.20	4.00	8.00	50.00	4.00
WR5120250210	2.50	0.20	4.00	10.00	50.00	4.00
WR5120250212	2.50	0.20	4.00	12.00	50.00	4.00
WR5120250214	2.50	0.20	4.00	14.00	50.00	4.00
WR5120250216	2.50	0.20	4.00	16.00	50.00	4.00
WR5120250220	2.50	0.20	4.00	20.00	50.00	4.00
WR5120250308	2.50	0.30	4.00	8.00	50.00	4.00
WR5120250310	2.50	0.30	4.00	10.00	50.00	4.00

>>Continue

EDP NO. 2 Flute W Coating Helix 30°	Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
WR512	D1	R	L1	L2	L3	D2
WR5120250312	2.50	0.30	4.00	12.00	50.00	4.00
WR5120250314	2.50	0.30	4.00	14.00	50.00	4.00
WR5120250316	2.50	0.30	4.00	16.00	50.00	4.00
WR5120250320	2.50	0.30	4.00	20.00	50.00	4.00
WR5120250508	2.50	0.50	4.00	8.00	50.00	4.00
WR5120250510	2.50	0.50	4.00	10.00	50.00	4.00
WR5120250512	2.50	0.50	4.00	12.00	50.00	4.00
WR5120250514	2.50	0.50	4.00	14.00	50.00	4.00
WR5120250516	2.50	0.50	4.00	16.00	50.00	4.00
WR5120250520	2.50	0.50	4.00	20.00	50.00	4.00
WR5120250126	2.50	0.10	4.00	26.00	60.00	4.00
WR5120250226	2.50	0.20	4.00	26.00	60.00	4.00
WR5120250326	2.50	0.30	4.00	26.00	60.00	4.00
WR5120250526	2.50	0.50	4.00	26.00	60.00	4.00
WR5120250130	2.50	0.10	4.00	30.00	70.00	4.00
WR5120250230	2.50	0.20	4.00	30.00	70.00	4.00
WR5120250330	2.50	0.30	4.00	30.00	70.00	4.00
WR5120250530	2.50	0.50	4.00	30.00	70.00	4.00
WR5120300108	3.00	0.10	4.50	8.00	50.00	6.00
WR5120300110	3.00	0.10	4.50	10.00	50.00	6.00
WR5120300112	3.00	0.10	4.50	12.00	50.00	6.00
WR5120300208	3.00	0.20	4.50	8.00	50.00	6.00
WR5120300210	3.00	0.20	4.50	10.00	50.00	6.00
WR5120300212	3.00	0.20	4.50	12.00	50.00	6.00
WR5120300308	3.00	0.30	4.50	8.00	50.00	6.00
WR5120300310	3.00	0.30	4.50	10.00	50.00	6.00
WR5120300312	3.00	0.30	4.50	12.00	50.00	6.00
WR5120300508	3.00	0.50	4.50	8.00	50.00	6.00
WR5120300510	3.00	0.50	4.50	10.00	50.00	6.00
WR5120300512	3.00	0.50	4.50	12.00	50.00	6.00
WR5120301008	3.00	1.00	4.50	8.00	50.00	6.00
WR5120301010	3.00	1.00	4.50	10.00	50.00	6.00
WR5120301012	3.00	1.00	4.50	12.00	50.00	6.00
WR5120300114	3.00	0.10	4.50	14.00	60.00	6.00
WR5120300116	3.00	0.10	4.50	16.00	60.00	6.00
WR5120300120	3.00	0.10	4.50	20.00	60.00	6.00
WR5120300214	3.00	0.20	4.50	14.00	60.00	6.00
WR5120300216	3.00	0.20	4.50	16.00	60.00	6.00
WR5120300220	3.00	0.20	4.50	20.00	60.00	6.00
WR5120300314	3.00	0.30	4.50	14.00	60.00	6.00
WR5120300316	3.00	0.30	4.50	16.00	60.00	6.00
WR5120300320	3.00	0.30	4.50	20.00	60.00	6.00
WR5120300514	3.00	0.50	4.50	14.00	60.00	6.00
WR5120300516	3.00	0.50	4.50	16.00	60.00	6.00
WR5120300520	3.00	0.50	4.50	20.00	60.00	6.00
WR5120301014	3.00	1.00	4.50	14.00	60.00	6.00

WINNER

WR512 Series

>>Continue

EDP NO. 2 Flute W Coating Helix 30°	Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
WR512	D1	R	L1	L2	L3	D2
WR5120301016	3.00	1.00	4.50	16.00	60.00	6.00
WR5120301020	3.00	1.00	4.50	20.00	60.00	6.00
WR5120300126	3.00	0.10	4.50	26.00	65.00	6.00
WR5120300226	3.00	0.20	4.50	26.00	65.00	6.00
WR5120300326	3.00	0.30	4.50	26.00	65.00	6.00
WR5120300526	3.00	0.50	4.50	26.00	65.00	6.00
WR5120301026	3.00	1.00	4.50	26.00	65.00	6.00
WR5120300130	3.00	0.10	4.50	30.00	70.00	6.00
WR5120300135	3.00	0.10	4.50	35.00	70.00	6.00
WR5120300230	3.00	0.20	4.50	30.00	70.00	6.00
WR5120300235	3.00	0.20	4.50	35.00	70.00	6.00
WR5120300330	3.00	0.30	4.50	30.00	70.00	6.00
WR5120300335	3.00	0.30	4.50	35.00	70.00	6.00
WR5120300530	3.00	0.50	4.50	30.00	70.00	6.00
WR5120300535	3.00	0.50	4.50	35.00	70.00	6.00
WR5120301030	3.00	1.00	4.50	30.00	70.00	6.00
WR5120301035	3.00	1.00	4.50	35.00	70.00	6.00
WR5120300140	3.00	0.10	4.50	40.00	80.00	6.00
WR5120300240	3.00	0.20	4.50	40.00	80.00	6.00
WR5120300340	3.00	0.30	4.50	40.00	80.00	6.00
WR5120300540	3.00	0.50	4.50	40.00	80.00	6.00
WR5120301040	3.00	1.00	4.50	40.00	80.00	6.00
WR5120400110	4.00	0.10	6.00	10.00	50.00	6.00
WR5120400112	4.00	0.10	6.00	12.00	50.00	6.00
WR5120400210	4.00	0.20	6.00	10.00	50.00	6.00
WR5120400212	4.00	0.20	6.00	12.00	50.00	6.00
WR5120400310	4.00	0.30	6.00	10.00	50.00	6.00
WR5120400312	4.00	0.30	6.00	12.00	50.00	6.00
WR5120400510	4.00	0.50	6.00	10.00	50.00	6.00
WR5120400512	4.00	0.50	6.00	12.00	50.00	6.00
WR5120401010	4.00	1.00	6.00	10.00	50.00	6.00
WR5120401012	4.00	1.00	6.00	12.00	50.00	6.00
WR5120400114	4.00	0.10	6.00	14.00	60.00	6.00
WR5120400116	4.00	0.10	6.00	16.00	60.00	6.00
WR5120400120	4.00	0.10	6.00	20.00	60.00	6.00
WR5120400214	4.00	0.20	6.00	14.00	60.00	6.00
WR5120400216	4.00	0.20	6.00	16.00	60.00	6.00
WR5120400220	4.00	0.20	6.00	20.00	60.00	6.00
WR5120400314	4.00	0.30	6.00	14.00	60.00	6.00
WR5120400316	4.00	0.30	6.00	16.00	60.00	6.00
WR5120400320	4.00	0.30	6.00	20.00	60.00	6.00
WR5120400514	4.00	0.50	6.00	14.00	60.00	6.00
WR5120400516	4.00	0.50	6.00	16.00	60.00	6.00
WR5120400520	4.00	0.50	6.00	20.00	60.00	6.00
WR5120401014	4.00	1.00	6.00	14.00	60.00	6.00
WR5120401016	4.00	1.00	6.00	16.00	60.00	6.00

>>Continue

EDP NO. 2 Flute W Coating Helix 30°	Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
WR512	D1	R	L1	L2	L3	D2
WR5120401020	4.00	1.00	6.00	20.00	60.00	6.00
WR5120400126	4.00	0.10	6.00	26.00	65.00	6.00
WR5120400130	4.00	0.10	6.00	30.00	65.00	6.00
WR5120400226	4.00	0.20	6.00	26.00	65.00	6.00
WR5120400230	4.00	0.20	6.00	30.00	65.00	6.00
WR5120400326	4.00	0.30	6.00	26.00	65.00	6.00
WR5120400330	4.00	0.30	6.00	30.00	65.00	6.00
WR5120400526	4.00	0.50	6.00	26.00	65.00	6.00
WR5120400530	4.00	0.50	6.00	30.00	65.00	6.00
WR5120401026	4.00	1.00	6.00	26.00	65.00	6.00
WR5120401030	4.00	1.00	6.00	30.00	65.00	6.00
WR5120400135	4.00	0.10	6.00	35.00	70.00	6.00
WR5120400235	4.00	0.20	6.00	35.00	70.00	6.00
WR5120400335	4.00	0.30	6.00	35.00	70.00	6.00
WR5120400535	4.00	0.50	6.00	35.00	70.00	6.00
WR5120401035	4.00	1.00	6.00	35.00	70.00	6.00
WR5120400140	4.00	0.10	6.00	40.00	80.00	6.00
WR5120400240	4.00	0.20	6.00	40.00	80.00	6.00
WR5120400340	4.00	0.30	6.00	40.00	80.00	6.00
WR5120400540	4.00	0.50	6.00	40.00	80.00	6.00
WR5120401040	4.00	1.00	6.00	40.00	80.00	6.00
WR5120400145	4.00	0.10	6.00	45.00	90.00	6.00
WR5120400245	4.00	0.20	6.00	45.00	90.00	6.00
WR5120400345	4.00	0.30	6.00	45.00	90.00	6.00
WR5120400545	4.00	0.50	6.00	45.00	90.00	6.00
WR5120401045	4.00	1.00	6.00	45.00	90.00	6.00
WR5120400150	4.00	0.10	6.00	50.00	100.00	6.00
WR5120400250	4.00	0.20	6.00	50.00	100.00	6.00
WR5120400350	4.00	0.30	6.00	50.00	100.00	6.00
WR5120400550	4.00	0.50	6.00	50.00	100.00	6.00
WR5120401050	4.00	1.00	6.00	50.00	100.00	6.00
WR51205001	5.00	0.10	8.00	15.00	60.00	6.00
WR51205002	5.00	0.20	8.00	15.00	60.00	6.00
WR51205003	5.00	0.30	8.00	15.00	60.00	6.00
WR51205005	5.00	0.50	8.00	15.00	60.00	6.00
WR51205010	5.00	1.00	8.00	15.00	60.00	6.00
WR51205015	5.00	1.50	8.00	15.00	60.00	6.00
WR51205020	5.00	2.00	8.00	15.00	60.00	6.00
WR5120600262SP	6.00	?	6.80	?	62.00	6.00
WR51206001	6.00	0.10	9.00	20.00	60.00	6.00
WR51206002	6.00	0.20	9.00	20.00	60.00	6.00
WR51206003	6.00	0.30	9.00	20.00	60.00	6.00
WR51206005	6.00	0.50	9.00	20.00	60.00	6.00
WR51206010	6.00	1.00	9.00	20.00	60.00	6.00
WR51206015	6.00	1.50	9.00	20.00	60.00	6.00
WR51206020	6.00	2.00	9.00	20.00	60.00	6.00

WINNER

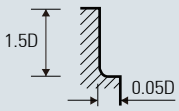
WR512 Series

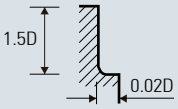
EDP NO. 2 Flute W Coating Helix 30°	Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
WR512	D1	R	L1	L2	L3	D2
WR5120600390	6.00	0.30	15.00	30.00	90.00	6.00
WR5120600590	6.00	0.50	15.00	30.00	90.00	6.00
WR5120601090	6.00	1.00	15.00	30.00	90.00	6.00
WR51208001	8.00	0.10	12.00	25.00	70.00	8.00
WR51208002	8.00	0.20	12.00	25.00	70.00	8.00
WR51208003	8.00	0.30	12.00	25.00	70.00	8.00
WR51208005	8.00	0.50	12.00	25.00	70.00	8.00
WR51208010	8.00	1.00	12.00	25.00	70.00	8.00
WR51208015	8.00	1.50	12.00	25.00	70.00	8.00
WR51208020	8.00	2.00	12.00	25.00	70.00	8.00
WR51208003100	8.00	0.30	20.00	35.00	100.00	8.00
WR51208005100	8.00	0.50	20.00	35.00	100.00	8.00
WR51208010100	8.00	1.00	20.00	35.00	100.00	8.00
WR51210001	10.00	0.10	15.00	30.00	75.00	10.00
WR51210002	10.00	0.20	15.00	30.00	75.00	10.00
WR51210003	10.00	0.30	15.00	30.00	75.00	10.00
WR51210005	10.00	0.50	15.00	30.00	75.00	10.00
WR51210010	10.00	1.00	15.00	30.00	75.00	10.00
WR51210015	10.00	1.50	15.00	30.00	75.00	10.00
WR51210020	10.00	2.00	15.00	30.00	75.00	10.00
WR51210003100	10.00	0.30	25.00	40.00	100.00	10.00
WR51210005100	10.00	0.50	25.00	40.00	100.00	10.00
WR51210010100	10.00	1.00	25.00	40.00	100.00	10.00
WR51212004108SP	12.00	0.20	13.50	35.50	108.00	12.00
WR51212002	12.00	0.20	18.00	32.00	80.00	12.00
WR51212003	12.00	0.30	18.00	32.00	80.00	12.00
WR51212005	12.00	0.50	18.00	32.00	80.00	12.00
WR51212010	12.00	1.00	18.00	32.00	80.00	12.00
WR51212015	12.00	1.50	18.00	32.00	80.00	12.00
WR51212020	12.00	2.00	18.00	32.00	80.00	12.00
WR51212003110	12.00	0.30	30.00	45.00	110.00	12.00
WR51212005110	12.00	0.50	30.00	45.00	110.00	12.00
WR51212010110	12.00	1.00	30.00	45.00	110.00	12.00
WR51216005	16.00	0.50	20.00	35.00	100.00	16.00
WR51216010	16.00	1.00	20.00	35.00	100.00	16.00
WR51216005150	16.00	0.50	35.00	50.00	150.00	16.00
WR51216010150	16.00	1.00	35.00	50.00	150.00	16.00
WR51220005	20.00	0.50	25.00	40.00	100.00	20.00
WR51220010	20.00	1.00	25.00	40.00	100.00	20.00
WR51220005150	20.00	0.50	40.00	55.00	150.00	20.00
WR51220010150	20.00	1.00	40.00	55.00	150.00	20.00

WR512 Series

Work Material	Alloy Steels, Carbon Steels (SCM, SNCM, S45C)		Prehardened Steels (NAK, CENA, KP4)		Hardened Steels (SKD, SKT, STAVAX)	
Hardness	≤ 35 HRc		35 ~ 45 HRc		45 ~ 55 HRc	
Strength	≤ 1100N / mm²		1100~1500N / mm²		1500~2000N / mm²	
Cutting Diameter (metric)	RPM	FEED	RPM	FEED	RPM	FEED
6.0	14,880	3,210	14,100	2,940	9,600	2,940
8.0	12,000	3,300	11,400	3,000	7,200	2,760
10.0	9,600	2,940	9,300	2,700	5,700	2,460
12.0	7,800	2,700	7,500	2,460	4,800	2,280
16.0	6,000	2,400	5,820	2,220	3,600	2,040
20.0	4,800	2,010	4,680	2,040	2,880	1,920

RPM = rev. / min.
FEED = mm / min.



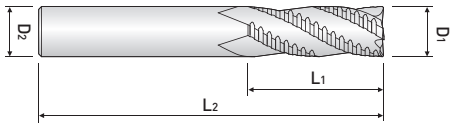


WINNER

WF61x Series

ROUGHER / 3, 4 & 5 FLUTES / REGULAR / W-COATING

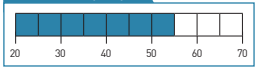
ULTRA FINE | Slotting | Side milling



TOLERANCE (metric)

D_1 = +0 / -0.040 (WF613 D1≤3.0)
D_1 = +0 / -0.048 (WF613 D1= 4.0 - 6.0)
D_1 = +0 / -0.058 (WF613, WF614 D1= 7.0 - 10.0)
D_1 = +0 / -0.070 (WF614 D1= 11.0 - 18.0)
D_1 = +0 / -0.084 (WF614, WF615 D1 ≥ 20.0)
D_2 = h6

HARDNESS (HRc)



EDP NO.			Cutting Diameter (metric)	Cutting Length (metric)	Overall Length (metric)	Shank Diameter (metric)
3 Flute	4 Flute	5 Flute				
W Coating	W Coating	W Coating				
Helix 20°	Helix 20°	Helix 20°				
WF613	WF614	WF615	D1	L1	L2	D2
WF613030	-	-	3.00	8.00	50.00	6.00
WF613040	-	-	4.00	10.00	50.00	6.00
WF613050	-	-	5.00	13.00	50.00	6.00
WF613060	-	-	6.00	15.00	60.00	6.00
WF61306020	-	-	6.00	20.00	60.00	6.00
WF613070	-	-	7.00	18.00	70.00	8.00
WF613080	-	-	8.00	20.00	70.00	8.00
WF61308025	-	-	8.00	25.00	70.00	8.00
-	WF614090	-	9.00	22.00	75.00	10.00
-	WF614100	-	10.00	25.00	75.00	10.00
-	WF61410030	-	10.00	30.00	75.00	10.00
-	WF614110	-	11.00	27.00	80.00	12.00
-	WF614120	-	12.00	30.00	80.00	12.00
-	WF61412035	-	12.00	35.00	80.00	12.00
-	WF614130	-	13.00	35.00	100.00	12.00
-	WF614140	-	14.00	35.00	100.00	16.00
-	WF614160	-	16.00	40.00	100.00	16.00
-	WF614180	-	18.00	40.00	100.00	18.00
-	WF614200	-	20.00	50.00	100.00	20.00
-	-	WF615250	25.00	50.00	100.00	25.00

Applicable Working Material

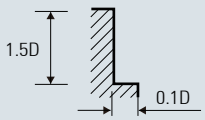
○ : GOOD ◎ : BEST

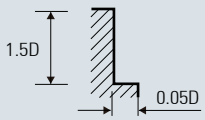
SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
All	○	○	○	○	◎	○	○	○	○					◎	◎	◎	○				

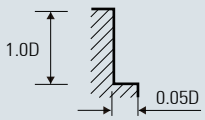
WF61x Series

Work Material	Alloy Steels, Carbon Steels (SCM, SNCM, S45C)		Prehardened Steels (NAK, CENA, KP4)		Hardened Steels (SKD, SKT, STAVAX)	
Hardness	≤ 35 HRc		35 ~ 45 HRc		45 ~ 55 HRc	
Strength	≤ 1100N / mm²		1100~1500N / mm²		1500~2000N / mm²	
Cutting Diameter (metric)	RPM	FEED	RPM	FEED	RPM	FEED
6.0	12,400	840	8,400	570	3,400	260
8.0	9,200	840	6,300	570	2,400	240
10.0	7,600	840	5,100	570	2,000	290
12.0	6,000	800	4,200	570	1,680	260
14.0	5,200	840	3,600	570	1,400	200
16.0	4,800	760	3,300	510	1,200	160
18.0	4,400	720	2,700	420	1,100	150
20.0	3,600	560	2,400	360	1,000	150
25.0	3,200	620	2,160	410	900	160

RPM = rev. / min.
FEED = mm / min.





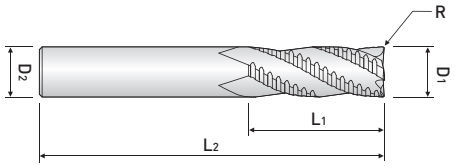


WINNER

WF60x Series

ROUGHER / 3, 4 & 5 FLUTES / REGULAR / VARIABLE INDEX / W-COATING

ULTRA FINE | Slotting | Side milling | Variable index



TOLERANCE (metric)

D_1 = +0 / -0.05
D_2 = h6

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO.			Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Overall Length (metric)	Shank Diameter (metric)
3 Flute	4 Flute	5 Flute					
W Coating	W Coating	W Coating					
Variable Helix	Variable Helix	Variable Helix					
WF603	WF604	WF605	D1	R	L1	L2	D2
WF603030	-	-	3.00	0.20	8.00	50.00	6.00
WF603040	-	-	4.00	0.20	10.00	50.00	6.00
-	WF604050	-	5.00	0.20	13.00	50.00	6.00
-	WF604060	-	6.00	0.20	10.00	50.00	6.00
-	WF60406015	-	6.00	0.20	15.00	60.00	6.00
-	WF604070	-	7.00	0.20	18.00	70.00	8.00
-	WF604080	-	8.00	0.20	12.00	60.00	8.00
-	WF60408020	-	8.00	0.20	20.00	70.00	8.00
-	WF604090	-	9.00	0.30	22.00	75.00	10.00
-	WF604100	-	10.00	0.30	15.00	65.00	10.00
-	WF60410025	-	10.00	0.30	25.00	75.00	10.00
-	WF604110	-	11.00	0.30	27.00	80.00	12.00
-	WF604120	-	12.00	0.30	20.00	70.00	12.00
-	WF60412030	-	12.00	0.30	30.00	80.00	12.00
-	-	WF605130	13.00	0.50	35.00	100.00	12.00
-	-	WF605140	14.00	0.50	35.00	100.00	14.00
-	-	WF605140S16	14.00	0.50	35.00	100.00	16.00
-	-	WF605160	16.00	1.00	25.00	80.00	16.00
-	-	WF60516040	16.00	1.00	40.00	100.00	16.00
-	-	WF605180	18.00	1.00	40.00	100.00	18.00
-	-	WF605180S20	18.00	1.00	40.00	100.00	20.00
-	-	WF605200	20.00	1.00	25.00	80.00	20.00
-	-	WF60520045	20.00	1.00	45.00	100.00	20.00
-	-	WF605250	25.00	1.00	45.00	100.00	25.00

Applicable Working Material

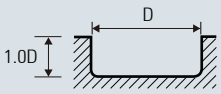
○ : GOOD ◎ : BEST

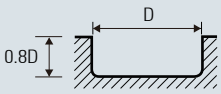
SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
All	○	○	○	○	◎	○	○	○	○					◎	◎	◎	○				

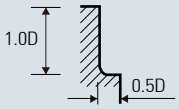
WF60x Series

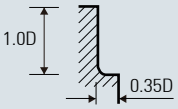
End Cutting	Slotting				Side Milling			
Work Material	Alloy Steels, Carbon Steels (SCM, SNCM, S45C)		Alloy Steels, Carbon Steels Prehardened Steels (NAK, CENA, KP4)		Alloy Steels, Carbon Steels (SCM, SNCM, S45C)		Alloy Steels, Carbon Steels Prehardened Steels (NAK, CENA, KP4)	
Hardness	≤ 25 HRc		25 ~ 40 HRc		≤ 25 HRc		25 ~ 40 HRc	
Cutting Diameter (metric)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
6.0	12,000	1,550	10,600	1,100	15,800	2,570	14,300	1,850
8.0	9,000	1,650	8,100	1,180	11,900	2,700	10,700	1,950
10.0	7,200	1,650	6,400	1,180	9,500	2,700	8,500	1,950
12.0	6,000	1,540	5,400	1,140	8,000	2,570	7,100	1,850
16.0	4,500	1,500	4,100	1,050	6,000	2,450	5,400	1,750
20.0	3,600	1,330	3,200	900	4,800	2,140	4,300	1,500

RPM = rev. / min.
FEED = mm / min.







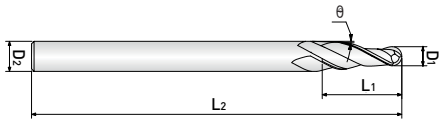


WINNER

WTB502 Series

TAPER BALL / 2 FLUTES / REGULAR & LONG / W-COATING

ULTRA FINE | Slotting | Side milling



TOLERANCE (metric)

D_1 = +0 / -0.03
D_2 = h6

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO. 2 Flute W Coating Helix 30°	Cutting Diameter (metric)	Cutting Length (metric)	Taper Degree°	Overall Length (metric)	Shank Diameter (metric)
WTB502	D1	L1	θ	L2	D2
WTB502003005	0.30	1.20	30`	40.00	4.00
WTB50200301	0.30	1.20	1°	40.00	4.00
WTB502003015	0.30	1.20	1°30`	40.00	4.00
WTB50200302	0.30	1.20	2°	40.00	4.00
WTB50200303	0.30	1.20	3°	40.00	4.00
WTB50200305	0.30	1.20	5°	40.00	4.00
WTB50200307	0.30	1.50	7°	40.00	4.00
WTB50200310	0.30	1.50	10°	40.00	4.00
WTB502004005	0.40	1.60	30`	40.00	4.00
WTB50200401	0.40	1.60	1°	40.00	4.00
WTB502004015	0.40	1.60	1°30`	40.00	4.00
WTB50200402	0.40	1.60	2°	40.00	4.00
WTB50200403	0.40	1.60	3°	40.00	4.00
WTB50200405	0.40	1.60	5°	40.00	4.00
WTB50200407	0.40	2.00	7°	40.00	4.00
WTB50200410	0.40	2.00	10°	40.00	4.00
WTB502005005	0.50	2.00	30`	45.00	4.00
WTB50200501	0.50	2.00	1°	45.00	4.00
WTB502005015	0.50	2.00	1°30`	45.00	4.00
WTB50200502	0.50	2.00	2°	45.00	4.00
WTB50200503	0.50	2.00	3°	45.00	4.00
WTB50200505	0.50	2.00	5°	45.00	4.00
WTB50200507	0.50	2.50	7°	45.00	4.00
WTB50200510	0.50	2.50	10°	45.00	4.00
WTB502006005	0.60	2.00	30`	45.00	4.00
WTB50200601	0.60	2.00	1°	45.00	4.00
WTB502006015	0.60	2.00	1°30`	45.00	4.00
WTB50200602	0.60	2.00	2°	45.00	4.00
WTB50200603	0.60	2.00	3°	45.00	4.00
WTB50200605	0.60	2.00	5°	45.00	4.00
WTB50200607	0.60	2.50	7°	45.00	4.00
WTB50200610	0.60	2.50	10°	45.00	4.00
WTB502007005	0.70	2.50	30`	45.00	4.00
WTB50200701	0.70	2.50	1°	45.00	4.00
WTB502007015	0.70	2.50	1°30`	45.00	4.00
WTB50200702	0.70	2.50	2°	45.00	4.00

Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
WTB502	○	○	○	○	◎	○	○	○	○					◎	◎	◎	○				

WINNER

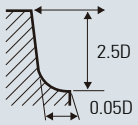
WTB502 Series

EDP NO. 2 Flute W Coating Helix 30°	Cutting Diameter (metric)	Cutting Length (metric)	Taper Degree°	Overall Length (metric)	Shank Diameter (metric)
WTB502	D1	L1	θ	L2	D2
WTB50200703	0.70	2.50	3˚	45.00	4.00
WTB50200705	0.70	2.50	5˚	45.00	4.00
WTB50200707	0.70	3.00	7˚	45.00	4.00
WTB50200710	0.70	3.00	10˚	45.00	4.00
WTB502008005	0.80	3.20	30`	45.00	4.00
WTB50200801	0.80	3.20	1˚	45.00	4.00
WTB502008015	0.80	3.20	1˚30`	45.00	4.00
WTB50200802	0.80	3.20	2˚	45.00	4.00
WTB50200803	0.80	3.20	3˚	45.00	4.00
WTB50200805	0.80	3.20	5˚	45.00	4.00
WTB50200807	0.80	3.20	7˚	45.00	4.00
WTB50200810	0.80	3.20	10˚	45.00	4.00
WTB502010005	1.00	4.00	30`	50.00	4.00
WTB50201001	1.00	4.00	1˚	50.00	4.00
WTB502010015	1.00	4.00	1˚30`	50.00	4.00
WTB50201002	1.00	4.00	2˚	50.00	4.00
WTB50201003	1.00	4.00	3˚	50.00	4.00
WTB50201005	1.00	4.00	5˚	50.00	4.00
WTB50201007	1.00	4.00	7˚	50.00	4.00
WTB50201010	1.00	4.00	10˚	50.00	4.00
WTB502015005	1.50	6.00	30`	50.00	4.00
WTB50201501	1.50	6.00	1˚	50.00	4.00
WTB502015015	1.50	6.00	1˚30`	50.00	4.00
WTB50201502	1.50	7.00	2˚	50.00	4.00
WTB50201503	1.50	8.00	3˚	50.00	4.00
WTB50201505	1.50	10.00	5˚	50.00	4.00
WTB50201507	1.50	10.00	7˚	50.00	4.00
WTB50201510	1.50	10.00	10˚	50.00	6.00
WTB502020005	2.00	6.00	30`	50.00	4.00
WTB50202001	2.00	6.00	1˚	50.00	4.00
WTB502020015	2.00	6.00	1˚30`	50.00	4.00
WTB50202002	2.00	10.00	2˚	50.00	4.00
WTB50202003	2.00	10.00	3˚	50.00	4.00
WTB50202005	2.00	10.00	5˚	50.00	4.00
WTB50202007	2.00	10.00	7˚	50.00	6.00
WTB50202010	2.00	11.00	10˚	50.00	6.00

WTB502 Series

Work Material	Alloy Steels, Carbon Steels(SCM, SNCM, S45C)		Prehardened Steels(NAK, CENA, KP4)	
Hardness	≤ 35 HRc		35 ~ 45 HRc	
Strength	≤ 1100N / mm²		1100~1500N / mm²	
Cutting Diameter(metric)	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
1.0	14,850	149	11,250	113
2.0	7,560	153	5,670	113
3.0	3,969	108	3,213	90
4.0	3,213	126	2,556	104

RPM = rev. / min.
FEED = mm / min.

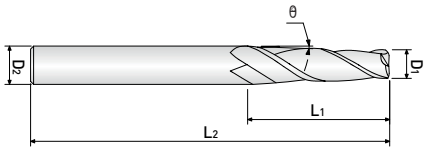


WINNER

WTE502, WTE504 Series

TAPER SQUARE / 2 & 4 FLUTES / REGULAR & LONG / W-COATING

ULTRA FINE | Slotting | Side milling



TOLERANCE (metric)

D_1 = +0 / -0.03
D_2 = h6

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO.		Cutting Diameter (metric)	Cutting Length (metric)	Taper Degree°	Overall Length (metric)	Shank Diameter (metric)
2 Flute W Coating Helix 30°	4 Flute W Coating Helix 30°					
WTE502	WTE504	D1	L1	θ	L2	D2
WTE502003005	-	0.30	1.20	30`	40.00	4.00
WTE50200301	-	0.30	1.20	1°	40.00	4.00
WTE502003015	-	0.30	1.20	1°30`	40.00	4.00
WTE50200302	-	0.30	1.20	2°	40.00	4.00
WTE50200303	-	0.30	1.50	3°	40.00	4.00
WTE50200305	-	0.30	1.50	5°	40.00	4.00
WTE50200307	-	0.30	1.50	7°	40.00	4.00
WTE50200310	-	0.30	1.50	10°	40.00	4.00
WTE502004005	-	0.40	1.60	30`	40.00	4.00
WTE50200401	-	0.40	1.60	1°	40.00	4.00
WTE502004015	-	0.40	1.60	1°30`	40.00	4.00
WTE50200402	-	0.40	1.60	2°	40.00	4.00
WTE50200403	-	0.40	1.60	3°	40.00	4.00
WTE50200405	-	0.40	2.00	5°	40.00	4.00
WTE50200407	-	0.40	2.00	7°	40.00	4.00
WTE50200410	-	0.40	2.00	10°	40.00	4.00
WTE502005005	-	0.50	2.00	30`	45.00	4.00
WTE50200501	-	0.50	2.00	1°	45.00	4.00
WTE502005015	-	0.50	2.00	1°30`	45.00	4.00
WTE50200502	-	0.50	2.00	2°	45.00	4.00
WTE50200503	-	0.50	2.00	3°	45.00	4.00
WTE50200505	-	0.50	2.50	5°	45.00	4.00
WTE50200507	-	0.50	2.50	7°	45.00	4.00
WTE50200510	-	0.50	2.50	10°	45.00	4.00
WTE502006005	-	0.60	2.40	30`	45.00	4.00
WTE50200601	-	0.60	2.40	1°	45.00	4.00
WTE502006015	-	0.60	2.40	1°30`	45.00	4.00
WTE50200602	-	0.60	2.40	2°	45.00	4.00
WTE50200603	-	0.60	2.40	3°	45.00	4.00
WTE50200605	-	0.60	3.00	5°	45.00	4.00
WTE50200607	-	0.60	3.00	7°	45.00	4.00
WTE50200610	-	0.60	3.00	10°	45.00	4.00
WTE502007005	-	0.70	2.80	30`	45.00	4.00
WTE50200701	-	0.70	2.80	1°	45.00	4.00
WTE502007015	-	0.70	2.80	1°30`	45.00	4.00
WTE50200702	-	0.70	2.80	2°	45.00	4.00

Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
All	○	○	○	○	◎	○	○	○	○					◎	◎	◎	○				

WINNER

WTE502, WTE504 Series

EDP NO.		Cutting Diameter (metric)	Cutting Length (metric)	Taper Degree°	Overall Length (metric)	Shank Diameter (metric)
2 Flute	4 Flute					
W Coating	W Coating					
Helix 30°	Helix 30°					
WTE502	WTE504	D1	L1	θ	L2	D2
WTE50200703	-	0.70	2.80	3°	45.00	4.00
WTE50200705	-	0.70	3.50	5°	45.00	4.00
WTE50200707	-	0.70	3.50	7°	45.00	4.00
WTE50200710	-	0.70	3.50	10°	45.00	4.00
WTE502008005	-	0.80	3.20	30`	45.00	4.00
WTE50200801	-	0.80	3.20	1°	45.00	4.00
WTE502008015	-	0.80	3.20	1°30`	45.00	4.00
WTE50200802	-	0.80	3.20	2°	45.00	4.00
WTE50200803	-	0.80	3.20	3°	45.00	4.00
WTE50200805	-	0.80	4.00	5°	45.00	4.00
WTE50200807	-	0.80	4.00	7°	45.00	4.00
WTE50200810	-	0.80	4.00	10°	45.00	4.00
WTE502010005	-	1.00	4.00	30`	50.00	4.00
WTE50201001	-	1.00	4.00	1°	50.00	4.00
WTE502010015	-	1.00	4.00	1°30`	50.00	4.00
WTE50201002	-	1.00	6.00	2°	50.00	4.00
WTE50201003	-	1.00	6.00	3°	50.00	4.00
WTE50201005	-	1.00	8.00	5°	50.00	4.00
WTE50201007	-	1.00	8.00	7°	50.00	4.00
WTE50201010	-	1.00	8.00	10°	50.00	4.00
WTE502015005	-	1.50	6.00	30`	50.00	4.00
WTE50201501	-	1.50	6.00	1°	50.00	4.00
WTE502015015	-	1.50	6.00	1°30`	50.00	4.00
WTE50201502	-	1.50	8.00	2°	50.00	4.00
WTE50201503	-	1.50	8.00	3°	50.00	4.00
WTE50201505	-	1.50	10.00	5°	50.00	4.00
WTE50201507	-	1.50	10.00	7°	50.00	4.00
WTE50201510	-	1.50	10.00	10°	50.00	6.00
WTE502020005	-	2.00	8.00	30`	50.00	4.00
WTE50202001	-	2.00	8.00	1°	50.00	4.00
WTE502020015	-	2.00	8.00	1°30`	50.00	4.00
WTE50202002	-	2.00	10.00	2°	50.00	4.00
WTE50202003	-	2.00	10.00	3°	50.00	4.00
WTE50202005	-	2.00	12.00	5°	50.00	6.00
WTE50202007	-	2.00	12.00	7°	50.00	6.00
WTE50202010	-	2.00	12.00	10°	50.00	8.00
WTE502025005	-	2.50	10.00	30`	50.00	6.00
WTE50202501	-	2.50	10.00	1°	50.00	6.00
WTE502025015	-	2.50	10.00	1°30`	50.00	6.00
WTE50202502	-	2.50	12.00	2°	50.00	6.00
WTE50202503	-	2.50	12.00	3°	50.00	6.00
WTE50202505	-	2.50	14.00	5°	50.00	6.00
WTE50202507	-	2.50	14.00	7°	50.00	6.00
WTE50202510	-	2.50	14.00	10°	50.00	8.00
WTE502030005	WTE504030005	3.00	12.00	30`	50.00	6.00
WTE50203001	WTE50403001	3.00	12.00	1°	50.00	6.00

WINNER

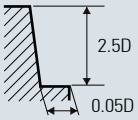
WTE502, WTE504 Series

EDP NO.		Cutting Diameter (metric)	Cutting Length (metric)	Taper Degree°	Overall Length (metric)	Shank Diameter (metric)
2 Flute	4 Flute					
W Coating	W Coating					
Helix 30°	Helix 30°					
WTE502	WTE504	D1	L1	θ	L2	D2
WTE502030015	WTE504030015	3.00	12.00	1°30`	50.00	6.00
WTE50203002	WTE50403002	3.00	14.00	2°	50.00	6.00
WTE50203003	WTE50403003	3.00	14.00	3°	50.00	6.00
WTE50203005	WTE50403005	3.00	16.00	5°	50.00	6.00
WTE50203007	WTE50403007	3.00	16.00	7°	50.00	8.00
WTE50203010	WTE50403010	3.00	16.00	10°	50.00	10.00
WTE502040005	WTE504040005	4.00	16.00	30`	60.00	6.00
WTE50204001	WTE50404001	4.00	16.00	1°	60.00	6.00
WTE502040015	WTE504040015	4.00	16.00	1°30`	60.00	6.00
WTE50204002	WTE50404002	4.00	16.00	2°	60.00	6.00
WTE50204007	WTE50404007	4.00	16.00	7°	65.00	8.00
WTE50204010	WTE50404010	4.00	17.00	10°	65.00	10.00
WTE50204003	WTE50404003	4.00	19.00	3°	60.00	6.00
WTE50204005	WTE50404005	4.00	22.00	5°	65.00	8.00
WTE50206010	WTE50406010	6.00	17.00	10°	75.00	12.00
WTE50206003	WTE50406003	6.00	19.00	3°	65.00	8.00
WTE502060005	WTE504060005	6.00	20.00	30`	65.00	8.00
WTE50206001	WTE50406001	6.00	20.00	1°	65.00	8.00
WTE502060015	WTE504060015	6.00	20.00	1°30`	65.00	8.00
WTE50206002	WTE50406002	6.00	20.00	2°	65.00	8.00
WTE50206005	WTE50406005	6.00	22.00	5°	75.00	10.00
WTE50206007	WTE50406007	6.00	24.00	7°	75.00	12.00
WTE502070005	WTE504070005	7.00	28.00	30`	70.00	8.00
WTE50207001	WTE50407001	7.00	28.00	1°	70.00	8.00
WTE502070015	WTE504070015	7.00	28.00	1°30`	70.00	10.00
WTE50207002	WTE50407002	7.00	28.00	2°	80.00	10.00
WTE50207003	WTE50407003	7.00	28.00	3°	80.00	10.00
WTE50207005	WTE50407005	7.00	28.00	5°	80.00	12.00
WTE50208002	WTE50408002	8.00	28.00	2°	90.00	10.00
WTE50208007	WTE50408007	8.00	32.00	7°	90.00	16.00
WTE50208010	WTE50408010	8.00	34.00	10°	100.00	20.00
WTE502080005	WTE504080005	8.00	35.00	30`	90.00	10.00
WTE50208001	WTE50408001	8.00	35.00	1°	90.00	10.00
WTE502080015	WTE504080015	8.00	35.00	1°30`	90.00	10.00
WTE50208003	WTE50408003	8.00	38.00	3°	90.00	12.00
WTE50208005	WTE50408005	8.00	45.00	5°	100.00	16.00
WTE50208010S25	-	8.00	48.00	10°	150.00	25.00
WTE50210005	WTE50410005	10.00	34.00	5°	100.00	16.00
WTE502100015	WTE504100015	10.00	38.00	1°30`	90.00	12.00
WTE50210002	-	10.00	40.00	2°	75.00	16.00
WTE502100005	WTE504100005	10.00	40.00	30`	90.00	12.00
WTE50210001	WTE50410001	10.00	40.00	1°	90.00	12.00
-	WTE50410002	10.00	40.00	2°	90.00	16.00
WTE50210007	WTE50410007	10.00	40.00	7°	90.00	20.00
WTE50210003	WTE50410003	10.00	40.00	3°	100.00	16.00
WTE50210010	WTE50410010	10.00	42.00	10°	100.00	25.00

WTE502 Series

Work Material	Alloy Steels, Carbon Steels(SCM, SNCM, S45C)		Prehardened Steels(NAK, CENA, KP4)	
Hardness	≤ 35 HRc		35 ~ 45 HRc	
Strength	≤ 1100N / mm²		1100~1500N / mm²	
Cutting Diameter(metric)	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
1.0	14,850	149	11,250	113
2.0	7,560	153	5,670	113
3.0	3,969	108	3,213	90
4.0	3,213	126	2,556	104
6.0	2,367	189	1,890	153
8.0	1,800	225	1,422	162
10.0	1,440	225	1,170	167

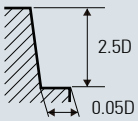
RPM = rev. / min.
FEED = mm / min.



WTE504 Series

Work Material	Alloy Steels, Carbon Steels(SCM, SNCM, S45C)		Prehardened Steels(NAK, CENA, KP4)	
Hardness	≤ 35 HRc		35 ~ 45 HRc	
Strength	≤ 1100N / mm²		1100~1500N / mm²	
Cutting Diameter(metric)	RPM	FEED	RPM	FEED
3.0	3,969	216	3,213	180
4.0	3,213	252	2,556	207
6.0	2,367	378	1,890	306
8.0	1,800	450	1,422	324
10.0	1,440	450	1,170	333

RPM = rev. / min.
FEED = mm / min.

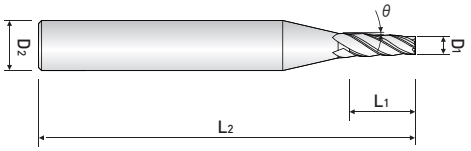


WINNER

WTE514 Series

TAPER SQUARE / 4 FLUTES / X-LONG / W-COATING

ULTRA FINE | Slotting | Side milling



TOLERANCE (metric)

D_1 = +0 / -0.03
D_2 = h6

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO. 4 Flute W Coating Helix 30°	Cutting Diameter (metric)	Cutting Length (metric)	Taper Degree°	Overall Length (metric)	Shank Diameter (metric)
WTE514	D1	L1	θ	L2	D2
WTE51400800504	0.80	4.00	30`	45.00	4.00
WTE51400801004	0.80	4.00	1°	45.00	4.00
WTE51400801504	0.80	4.00	1°30`	45.00	4.00
WTE51400802004	0.80	4.00	2°	45.00	4.00
WTE51400800506	0.80	6.00	30`	45.00	4.00
WTE51400801006	0.80	6.00	1°	45.00	4.00
WTE51400801506	0.80	6.00	1°30`	45.00	4.00
WTE51400802006	0.80	6.00	2°	45.00	4.00
WTE51400800508	0.80	8.00	30`	45.00	4.00
WTE51400801008	0.80	8.00	1°	45.00	4.00
WTE51400801508	0.80	8.00	1°30`	45.00	4.00
WTE51400802008	0.80	8.00	2°	45.00	4.00
WTE51400800510	0.80	10.00	30`	45.00	4.00
WTE51400801010	0.80	10.00	1°	45.00	4.00
WTE51400801510	0.80	10.00	1°30`	45.00	4.00
WTE51400802010	0.80	10.00	2°	45.00	4.00
WTE51400800512	0.80	12.00	30`	45.00	4.00
WTE51400801012	0.80	12.00	1°	45.00	4.00
WTE51400801512	0.80	12.00	1°30`	45.00	4.00
WTE51400802012	0.80	12.00	2°	45.00	4.00
WTE51401000504	1.00	4.00	30`	50.00	4.00
WTE51401001004	1.00	4.00	1°	50.00	4.00
WTE51401001504	1.00	4.00	1°30`	50.00	4.00
WTE51401002004	1.00	4.00	2°	50.00	4.00
WTE51401003004	1.00	4.00	3°	50.00	4.00
WTE51401000506	1.00	6.00	30`	50.00	4.00
WTE51401001006	1.00	6.00	1°	50.00	4.00
WTE51401001506	1.00	6.00	1°30`	50.00	4.00
WTE51401002006	1.00	6.00	2°	50.00	4.00
WTE51401003006	1.00	6.00	3°	50.00	4.00
WTE51401000508	1.00	8.00	30`	50.00	4.00
WTE51401001508	1.00	8.00	1°30`	50.00	4.00
WTE51401002008	1.00	8.00	2°	50.00	4.00
WTE51401003008	1.00	8.00	3°	50.00	4.00
WTE51401001008	1.00	8.00	1°	50.00	4.00

Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
WTE514	○	○	○	○	◎	○	○	○	○					◎	◎	◎	○				

>>Continue

EDP NO. 4 Flute W Coating Helix 30°	Cutting Diameter (metric)	Cutting Length (metric)	Taper Degree°	Overall Length (metric)	Shank Diameter (metric)
WTE514	D1	L1	θ	L2	D2
WTE51401001010	1.00	10.00	1°	50.00	4.00
WTE51401000510	1.00	10.00	30`	50.00	4.00
WTE51401001510	1.00	10.00	1°30`	50.00	4.00
WTE51401002010	1.00	10.00	2°	50.00	4.00
WTE51401003010	1.00	10.00	3°	50.00	4.00
WTE51401000512	1.00	12.00	30`	50.00	4.00
WTE51401001012	1.00	12.00	1°	50.00	4.00
WTE51401001512	1.00	12.00	1°30`	50.00	4.00
WTE51401002012	1.00	12.00	2°	50.00	4.00
WTE51401003012	1.00	12.00	3°	50.00	4.00
WTE51401000516	1.00	16.00	30`	50.00	4.00
WTE51401001016	1.00	16.00	1°	50.00	4.00
WTE51401001516	1.00	16.00	1°30`	50.00	4.00
WTE51401002016	1.00	16.00	2°	50.00	4.00
WTE51401003016	1.00	16.00	3°	50.00	4.00
WTE51401200506	1.20	6.00	30`	50.00	4.00
WTE51401201006	1.20	6.00	1°	50.00	4.00
WTE51401201506	1.20	6.00	1°30`	50.00	4.00
WTE51401202006	1.20	6.00	2°	50.00	4.00
WTE51401203006	1.20	6.00	3°	50.00	4.00
WTE51401200508	1.20	8.00	30`	50.00	4.00
WTE51401201008	1.20	8.00	1°	50.00	4.00
WTE51401201508	1.20	8.00	1°30`	50.00	4.00
WTE51401202008	1.20	8.00	2°	50.00	4.00
WTE51401203008	1.20	8.00	3°	50.00	4.00
WTE51401200510	1.20	10.00	30`	50.00	4.00
WTE51401201010	1.20	10.00	1°	50.00	4.00
WTE51401201510	1.20	10.00	1°30`	50.00	4.00
WTE51401202010	1.20	10.00	2°	50.00	4.00
WTE51401203010	1.20	10.00	3°	50.00	4.00
WTE51401200512	1.20	12.00	30`	50.00	4.00
WTE51401201012	1.20	12.00	1°	50.00	4.00
WTE51401201512	1.20	12.00	1°30`	50.00	4.00
WTE51401202012	1.20	12.00	2°	50.00	4.00
WTE51401203012	1.20	12.00	3°	50.00	4.00
WTE51401200516	1.20	16.00	30`	50.00	4.00
WTE51401201016	1.20	16.00	1°	50.00	4.00
WTE51401201516	1.20	16.00	1°30`	50.00	4.00
WTE51401202016	1.20	16.00	2°	50.00	4.00
WTE51401203016	1.20	16.00	3°	50.00	4.00
WTE51401500506	1.50	6.00	30`	50.00	4.00
WTE51401501006	1.50	6.00	1°	50.00	4.00
WTE51401501506	1.50	6.00	1°30`	50.00	4.00
WTE51401502006	1.50	6.00	2°	50.00	4.00
WTE51401503006	1.50	6.00	3°	50.00	4.00
WTE51401500508	1.50	8.00	30`	50.00	4.00

WTE514 Series

>>Continue

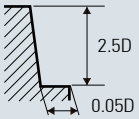
EDP NO. 4 Flute W Coating Helix 30°	Cutting Diameter (metric)	Cutting Length (metric)	Taper Degree°	Overall Length (metric)	Shank Diameter (metric)
WTE514	D1	L1	θ	L2	D2
WTE51401501008	1.50	8.00	1°	50.00	4.00
WTE51401501508	1.50	8.00	1°30`	50.00	4.00
WTE51401502008	1.50	8.00	2°	50.00	4.00
WTE51401503008	1.50	8.00	3°	50.00	4.00
WTE51401500510	1.50	10.00	30`	50.00	4.00
WTE51401501010	1.50	10.00	1°	50.00	4.00
WTE51401501510	1.50	10.00	1°30`	50.00	4.00
WTE51401502010	1.50	10.00	2°	50.00	4.00
WTE51401503010	1.50	10.00	3°	50.00	4.00
WTE51401500512	1.50	12.00	30`	50.00	4.00
WTE51401501012	1.50	12.00	1°	50.00	4.00
WTE51401501512	1.50	12.00	1°30`	50.00	4.00
WTE51401502012	1.50	12.00	2°	50.00	4.00
WTE51401503012	1.50	12.00	3°	50.00	4.00
WTE51401500516	1.50	16.00	30`	50.00	4.00
WTE51401501016	1.50	16.00	1°	50.00	4.00
WTE51401501516	1.50	16.00	1°30`	50.00	4.00
WTE51401502016	1.50	16.00	2°	50.00	4.00
WTE51401503016	1.50	16.00	3°	50.00	4.00
WTE51401500520	1.50	20.00	30`	60.00	4.00
WTE51401501020	1.50	20.00	1°	60.00	4.00
WTE51401501520	1.50	20.00	1°30`	60.00	4.00
WTE51401502020	1.50	20.00	2°	60.00	4.00
WTE51401503020	1.50	20.00	3°	60.00	4.00
WTE51402000508	2.00	8.00	30`	50.00	4.00
WTE51402001008	2.00	8.00	1°	50.00	4.00
WTE51402001508	2.00	8.00	1°30`	50.00	4.00
WTE51402002008	2.00	8.00	2°	50.00	4.00
WTE51402003008	2.00	8.00	3°	50.00	4.00
WTE51402000510	2.00	10.00	30`	50.00	4.00
WTE51402001010	2.00	10.00	1°	50.00	4.00
WTE51402001510	2.00	10.00	1°30`	50.00	4.00
WTE51402002010	2.00	10.00	2°	50.00	4.00
WTE51402003010	2.00	10.00	3°	50.00	4.00
WTE51402000512	2.00	12.00	30`	50.00	4.00
WTE51402001012	2.00	12.00	1°	50.00	4.00
WTE51402001512	2.00	12.00	1°30`	50.00	4.00
WTE51402002012	2.00	12.00	2°	50.00	4.00
WTE51402003012	2.00	12.00	3°	50.00	4.00
WTE51402000516	2.00	16.00	30`	50.00	4.00
WTE51402001016	2.00	16.00	1°	50.00	4.00
WTE51402001516	2.00	16.00	1°30`	50.00	4.00
WTE51402002016	2.00	16.00	2°	50.00	4.00
WTE51402003016	2.00	16.00	3°	50.00	4.00
WTE51402000520	2.00	20.00	30`	60.00	4.00
WTE51402001020	2.00	20.00	1°	60.00	4.00

EDP NO. 4 Flute W Coating Helix 30°	Cutting Diameter (metric)	Cutting Length (metric)	Taper Degree°	Overall Length (metric)	Shank Diameter (metric)
WTE514	D1	L1	θ	L2	D2
WTE51402001520	2.00	20.00	1°30`	60.00	4.00
WTE51402002020	2.00	20.00	2°	60.00	4.00
WTE51402003020	2.00	20.00	3°	60.00	6.00
WTE51402000525	2.00	25.00	30`	60.00	4.00
WTE51402001025	2.00	25.00	1°	60.00	4.00
WTE51402001525	2.00	25.00	1°30`	60.00	4.00
WTE51402002025	2.00	25.00	2°	60.00	4.00
WTE51402003025	2.00	25.00	3°	60.00	6.00
WTE51402500510	2.50	10.00	30`	50.00	4.00
WTE51402501010	2.50	10.00	1°	50.00	4.00
WTE51402501510	2.50	10.00	1°30`	50.00	4.00
WTE51402502010	2.50	10.00	2°	50.00	4.00
WTE51402503010	2.50	10.00	3°	50.00	4.00
WTE51402500512	2.50	12.00	30`	50.00	4.00
WTE51402501012	2.50	12.00	1°	50.00	4.00
WTE51402501512	2.50	12.00	1°30`	50.00	4.00
WTE51402502012	2.50	12.00	2°	50.00	4.00
WTE51402503012	2.50	12.00	3°	50.00	4.00
WTE51402500516	2.50	16.00	30`	50.00	4.00
WTE51402501016	2.50	16.00	1°	50.00	4.00
WTE51402501516	2.50	16.00	1°30`	50.00	4.00
WTE51402502016	2.50	16.00	2°	50.00	4.00
WTE51402503016	2.50	16.00	3°	50.00	6.00
WTE51402500520	2.50	20.00	30`	60.00	4.00
WTE51402501020	2.50	20.00	1°	60.00	4.00
WTE51402501520	2.50	20.00	1°30`	60.00	4.00
WTE51402502020	2.50	20.00	2°	60.00	4.00
WTE51402503020	2.50	20.00	3°	60.00	6.00
WTE51402500525	2.50	25.00	30`	60.00	4.00
WTE51402501025	2.50	25.00	1°	60.00	4.00
WTE51402501525	2.50	25.00	1°30`	60.00	4.00
WTE51402502025	2.50	25.00	2°	60.00	6.00
WTE51402503025	2.50	25.00	3°	60.00	6.00
WTE51402500530	2.50	30.00	30`	60.00	4.00
WTE51402501030	2.50	30.00	1°	60.00	4.00
WTE51402501530	2.50	30.00	1°30`	60.00	6.00
WTE51402502030	2.50	30.00	2°	60.00	6.00
WTE51402503030	2.50	30.00	3°	60.00	6.00

WTE514 Series

Work Material	Alloy Steels, Carbon Steels(SCM, SNCM, S45C)		Prehardened Steels(NAK, CENA, KP4)	
Hardness	≤ 35 HRc		35 ~ 45 HRc	
Strength	≤ 1100N / mm²		1100~1500N / mm²	
Cutting Diameter(metric)	RPM	FEED	RPM	FEED
3.0	3,969	216	3,213	180
4.0	3,213	252	2,556	207
6.0	2,367	378	1,890	306
8.0	1,800	450	1,422	324
10.0	1,440	450	1,170	333

RPM = rev. / min.
FEED = mm / min.

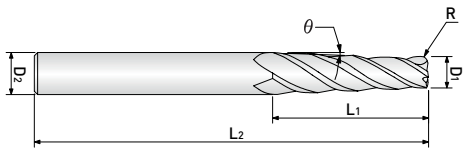


ULTRA FINE | Slotting | Side milling

WINNER

WTR504 Series

TAPER CORNER RADIUS / 4 FLUTES / REGULAR & LONG / W-COATING



TOLERANCE (metric)

D_1 = +0 / -0.030
D_2 = h6
R = ±0.01

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO. 4 Flute W Coating Helix 30°	Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Taper Degree°	Overall Length (metric)	Shank Diameter (metric)
WTR504	D1	R	L1	θ	L2	D2
WTR504008010104	0.80	0.10	4.00	1°	45.00	4.00
WTR5040080101504	0.80	0.10	4.00	1°30`	45.00	4.00
WTR504008020104	0.80	0.20	4.00	1°	45.00	4.00
WTR5040080201504	0.80	0.20	4.00	1°30`	45.00	4.00
WTR504008010106	0.80	0.10	6.00	1°	45.00	4.00
WTR5040080101506	0.80	0.10	6.00	1°30`	45.00	4.00
WTR504008020106	0.80	0.20	6.00	1°	45.00	4.00
WTR5040080201506	0.80	0.20	6.00	1°30`	45.00	4.00
WTR504008010108	0.80	0.10	8.00	1°	45.00	4.00
WTR5040080101508	0.80	0.10	8.00	1°30`	45.00	4.00
WTR504008020108	0.80	0.20	8.00	1°	45.00	4.00
WTR5040080201508	0.80	0.20	8.00	1°30`	45.00	4.00
WTR504010010104	1.00	0.10	4.00	1°	50.00	4.00
WTR5040100101504	1.00	0.10	4.00	1°30`	50.00	4.00
WTR504010010204	1.00	0.10	4.00	2°	50.00	4.00
WTR504010010304	1.00	0.10	4.00	3°	50.00	4.00
WTR504010020104	1.00	0.20	4.00	1°	50.00	4.00
WTR5040100201504	1.00	0.20	4.00	1°30`	50.00	4.00
WTR504010020204	1.00	0.20	4.00	2°	50.00	4.00
WTR504010020304	1.00	0.20	4.00	3°	50.00	4.00
WTR504010030104	1.00	0.30	4.00	1°	50.00	4.00
WTR5040100301504	1.00	0.30	4.00	1°30`	50.00	4.00
WTR504010030204	1.00	0.30	4.00	2°	50.00	4.00
WTR504010030304	1.00	0.30	4.00	3°	50.00	4.00
WTR504010010106	1.00	0.10	6.00	1°	50.00	4.00
WTR5040100101506	1.00	0.10	6.00	1°30`	50.00	4.00
WTR504010010206	1.00	0.10	6.00	2°	50.00	4.00
WTR504010010306	1.00	0.10	6.00	3°	50.00	4.00
WTR504010020106	1.00	0.20	6.00	1°	50.00	4.00
WTR5040100201506	1.00	0.20	6.00	1°30`	50.00	4.00
WTR504010020206	1.00	0.20	6.00	2°	50.00	4.00
WTR504010020306	1.00	0.20	6.00	3°	50.00	4.00
WTR504010030106	1.00	0.30	6.00	1°	50.00	4.00
WTR5040100301506	1.00	0.30	6.00	1°30`	50.00	4.00
WTR504010030206	1.00	0.30	6.00	2°	50.00	4.00
WTR504010030306	1.00	0.30	6.00	3°	50.00	4.00

Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
WTR504	○	○	○	○	◎	○	○	○	○					◎	◎	◎	○				

>>Continue

EDP NO. 4 Flute W Coating Helix 30°	Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Taper Degree°	Overall Length (metric)	Shank Diameter (metric)
WTR504	D1	R	L1	θ	L2	D2
WTR504010010108	1.00	0.10	8.00	1°	50.00	4.00
WTR5040100101508	1.00	0.10	8.00	1°30`	50.00	4.00
WTR504010010208	1.00	0.10	8.00	2°	50.00	4.00
WTR504010010308	1.00	0.10	8.00	3°	50.00	4.00
WTR504010020108	1.00	0.20	8.00	1°	50.00	4.00
WTR5040100201508	1.00	0.20	8.00	1°30`	50.00	4.00
WTR504010020208	1.00	0.20	8.00	2°	50.00	4.00
WTR504010020308	1.00	0.20	8.00	3°	50.00	4.00
WTR504010030108	1.00	0.30	8.00	1°	50.00	4.00
WTR5040100301508	1.00	0.30	8.00	1°30`	50.00	4.00
WTR504010030208	1.00	0.30	8.00	2°	50.00	4.00
WTR504010030308	1.00	0.30	8.00	3°	50.00	4.00
WTR504010010110	1.00	0.10	10.00	1°	50.00	4.00
WTR5040100101510	1.00	0.10	10.00	1°30`	50.00	4.00
WTR504010010210	1.00	0.10	10.00	2°	50.00	4.00
WTR504010010310	1.00	0.10	10.00	3°	50.00	4.00
WTR504010020110	1.00	0.20	10.00	1°	50.00	4.00
WTR5040100201510	1.00	0.20	10.00	1°30`	50.00	4.00
WTR504010020210	1.00	0.20	10.00	2°	50.00	4.00
WTR504010020310	1.00	0.20	10.00	3°	50.00	4.00
WTR504010030110	1.00	0.30	10.00	1°	50.00	4.00
WTR5040100301510	1.00	0.30	10.00	1°30`	50.00	4.00
WTR504010030210	1.00	0.30	10.00	2°	50.00	4.00
WTR504010030310	1.00	0.30	10.00	3°	50.00	4.00
WTR504010010112	1.00	0.10	12.00	1°	50.00	4.00
WTR5040100101512	1.00	0.10	12.00	1°30`	50.00	4.00
WTR504010010212	1.00	0.10	12.00	2°	50.00	4.00
WTR504010010312	1.00	0.10	12.00	3°	50.00	4.00
WTR504010020112	1.00	0.20	12.00	1°	50.00	4.00
WTR5040100201512	1.00	0.20	12.00	1°30`	50.00	4.00
WTR504010020212	1.00	0.20	12.00	2°	50.00	4.00
WTR504010020312	1.00	0.20	12.00	3°	50.00	4.00
WTR504010030112	1.00	0.30	12.00	1°	50.00	4.00
WTR5040100301512	1.00	0.30	12.00	1°30`	50.00	4.00
WTR504010030212	1.00	0.30	12.00	2°	50.00	4.00
WTR504010030312	1.00	0.30	12.00	3°	50.00	4.00
WTR504012010106	1.20	0.10	6.00	1°	50.00	4.00
WTR504012010206	1.20	0.10	6.00	2°	50.00	4.00
WTR504012010306	1.20	0.10	6.00	3°	50.00	4.00
WTR504012020106	1.20	0.20	6.00	1°	50.00	4.00
WTR504012020206	1.20	0.20	6.00	2°	50.00	4.00
WTR504012020306	1.20	0.20	6.00	3°	50.00	4.00
WTR504012030106	1.20	0.30	6.00	1°	50.00	4.00
WTR504012030206	1.20	0.30	6.00	2°	50.00	4.00
WTR504012030306	1.20	0.30	6.00	3°	50.00	4.00
WTR504012010108	1.20	0.10	8.00	1°	50.00	4.00
WTR504012010208	1.20	0.10	8.00	2°	50.00	4.00

>>Continue

EDP NO. 4 Flute W Coating Helix 30°	Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Taper Degree°	Overall Length (metric)	Shank Diameter (metric)
WTR504	D1	R	L1	θ	L2	D2
WTR504012010308	1.20	0.10	8.00	3°	50.00	4.00
WTR504012020108	1.20	0.20	8.00	1°	50.00	4.00
WTR504012020208	1.20	0.20	8.00	2°	50.00	4.00
WTR504012020308	1.20	0.20	8.00	3°	50.00	4.00
WTR504012030108	1.20	0.30	8.00	1°	50.00	4.00
WTR504012030208	1.20	0.30	8.00	2°	50.00	4.00
WTR504012030308	1.20	0.30	8.00	3°	50.00	4.00
WTR504012010110	1.20	0.10	10.00	1°	50.00	4.00
WTR504012010210	1.20	0.10	10.00	2°	50.00	4.00
WTR504012010310	1.20	0.10	10.00	3°	50.00	4.00
WTR504012020110	1.20	0.20	10.00	1°	50.00	4.00
WTR504012020210	1.20	0.20	10.00	2°	50.00	4.00
WTR504012020310	1.20	0.20	10.00	3°	50.00	4.00
WTR504012030110	1.20	0.30	10.00	1°	50.00	4.00
WTR504012030210	1.20	0.30	10.00	2°	50.00	4.00
WTR504012030310	1.20	0.30	10.00	3°	50.00	4.00
WTR504012010112	1.20	0.10	12.00	1°	50.00	4.00
WTR504012010212	1.20	0.10	12.00	2°	50.00	4.00
WTR504012010312	1.20	0.10	12.00	3°	50.00	4.00
WTR504012020112	1.20	0.20	12.00	1°	50.00	4.00
WTR504012020212	1.20	0.20	12.00	2°	50.00	4.00
WTR504012020312	1.20	0.20	12.00	3°	50.00	4.00
WTR504012030112	1.20	0.30	12.00	1°	50.00	4.00
WTR504012030212	1.20	0.30	12.00	2°	50.00	4.00
WTR504012030312	1.20	0.30	12.00	3°	50.00	4.00
WTR504015010106	1.50	0.10	6.00	1°	50.00	4.00
WTR504015010206	1.50	0.10	6.00	2°	50.00	4.00
WTR504015010306	1.50	0.10	6.00	3°	50.00	4.00
WTR504015020106	1.50	0.20	6.00	1°	50.00	4.00
WTR504015020206	1.50	0.20	6.00	2°	50.00	4.00
WTR504015020306	1.50	0.20	6.00	3°	50.00	4.00
WTR504015030106	1.50	0.30	6.00	1°	50.00	4.00
WTR504015030206	1.50	0.30	6.00	2°	50.00	4.00
WTR504015030306	1.50	0.30	6.00	3°	50.00	4.00
WTR504015010108	1.50	0.10	8.00	1°	50.00	4.00
WTR504015010208	1.50	0.10	8.00	2°	50.00	4.00
WTR504015010308	1.50	0.10	8.00	3°	50.00	4.00
WTR504015020108	1.50	0.20	8.00	1°	50.00	4.00
WTR504015020208	1.50	0.20	8.00	2°	50.00	4.00
WTR504015020308	1.50	0.20	8.00	3°	50.00	4.00
WTR504015030108	1.50	0.30	8.00	1°	50.00	4.00
WTR504015030208	1.50	0.30	8.00	2°	50.00	4.00
WTR504015030308	1.50	0.30	8.00	3°	50.00	4.00
WTR504015010110	1.50	0.10	10.00	1°	50.00	4.00
WTR504015010210	1.50	0.10	10.00	2°	50.00	4.00
WTR504015010310	1.50	0.10	10.00	3°	50.00	4.00
WTR504015020110	1.50	0.20	10.00	1°	50.00	4.00

>>Continue

EDP NO. 4 Flute W Coating Helix 30°	Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Taper Degree°	Overall Length (metric)	Shank Diameter (metric)
WTR504	D1	R	L1	θ	L2	D2
WTR504015020210	1.50	0.20	10.00	2°	50.00	4.00
WTR504015020310	1.50	0.20	10.00	3°	50.00	4.00
WTR504015030110	1.50	0.30	10.00	1°	50.00	4.00
WTR504015030210	1.50	0.30	10.00	2°	50.00	4.00
WTR504015030310	1.50	0.30	10.00	3°	50.00	4.00
WTR504015010112	1.50	0.10	12.00	1°	50.00	4.00
WTR504015010212	1.50	0.10	12.00	2°	50.00	4.00
WTR504015010312	1.50	0.10	12.00	3°	50.00	4.00
WTR504015020112	1.50	0.20	12.00	1°	50.00	4.00
WTR504015020212	1.50	0.20	12.00	2°	50.00	4.00
WTR504015020312	1.50	0.20	12.00	3°	50.00	4.00
WTR504015030112	1.50	0.30	12.00	1°	50.00	4.00
WTR504015030212	1.50	0.30	12.00	2°	50.00	4.00
WTR504015030312	1.50	0.30	12.00	3°	50.00	4.00
WTR504015010116	1.50	0.10	16.00	1°	50.00	4.00
WTR504015010216	1.50	0.10	16.00	2°	50.00	4.00
WTR504015010316	1.50	0.10	16.00	3°	50.00	4.00
WTR504015020116	1.50	0.20	16.00	1°	50.00	4.00
WTR504015020216	1.50	0.20	16.00	2°	50.00	4.00
WTR504015020316	1.50	0.20	16.00	3°	50.00	4.00
WTR504015030116	1.50	0.30	16.00	1°	50.00	4.00
WTR504015030216	1.50	0.30	16.00	2°	50.00	4.00
WTR504015030316	1.50	0.30	16.00	3°	50.00	4.00
WTR504015010120	1.50	0.10	20.00	1°	60.00	4.00
WTR504015010220	1.50	0.10	20.00	2°	60.00	4.00
WTR504015010320	1.50	0.10	20.00	3°	60.00	4.00
WTR504015020120	1.50	0.20	20.00	1°	60.00	4.00
WTR504015020220	1.50	0.20	20.00	2°	60.00	4.00
WTR504015020320	1.50	0.20	20.00	3°	60.00	4.00
WTR504015030120	1.50	0.30	20.00	1°	60.00	4.00
WTR504015030220	1.50	0.30	20.00	2°	60.00	4.00
WTR504015030320	1.50	0.30	20.00	3°	60.00	4.00
WTR504020010108	2.00	0.10	8.00	1°	50.00	4.00
WTR504020010208	2.00	0.10	8.00	2°	50.00	4.00
WTR504020010308	2.00	0.10	8.00	3°	50.00	4.00
WTR504020020108	2.00	0.20	8.00	1°	50.00	4.00
WTR504020020208	2.00	0.20	8.00	2°	50.00	4.00
WTR504020020308	2.00	0.20	8.00	3°	50.00	4.00
WTR504020030108	2.00	0.30	8.00	1°	50.00	4.00
WTR504020030208	2.00	0.30	8.00	2°	50.00	4.00
WTR504020030308	2.00	0.30	8.00	3°	50.00	4.00
WTR504020010110	2.00	0.10	10.00	1°	50.00	4.00
WTR504020010210	2.00	0.10	10.00	2°	50.00	4.00
WTR504020010310	2.00	0.10	10.00	3°	50.00	4.00
WTR504020020110	2.00	0.20	10.00	1°	50.00	4.00
WTR504020020210	2.00	0.20	10.00	2°	50.00	4.00
WTR504020020310	2.00	0.20	10.00	3°	50.00	4.00

>>Continue

EDP NO. 4 Flute W Coating Helix 30°	Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Taper Degree°	Overall Length (metric)	Shank Diameter (metric)
WTR504	D1	R	L1	θ	L2	D2
WTR504020030110	2.00	0.30	10.00	1°	50.00	4.00
WTR504020030210	2.00	0.30	10.00	2°	50.00	4.00
WTR504020030310	2.00	0.30	10.00	3°	50.00	4.00
WTR504020010112	2.00	0.10	12.00	1°	50.00	4.00
WTR504020010212	2.00	0.10	12.00	2°	50.00	4.00
WTR504020010312	2.00	0.10	12.00	3°	50.00	4.00
WTR504020020112	2.00	0.20	12.00	1°	50.00	4.00
WTR504020020212	2.00	0.20	12.00	2°	50.00	4.00
WTR504020020312	2.00	0.20	12.00	3°	50.00	4.00
WTR504020030112	2.00	0.30	12.00	1°	50.00	4.00
WTR504020030212	2.00	0.30	12.00	2°	50.00	4.00
WTR504020030312	2.00	0.30	12.00	3°	50.00	4.00
WTR504020010116	2.00	0.10	16.00	1°	50.00	4.00
WTR504020010216	2.00	0.10	16.00	2°	50.00	4.00
WTR504020010316	2.00	0.10	16.00	3°	50.00	4.00
WTR504020020116	2.00	0.20	16.00	1°	50.00	4.00
WTR504020020216	2.00	0.20	16.00	2°	50.00	4.00
WTR504020020316	2.00	0.20	16.00	3°	50.00	4.00
WTR504020030116	2.00	0.30	16.00	1°	50.00	4.00
WTR504020030216	2.00	0.30	16.00	2°	50.00	4.00
WTR504020030316	2.00	0.30	16.00	3°	50.00	4.00
WTR504020010120	2.00	0.10	20.00	1°	60.00	4.00
WTR504020010220	2.00	0.10	20.00	2°	60.00	4.00
WTR504020010320	2.00	0.10	20.00	3°	60.00	6.00
WTR504020020120	2.00	0.20	20.00	1°	60.00	4.00
WTR504020020220	2.00	0.20	20.00	2°	60.00	4.00
WTR504020020320	2.00	0.20	20.00	3°	60.00	6.00
WTR504020030120	2.00	0.30	20.00	1°	60.00	4.00
WTR504020030220	2.00	0.30	20.00	2°	60.00	4.00
WTR504020030320	2.00	0.30	20.00	3°	60.00	6.00
WTR504020010125	2.00	0.10	25.00	1°	60.00	4.00
WTR504020010225	2.00	0.10	25.00	2°	60.00	4.00
WTR504020010325	2.00	0.10	25.00	3°	60.00	6.00
WTR504020020125	2.00	0.20	25.00	1°	60.00	4.00
WTR504020020225	2.00	0.20	25.00	2°	60.00	4.00
WTR504020020325	2.00	0.20	25.00	3°	60.00	6.00
WTR504020030125	2.00	0.30	25.00	1°	60.00	4.00
WTR504020030225	2.00	0.30	25.00	2°	60.00	4.00
WTR504020030325	2.00	0.30	25.00	3°	60.00	6.00
WTR504025010110	2.50	0.10	10.00	1°	50.00	4.00
WTR504025010210	2.50	0.10	10.00	2°	50.00	4.00
WTR504025010310	2.50	0.10	10.00	3°	50.00	4.00
WTR504025020110	2.50	0.20	10.00	1°	50.00	4.00
WTR504025020210	2.50	0.20	10.00	2°	50.00	4.00
WTR504025020310	2.50	0.20	10.00	3°	50.00	4.00
WTR504025030110	2.50	0.30	10.00	1°	50.00	4.00
WTR504025030210	2.50	0.30	10.00	2°	50.00	4.00

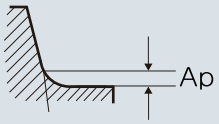
WTR504 Series

EDP NO. 4 Flute W Coating Helix 30°	Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Taper Degree°	Overall Length (metric)	Shank Diameter (metric)
WTR504	D1	R	L1	θ	L2	D2
WTR504025030310	2.50	0.30	10.00	3°	50.00	4.00
WTR504025010112	2.50	0.10	12.00	1°	50.00	4.00
WTR504025010212	2.50	0.10	12.00	2°	50.00	4.00
WTR504025010312	2.50	0.10	12.00	3°	50.00	4.00
WTR504025020112	2.50	0.20	12.00	1°	50.00	4.00
WTR504025020212	2.50	0.20	12.00	2°	50.00	4.00
WTR504025020312	2.50	0.20	12.00	3°	50.00	4.00
WTR504025030112	2.50	0.30	12.00	1°	50.00	4.00
WTR504025030212	2.50	0.30	12.00	2°	50.00	4.00
WTR504025030312	2.50	0.30	12.00	3°	50.00	4.00
WTR504025010116	2.50	0.10	16.00	1°	50.00	4.00
WTR504025010216	2.50	0.10	16.00	2°	50.00	4.00
WTR504025010316	2.50	0.10	16.00	3°	50.00	6.00
WTR504025020116	2.50	0.20	16.00	1°	50.00	4.00
WTR504025020216	2.50	0.20	16.00	2°	50.00	4.00
WTR504025020316	2.50	0.20	16.00	3°	50.00	6.00
WTR504025030116	2.50	0.30	16.00	1°	50.00	4.00
WTR504025030216	2.50	0.30	16.00	2°	50.00	4.00
WTR504025030316	2.50	0.30	16.00	3°	50.00	6.00
WTR504025010120	2.50	0.10	20.00	1°	60.00	4.00
WTR504025010220	2.50	0.10	20.00	2°	60.00	4.00
WTR504025010320	2.50	0.10	20.00	3°	60.00	6.00
WTR504025020120	2.50	0.20	20.00	1°	60.00	4.00
WTR504025020220	2.50	0.20	20.00	2°	60.00	4.00
WTR504025020320	2.50	0.20	20.00	3°	60.00	6.00
WTR504025030120	2.50	0.30	20.00	1°	60.00	4.00
WTR504025030220	2.50	0.30	20.00	2°	60.00	4.00
WTR504025030320	2.50	0.30	20.00	3°	60.00	6.00
WTR504025010125	2.50	0.10	25.00	1°	60.00	4.00
WTR504025010225	2.50	0.10	25.00	2°	60.00	6.00
WTR504025010325	2.50	0.10	25.00	3°	60.00	6.00
WTR504025020125	2.50	0.20	25.00	1°	60.00	4.00
WTR504025020225	2.50	0.20	25.00	2°	60.00	6.00
WTR504025020325	2.50	0.20	25.00	3°	60.00	6.00
WTR504025030125	2.50	0.30	25.00	1°	60.00	4.00
WTR504025030225	2.50	0.30	25.00	2°	60.00	6.00
WTR504025030325	2.50	0.30	25.00	3°	60.00	6.00
WTR504025010130	2.50	0.10	30.00	1°	60.00	4.00
WTR504025010230	2.50	0.10	30.00	2°	60.00	6.00
WTR504025010330	2.50	0.10	30.00	3°	60.00	6.00
WTR504025020130	2.50	0.20	30.00	1°	60.00	4.00
WTR504025020230	2.50	0.20	30.00	2°	60.00	6.00
WTR504025020330	2.50	0.20	30.00	3°	60.00	6.00
WTR504025030130	2.50	0.30	30.00	1°	60.00	4.00
WTR504025030230	2.50	0.30	30.00	2°	60.00	6.00
WTR504025030330	2.50	0.30	30.00	3°	60.00	6.00

WTR504 Series

Work Material	Alloy Steels, Carbon Steels (SCM, SNCM, S45C)			Prehardened Steels (NAK, CENA, KP4)			Hardened Steels (SKD, SKT, STAVAX)		
Hardness	≤ 35 HRc			35 ~ 45 HRc			45 ~ 55 HRc		
Strength	≤ 1100N / mm²			1100~1500N / mm²			1500~2000N / mm²		
Cutting Diameter(metric)	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
1.0	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
2.0	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.

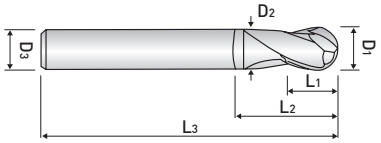


ZAMUS STAR

DB702, DB712 Series

ULTRA FINE | Plunge | Profile

BALL / 2 & 4 FLUTES / STUB & REGULAR / AlTiN-HH COATING



TOLERANCE (metric)

D_1 = +0 / -0.02
D_2 = h5

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO.		Cutting Diameter (metric)	Cutting Length (metric)	Neck Diameter (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute							
AlTiN-HH	AlTiN-HH						
Helix 30°	Helix 30°						
DB702	DB712	D1	L1	D2	L2	L3	D3
DB702001	-	0.10	0.15	-	-	40.00	4.00
DB702002	-	0.20	0.30	-	-	40.00	4.00
DB702003	-	0.30	0.50	-	-	40.00	4.00
DB702004	-	0.40	0.60	-	-	40.00	4.00
DB702005	-	0.50	0.70	-	-	40.00	4.00
DB702006	-	0.60	0.90	-	-	40.00	4.00
DB702007	-	0.70	1.10	-	-	40.00	4.00
DB702008	-	0.80	1.20	-	-	40.00	4.00
DB702009	-	0.90	1.40	-	-	40.00	4.00
-	DB712010S	1.00	1.50	-	-	40.00	6.00
DB702010S4	-	1.00	1.50	-	-	45.00	4.00
DB702010	-	1.00	1.50	0.95	3.00	50.00	6.00
-	DB712010	1.00	2.50	-	-	50.00	6.00
-	DB712010S4	1.00	2.50	-	-	50.00	4.00
-	DB712012	1.20	3.00	-	-	50.00	6.00
DB702015S4	-	1.50	2.00	-	4.00	45.00	4.00
DB702015	-	1.50	2.00	1.45	-	50.00	6.00
-	DB712015S	1.50	2.50	-	-	40.00	6.00
-	DB712015	1.50	4.00	-	-	50.00	6.00
-	DB712015S4	1.50	4.00	-	-	50.00	4.00
DB702020	-	2.00	2.50	1.90	5.00	50.00	6.00
DB702020S4	-	2.00	2.50	-	-	50.00	4.00
-	DB712020S	2.00	3.00	-	-	40.00	6.00
-	DB712020	2.00	5.00	-	-	50.00	6.00
-	DB712020S4	2.00	5.00	-	-	50.00	4.00
DB702025	-	2.50	3.00	2.45	7.00	50.00	6.00
-	DB712025	2.50	7.00	-	-	60.00	6.00
DB702030S4	-	3.00	4.00	-	-	45.00	4.00
DB702030S	-	3.00	4.00	2.90	10.00	50.00	6.00
DB702030	-	3.00	4.00	2.90	10.00	60.00	6.00
DB702031	-	3.00	4.00	2.90	10.00	70.00	6.00
-	DB712030S	3.00	4.50	-	-	50.00	6.00
-	DB712030	3.00	8.00	-	-	60.00	6.00
-	DB712030S4	3.00	8.00	-	-	60.00	4.00
DB702040S	-	4.00	5.00	3.70	10.00	50.00	6.00

Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
All				○	○									○	○	◎	◎		○		

ZAMUS STAR

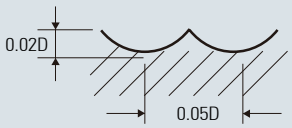
DB702, DB712 Series

EDP NO.		Cutting Diameter (metric)	Cutting Length (metric)	Neck Diameter (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute							
AlTiN-HH	AlTiN-HH						
Helix 30°	Helix 30°						
DB702	DB712	D1	L1	D2	L2	L3	D3
DB702040S4	-	4.00	5.00	-	10.00	50.00	4.00
DB702040	-	4.00	5.00	3.70	10.00	60.00	6.00
DB702041	-	4.00	5.00	3.70	10.00	70.00	6.00
-	DB712040S	4.00	6.00	-	-	50.00	6.00
-	DB712040	4.00	8.00	-	-	70.00	6.00
DB702050	-	5.00	6.00	4.70	12.00	60.00	6.00
-	DB712050S	5.00	7.50	-	-	50.00	6.00
-	DB712050	5.00	10.00	-	-	80.00	6.00
DB702060	-	6.00	7.00	5.90	12.00	60.00	6.00
DB702061	-	6.00	7.00	5.90	12.00	90.00	6.00
-	DB712060S	6.00	9.00	-	-	50.00	6.00
-	DB712060	6.00	12.00	-	-	90.00	6.00
DB702080	-	8.00	9.00	7.90	15.00	70.00	8.00
DB702081	-	8.00	9.00	7.90	15.00	100.00	8.00
-	DB712080S	8.00	12.00	-	-	50.00	8.00
-	DB712081	8.00	14.00	-	-	100.00	8.00
DB702100	-	10.00	11.00	9.90	25.00	75.00	10.00
DB702101	-	10.00	11.00	9.90	25.00	100.00	10.00
-	DB712100S	10.00	15.00	-	-	60.00	10.00
-	DB712100	10.00	18.00	-	-	100.00	10.00
DB702120	-	12.00	12.00	11.90	25.00	80.00	12.00
DB702121	-	12.00	12.00	11.90	25.00	110.00	12.00
-	DB712120S	12.00	18.00	-	-	60.00	12.00
-	DB712120	12.00	22.00	-	-	110.00	12.00

DB702, DB712 series

Work Material	Hardened Steels Heat Resistant Steels		Hardened Steels									
Hardness	30 ~ 40 HRc		40 ~ 50 HRc		50 ~ 55 HRc		55 ~ 60 HRc		60 ~ 65 HRc		65 ~ 70 HRc	
Cutting Diameter(metric)	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.

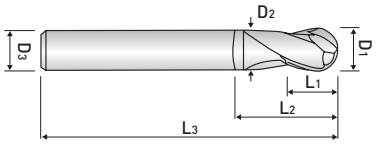


ULTRA FINE Plunge Profile

ZAMUS STAR

DB703 Series

BALL / 3 FLUTES / STUB / AlTiN-HH COATING



TOLERANCE (metric)

D_1 = +0 / -0.015
D_2 = h6

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO. 3 Flute AlTiN-HH Helix 30°	Cutting Diameter (metric)	Cutting Length (metric)	Neck Diameter (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
DB703	D1	L1	D2	L2	L3	D3
DB703020	2.00	2.50	1.90	5.00	50.00	6.00
DB703025	2.50	3.00	2.40	7.00	50.00	6.00
DB703030S	3.00	4.00	2.90	10.00	50.00	6.00
DB703030	3.00	4.00	2.90	10.00	60.00	6.00
DB703031	3.00	4.00	2.90	10.00	70.00	6.00
DB703040S	4.00	5.00	3.70	10.00	50.00	6.00
DB703040	4.00	5.00	3.70	10.00	60.00	6.00
DB703041	4.00	5.00	3.70	10.00	70.00	6.00
DB703050	5.00	6.00	4.70	12.00	60.00	6.00
DB703060	6.00	7.00	5.60	12.00	60.00	6.00
DB703061	6.00	7.00	5.90	12.00	90.00	6.00
DB703080	8.00	9.00	7.40	15.00	70.00	8.00
DB703081	8.00	9.00	7.90	15.00	100.00	8.00
DB703100	10.00	11.00	9.40	25.00	75.00	10.00
DB703101	10.00	11.00	9.90	25.00	100.00	10.00
DB703120	12.00	12.00	11.40	25.00	80.00	12.00
DB703121	12.00	12.00	11.90	25.00	110.00	12.00

Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
DB703				○	○									○	○	◎	◎		○		

DB703 series

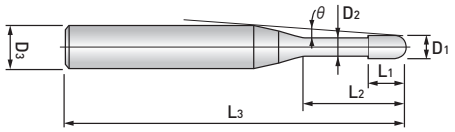
Work Material	Hardened Steels Heat Resistant Steels		Hardened Steels									
Hardness	30 ~ 40 HRc		40 ~ 50 HRc		50 ~ 55 HRc		55 ~ 60 HRc		60 ~ 65 HRc		65 ~ 70 HRc	
Cutting Diameter(metric)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2	57,000	7,100	55,000	6,000	46,000	5,000	40,300	3,900	36,800	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

ULTRA FINE | Slotting | Side milling

ZAMUS STAR

ZSLNB20xx Series

TAPER LONG NECK BALL / 2 FLUTES / REGULAR / AlTiN-HH COATING



TOLERANCE (metric)

D_1 = +0 / -0.015
D_2 = h5

HARDNESS (HRc)

20 30 40 50 60 70

EDP. No. 2 Flute AlTiN-HH Helix 30°	Cutting Diameter (metric)	Cutting Length (metric)	Neck Diameter (metric)	Neck Length (metric)	Taper Degree°	Overall Length (metric)	Shank Diameter (metric)	Effective Neck Length				
ZSLNB	D1	L1	D2	L2	θ	L3	D3	0.5°	1.0°	1.5°	2.0°	3.0°
ZSLNB2001-0.2	0.10	0.08	0.08	0.20	11.8°	45.00	4.00	0.3	0.3	0.3	0.4	0.4
ZSLNB2001-0.3	0.10	0.08	0.08	0.30	11.7°	45.00	4.00	0.4	0.4	0.5	0.5	0.5
ZSLNB2001-0.5	0.10	0.08	0.08	0.50	11.4°	45.00	4.00	0.6	0.7	0.7	0.7	0.8
ZSLNB2002-0.5	0.20	0.15	0.17	0.50	11.5°	50.00	4.00	1.2	1.3	1.5	1.6	2.0
ZSLNB2002-1	0.20	0.15	0.17	1.00	10.9°	50.00	4.00	1.7	1.9	2.1	2.3	2.7
ZSLNB2002-1.5	0.20	0.15	0.17	1.50	10.4°	50.00	4.00	2.3	2.5	2.8	3.0	3.4
ZSLNB2002-2	0.20	0.15	0.17	2.00	9.9°	50.00	4.00	2.8	3.1	3.4	3.6	4.1
ZSLNB2002-2.5	0.20	0.15	0.17	2.50	9.5°	50.00	4.00	3.4	3.7	4.0	4.2	4.7
ZSLNB2002-3.0	0.20	0.15	0.17	3.00	9.1°	50.00	4.00	3.9	4.3	4.6	4.9	5.4
ZSLNB2003-1	0.30	0.25	0.27	1.00	10.9°	50.00	4.00	1.7	1.9	2.1	2.3	2.7
ZSLNB2003-1.5	0.30	0.25	0.27	1.50	10.4°	50.00	4.00	2.3	2.5	2.7	3.0	3.4
ZSLNB2003-2	0.30	0.25	0.27	2.00	9.9°	50.00	4.00	2.8	3.1	3.4	3.6	4.0
ZSLNB2003-2.5	0.30	0.25	0.27	2.50	9.5°	50.00	4.00	3.4	3.7	4.0	4.2	4.7
ZSLNB2003-3	0.30	0.25	0.27	3.00	9.1°	50.00	4.00	3.9	4.3	4.6	4.8	5.3
ZSLNB2004-1	0.40	0.30	0.37	1.00	11.0°	50.00	4.00	1.7	1.9	2.1	2.3	2.7
ZSLNB2004-1.5	0.40	0.30	0.37	1.50	10.4°	50.00	4.00	2.3	2.5	2.7	2.9	3.4
ZSLNB2004-2	0.40	0.30	0.37	2.00	9.9°	50.00	4.00	2.8	3.1	3.4	3.6	4.0
ZSLNB2004-2.5	0.40	0.30	0.37	2.50	9.5°	50.00	4.00	3.4	3.7	4.0	4.2	4.7
ZSLNB2004-3	0.40	0.30	0.37	3.00	9.1°	50.00	4.00	3.9	4.3	4.6	4.8	5.3
ZSLNB2004-3.5	0.40	0.30	0.37	3.50	8.7°	50.00	4.00	4.5	4.8	5.2	5.4	6.0
ZSLNB2004-4	0.40	0.30	0.37	4.00	8.3°	50.00	4.00	5.0	5.4	5.7	6.0	6.6
ZSLNB2004-4.5	0.40	0.30	0.37	4.50	8.0°	50.00	4.00	5.6	6.0	6.3	6.6	7.2
ZSLNB2005-1	0.50	0.35	0.47	1.00	11.0°	50.00	4.00	1.7	1.9	2.1	2.3	2.6
ZSLNB2005-2	0.50	0.35	0.47	2.00	9.9°	50.00	4.00	2.8	3.1	3.3	3.6	4.0
ZSLNB2005-3	0.50	0.35	0.47	3.00	9.0°	50.00	4.00	3.9	4.3	4.6	4.8	5.3
ZSLNB2005-4	0.50	0.35	0.47	4.00	8.3°	50.00	4.00	5.0	5.4	5.7	6.0	6.6
ZSLNB2005-5	0.50	0.35	0.47	5.00	7.7°	50.00	4.00	6.1	6.5	6.9	7.2	7.8
ZSLNB2005-6	0.50	0.35	0.47	6.00	7.1°	50.00	4.00	7.2	7.6	8.0	8.4	9.0
ZSLNB2005-8	0.50	0.35	0.47	8.00	6.3°	50.00	4.00	9.3	9.9	10.3	10.7	11.4
ZSLNB2006-1	0.60	0.40	0.57	1.00	11.0°	50.00	4.00	1.7	1.9	2.1	2.3	2.6
ZSLNB2006-2	0.60	0.40	0.57	2.00	9.9°	50.00	4.00	2.8	3.1	3.3	3.6	4.0
ZSLNB2006-3	0.60	0.40	0.57	3.00	9.0°	50.00	4.00	3.9	4.3	4.5	4.8	5.3
ZSLNB2006-4	0.60	0.40	0.57	4.00	8.3°	50.00	4.00	5.0	5.4	5.7	6.0	6.6
ZSLNB2006-5	0.60	0.40	0.57	5.00	7.6°	50.00	4.00	6.1	6.5	6.9	7.2	7.8
ZSLNB2006-6	0.60	0.40	0.57	6.00	7.1°	50.00	4.00	7.2	7.6	8.0	8.4	9.0

Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
ZSLNBxx				○	○									○	○	◎	◎		○		

ZAMUS STAR

ZSLNB20xx Series

>>Continue

EDP. No. 2 Flute AlTiN-HH Helix 30°	Cutting Diameter (metric)	Cutting Length (metric)	Neck Diameter (metric)	Neck Length (metric)	Taper Degree°	Overall Length (metric)	Shank Diameter (metric)	Effective Neck Length				
ZSLNB	D1	L1	D2	L2	θ	L3	D3	0.5º	1.0º	1.5º	2.0º	3.0º
ZSLNB2006-7	0.60	0.40	0.57	7.00	6.6º	50.00	4.00	8.3	8.8	9.2	9.5	10.2
ZSLNB2006-8	0.60	0.40	0.57	8.00	6.2º	50.00	4.00	9.3	9.9	10.3	10.7	11.4
ZSLNB2006-9	0.60	0.40	0.57	9.00	5.8º	50.00	4.00	10.4	10.9	11.4	11.8	12.5
ZSLNB2006-10	0.60	0.40	0.57	10.00	5.5º	50.00	4.00	11.4	12.0	12.5	12.9	13.7
ZSLNB2006-12	0.60	0.40	0.57	12.00	5.0º	50.00	4.00	13.6	14.2	14.7	15.2	16.0
ZSLNB2008-2	0.80	0.50	0.77	2.00	9.9º	50.00	4.00	2.8	3.1	3.3	3.5	4.0
ZSLNB2008-4	0.80	0.50	0.77	4.00	8.2º	50.00	4.00	5.0	5.4	5.7	6.0	6.5
ZSLNB2008-5	0.80	0.50	0.77	5.00	7.5º	50.00	4.00	6.1	6.5	6.9	7.2	7.8
ZSLNB2008-6	0.80	0.50	0.77	6.00	7.0º	50.00	4.00	7.2	7.6	8.0	8.4	9.0
ZSLNB2008-8	0.80	0.50	0.77	8.00	6.1º	50.00	4.00	9.3	9.8	10.3	10.7	11.3
ZSLNB2008-10	0.80	0.50	0.77	10.00	5.4º	50.00	4.00	11.4	12.0	12.5	12.9	13.7
ZSLNB2010-2	1.00	0.80	0.96	2.00	9.9º	50.00	4.00	2.9	3.1	3.3	3.5	4.0
ZSLNB2010-3	1.00	0.80	0.96	3.00	8.9º	50.00	4.00	4.0	4.3	4.5	4.8	5.3
ZSLNB2010-4	1.00	0.80	0.96	4.00	8.1º	50.00	4.00	5.0	5.4	5.7	6.0	6.5
ZSLNB2010-5	1.00	0.80	0.96	5.00	7.4º	50.00	4.00	6.1	6.5	6.9	7.2	7.8
ZSLNB2010-6	1.00	0.80	0.96	6.00	6.8º	50.00	4.00	7.2	7.7	8.0	8.4	9.0
ZSLNB2010-7	1.00	0.80	0.96	7.00	6.3º	50.00	4.00	8.3	8.8	9.2	9.5	10.2
ZSLNB2010-8	1.00	0.80	0.96	8.00	5.9º	50.00	4.00	9.3	9.9	10.3	10.7	11.3
ZSLNB2010-9	1.00	0.80	0.96	9.00	5.5º	50.00	4.00	10.4	11.0	11.4	11.8	12.5
ZSLNB2010-10	1.00	0.80	0.96	10.00	5.2º	50.00	4.00	11.5	12.0	12.5	12.9	13.7
ZSLNB2010-12	1.00	0.80	0.96	12.00	4.6º	55.00	4.00	13.6	14.2	14.7	15.2	15.9
ZSLNB2010-14	1.00	0.80	0.96	14.00	4.2º	55.00	4.00	15.7	16.4	16.9	17.4	18.5
ZSLNB2010-16	1.00	0.80	0.96	16.00	3.8º	55.00	4.00	17.8	18.5	19.1	19.6	21.2
ZSLNB2010-18	1.00	0.80	0.96	18.00	3.5º	60.00	4.00	19.9	20.7	21.3	21.8	23.8
ZSLNB2010-20	1.00	0.80	0.96	20.00	3.3º	60.00	4.00	22.0	22.8	23.4	24.0	26.5
ZSLNB2012-4	1.20	1.10	1.15	4.00	7.9º	50.00	4.00	5.1	5.4	5.7	6.0	6.5
ZSLNB2012-6	1.20	1.10	1.15	6.00	6.6º	50.00	4.00	7.2	7.7	8.0	8.4	9.0
ZSLNB2012-8	1.20	1.10	1.15	8.00	5.7º	50.00	4.00	9.4	9.9	10.3	10.7	11.3
ZSLNB2012-10	1.20	1.10	1.15	10.00	5.0º	50.00	4.00	11.5	12.1	12.5	12.9	13.7
ZSLNB2012-12	1.20	1.10	1.15	12.00	4.5º	55.00	4.00	13.6	14.2	14.7	15.2	15.9
ZSLNB2014-8	1.40	1.30	1.34	8.00	5.5º	50.00	4.00	9.4	9.9	10.3	10.7	11.3
ZSLNB2014-12	1.40	1.30	1.34	12.00	4.3º	55.00	4.00	13.6	14.2	14.7	15.2	15.9
ZSLNB2014-16	1.40	1.30	1.34	16.00	3.5º	55.00	4.00	17.8	18.5	19.1	19.6	21.2
ZSLNB2015-4	1.50	1.35	1.44	4.00	7.7º	50.00	4.00	5.1	5.4	5.7	6.0	6.5
ZSLNB2015-6	1.50	1.35	1.44	6.00	6.4º	50.00	4.00	7.3	7.7	8.0	8.4	9.0
ZSLNB2015-8	1.50	1.35	1.44	8.00	5.4º	50.00	4.00	9.4	9.9	10.3	10.7	11.3
ZSLNB2015-10	1.50	1.35	1.44	10.00	4.7º	50.00	4.00	11.5	12.1	12.5	12.9	13.7
ZSLNB2015-12	1.50	1.35	1.44	12.00	4.2º	55.00	4.00	13.6	14.2	14.7	15.2	15.9
ZSLNB2015-14	1.50	1.35	1.44	14.00	3.8º	55.00	4.00	15.7	16.4	16.9	17.4	18.5
ZSLNB2015-16	1.50	1.35	1.44	16.00	3.4º	55.00	4.00	17.8	18.5	19.1	19.6	21.1
ZSLNB2015-20	1.50	1.35	1.44	20.00	2.9º	60.00	4.00	22.0	22.8	23.4	24.0	-
ZSLNB2016-8	1.60	1.40	1.54	8.00	5.3º	50.00	4.00	9.4	9.9	10.3	10.7	11.3
ZSLNB2016-10	1.60	1.40	1.54	10.00	4.6º	50.00	4.00	11.5	12.1	12.5	12.9	13.7
ZSLNB2016-12	1.60	1.40	1.54	12.00	4.1º	55.00	4.00	13.6	14.2	14.7	15.2	15.9
ZSLNB2016-16	1.60	1.40	1.54	16.00	3.3º	55.00	4.00	17.8	18.5	19.1	19.6	21.1
ZSLNB2016-20	1.60	1.40	1.54	20.00	2.8º	60.00	4.00	22.0	22.8	23.4	24.0	-

ZAMUS STAR

ZSLNB20xx Series

EDP. No. 2 Flute AlTiN-HH Helix 30°	Cutting Diameter (metric)	Cutting Length (metric)	Neck Diameter (metric)	Neck Length (metric)	Taper Degree°	Overall Length (metric)	Shank Diameter (metric)	Effective Neck Length				
ZSLNB	D1	L1	D2	L2	θ	L3	D3	0.5°	1.0°	1.5°	2.0°	3.0°
ZSLNB2018-8	1.80	1.60	1.73	8.00	5.1°	50.00	4.00	9.4	9.9	10.3	10.7	11.3
ZSLNB2018-12	1.80	1.60	1.73	12.00	3.9°	55.00	4.00	13.7	14.3	14.7	15.2	15.9
ZSLNB2018-16	1.80	1.60	1.73	16.00	3.1°	55.00	4.00	17.9	18.6	19.1	19.6	21.1
ZSLNB2018-20	1.80	1.60	1.73	20.00	2.6°	60.00	4.00	22.0	22.8	23.4	24.0	-
ZSLNB2020-3	2.00	1.70	1.92	3.00	8.3°	50.00	4.00	4.1	4.4	4.6	4.8	5.2
ZSLNB2020-4	2.00	3.00	1.92	4.00	7.3°	50.00	4.00	5.2	5.5	5.8	6.0	6.5
ZSLNB2020-6	2.00	3.00	1.92	6.00	5.8°	50.00	4.00	7.3	7.7	8.1	8.4	9.0
ZSLNB2020-8	2.00	3.00	1.92	8.00	4.9°	50.00	4.00	9.5	9.9	10.3	10.7	11.3
ZSLNB2020-10	2.00	3.00	1.92	10.00	4.2°	50.00	4.00	11.6	12.1	12.6	12.9	13.6
ZSLNB2020-12	2.00	3.00	1.92	12.00	3.7°	55.00	4.00	13.7	14.3	14.8	15.2	15.9
ZSLNB2020-14	2.00	3.00	1.92	14.00	3.2°	55.00	4.00	15.8	16.4	16.9	17.4	18.5
ZSLNB2020-16	2.00	3.00	1.92	16.00	2.9°	55.00	4.00	17.9	18.6	19.1	19.6	-
ZSLNB2020-18	2.00	3.00	1.92	18.00	2.7°	60.00	4.00	20.0	20.7	21.3	21.8	-
ZSLNB2020-20	2.00	3.00	1.92	20.00	2.4°	60.00	4.00	22.1	22.8	23.4	24.0	-
ZSLNB2020-22	2.00	3.00	1.92	22.00	2.3°	60.00	4.00	24.1	24.9	25.6	26.3	-
ZSLNB2020-25	2.00	3.00	1.92	25.00	2.0°	65.00	4.00	27.3	28.1	28.8	-	-
ZSLNB2020-30	2.00	3.00	1.92	30.00	1.7°	70.00	4.00	32.4	33.4	34.2	-	-
ZSLNB2020-35	2.00	3.00	1.92	35.00	1.5°	75.00	4.00	37.6	38.6	-	-	-
ZSLNB2020-40	2.00	3.00	1.92	40.00	1.4°	80.00	4.00	42.8	43.8	-	-	-
ZSLNB2025-10	2.50	4.00	2.40	10.00	3.4°	50.00	4.00	11.6	12.1	12.6	13.0	13.6
ZSLNB2025-16	2.50	4.00	2.40	16.00	2.3°	55.00	4.00	17.9	18.6	19.1	19.6	-
ZSLNB2025-20	2.50	4.00	2.40	20.00	1.9°	60.00	4.00	22.1	22.8	23.5	-	-
ZSLNB2030-8	3.00	4.00	2.88	8.00	6.2°	55.00	6.00	9.6	10.0	10.4	10.7	11.3
ZSLNB2030-10	3.00	4.00	2.88	10.00	5.5°	55.00	6.00	11.7	12.2	12.6	13.0	13.6
ZSLNB2030-13	3.00	4.00	2.88	13.00	4.6°	60.00	6.00	14.8	15.4	15.9	16.3	17.1
ZSLNB2030-16	3.00	4.00	2.88	16.00	4.0°	60.00	6.00	18.0	18.6	19.1	19.6	21.1
ZSLNB2030-18	3.00	4.00	2.88	18.00	3.6°	60.00	6.00	20.0	20.7	21.3	21.8	23.7
ZSLNB2030-20	3.00	4.00	2.88	20.00	3.4°	65.00	6.00	22.1	22.9	23.5	24.0	26.4
ZSLNB2030-25	3.00	4.00	2.88	25.00	2.8°	70.00	6.00	27.3	28.2	28.8	29.9	-
ZSLNB2030-30	3.00	4.00	2.88	30.00	2.5°	75.00	6.00	32.5	33.4	34.3	35.9	-
ZSLNB2030-35	3.00	4.00	2.88	35.00	2.2°	80.00	6.00	37.7	38.7	40.0	41.9	-
ZSLNB2040-10	4.00	5.00	3.90	10.00	4.5°	55.00	6.00	11.6	12.1	12.5	12.9	13.5
ZSLNB2040-13	4.00	5.00	3.90	13.00	3.6°	60.00	6.00	14.7	15.3	15.8	16.2	17.0
ZSLNB2040-16	4.00	5.00	3.90	16.00	3.1°	60.00	6.00	17.9	18.5	19.1	19.5	20.9
ZSLNB2040-20	4.00	5.00	3.90	20.00	2.5°	65.00	6.00	22.1	22.8	23.4	23.9	-
ZSLNB2040-25	4.00	5.00	3.90	25.00	2.1°	70.00	6.00	27.3	28.1	28.8	29.8	-
ZSLNB2040-30	4.00	5.00	3.90	30.00	1.8°	75.00	6.00	32.4	33.4	34.2	-	-
ZSLNB2040-35	4.00	5.00	3.90	35.00	1.6°	80.00	6.00	37.6	38.6	39.9	-	-
ZSLNB2040-40	4.00	5.00	3.90	40.00	1.4°	80.00	6.00	42.8	43.8	-	-	-
ZSLNB2040-45	4.00	5.00	3.90	45.00	1.2°	90.00	6.00	47.9	49.1	-	-	-
ZSLNB2040-50	4.00	5.00	3.90	50.00	1.1°	100.00	6.00	53.1	54.5	-	-	-
ZSLNB2050-20	5.00	6.00	4.90	20.00	1.4°	65.00	6.00	22.0	22.8	-	-	-
ZSLNB2050-25	5.00	6.00	4.90	25.00	1.2°	70.00	6.00	27.2	28.1	-	-	-
ZSLNB2050-30	5.00	6.00	4.90	30.00	1.0°	75.00	6.00	32.4	-	-	-	-
ZSLNB2050-35	5.00	6.00	4.90	35.00	0.8°	80.00	6.00	42.8	-	-	-	-
ZSLNB2050-40	5.00	6.00	4.90	40.00	0.7°	90.00	6.00	42.8	-	-	-	-

ZSLNB series

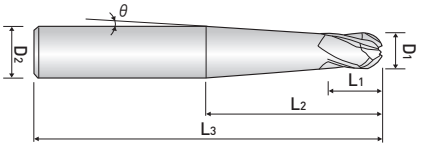
Work Material	Alloy Steels, Heat Resistant Steels			Hardened Steels						Copper		
Hardness	30 ~ 45 HRc			45 ~ 55 HRc			55 ~ 65 HRc			-		
Cutting Diameter (metric)	RPM	FEED	Ae (mm)	RPM	FEED	Ae (mm)	RPM	FEED	Ae (mm)	RPM	FEED	Ae (mm)
0.5	34,100~49,500	600~870	0.007~0.028	31,900~35,200	490~540	0.005~0.023	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
1.0	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
2.0	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
3.0	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
4.0	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

ULTRA FINE Plunge Profile

ZAMUS STAR

DB734 Series

TAPER BALL / 2 FLUTES / STUB / AlTiN-HH COATING



TOLERANCE (metric)

D_1 = +0 / -0.02
D_2 = h6

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO. 4 Flute AlTiN-HH Helix 15°	Cutting Diameter (metric)	Cutting Length (metric)	Neck Length (metric)	Taper Degree°	Overall Length (metric)	Shank Diameter (metric)
DB734	D1	L1	L2	θ	L3	D2
DB734020-3.5	2.00	2.00	18.00	3.5°	60.00	4.00
DB734020-2.5	2.00	2.00	25.00	2.5°	60.00	4.00
DB734025-3.0	2.50	3.00	17.00	3°	60.00	4.00
DB734025-2.5	2.50	3.00	20.00	2.5°	60.00	4.00
DB734030-2.5	3.00	3.00	37.00	2.5°	70.00	6.00
DB734030-2.0	3.00	3.00	46.00	2°	70.00	6.00
DB734040-2.5	4.00	4.00	27.00	2.5°	70.00	6.00
DB734040-2.0	4.00	4.00	33.00	2°	70.00	6.00
DB734050-2.5	5.00	5.00	16.00	2.5°	70.00	6.00
DB734060-2.5	6.00	6.00	29.00	2.5°	100.00	8.00
DB734060-1.5	6.00	6.00	44.00	1.5°	100.00	8.00
DB734080-2.5	8.00	8.00	31.00	2.5°	100.00	10.00
DB734080-1.5	8.00	8.00	46.00	1.5°	100.00	10.00
DB734100-2.5	10.00	10.00	33.00	2.5°	110.00	12.00
DB734100-1.5	10.00	10.00	48.00	1.5°	110.00	12.00

Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
DB734				○	○									○	○	◎	◎		○		

DB734 series

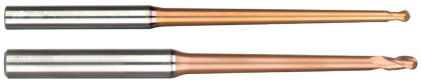
Work Material	Hardened Steels											
Hardness	30 ~ 40 HRc		40 ~ 50 HRc		50 ~ 55 HRc		55 ~ 60 HRc		60 ~ 65 HRc		65 ~ 70 HRc	
Cutting Diameter (metric)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2	62,100	8,600	59,800	7,200	50,000	6,000	43,800	4,700	40,000	4,200	35,600	3,500
2.5	62,100	8,600	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

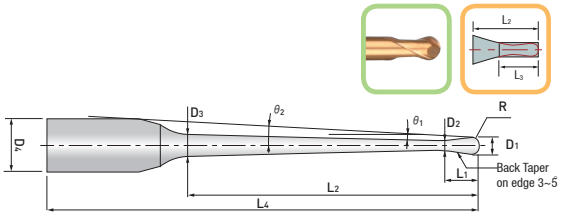
ULTRA FINE Plunge Profile

ZAMUS STAR

ZSTNB20xx, ZSTNB30xx Series

TAPER NECK BACK DRAFT BALL / 2 & 3 FLUTES / STUB / AlTiN-HH COATING





※R2 or higher is not applied to Back draft type.

TOLERANCE (metric)

D_1 = +0 / -0.015
D_2 = h5

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO.		Cutting Diameter (metric)	Cutting Length (metric)	Neck Diameter (metric)		Neck Length (metric)	Taper Degree°		Applica-tion Length	Overall Length (metric)	Shank Diameter (metric)	Effective Neck Length				
2 Flute	3 Flute															
AlTiN-HH	AlTiN-HH															
Helix 30°	Helix 30°															
ZSTNB20	ZSTNB30	D1	L1	D2	D3	L2	θ1	θ2	L3	L4	D4	0.5°	1.0°	1.5°	2.0°	3.0°
ZSTNB2002-1-04	-	0.20	0.15	0.17	0.18	1.00	0.4°	10.9°	1.35	50.00	4.00	1.5	1.7	1.8	2.0	2.3
ZSTNB2002-1.5-04	-	0.20	0.15	0.17	0.19	1.50	0.4°	10.4°	1.77	50.00	4.00	2.0	2.2	2.4	2.6	2.9
ZSTNB2002-2-09	-	0.20	0.15	0.17	0.23	2.00	0.9°	10.1°	1.10	50.00	4.00	-	2.8	3.1	3.4	3.9
ZSTNB2002-2.5-09	-	0.20	0.15	0.17	0.24	2.50	0.9°	9.6°	1.10	50.00	4.00	-	3.3	3.7	4.0	4.5
ZSTNB2003-2-04	-	0.30	0.25	0.28	0.29	2.00	0.4°	10.0°	2.19	50.00	4.00	2.5	2.8	3.0	3.2	3.5
ZSTNB2003-3-09	-	0.30	0.25	0.28	0.36	3.00	0.9°	9.3°	1.20	50.00	4.00	-	3.8	4.2	4.5	5.1
ZSTNB2003-4-09	-	0.30	0.25	0.28	0.39	4.00	0.9°	8.6°	1.20	50.00	4.00	-	4.8	5.3	5.7	6.3
ZSTNB2004-2-04	-	0.40	0.30	0.37	0.39	2.00	0.4°	10.0°	2.20	50.00	4.00	2.5	2.8	3.0	3.2	3.5
ZSTNB2004-3-04	-	0.40	0.30	0.37	0.41	3.00	0.4°	9.1°	2.44	50.00	4.00	3.6	3.9	4.1	4.4	4.8
ZSTNB2004-4-04	-	0.40	0.30	0.37	0.42	4.00	0.4°	8.4°	2.44	50.00	4.00	4.7	5.2	5.6	5.9	6.5
ZSTNB2004-4-09	-	0.40	0.30	0.37	0.49	4.00	0.9°	8.5°	1.25	50.00	4.00	-	4.8	5.3	5.7	6.3
ZSTNB2004-5-04	-	0.40	0.30	0.37	0.44	5.00	0.4°	7.8°	2.44	50.00	4.00	5.7	6.3	6.7	7.1	7.7
ZSTNB2004-5-09	-	0.40	0.30	0.37	0.52	5.00	0.9°	7.9°	1.25	50.00	4.00	-	5.9	6.4	6.8	7.5
ZSTNB2005-4-04	-	0.50	0.35	0.47	0.52	4.00	0.4°	8.4°	2.49	50.00	4.00	4.6	5.0	5.3	5.5	5.9
ZSTNB2005-8-09	-	0.50	0.35	0.47	0.71	8.00	0.9°	6.5°	1.30	50.00	4.00	-	8.9	9.6	10.1	10.9
ZSTNB2005-12-09	-	0.50	0.35	0.47	0.84	12.00	0.9°	5.3°	1.30	50.00	4.00	-	13.0	13.9	14.5	15.4
ZSTNB20054-2-04	-	0.54	0.37	0.52	0.54	2.00	0.4°	10.0°	1.80	50.00	4.00	2.3	2.5	2.7	2.8	3.0
ZSTNB20054-4-04	-	0.54	0.37	0.52	0.57	4.00	0.4°	8.4°	1.80	50.00	4.00	4.5	4.9	5.2	5.5	5.9
ZSTNB20054-5-04	-	0.54	0.37	0.52	0.59	5.00	0.4°	7.8°	1.80	50.00	4.00	5.5	6.0	6.3	6.6	7.1
ZSTNB20054-6-04	-	0.54	0.37	0.52	0.60	6.00	0.4°	7.2°	1.80	50.00	4.00	6.7	7.3	7.8	8.2	8.8
ZSTNB20054-6.5-04	-	0.54	0.37	0.52	0.61	6.50	0.4°	7.0°	1.80	50.00	4.00	7.2	7.9	8.3	8.7	9.4
ZSTNB20054-7-04	-	0.54	0.37	0.52	0.61	7.00	0.4°	6.8°	1.80	50.00	4.00	7.7	8.4	8.9	9.3	10.0
ZSTNB2006-2-04	-	0.60	0.40	0.57	0.59	2.00	0.4°	10.0°	2.17	50.00	4.00	2.4	2.5	2.7	2.8	3.0
ZSTNB2006-4-04	-	0.60	0.40	0.57	0.62	4.00	0.4°	8.4°	2.54	50.00	4.00	4.6	5.0	5.2	5.5	5.9
ZSTNB2006-6-04	-	0.60	0.40	0.57	0.65	6.00	0.4°	7.2°	2.54	50.00	4.00	6.8	7.4	7.8	8.2	8.8
ZSTNB2006-6-09	-	0.60	0.40	0.57	0.75	6.00	0.9°	7.3°	1.35	50.00	4.00	-	6.9	7.5	7.9	8.6
ZSTNB2006-8-09	-	0.60	0.40	0.57	0.81	8.00	0.9°	6.4°	1.35	50.00	4.00	-	8.9	9.6	10.1	10.9
ZSTNB2006-10-04	-	0.60	0.40	0.57	0.70	10.00	0.4°	5.6°	2.54	50.00	4.00	10.8	11.7	12.2	12.7	13.5
ZSTNB2006-10-09	-	0.60	0.40	0.57	0.87	10.00	0.9°	5.7°	1.35	50.00	4.00	-	11.0	11.8	12.3	13.2
ZSTNB2006-12-09	-	0.60	0.40	0.57	0.93	12.00	0.9°	5.2°	1.35	55.00	4.00	-	13.0	13.9	14.5	15.4
ZSTNB2006-15-04	-	0.60	0.40	0.57	0.77	15.00	0.4°	4.4°	2.54	55.00	4.00	15.9	17.0	17.6	18.2	19.2
ZSTNB2006-15-09	-	0.60	0.40	0.57	1.03	15.00	0.9°	4.5°	1.35	55.00	4.00	-	16.1	17.1	17.7	18.8
ZSTNB2008-4-04	-	0.80	0.50	0.77	0.82	4.00	0.4°	8.3°	2.64	50.00	4.00	4.6	4.9	5.2	5.5	5.9
ZSTNB2008-6-04	-	0.80	0.50	0.77	0.85	6.00	0.4°	7.1°	2.64	50.00	4.00	6.6	7.1	7.5	7.7	8.3
ZSTNB2008-8-09	-	0.80	0.50	0.77	1.01	8.00	0.9°	6.3°	1.45	50.00	4.00	-	8.9	9.6	10.1	10.9

Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
All				○	○									○	○	◎	◎		○		

ZAMUS STAR

ZSTNB20xx, ZSTNB30xx Series

>>Continue

EDP NO.		Cutting Diameter (metric)	Cutting Length (metric)	Neck Diameter (metric)		Neck Length (metric)	Taper Degree°		Applica-tion Length	Overall Length (metric)	Shank Diameter (metric)	Effective Neck Length				
2 Flute	3 Flute															
AlTiN-HH	AlTiN-HH															
Helix 30°	Helix 30°															
ZSTNB20	ZSTNB30	D1	L1	D2	D3	L2	θ1	θ2	L3	L4	D4	0.5°	1.0°	1.5°	2.0°	3.0°
ZSTNB2008-12-09	-	0.80	0.50	0.77	1.13	12.00	0.9°	5.0°	1.45	55.00	4.00	-	13.0	13.9	14.5	15.4
ZSTNB2008-16-09	-	0.80	0.50	0.77	1.26	16.00	0.9°	4.2°	1.45	55.00	4.00	-	17.1	18.1	18.8	19.9
ZSTNB2009-4-04	-	0.90	0.60	0.86	0.91	4.00	0.4°	8.2°	3.46	50.00	4.00	4.5	4.7	4.9	5.1	5.4
ZSTNB2009-8-04	-	0.90	0.60	0.86	0.96	8.00	0.4°	6.1°	3.46	55.00	4.00	8.7	9.3	9.7	10.0	10.6
ZSTNB2009-12-04	-	0.90	0.60	0.86	1.02	12.00	0.4°	4.8°	3.46	55.00	4.00	12.9	13.8	14.4	14.9	15.7
ZSTNB2009-16-04	-	0.90	0.60	0.86	1.08	16.00	0.4°	4.0°	3.46	60.00	4.00	17.0	18.0	18.7	19.3	20.5
ZSTNB2009-18-04	-	0.90	0.60	0.86	1.10	18.00	0.4°	3.7°	3.46	65.00	4.00	19.1	20.1	20.9	21.5	23.1
ZSTNB2009-20-04	-	0.90	0.60	0.86	1.13	20.00	0.4°	3.4°	3.46	65.00	4.00	21.1	22.2	23.0	23.6	25.6
ZSTNB2009-22-04	-	0.90	0.60	0.86	1.16	22.00	0.4°	3.2°	3.46	65.00	4.00	23.1	24.3	25.1	25.8	28.2
ZSTNB2009-24-04	-	0.90	0.60	0.86	1.19	24.00	0.4°	3.0°	3.46	70.00	4.00	25.2	26.4	27.2	27.9	-
ZSTNB2010-6-04	-	1.00	0.80	0.94	1.01	6.00	0.4°	8.3°	5.09	50.00	6.00	6.8	7.2	7.5	7.8	8.3
ZSTNB2010-8-04	-	1.00	0.80	0.94	1.04	8.00	0.4°	7.5°	5.09	55.00	6.00	8.8	9.3	9.7	10.0	10.6
ZSTNB2010-10-04	-	1.00	0.80	0.94	1.07	10.00	0.4°	6.8°	5.09	55.00	6.00	11.0	11.7	12.3	12.7	13.5
ZSTNB2010-10-09	-	1.00	0.80	0.94	1.23	10.00	0.9°	6.9°	2.70	55.00	6.00	-	11.2	11.9	12.4	13.2
ZSTNB2010-15-09	-	1.00	0.80	0.94	1.39	15.00	0.9°	5.7°	2.70	60.00	6.00	-	16.2	17.1	17.8	18.8
ZSTNB2010-20-04	-	1.00	0.80	0.94	1.21	20.00	0.4°	4.7°	5.09	65.00	6.00	21.2	22.3	23.0	23.6	25.7
ZSTNB2010-20-09	-	1.00	0.80	0.94	1.54	20.00	0.9°	4.8°	2.70	65.00	6.00	-	21.3	22.4	23.1	24.6
ZSTNB2010-25-09	-	1.00	0.80	0.94	1.70	25.00	0.9°	4.2°	2.70	70.00	6.00	-	26.4	27.6	28.4	30.8
ZSTNB2010-30-04	-	1.00	0.80	0.94	1.35	30.00	0.4°	3.6°	5.09	75.00	6.00	31.3	32.7	33.6	34.8	38.5
ZSTNB2010-30-09	-	1.00	0.80	0.94	1.86	30.00	0.9°	3.7°	2.70	75.00	6.00	-	31.4	32.8	33.7	36.9
ZSTNB2010-35-09	-	1.00	0.80	0.94	2.02	35.00	0.9°	3.3°	2.70	80.00	6.00	-	36.5	38.0	39.0	43.1
ZSTNB2010-40-09	-	1.00	0.80	0.94	2.17	40.00	0.9°	3.0°	2.70	85.00	6.00	-	41.6	43.2	44.4	-
ZSTNB2010-50-09	-	1.00	0.80	0.94	2.49	50.00	0.9°	2.5°	2.70	95.00	6.00	-	51.7	53.5	55.5	-
ZSTNB2010-60-09	-	1.00	0.80	0.94	2.80	60.00	0.9°	2.2°	2.70	105.00	6.00	-	61.8	63.8	66.6	-
ZSTNB2010-70-09	-	1.00	0.80	0.94	3.11	70.00	0.9°	1.9°	2.70	115.00	6.00	-	71.9	74.0	-	-
ZSTNB2015-8-04	-	1.50	1.35	1.42	1.51	8.00	0.4°	7.3°	7.07	55.00	6.00	8.9	9.4	9.7	10.0	10.6
ZSTNB2015-10-04	-	1.50	1.35	1.42	1.54	10.00	0.4°	6.6°	7.07	55.00	6.00	10.9	11.5	11.9	12.2	12.9
ZSTNB2015-12-04	-	1.50	1.35	1.42	1.57	12.00	0.4°	6.0°	7.07	55.00	6.00	13.0	13.6	14.0	14.4	15.4
ZSTNB2015-15-09	-	1.50	1.35	1.42	1.85	15.00	0.9°	5.4°	3.89	60.00	6.00	-	16.4	17.2	17.8	18.8
ZSTNB2015-20-09	-	1.50	1.35	1.42	2.01	20.00	0.9°	4.5°	3.89	65.00	6.00	-	21.4	22.4	23.2	24.7
ZSTNB2015-30-09	-	1.50	1.35	1.42	2.32	30.00	0.9°	3.4°	3.89	75.00	6.00	-	31.5	32.9	33.7	37.0
ZSTNB2018-4-04	-	1.80	1.60	1.73	1.76	4.00	0.4°	9.2°	4.38	50.00	6.00	4.6	4.8	4.9	5.1	5.4
ZSTNB2018-8-04	-	1.80	1.60	1.73	1.82	8.00	0.4°	7.1°	6.61	50.00	6.00	8.6	9.0	9.2	9.4	10.2
ZSTNB2018-12-04	-	1.80	1.60	1.73	1.88	12.00	0.4°	5.8°	6.61	55.00	6.00	12.9	13.5	14.0	14.4	15.4
ZSTNB2018-16-04	-	1.80	1.60	1.73	1.93	16.00	0.4°	4.9°	6.61	60.00	6.00	17.0	17.7	18.3	18.7	20.5
ZSTNB2018-20-04	-	1.80	1.60	1.73	1.99	20.00	0.4°	4.3°	6.61	65.00	6.00	21.2	22.3	23.0	23.6	25.6
ZSTNB2018-24-04	-	1.80	1.60	1.73	2.04	24.00	0.4°	3.8°	6.61	65.00	6.00	25.3	26.5	27.3	27.9	30.8
ZSTNB2018-28-04	-	1.80	1.60	1.73	2.10	28.00	0.4°	3.4°	6.61	70.00	6.00	29.4	30.6	31.5	32.4	35.9
ZSTNB2018-32-04	-	1.80	1.60	1.73	2.15	32.00	0.4°	3.0°	6.61	70.00	6.00	33.4	34.8	35.7	37.1	-
ZSTNB2018-36-04	-	1.80	1.60	1.73	2.21	36.00	0.4°	2.8°	6.61	75.00	6.00	37.5	38.9	39.9	41.7	-
ZSTNB2018-38-04	-	1.80	1.60	1.73	2.24	38.00	0.4°	2.7°	6.61	80.00	6.00	39.5	41.0	42.0	44.0	-
ZSTNB2018-40-04	-	1.80	1.60	1.73	2.27	40.00	0.4°	2.6°	6.61	80.00	6.00	41.5	43.1	44.2	46.3	-
ZSTNB2020-8-04	ZSTNB3020-8-04	2.00	1.70	1.92	2.01	8.00	0.4°	7.0°	7.42	50.00	6.00	8.7	9.0	9.2	9.5	10.2
ZSTNB2020-12-04	ZSTNB3020-12-04	2.00	1.70	1.92	2.06	12.00	0.4°	5.7°	7.42	55.00	6.00	13.0	13.6	14.0	14.4	15.4
ZSTNB2020-16-04	ZSTNB3020-16-04	2.00	1.70	1.92	2.12	16.00	0.4°	4.8°	7.42	60.00	6.00	17.0	17.7	18.3	18.7	20.5
ZSTNB2020-20-04	ZSTNB3020-20-04	2.00	1.70	1.92	2.18	20.00	0.4°	4.1°	7.42	65.00	6.00	21.3	22.3	23.0	23.6	25.6

ZAMUS STAR

ZSTNB20xx, ZSTNB30xx Series

EDP NO.		Cutting Diameter (metric)	Cutting Length (metric)	Neck Diameter (metric)		Neck Length (metric)	Taper Degree°		Applica-tion Length	Overall Length (metric)	Shank Diameter (metric)	Effective Neck Length				
2 Flute	3 Flute															
AlTiN-HH	AlTiN-HH															
Helix 30°	Helix 30°															
ZSTNB20	ZSTNB30	D1	L1	D2	D3	L2	θ1	θ2	L3	L4	D4	0.5°	1.0°	1.5°	2.0°	3.0°
ZSTNB2020-20-09	ZSTNB3020-20-09	2.00	1.70	1.92	2.50	20.00	0.9°	4.2°	4.24	65.00	6.00	-	21.4	22.4	23.2	24.6
ZSTNB2020-25-09	ZSTNB3020-25-09	2.00	1.70	1.92	2.65	25.00	0.9°	3.6°	4.24	65.00	6.00	-	26.5	27.7	28.5	30.8
ZSTNB2020-30-04	ZSTNB3020-30-04	2.00	1.70	1.92	2.32	30.00	0.4°	3.1°	7.42	70.00	6.00	31.4	32.7	33.6	34.8	38.5
ZSTNB2020-30-09	ZSTNB3020-30-09	2.00	1.70	1.92	2.81	30.00	0.9°	3.2°	4.24	70.00	6.00	-	31.6	32.9	33.7	36.9
ZSTNB2020-35-09	ZSTNB3020-35-09	2.00	1.70	1.92	2.97	35.00	0.9°	2.8°	4.24	75.00	6.00	-	36.6	38.0	39.0	-
ZSTNB2020-40-04	ZSTNB3020-40-04	2.00	1.70	1.92	2.46	40.00	0.4°	2.5°	7.42	80.00	6.00	41.5	43.1	44.2	46.3	-
ZSTNB2020-40-09	ZSTNB3020-40-09	2.00	1.70	1.92	3.12	40.00	0.9°	2.6°	4.24	80.00	6.00	-	41.7	43.2	44.5	-
ZSTNB2020-50-09	ZSTNB3020-50-09	2.00	1.70	1.92	3.44	50.00	0.9°	2.1°	4.24	90.00	6.00	-	51.8	53.5	55.5	-
ZSTNB2020-60-09	ZSTNB3020-60-09	2.00	1.70	1.92	3.75	60.00	0.9°	1.8°	4.24	100.00	6.00	-	61.9	63.8	-	-
ZSTNB2020-70-09	ZSTNB3020-70-09	2.00	1.70	1.92	4.07	70.00	0.9°	1.6°	4.24	110.00	6.00	-	72.0	74.1	-	-
ZSTNB2030-8-04	ZSTNB3030-8-04	3.00	2.50	2.86	2.94	8.00	0.4°	6.3°	8.50	50.00	6.00	8.8	9.1	9.3	9.5	10.3
ZSTNB2030-16-04	ZSTNB3030-16-04	3.00	2.50	2.86	3.05	16.00	0.4°	4.1°	12.52	55.00	6.00	17.2	17.8	18.3	18.7	20.6
ZSTNB2030-20-04	ZSTNB3030-20-04	3.00	2.50	2.86	3.10	20.00	0.4°	3.4°	12.52	60.00	6.00	21.2	22.0	22.6	23.3	25.7
ZSTNB2030-30-04	ZSTNB3030-30-04	3.00	2.50	2.86	3.24	30.00	0.4°	2.5°	12.52	70.00	6.00	31.6	32.8	33.7	34.9	-
ZSTNB2030-30-09	ZSTNB3030-30-09	3.00	2.50	2.86	3.72	30.00	0.9°	2.6°	6.95	70.00	6.00	-	31.8	33.0	33.8	-
ZSTNB2030-40-04	ZSTNB3030-40-04	3.00	2.50	2.86	3.38	40.00	0.4°	2.0°	12.52	80.00	6.00	41.7	43.2	44.3	-	-
ZSTNB2030-40-09	ZSTNB3030-40-09	3.00	2.50	2.86	4.04	40.00	0.9°	2.0°	6.95	80.00	6.00	-	41.9	43.3	-	-
ZSTNB2030-50-09	ZSTNB3030-50-09	3.00	2.50	2.86	4.35	50.00	0.9°	1.7°	6.95	90.00	6.00	-	52.0	53.6	-	-
ZSTNB2030-60-09	ZSTNB3030-60-09	3.00	2.50	2.86	4.67	60.00	0.9°	1.4°	6.95	100.00	6.00	-	62.1	-	-	-
ZSTNB2030-70-09	ZSTNB3030-70-09	3.00	2.50	2.86	4.98	70.00	0.9°	1.2°	6.95	110.00	6.00	-	72.1	-	-	-
ZSTNB2040-20-10	ZSTNB3040-20-10	4.00	8.00	3.86	4.28	20.00	1.0°	5.0°	12.01	70.00	8.00	20.5	21.6	22.3	22.8	23.5
ZSTNB2040-30-10	ZSTNB3040-30-10	4.00	8.00	3.86	4.63	30.00	1.0°	3.5°	12.01	80.00	8.00	22.0	31.6	32.5	33.2	34.1
ZSTNB2040-40-10	ZSTNB3040-40-10	4.00	8.00	3.86	4.98	40.00	1.0°	2.7°	12.01	90.00	8.00	22.0	42.0	43.4	44.3	-
ZSTNB2040-50-10	ZSTNB3040-50-10	4.00	8.00	3.86	5.33	50.00	1.0°	2.2°	12.01	100.00	8.00	22.0	52.0	53.6	54.7	-
ZSTNB2040-60-10	ZSTNB3040-60-10	4.00	8.00	3.86	5.68	60.00	1.0°	1.9°	12.01	110.00	8.00	22.0	62.0	63.8	-	-
ZSTNB2050-30-10	ZSTNB3050-30-10	5.00	10.00	4.86	5.56	30.00	1.0°	2.8°	14.01	80.00	8.00	25.5	31.7	32.6	33.2	-
ZSTNB2050-40-10	ZSTNB3050-40-10	5.00	10.00	4.86	5.91	40.00	1.0°	2.1°	14.01	90.00	8.00	25.5	41.7	42.8	43.5	-
ZSTNB2050-60-10	ZSTNB3050-60-10	5.00	10.00	4.86	6.61	60.00	1.0°	1.5°	14.01	110.00	8.00	25.5	62.1	-	-	-
ZSTNB2060-30-10	-	6.00	12.00	5.86	6.49	30.00	1.0°	1.9°	16.01	80.00	8.00	29.0	31.8	32.6	-	-
ZSTNB2060-40-10	-	6.00	12.00	5.86	6.84	40.00	1.0°	1.5°	16.01	90.00	8.00	29.0	41.8	-	-	-
ZSTNB2060-50-10	-	6.00	12.00	5.86	7.19	50.00	1.0°	1.2°	16.01	100.00	8.00	29.0	51.8	-	-	-
ZSTNB2060-60-10	-	6.00	12.00	5.86	7.54	60.00	1.0°	1.9°	16.01	110.00	10.00	29.0	62.2	63.9	-	-
ZSTNB2060-70-10	-	6.00	12.00	5.86	7.89	70.00	1.0°	1.7°	16.01	120.00	10.00	29.0	72.2	74.1	-	-
ZSTNB2060-80-10	-	6.00	12.00	5.86	8.23	80.00	1.0°	1.5°	16.01	130.00	10.00	29.0	82.2	-	-	-
ZSTNB2080-50-10	-	8.00	14.00	7.86	9.12	50.00	1.0°	1.2°	18.01	110.00	10.00	32.0	51.9	-	-	-
ZSTNB2080-60-10	-	8.00	14.00	7.86	9.47	60.00	1.0°	1.0°	18.01	120.00	10.00	32.0	-	-	-	-
ZSTNB2080-70-10	-	8.00	14.00	7.86	9.82	70.00	1.0°	0.9°	18.01	130.00	10.00	32.0	-	-	-	-
ZSTNB2080-80-10	-	8.00	14.00	7.86	10.16	80.00	1.0°	1.5°	18.01	140.00	12.00	32.0	82.3	-	-	-
ZSTNB2100-60-10	-	10.00	18.00	9.86	11.33	60.00	1.0°	1.1°	22.01	130.00	12.00	39.0	62.1	-	-	-
ZSTNB2100-75-10	-	10.00	18.00	9.86	11.85	75.00	1.0°	0.9°	22.01	140.00	12.00	39.0	-	-	-	-

ZSTNB20, ZSTNB30 Series

Work Material				Carbon Steels, Alloy Steels (180 ~ 250 HB)		Prehardened Steels (35 ~ 45 HRc)		Hardened Steels (45 ~ 55 HRc)		Hardened Steels (55 ~ 65 HRc)	
Ratio to standard depth of cut				Depth of Cut X 100%		Depth of Cut X 80%		Depth of Cut X 65%		Depth of Cut X 60%	
Cutting Diameter (metric)	Neck Length (metric)	Neck Angle(°)	Depth of Cut (metric)	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	1	0.4	0.017	40,000	800	28,000	504	26,000	416	26,000	364
0.2	1.5	0.4	0.009	40,000	800	28,000	504	26,000	416	26,000	364
0.2	2	0.9	0.007	32,000	461	22,400	323	20,800	266	20,800	233
0.2	2.5	0.9	0.004	26,000	333	18,200	204	16,900	189	16,900	162
0.3	2	0.4	0.025	40,000	1,200	28,000	756	26,000	624	26,000	546
0.3	3	0.9	0.013	32,000	691	22,400	484	20,800	399	20,800	349
0.3	4	0.9	0.010	26,000	499	18,200	306	16,900	284	16,900	243
0.4	2	0.4	0.035	40,000	1,600	28,000	1,008	26,000	832	26,000	728
0.4	3	0.4	0.020	40,000	1,600	28,000	1,008	26,000	832	26,000	728
0.4	4	0.4	0.007	32,000	922	22,400	645	20,800	532	20,800	466
0.4	4	0.9	0.009	32,000	922	22,400	645	20,800	532	20,800	466
0.4	5	0.4	0.006	26,000	666	18,200	408	16,900	379	16,900	324
0.4	5	0.9	0.007	26,000	666	18,200	408	16,900	379	16,900	324
0.5	4	0.4	0.040	40,000	2,000	28,000	1,260	26,000	1,040	26,000	910
0.5	8	0.9	0.010	26,000	728	18,200	446	16,900	414	16,900	355
0.5	12	0.9	0.005	22,400	627	15,680	384	14,560	357	14,560	306
0.54	2	0.4	0.050	40,000	2,160	28,000	1,361	26,000	1,123	26,000	983
0.54	4	0.4	0.037	40,000	2,160	28,000	1,361	26,000	1,123	26,000	983
0.54	5	0.4	0.031	40,000	1,512	28,000	1,176	26,000	1,040	26,000	832
0.54	6	0.4	0.025	26,000	1,244	18,200	871	16,900	676	16,900	629
0.54	6.5	0.4	0.020	26,000	1,011	18,200	619	16,900	575	16,900	493
0.54	7	0.4	0.015	26,000	899	18,200	585	16,900	543	16,900	465
0.6	2	0.4	0.055	40,000	2,400	28,000	1,512	26,000	1,248	26,000	1,092
0.6	4	0.4	0.035	40,000	2,400	28,000	1,512	26,000	1,248	26,000	1,092
0.6	6	0.4	0.018	32,000	1,382	22,400	968	20,800	799	20,800	699
0.6	6	0.9	0.020	32,000	1,382	22,400	968	20,800	799	20,800	699
0.6	8	0.9	0.020	26,000	998	18,200	612	16,900	568	16,900	487
0.6	10	0.4	0.013	26,000	874	18,200	535	16,900	497	16,900	426
0.6	10	0.9	0.015	26,000	874	18,200	535	16,900	497	16,900	426
0.6	12	0.9	0.010	26,000	874	18,200	535	16,900	497	16,900	426
0.6	15	0.4	0.005	22,400	753	15,680	461	14,560	367	14,560	367
0.6	15	0.9	0.006	22,400	753	15,680	461	14,560	367	14,560	367
0.8	4	0.4	0.062	32,000	2,560	22,400	1,613	20,800	1,331	20,800	1,165
0.8	6	0.4	0.045	32,000	2,560	22,400	1,613	20,800	1,331	20,800	1,165
0.8	8	0.9	0.026	25,600	1,475	17,920	1,032	16,640	852	16,640	745
0.8	12	0.9	0.020	20,800	1,065	14,560	699	13,520	606	13,520	519
0.8	16	0.9	0.018	20,800	932	14,560	612	13,520	530	13,520	454
0.9	4	0.4	0.063	28,300	2,547	19,810	1,605	18,395	1,324	18,395	1,159
0.9	8	0.4	0.050	28,300	2,547	19,810	1,605	18,395	1,324	18,395	1,159
0.9	12	0.4	0.037	18,400	1,325	12,880	811	11,960	753	11,960	646
0.9	16	0.4	0.024	18,400	1,325	12,880	811	11,960	753	11,960	646
0.9	18	0.4	0.018	18,400	1,325	12,880	811	11,960	753	11,960	646
0.9	20	0.4	0.015	15,850	1,141	11,095	699	10,303	649	10,303	556
0.9	22	0.4	0.012	15,850	1,141	11,095	699	10,303	649	10,303	556
0.9	24	0.4	0.009	14,150	1,019	9,905	624	9,198	579	9,198	497
1	6	0.4	0.055	25,600	2,560	17,920	1,613	16,640	1,331	16,640	1,165
1	8	0.4	0.055	25,600	2,560	17,920	1,613	16,640	1,331	16,640	1,165
1	10	0.4	0.032	20,800	1,872	14,560	1,310	13,520	1,082	13,520	946
1	10	0.9	0.035	20,800	1,872	14,560	1,310	13,520	1,082	13,520	946
1	15	0.9	0.028	16,640	1,331	11,648	874	10,816	757	10,816	649
1	20	0.4	0.018	16,640	1,331	11,648	874	10,816	757	10,816	649

ZSTNB20, ZSTNB30 Series

>>Continue

Work Material				Carbon Steels, Alloy Steels (180 ~ 250 HB)		Prehardened Steels (35 ~ 45 HRc)		Hardened Steels (45 ~ 55 HRc)		Hardened Steels (55 ~ 65 HRc)	
Ratio to standard depth of cut				Depth of Cut X 100%		Depth of Cut X 80%		Depth of Cut X 65%		Depth of Cut X 60%	
Cutting Diameter (metric)	Neck Length (metric)	Neck Angle(°)	Depth of Cut (metric)	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	20	0.9	0.020	16,640	1,331	11,648	874	10,816	757	10,816	649
1	25	0.9	0.017	14,560	1,165	10,192	764	9,464	662	9,464	568
1	30	0.4	0.015	12,480	874	8,736	568	8,112	487	8,112	406
1	30	0.9	0.017	12,480	874	8,736	568	8,112	487	8,112	406
1	35	0.9	0.010	10,400	728	7,280	473	6,760	406	6,760	338
1	40	0.9	0.009	10,000	700	7,000	455	6,500	390	6,500	325
1	50	0.9	0.007	9,500	665	6,650	432	6,175	371	6,175	309
1	60	0.9	0.005	9,000	630	6,300	410	5,850	351	5,850	293
1	70	0.9	0.003	8,500	595	5,950	387	5,525	332	5,525	276
1.5	8	0.4	0.070	16,960	2,544	11,872	1,603	11,024	1,323	11,024	1,158
1.5	10	0.4	0.070	16,960	2,544	11,872	1,603	11,024	1,323	11,024	1,158
1.5	12	0.4	0.070	16,960	2,544	11,872	1,603	11,024	1,323	11,024	1,158
1.5	15	0.9	0.045	13,568	1,832	9,498	1,282	8,819	1,058	8,819	926
1.5	20	0.9	0.040	11,024	1,323	7,717	810	7,166	752	7,166	645
1.5	30	0.9	0.028	11,024	1,323	7,717	810	7,166	752	7,166	645
1.8	4	0.4	0.120	14,200	2,556	9,940	1,610	9,230	1,329	9,230	1,163
1.8	8	0.4	0.100	14,200	2,556	9,940	1,610	9,230	1,329	9,230	1,163
1.8	12	0.4	0.080	14,200	2,556	9,940	1,610	9,230	1,329	9,230	1,163
1.8	16	0.4	0.071	14,200	2,556	9,940	1,610	9,230	1,329	9,230	1,163
1.8	20	0.4	0.062	9,230	1,329	6,461	814	6,000	756	6,000	648
1.8	24	0.4	0.053	9,230	1,329	6,461	814	6,000	756	6,000	648
1.8	28	0.4	0.044	9,230	1,329	6,461	814	6,000	756	6,000	648
1.8	32	0.4	0.036	9,230	1,329	6,461	814	6,000	756	6,000	648
1.8	36	0.4	0.028	9,230	1,329	6,461	814	6,000	756	6,000	648
1.8	38	0.4	0.020	8,000	1,152	5,600	706	5,200	655	5,200	562
1.8	40	0.4	0.015	8,000	1,152	5,600	706	5,200	655	5,200	562
2	8	0.4	0.150	15,200	3,040	10,640	1,915	9,880	1,581	9,880	1,383
2	12	0.4	0.090	15,200	3,040	10,640	1,915	9,880	1,581	9,880	1,383
2	16	0.4	0.090	15,200	3,040	10,640	1,915	9,880	1,581	9,880	1,383
2	20	0.4	0.060	12,160	2,189	8,512	1,532	7,904	1,265	7,904	1,107
2	20	0.9	0.070	12,160	2,189	8,512	1,532	7,904	1,265	7,904	1,107
2	25	0.9	0.070	9,880	1,581	6,916	968	6,442	899	6,422	771
2	30	0.4	0.040	9,880	1,581	6,916	968	6,442	899	6,422	771
2	30	0.9	0.045	9,880	1,581	6,916	968	6,442	899	6,422	771
2	35	0.9	0.045	9,880	1,581	6,916	968	6,442	899	6,422	771
2	40	0.4	0.030	9,880	1,581	6,916	968	6,442	899	6,422	771
2	40	0.9	0.035	9,880	1,581	6,916	968	6,442	899	6,422	771
2	50	0.9	0.170	8,512	1,192	5,958	775	5,533	664	5,533	553
2	60	0.9	0.009	7,235	1,013	5,065	658	4,703	564	4,703	470
2	70	0.9	0.005	6,150	861	4,305	560	3,997	480	3,997	400
3	8	0.4	0.320	12,720	3,816	8,904	2,404	8,268	1,984	8,268	1,736
3	16	0.4	0.220	12,720	3,816	8,904	2,404	8,268	1,984	8,268	1,736
3	20	0.4	0.150	12,720	3,434	8,904	2,137	8,268	1,736	8,268	1,488
3	30	0.4	0.080	10,176	2,748	7,123	1,496	6,614	1,389	6,614	1,191
3	30	0.9	0.090	10,176	2,748	7,123	1,496	6,614	1,389	6,614	1,191
3	40	0.4	0.060	8,268	1,984	5,788	1,215	5,374	1,129	5,374	967
3	40	0.9	0.070	8,268	1,984	5,788	1,215	5,374	1,129	5,374	967
3	50	0.9	0.050	8,268	1,984	5,788	1,215	5,374	1,129	5,374	967
3	60	0.9	0.030	7,123	1,710	4,986	1,047	4,630	972	4,630	833
3	70	0.9	0.020	6,233	1,496	4,363	916	4,051	851	4,051	729
4	20	1	0.320	11,900	2,860	9,000	2,050	7,800	1,680	7,800	1,590

ZSTNB20, ZSTNB30 Series

Work Material				Carbon Steels, Alloy Steels (180 ~ 250 HB)		Prehardened Steels (35 ~ 45 HRc)		Hardened Steels (45 ~ 55 HRc)		Hardened Steels (55 ~ 65 HRc)	
Ratio to standard depth of cut				Depth of Cut X 100%		Depth of Cut X 80%		Depth of Cut X 65%		Depth of Cut X 60%	
Cutting Diameter (metric)	Neck Length (metric)	Neck Angle(°)	Depth of Cut (metric)	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	30	1	0.240	11,900	2,570	9,000	1,850	7,800	1,520	7,800	1,430
4	40	1	0.140	9,500	1,940	7,200	1,400	6,200	1,140	6,200	1,080
4	50	1	0.110	7,800	1,590	5,800	1,120	5,000	920	5,000	870
4	60	1	0.070	7,800	1,590	5,800	1,120	5,000	920	5,000	870
5	30	1	0.340	9,500	2,140	7,200	1,540	6,200	1,260	6,200	1,190
5	40	1	0.250	9,500	2,140	7,200	1,540	6,500	1,260	6,500	1,190
5	60	1	0.150	6,200	1,320	4,700	950	4,000	770	4,000	720
6	30	1	0.450	8,000	2,000	6,000	1,430	5,200	1,170	5,200	1,110
6	40	1	0.400	8,000	1,800	6,000	1,280	5,200	1,050	5,200	990
6	50	1	0.320	8,000	1,800	6,000	1,280	5,200	1,050	5,200	990
6	60	1	0.220	6,400	1,360	4,800	970	4,100	780	4,100	740
6	70	1	0.180	5,200	1,110	3,900	790	3,400	650	3,400	610
6	80	1	0.140	5,200	1,110	3,900	790	3,400	650	3,400	610
8	50	1	0.500	6,000	1,460	4,500	1,040	3,900	850	3,900	810
8	60	1	0.430	6,000	1,460	4,500	1,040	3,900	850	3,900	810
8	70	1	0.330	6,000	1,460	4,500	1,040	3,900	850	3,900	810
8	80	1	0.250	4,800	1,100	3,600	780	3,100	640	3,100	600
10	60	1	0.700	4,800	1,300	3,600	920	3,100	750	3,100	710
10	75	1	0.500	4,800	1,300	3,600	920	3,100	750	3,100	710

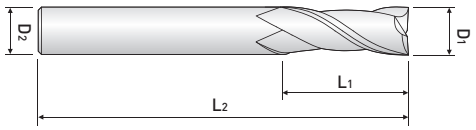
※Please adjust the cutting depth index according to the cutting depth factors of above table.
※In actual machining, the condition should be adjusted according to the machining shape, purpose and machine type.
※If RPM of the machine is low, the feed rate should be low in the same ratio as RPM.

ULTRA FINE | Slotting | Side milling

ZAMUS STAR

ZE712, ZE714 & ZE716 Series

SQUARE / 2, 4 & 6 FLUTES / STUB & REGULAR / AlTiN-HH COATING



TOLERANCE (metric)

D_1 = +0 / -0.02
D_2 = h6

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO.			Cutting Diameter (metric)	Cutting Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute	4 Flute	6 Flute				
AlTiN-HH	AlTiN-HH	AlTiN-HH				
Helix 35°	Helix 45°	Helix 50°				
ZE712	ZE714	ZE716	D1	L1	L2	D2
ZE712010-02	-	-	1.00	2.00	40.00	6.00
-	ZE714010	-	1.00	2.50	40.00	6.00
ZE712010	-	-	1.00	3.00	40.00	6.00
ZE712010-04	-	-	1.00	4.00	40.00	6.00
ZE712012	ZE714012	-	1.20	3.00	40.00	6.00
ZE712015	ZE714015	-	1.50	4.00	40.00	6.00
ZE712015-06	-	-	1.50	6.00	40.00	6.00
ZE712015-08	-	-	1.50	8.00	40.00	6.00
ZE712020	ZE714020	-	2.00	5.00	40.00	6.00
ZE712020-08	-	-	2.00	8.00	40.00	6.00
ZE712020-10	-	-	2.00	10.00	50.00	6.00
ZE712025	ZE714025	-	2.50	6.00	40.00	6.00
ZE712030	ZE714030	-	3.00	8.00	45.00	6.00
ZE712030-10	-	-	3.00	10.00	50.00	6.00
ZE712030-12	-	-	3.00	12.00	50.00	6.00
-	ZE714035	-	3.50	9.00	45.00	6.00
ZE712035	-	-	3.50	10.00	45.00	6.00
ZE712040	ZE714040	-	4.00	10.00	45.00	6.00
ZE712040-12	-	-	4.00	12.00	50.00	6.00
ZE712040-16	-	-	4.00	16.00	60.00	6.00
ZE712045	-	-	4.50	11.00	45.00	6.00
ZE712050	ZE714050	-	5.00	13.00	50.00	6.00
ZE712055	-	-	5.50	13.00	50.00	6.00
ZE712060	ZE714060	ZE716060	6.00	13.00	50.00	6.00
ZE712060-15	ZE714060-15	-	6.00	15.00	60.00	6.00
ZE712065	-	-	6.50	16.00	60.00	8.00
ZE712070	-	-	7.00	18.00	60.00	8.00
-	-	ZE716080	8.00	18.00	60.00	8.00
ZE712080	ZE714080	-	8.00	19.00	60.00	8.00
ZE712100	ZE714100	ZE716100	10.00	22.00	70.00	10.00
ZE712100-25	ZE714100-25	-	10.00	25.00	70.00	10.00
ZE712120	ZE714120	ZE716120	12.00	26.00	75.00	12.00
ZE712120-30	ZE714120-30	-	12.00	30.00	80.00	12.00
-	-	ZE716160	16.00	35.00	90.00	16.00
-	-	ZE716200	20.00	44.00	100.00	20.00

Applicable Working Material

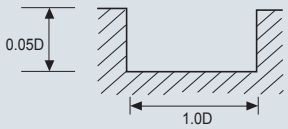
○ : GOOD ◎ : BEST

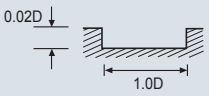
SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
All				○	○									○	○	◎	◎		○		

ZE712 series

End Cutting	Slotting											
Work Material	Hardened Steels Heat Resistant Steels		Hardened Steels									
Hardness	30 ~ 40 HRc		40 ~ 50 HRc		50 ~ 55 HRc		55 ~ 60 HRc		60 ~ 65 HRc		65 ~ 70 HRc	
Cutting Diameter(metric)	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.



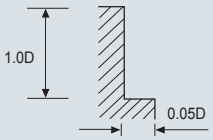


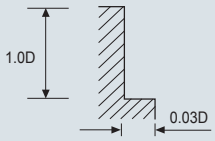
End Cutting	Side Milling											
Work Material	Hardened Steels Heat Resistant Steels		Hardened Steels									
Hardness	30 ~ 40 HRc		40 ~ 50 HRc		50 ~ 55 HRc		55 ~ 60 HRc		60 ~ 65 HRc		65 ~ 70 HRc	
Cutting Diameter(metric)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1	48,000	1,050	38,000	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

ZE714 series

End Cutting	Side Milling											
Work Material	Hardened Steels Heat Resistant Steels		Hardened Steels									
Hardness	30 ~ 40 HRc		40 ~ 50 HRc		50 ~ 55 HRc		55 ~ 60 HRc		60 ~ 65 HRc		65 ~ 70 HRc	
Cutting Diameter(metric)	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.

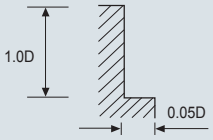


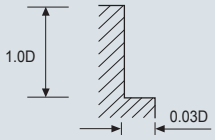


ZE716 series

End Cutting	Side Milling											
Work Material	Hardened Steels Heat Resistant Steels		Hardened Steels									
Hardness	30 ~ 40 HRc		40 ~ 50 HRc		50 ~ 55 HRc		55 ~ 60 HRc		60 ~ 65 HRc		65 ~ 70 HRc	
Cutting Diameter(metric)	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.



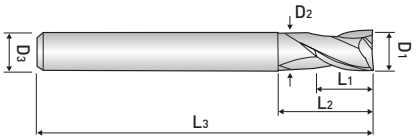


ZAMUS STAR

ZE702, ZE704 Series

ULTRA FINE | Slotting | Side milling

SQUARE / 2 & 4 FLUTES / STUB WITH EXTENDED NECK / AlTiN-HH COATING



TOLERANCE (metric)

D_1 = +0 / -0.012
D_1 = +0 / -0.015 (D1≥8.0)
D_2 = h6

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO.		Cutting Diameter (metric)	Cutting Length (metric)	Neck Diameter (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute	4 Flute						
AlTiN-HH	AlTiN-HH						
Helix 30°	Helix 30°						
ZE702	ZE704	D1	L1	D2	L2	L3	D3
ZE702001	-	0.10	0.20	-	-	40.00	4.00
ZE702002	-	0.20	0.40	-	-	40.00	4.00
ZE702003	-	0.30	0.50	-	-	40.00	3.00
ZE702004	-	0.40	0.70	-	-	40.00	3.00
ZE702005	-	0.50	1.00	-	-	40.00	4.00
ZE702006	-	0.60	1.20	-	-	40.00	4.00
ZE702007	-	0.70	1.40	-	-	40.00	4.00
ZE702008	-	0.80	1.60	-	-	40.00	4.00
ZE702009	-	0.90	2.00	-	-	40.00	4.00
ZE702010	ZE704010	1.00	1.50	-	-	40.00	6.00
ZE702010S4	ZE704010S4	1.00	1.50	-	-	40.00	4.00
ZE702015	ZE704015	1.50	2.20	-	-	40.00	6.00
ZE702020	ZE704020	2.00	3.00	1.90	6.00	40.00	6.00
ZE702020S4	ZE704020S4	2.00	3.00	1.90	6.00	40.00	4.00
ZE702025	ZE704025	2.50	4.00	2.40	6.00	40.00	6.00
ZE702030	ZE704030	3.00	4.00	2.90	7.00	45.00	6.00
-	ZE704035	3.50	5.00	3.30	9.00	45.00	6.00
ZE702035	-	3.50	6.00	3.30	9.00	45.00	6.00
-	ZE704040	4.00	5.00	3.80	9.00	45.00	6.00
ZE702040	-	4.00	6.00	3.80	9.00	45.00	6.00
ZE702045	ZE704045	4.50	6.00	4.30	10.00	45.00	6.00
ZE702050	ZE704050	5.00	6.00	4.80	11.00	50.00	6.00
ZE702060	ZE704060	6.00	7.00	5.80	14.00	50.00	6.00
ZE702080	ZE704080	8.00	9.00	7.80	18.00	60.00	8.00
ZE702100	ZE704100	10.00	12.00	9.70	25.00	75.00	10.00
ZE702120	ZE704120	12.00	15.00	11.70	30.00	75.00	12.00
ZE702160	ZE704160	16.00	18.00	15.70	38.00	90.00	16.00
ZE702200	ZE704200	20.00	24.00	19.70	45.00	100.00	20.00

Applicable Working Material

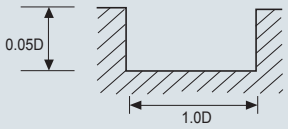
○ : GOOD ◎ : BEST

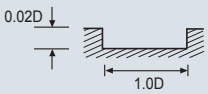
SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
All				○	○									○	○	◎	◎		○		

ZE702 series

End Cutting	Side Milling											
Work Material	Hardened Steels Heat Resistant Steels		Hardened Steels									
Hardness	30 ~ 40 HRc		40 ~ 50 HRc		50 ~ 55 HRc		55 ~ 60 HRc		60 ~ 65 HRc		65 ~ 70 HRc	
Cutting Diameter(metric)	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

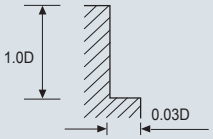
RPM = rev. / min.
FEED = mm / min.





End Cutting	Side Milling											
Work Material	Hardened Steels Heat Resistant Steels		Hardened Steels									
Hardness	30 ~ 40 HRc		40 ~ 50 HRc		50 ~ 55 HRc		55 ~ 60 HRc		60 ~ 65 HRc		65 ~ 70 HRc	
Cutting Diameter(metric)	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

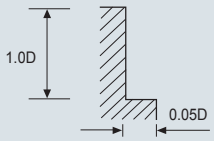
RPM = rev. / min.
FEED = mm / min.

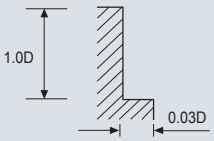


ZE704 Series

End Cutting	Side Milling											
Work Material	Hardened Steels Heat Resistant Steels		Hardened Steels									
Hardness	30 ~ 40 HRc		40 ~ 50 HRc		50 ~ 55 HRc		55 ~ 60 HRc		60 ~ 65 HRc		65 ~ 70 HRc	
Cutting Diameter(metric)	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.



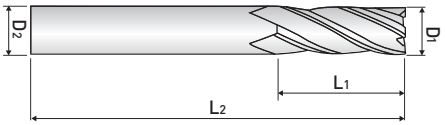


ULTRA FINE | Slotting | Side milling

ZAMUS STAR

ZS124 Series

SQUARE / 4 FLUTES / REGULAR / VARIABLE HELIX / AlTiN-HH COATING



TOLERANCE (metric)

D_1 = +0 / -0.02
D_2 = h6

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO. 4 Flute AlTiN-HH Helix 38°	Cutting Diameter (metric)	Cutting Length (metric)	Overall Length (metric)	Shank Diameter (metric)
ZS124	D1	L1	L2	D2
ZS124020	2.00	5.00	45.00	4.00
ZS124030	3.00	8.00	45.00	6.00
ZS124040	4.00	10.00	45.00	6.00
ZS124060	6.00	16.00	50.00	6.00
ZS124080	8.00	20.00	60.00	8.00
ZS124100	10.00	25.00	75.00	10.00
ZS124120	12.00	35.00	85.00	12.00

Applicable Working Material

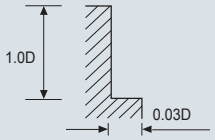
○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
ZS124				○	○									○	○	◎	◎		○		

ZS124 series

Work Material	Hardened Steels									
Hardness	40 ~ 50 HRc		50 ~ 55 HRc		55 ~ 60 HRc		60 ~ 65 HRc		65 ~ 70 HRc	
Cutting Diameter(metric)	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.

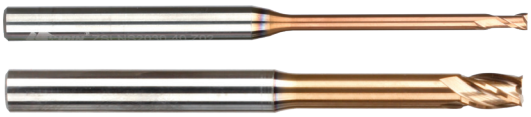


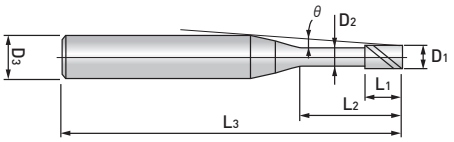
ULTRA FINE | Slotting | Side milling

ZAMUS STAR

ZSLNS20xx, ZSLNS40xx Series

TAPER LONG NECK SQUARE / 2 & 4 FLUTES / REGULAR / AlTiN-HH COATING





TOLERANCE (metric)

D_1 = +0 / -0.012
D_1 = +0 / -0.015 (D1≥0.6)
D_2 = h5

HARDNESS (HRc)

20 30 40 50 60 70

EDP. No.		Cutting Diameter (metric)	Cutting Length (metric)	Neck Diameter (metric)	Neck Length (metric)	Taper Degree°	Overall Length (metric)	Shank Diameter (metric)	Effective Neck Length				
2 Flute	4 Flute												
AlTiN-HH	AlTiN-HH												
Helix 30°	Helix 30°												
ZSLNS20	ZSLNS40	D1	L1	D2	L2	θ	L3	D3	0.5°	1.0°	1.5°	2.0°	3.0°
ZSLNS2001-0.3	-	0.10	0.15	0.08	0.30	11.6°	45.00	4.00	0.4	0.4	0.5	0.5	0.5
ZSLNS2001-0.5	-	0.10	0.15	0.08	0.50	11.4°	45.00	4.00	0.6	0.7	0.7	0.7	0.8
ZSLNS2001-1	-	0.10	0.15	0.08	1.00	10.9°	45.00	4.00	1.2	1.2	1.2	1.3	1.4
ZSLNS2002-0.5	-	0.20	0.30	0.17	0.50	11.3°	50.00	4.00	1.2	1.3	1.5	1.7	2.0
ZSLNS2002-1	-	0.20	0.30	0.17	1.00	10.8°	50.00	4.00	1.7	1.9	2.2	2.4	2.7
ZSLNS2002-1.5	-	0.20	0.30	0.17	1.50	10.3°	50.00	4.00	2.3	2.5	2.8	3.0	3.4
ZSLNS2003-1	-	0.30	0.45	0.27	1.00	10.8°	50.00	4.00	1.7	1.9	2.2	2.4	2.7
ZSLNS2003-1.5	-	0.30	0.45	0.27	1.50	10.3°	50.00	4.00	2.3	2.5	2.8	3.0	3.4
ZSLNS2003-2	-	0.30	0.45	0.27	2.00	9.8°	50.00	4.00	2.8	3.1	3.4	3.6	4.1
ZSLNS2003-2.5	-	0.30	0.45	0.27	2.50	9.4°	50.00	4.00	3.4	3.7	4.0	4.3	4.7
ZSLNS2003-3	-	0.30	0.45	0.27	3.00	9.0°	50.00	4.00	3.9	4.3	4.6	4.9	5.4
ZSLNS2004-1	-	0.40	0.60	0.37	1.00	10.7°	50.00	4.00	1.7	1.9	2.2	2.4	2.7
ZSLNS2004-1.5	-	0.40	0.60	0.37	1.50	10.2°	50.00	4.00	2.3	2.5	2.8	3.0	3.4
ZSLNS2004-2	-	0.40	0.60	0.37	2.00	9.7°	50.00	4.00	2.8	3.1	3.4	3.6	4.1
ZSLNS2004-2.5	-	0.40	0.60	0.37	2.50	9.3°	50.00	4.00	3.4	3.7	4.0	4.3	4.7
ZSLNS2004-3	-	0.40	0.60	0.37	3.00	8.9°	50.00	4.00	3.9	4.3	4.6	4.9	5.4
ZSLNS2004-3.5	-	0.40	0.60	0.37	3.50	8.6°	50.00	4.00	4.5	4.9	5.2	5.5	6.0
ZSLNS2004-4	-	0.40	0.60	0.37	4.00	8.2°	50.00	4.00	5.0	5.4	5.8	6.1	6.6
ZSLNS2004-5	-	0.40	0.60	0.37	5.00	7.6°	50.00	4.00	6.1	6.6	6.9	7.3	7.8
ZSLNS2004-6	-	0.40	0.60	0.37	6.00	7.1°	50.00	4.00	7.2	7.7	8.1	8.4	9.0
ZSLNS2005-1	-	0.50	0.75	0.47	1.00	10.7°	50.00	4.00	1.7	1.9	2.2	2.4	2.7
ZSLNS2005-1.5	-	0.50	0.75	0.47	1.50	10.2°	50.00	4.00	2.3	2.5	2.8	3.0	3.4
ZSLNS2005-2	-	0.50	0.75	0.47	2.00	9.7°	50.00	4.00	2.8	3.1	3.4	3.6	4.1
ZSLNS2005-2.5	-	0.50	0.75	0.47	2.50	9.3°	50.00	4.00	3.4	3.7	4.0	4.3	4.7
ZSLNS2005-3	-	0.50	0.75	0.47	3.00	8.9°	50.00	4.00	3.9	4.3	4.6	4.9	5.4
ZSLNS2005-4	-	0.50	0.75	0.47	4.00	8.1°	50.00	4.00	5.0	5.4	5.8	6.1	6.6
ZSLNS2005-5	-	0.50	0.75	0.47	5.00	7.5°	50.00	4.00	6.1	6.6	6.9	7.3	7.8
ZSLNS2005-6	-	0.50	0.75	0.47	6.00	7.0°	50.00	4.00	7.2	7.7	8.1	8.4	9.0
ZSLNS2005-8	-	0.50	0.75	0.47	8.00	6.2°	50.00	4.00	9.3	9.9	10.3	10.7	11.4
ZSLNS2006-2	-	0.60	0.90	0.57	2.00	9.6°	50.00	4.00	2.8	3.1	3.4	3.6	4.1
ZSLNS2006-4	-	0.60	0.90	0.57	4.00	8.1°	50.00	4.00	5.0	5.4	5.8	6.1	6.6
ZSLNS2006-6	-	0.60	0.90	0.57	6.00	6.9°	50.00	4.00	7.2	7.7	8.1	8.4	9.0
ZSLNS2006-8	-	0.60	0.90	0.57	8.00	6.1°	50.00	4.00	9.3	9.9	10.3	10.7	11.4
ZSLNS2006-10	-	0.60	0.90	0.57	10.00	5.4°	50.00	4.00	11.5	12.1	12.6	13.0	13.7
ZSLNS2007-2	-	0.70	1.05	0.67	2.00	9.6°	50.00	4.00	2.8	3.1	3.4	3.6	4.1

Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
All				○	○									○	○	◎	◎		○		

ZAMUS STAR

ZSLNS20xx, ZSLNS40xx Series

>>Continue

EDP. No.		Cutting Diameter (metric)	Cutting Length (metric)	Neck Diameter (metric)	Neck Length (metric)	Taper Degree°	Overall Length (metric)	Shank Diameter (metric)	Effective Neck Length				
2 Flute	4 Flute												
AlTiN-HH	AlTiN-HH												
Helix 30°	Helix 30°												
ZSLNS20	ZSLNS40	D1	L1	D2	L2	θ	L3	D3	0.5°	1.0°	1.5°	2.0°	3.0°
ZSLNS2007-4	-	0.70	1.05	0.67	4.00	8.0°	50.00	4.00	5.0	5.4	5.8	6.1	6.6
ZSLNS2007-6	-	0.70	1.05	0.67	6.00	6.9°	50.00	4.00	7.2	7.7	8.1	8.4	9.0
ZSLNS2007-8	-	0.70	1.05	0.67	8.00	6.0°	50.00	4.00	9.3	9.9	10.3	10.7	11.4
ZSLNS2007-10	-	0.70	1.05	0.67	10.00	5.3°	50.00	4.00	11.5	12.1	12.6	13.0	13.7
ZSLNS2008-4	-	0.80	1.20	0.77	4.00	7.9°	50.00	4.00	5.0	5.4	5.8	6.1	6.6
ZSLNS2008-6	-	0.80	1.20	0.77	6.00	6.8°	50.00	4.00	7.2	7.7	8.1	8.4	9.0
ZSLNS2008-8	-	0.80	1.20	0.77	8.00	5.9°	50.00	4.00	9.3	9.9	10.3	10.7	11.4
ZSLNS2008-10	-	0.80	1.20	0.77	10.00	5.2°	50.00	4.00	11.5	12.1	12.6	13.0	13.7
ZSLNS2008-12	-	0.80	1.20	0.77	12.00	4.7°	55.00	4.00	13.6	14.2	14.8	15.2	16.0
ZSLNS2009-6	-	0.90	1.35	0.86	6.00	6.7°	50.00	4.00	7.2	7.7	8.1	8.4	9.1
ZSLNS2009-8	-	0.90	1.35	0.86	8.00	5.8°	50.00	4.00	9.4	9.9	10.4	10.7	11.4
ZSLNS2009-10	-	0.90	1.35	0.86	10.00	5.1°	50.00	4.00	11.5	12.1	12.6	13.0	13.7
ZSLNS2009-12	-	0.90	1.35	0.86	12.00	4.6°	55.00	4.00	13.6	14.3	14.8	15.2	16.0
ZSLNS2010-2	-	1.00	1.50	0.96	2.00	9.4°	50.00	4.00	2.9	3.2	3.4	3.7	4.1
ZSLNS2010-4	ZSLNS4010-4	1.00	1.50	0.96	4.00	7.7°	50.00	4.00	5.1	5.5	5.8	6.1	6.6
ZSLNS2010-6	ZSLNS4010-6	1.00	1.50	0.96	6.00	6.6°	50.00	4.00	7.2	7.7	8.1	8.4	9.1
ZSLNS2010-8	ZSLNS4010-8	1.00	1.50	0.96	8.00	5.7°	50.00	4.00	9.4	9.9	10.4	10.7	11.4
ZSLNS2010-10	ZSLNS4010-10	1.00	1.50	0.96	10.00	5.0°	50.00	4.00	11.5	12.1	12.6	13.0	13.7
ZSLNS2010-12	-	1.00	1.50	0.96	12.00	4.5°	55.00	4.00	13.6	14.3	14.8	15.2	16.0
ZSLNS2010-14	-	1.00	1.50	0.96	14.00	4.1°	55.00	4.00	15.7	16.4	17.0	17.4	18.7
ZSLNS2010-16	-	1.00	1.50	0.96	16.00	3.8°	60.00	4.00	17.8	18.6	19.1	19.6	21.3
ZSLNS2010-20	-	1.00	1.50	0.96	20.00	3.2°	60.00	4.00	22.0	22.8	23.5	24.0	26.6
ZSLNS2012-6	-	1.20	1.80	1.15	6.00	6.3°	50.00	4.00	7.3	7.7	8.1	8.5	9.1
ZSLNS2012-8	-	1.20	1.80	1.15	8.00	5.5°	50.00	4.00	9.4	9.9	10.4	10.8	11.4
ZSLNS2012-10	-	1.20	1.80	1.15	10.00	4.8°	50.00	4.00	11.5	12.1	12.6	13.0	13.7
ZSLNS2012-12	-	1.20	1.80	1.15	12.00	4.3°	55.00	4.00	13.6	14.3	14.8	15.2	16.0
ZSLNS2012-16	-	1.20	1.80	1.15	16.00	3.6°	55.00	4.00	17.8	18.6	19.2	19.7	21.3
ZSLNS2014-6	-	1.40	2.10	1.34	6.00	6.1°	50.00	4.00	7.3	7.8	8.1	8.5	9.1
ZSLNS2014-8	-	1.40	2.10	1.34	8.00	5.3°	50.00	4.00	9.4	10.0	10.4	10.8	11.5
ZSLNS2014-10	-	1.40	2.10	1.34	10.00	4.6°	50.00	4.00	11.6	12.1	12.6	13.0	13.8
ZSLNS2014-12	-	1.40	2.10	1.34	12.00	4.1°	55.00	4.00	13.7	14.3	14.8	15.3	16.1
ZSLNS2014-14	-	1.40	2.10	1.34	14.00	3.7°	55.00	4.00	15.8	16.5	17.0	17.5	18.7
ZSLNS2014-16	-	1.40	2.10	1.34	16.00	3.4°	55.00	4.00	17.9	18.6	19.2	19.7	21.4
ZSLNS2015-4	ZSLNS4015-4	1.50	2.25	1.44	4.00	7.2°	50.00	4.00	5.2	5.5	5.9	6.2	6.7
ZSLNS2015-6	ZSLNS4015-6	1.50	2.25	1.44	6.00	6.0°	50.00	4.00	7.3	7.8	8.1	8.5	9.1
ZSLNS2015-8	ZSLNS4015-8	1.50	2.25	1.44	8.00	5.1°	50.00	4.00	9.4	10.0	10.4	10.8	11.5
ZSLNS2015-10	ZSLNS4015-10	1.50	2.25	1.44	10.00	4.5°	50.00	4.00	11.6	12.1	12.6	13.0	13.8
ZSLNS2015-12	ZSLNS4015-12	1.50	2.25	1.44	12.00	4.0°	55.00	4.00	13.7	14.3	14.8	15.3	16.1
ZSLNS2015-14	ZSLNS4015-14	1.50	2.25	1.44	14.00	3.6°	55.00	4.00	15.8	16.5	17.0	17.5	18.7
ZSLNS2015-16	ZSLNS4015-16	1.50	2.25	1.44	16.00	3.3°	55.00	4.00	17.9	18.6	19.2	19.7	-
ZSLNS2015-18	ZSLNS4015-18	1.50	2.25	1.44	18.00	3.0°	60.00	4.00	20.0	20.7	21.3	21.9	-
ZSLNS2015-20	ZSLNS4015-20	1.50	2.25	1.44	20.00	2.8°	60.00	4.00	22.0	22.9	23.5	24.1	-
ZSLNS2015-25	ZSLNS4015-25	1.50	2.25	1.44	25.00	2.4°	65.00	4.00	27.3	28.1	28.8	30.0	-
ZSLNS2016-6	-	1.60	2.40	1.54	6.00	5.9°	50.00	4.00	7.3	7.8	8.1	8.5	9.1
ZSLNS2016-8	-	1.60	2.40	1.54	8.00	5.0°	50.00	4.00	9.4	10.0	10.4	10.8	11.5
ZSLNS2016-10	-	1.60	2.40	1.54	10.00	4.4°	50.00	4.00	11.6	12.1	12.6	13.0	13.8

ZAMUS STAR

ZSLNS20xx, ZSLNS40xx Series

>>Continue

EDP. No.		Cutting Diameter (metric)	Cutting Length (metric)	Neck Diameter (metric)	Neck Length (metric)	Taper Degree°	Overall Length (metric)	Shank Diameter (metric)	Effective Neck Length				
2 Flute	4 Flute												
AlTiN-HH	AlTiN-HH												
Helix 30°	Helix 30°												
ZSLNS20	ZSLNS40	D1	L1	D2	L2	θ	L3	D3	0.5°	1.0°	1.5°	2.0°	3.0°
ZSLNS2016-12	-	1.60	2.40	1.54	12.00	3.9°	55.00	4.00	13.7	14.3	14.8	15.3	16.1
ZSLNS2016-14	-	1.60	2.40	1.54	14.00	3.5°	55.00	4.00	15.8	16.5	17.0	17.5	18.7
ZSLNS2016-16	-	1.60	2.40	1.54	16.00	3.2°	55.00	4.00	17.9	18.6	19.2	19.7	21.4
ZSLNS2016-18	-	1.60	2.40	1.54	18.00	2.9°	60.00	4.00	20.0	20.7	21.3	21.9	-
ZSLNS2016-20	-	1.60	2.40	1.54	20.00	2.7°	60.00	4.00	22.0	22.9	23.5	24.1	-
ZSLNS2018-6	-	1.80	2.70	1.73	6.00	5.6°	50.00	4.00	7.4	7.8	8.2	8.5	9.1
ZSLNS2018-8	-	1.80	2.70	1.73	8.00	4.8°	50.00	4.00	9.5	10.0	10.4	10.8	11.5
ZSLNS2018-10	-	1.80	2.70	1.73	10.00	4.2°	50.00	4.00	11.6	12.2	12.6	13.0	13.8
ZSLNS2018-12	-	1.80	2.70	1.73	12.00	3.7°	55.00	4.00	13.7	14.3	14.8	15.3	16.1
ZSLNS2018-14	-	1.80	2.70	1.73	14.00	3.3°	55.00	4.00	15.8	16.5	17.0	17.5	18.8
ZSLNS2018-16	-	1.80	2.70	1.73	16.00	3.0°	55.00	4.00	17.9	18.6	19.2	19.7	-
ZSLNS2018-18	-	1.80	2.70	1.73	18.00	2.7°	60.00	4.00	20.0	20.7	21.3	21.9	-
ZSLNS2018-20	-	1.80	2.70	1.73	20.00	2.5°	60.00	4.00	22.1	22.9	23.5	24.1	-
ZSLNS2020-4	ZSLNS4020-4	2.00	3.00	1.92	4.00	6.5°	50.00	4.00	5.3	5.6	5.9	6.2	6.7
ZSLNS2020-6	ZSLNS4020-6	2.00	3.00	1.92	6.00	5.3°	50.00	4.00	7.4	7.8	8.2	8.5	9.1
ZSLNS2020-8	ZSLNS4020-8	2.00	3.00	1.92	8.00	4.5°	50.00	4.00	9.5	10.0	10.4	10.8	11.5
ZSLNS2020-10	ZSLNS4020-10	2.00	3.00	1.92	10.00	3.9°	50.00	4.00	11.6	12.2	12.7	13.1	13.8
ZSLNS2020-12	ZSLNS4020-12	2.00	3.00	1.92	12.00	3.4°	55.00	4.00	13.7	14.3	14.9	15.3	16.1
ZSLNS2020-14	ZSLNS4020-14	2.00	3.00	1.92	14.00	3.1°	55.00	4.00	15.8	16.5	17.0	17.5	18.8
ZSLNS2020-16	ZSLNS4020-16	2.00	3.00	1.92	16.00	2.8°	55.00	4.00	17.9	18.6	19.2	19.7	-
ZSLNS2020-18	ZSLNS4020-18	2.00	3.00	1.92	18.00	2.6°	60.00	4.00	20.0	20.8	21.4	21.9	-
ZSLNS2020-20	ZSLNS4020-20	2.00	3.00	1.92	20.00	2.4°	60.00	4.00	22.1	22.9	23.5	24.1	-
ZSLNS2020-25	ZSLNS4020-25	2.00	3.00	1.92	25.00	2.0°	65.00	4.00	27.3	28.2	28.9	-	-
ZSLNS2020-30	ZSLNS4020-30	2.00	3.00	1.92	30.00	1.7°	70.00	4.00	32.5	33.4	34.4	-	-
ZSLNS2025-8	ZSLNS4025-8	2.50	3.75	2.40	8.00	3.7°	50.00	4.00	9.6	10.1	10.5	10.9	11.5
ZSLNS2025-10	ZSLNS4025-10	2.50	3.75	2.40	10.00	3.1°	50.00	4.00	11.7	12.2	12.7	13.1	13.8
ZSLNS2025-12	ZSLNS4025-12	2.50	3.75	2.40	12.00	2.7°	55.00	4.00	13.8	14.4	14.9	15.3	-
ZSLNS2025-14	ZSLNS4025-14	2.50	3.75	2.40	14.00	2.4°	55.00	4.00	15.9	16.5	17.1	17.5	-
ZSLNS2025-16	ZSLNS4025-16	2.50	3.75	2.40	16.00	2.2°	55.00	4.00	18.0	18.7	19.2	19.7	-
ZSLNS2025-18	ZSLNS4025-18	2.50	3.75	2.40	18.00	2.0°	60.00	4.00	20.1	20.8	21.4	-	-
ZSLNS2025-20	ZSLNS4025-20	2.50	3.75	2.40	20.00	1.8°	60.00	4.00	22.1	22.9	23.5	-	-
ZSLNS2025-25	ZSLNS4025-25	2.50	3.75	2.40	25.00	1.5°	65.00	4.00	27.3	28.2	-	-	-
ZSLNS2025-30	ZSLNS4025-30	2.50	3.75	2.40	30.00	1.3°	70.00	4.00	32.6	33.5	-	-	-
ZSLNS2030-8	ZSLNS4030-8	3.00	4.50	2.88	8.00	5.6°	55.00	6.00	9.6	10.1	10.5	10.9	11.5
ZSLNS2030-10	ZSLNS4030-10	3.00	4.50	2.88	10.00	5.0°	55.00	6.00	11.7	12.3	12.7	13.1	13.8
ZSLNS2030-12	ZSLNS4030-12	3.00	4.50	2.88	12.00	4.5°	60.00	6.00	13.8	14.4	14.9	15.4	16.3
ZSLNS2030-14	ZSLNS4030-14	3.00	4.50	2.88	14.00	4.1°	60.00	6.00	15.9	16.6	17.1	17.6	18.9
ZSLNS2030-16	ZSLNS4030-16	3.00	4.50	2.88	16.00	3.7°	60.00	6.00	18.0	18.7	19.3	19.8	21.6
ZSLNS2030-18	ZSLNS4030-18	3.00	4.50	2.88	18.00	3.4°	60.00	6.00	20.1	20.8	21.4	21.9	24.2
ZSLNS2030-20	ZSLNS4030-20	3.00	4.50	2.88	20.00	3.2°	65.00	6.00	22.2	23.0	23.6	24.2	26.9
ZSLNS2030-25	ZSLNS4030-25	3.00	4.50	2.88	25.00	2.7°	70.00	6.00	27.4	28.2	28.9	30.2	-
ZSLNS2030-30	ZSLNS4030-30	3.00	4.50	2.88	30.00	2.4°	75.00	6.00	32.6	33.5	34.5	36.2	-
ZSLNS2030-35	ZSLNS4030-35	3.00	4.50	2.88	35.00	2.1°	80.00	6.00	37.7	38.7	40.2	42.2	-
ZSLNS2030-40	ZSLNS4030-40	3.00	4.50	2.88	40.00	1.9°	90.00	6.00	42.9	43.9	45.9	-	-
ZSLNS2040-12	ZSLNS4040-12	4.00	6.00	3.85	12.00	3.4°	60.00	6.00	13.9	14.5	15.0	15.4	16.3
ZSLNS2040-16	ZSLNS4040-16	4.00	6.00	3.85	16.00	2.8°	60.00	6.00	18.1	18.8	19.3	19.8	-

ZAMUS STAR

ZSLNS20xx, ZSLNS40xx Series

EDP. No.		Cutting Diameter (metric)	Cutting Length (metric)	Neck Diameter (metric)	Neck Length (metric)	Taper Degree°	Overall Length (metric)	Shank Diameter (metric)	Effective Neck Length				
2 Flute	4 Flute												
AlTiN-HH	AlTiN-HH												
Helix 30°	Helix 30°												
ZSLNS20	ZSLNS40	D1	L1	D2	L2	θ	L3	D3	0.5°	1.0°	1.5°	2.0°	3.0°
ZSLNS2040-20	ZSLNS4040-20	4.00	6.00	3.85	20.00	2.3°	70.00	6.00	22.3	23.0	23.6	24.3	-
ZSLNS2040-25	ZSLNS4040-25	4.00	6.00	3.85	25.00	2.0°	70.00	6.00	27.4	28.3	28.9	-	-
ZSLNS2040-30	ZSLNS4040-30	4.00	6.00	3.85	30.00	1.7°	80.00	6.00	32.6	33.5	34.6	-	-
ZSLNS2040-35	ZSLNS4040-35	4.00	6.00	3.85	35.00	1.5°	80.00	6.00	37.8	38.8	-	-	-
ZSLNS2040-40	ZSLNS4040-40	4.00	6.00	3.85	40.00	1.3°	90.00	6.00	42.9	44.0	-	-	-
ZSLNS2040-45	ZSLNS4040-45	4.00	6.00	3.85	45.00	1.2°	90.00	6.00	48.1	49.4	-	-	-
ZSLNS2040-50	ZSLNS4040-50	4.00	6.00	3.85	50.00	1.1°	100.00	6.00	53.2	54.8	-	-	-
ZSLNS2050-16	ZSLNS4050-16	5.00	7.50	4.85	16.00	1.5°	60.00	6.00	18.1	18.8	-	-	-
ZSLNS2050-20	ZSLNS4050-20	5.00	7.50	4.85	20.00	1.3°	60.00	6.00	22.3	23.0	-	-	-
ZSLNS2050-25	ZSLNS4050-25	5.00	7.50	4.85	25.00	1.1°	70.00	6.00	27.4	28.3	-	-	-
ZSLNS2050-30	ZSLNS4050-30	5.00	7.50	4.85	30.00	0.9°	70.00	6.00	32.6	-	-	-	-
ZSLNS2050-35	ZSLNS4050-35	5.00	7.50	4.85	35.00	0.8°	80.00	6.00	37.8	-	-	-	-
ZSLNS2050-40	ZSLNS4050-40	5.00	7.50	4.85	40.00	0.7°	90.00	6.00	42.9	-	-	-	-
ZSLNS2050-50	ZSLNS4050-50	5.00	7.50	4.85	50.00	0.6°	100.00	6.00	53.2	-	-	-	-

Applicable Working Material

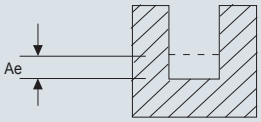
○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
All																					

ZSLNS20, ZSLNS40 Series

Work Material	Alloy Steels, Heat Resistant Steels			Hardened Steels			Hardened Steels			Copper		
Hardness	30 ~ 45 HRc			45 ~ 55 HRc			55 ~ 65 HRc			-		
Cutting Diameter (metric)	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.

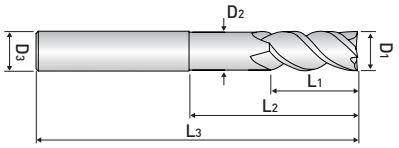


ZAMUS STAR

ZE724, ZE726 Series

ULTRA FINE | Slotting | Side milling

SQUARE / 4 & 6 FLUTES / REGULAR / HIGH HELIX /
AlTiN-HH COATING



TOLERANCE (metric)

D_1 = +0 / -0.015
D_1 = +0 / -0.02 (ZE726 D1≥8.0)
D_2 = h6

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO.		Cutting Diameter (metric)	Cutting Length (metric)	Neck Diameter (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
4 Flute	6 Flute						
AlTiN-HH	AlTiN-HH						
Helix 45°	Helix 60°						
ZE724	ZE726	D1	L1	D2	L2	L3	D3
ZE724010	-	1.00	1.50	0.95	5.00	45.00	6.00
ZE724015	-	1.50	2.20	1.45	6.00	45.00	6.00
ZE724020	-	2.00	3.00	1.90	8.00	45.00	6.00
ZE724030	-	3.00	4.00	2.90	9.00	50.00	6.00
ZE724040	-	4.00	5.00	3.80	12.00	50.00	6.00
ZE724050	-	5.00	6.00	4.80	15.00	50.00	6.00
-	ZE726060	6.00	7.00	5.80	20.00	60.00	6.00
-	ZE726080	8.00	9.00	7.80	25.00	70.00	8.00
-	ZE726100	10.00	12.00	9.70	32.00	75.00	10.00
-	ZE726120	12.00	15.00	11.70	38.00	80.00	12.00

Applicable Working Material

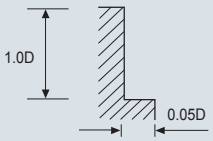
○ : GOOD ◎ : BEST

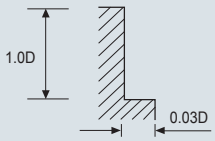
SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
All				○	○									○	○	◎	◎		○		

ZE724 series

End Cutting	Side Milling											
Work Material	Hardened Steels Heat Resistant Steels		Hardened Steels									
Hardness	30 ~ 40 HRc		40 ~ 50 HRc		50 ~ 55 HRc		55 ~ 60 HRc		60 ~ 65 HRc		65 ~ 70 HRc	
Cutting Diameter(metric)	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.

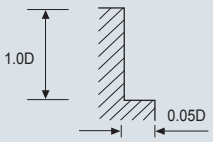


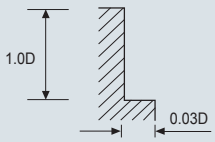


ZE726 series

Work Material	Hardened Steels Heat Resistant Steels		Hardened Steels									
Hardness	30 ~ 40 HRc		40 ~ 50 HRc		50 ~ 55 HRc		55 ~ 60 HRc		60 ~ 65 HRc		65 ~ 70 HRc	
Cutting Diameter(metric)	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.



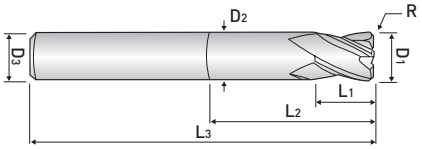


ULTRA FINE | Slotting | Side milling | Variable index

ZAMUS STAR

ZS104, ZS204 Series

CORNER RADIUS / 4 FLUTES / REGULAR / VARIABLE HELIX /
AlTiN-HH COATING



TOLERANCE (metric)

D_1 = +0 / -0.02
D_2 = h6
R = ±0.010 (D1≤6.0)
R = ±0.015 (D1>6.0)

HARDNESS (HRc)

20 30 40 50 60 70

EDP. No. / 4 Flute / AlTiN-HH / Helix 38°		Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Neck Diameter (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
ZS104	ZS204	D1	R	L1	D2	L2	L3	D3
-	ZS204010	1.00	0.05	1.50	0.90	4.00	45.00	4.00
ZS104010	-	1.00	-	1.50	0.90	4.00	45.00	4.00
-	ZS20402000507	2.00	0.05	2.50	1.90	7.00	50.00	4.00
-	ZS2040200107	2.00	0.10	2.50	1.90	7.00	50.00	4.00
-	ZS204020	2.00	0.05	3.00	1.90	6.00	45.00	4.00
ZS104020	-	2.00	-	3.00	1.90	6.00	45.00	4.00
-	ZS204030	3.00	0.10	4.00	2.90	7.00	45.00	6.00
ZS104030	-	3.00	-	4.00	2.90	7.00	45.00	6.00
-	ZS2040300109	3.00	0.10	4.00	2.90	9.00	55.00	6.00
-	ZS2040300209	3.00	0.20	4.00	2.90	9.00	55.00	6.00
-	ZS2040300309	3.00	0.30	4.00	2.90	9.00	55.00	6.00
-	ZS2040300312	3.00	0.30	4.00	2.90	12.00	55.00	6.00
-	ZS2040300316	3.00	0.30	4.00	2.90	16.00	55.00	6.00
-	ZS204040	4.00	0.10	5.00	3.80	9.00	45.00	6.00
ZS104040	-	4.00	-	5.00	3.80	9.00	45.00	6.00
-	ZS2040400212	4.00	0.20	5.00	3.80	12.00	55.00	6.00
-	ZS2040400312	4.00	0.30	5.00	3.80	12.00	55.00	6.00
-	ZS2040400316	4.00	0.30	5.00	3.80	16.00	55.00	6.00
-	ZS2040400320	4.00	0.30	5.00	3.80	20.00	55.00	6.00
-	ZS2040400512	4.00	0.50	5.00	3.80	12.00	55.00	6.00
-	ZS2040400516	4.00	0.50	5.00	3.80	16.00	55.00	6.00
-	ZS2040400520	4.00	0.50	5.00	3.80	20.00	55.00	6.00
-	ZS2040401012	4.00	1.00	5.00	3.80	12.00	55.00	6.00
-	ZS2040500116	5.00	0.10	6.00	4.80	16.00	60.00	6.00
-	ZS2040500216	5.00	0.20	6.00	4.80	16.00	60.00	6.00
-	ZS2040500316	5.00	0.30	6.00	4.80	16.00	60.00	6.00
-	ZS2040500516	5.00	0.50	6.00	4.80	16.00	60.00	6.00
-	ZS2040501016	5.00	1.00	6.00	4.80	16.00	60.00	6.00
-	ZS204060	6.00	0.20	7.00	5.80	14.00	50.00	6.00
ZS104060	-	6.00	-	7.00	5.80	14.00	50.00	6.00
-	ZS2040600120	6.00	0.10	7.00	5.80	20.00	60.00	6.00
-	ZS2040600220	6.00	0.20	7.00	5.80	20.00	60.00	6.00
-	ZS2040600320	6.00	0.30	7.00	5.80	20.00	60.00	6.00
-	ZS2040600520	6.00	0.50	7.00	5.80	20.00	60.00	6.00
-	ZS2040601020	6.00	1.00	7.00	5.80	20.00	60.00	6.00

Applicable Working Material

○ : GOOD ◎ : BEST

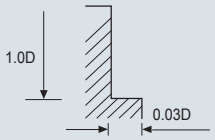
SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
All				○	○									○	○	◎	◎		○		

EDP. No. / 4 Flute / AlTiN-HH / Helix 38°		Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Neck Diameter (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
ZS104	ZS204	D1	R	L1	D2	L2	L3	D3
-	ZS2040601520	6.00	1.50	7.00	5.80	20.00	60.00	6.00
-	ZS2040800125	8.00	0.10	9.00	7.80	25.00	60.00	8.00
-	ZS204080	8.00	0.20	9.00	7.80	18.00	60.00	8.00
-	ZS2040800225	8.00	0.20	9.00	7.80	25.00	60.00	8.00
-	ZS2040800325	8.00	0.30	9.00	7.80	25.00	60.00	8.00
-	ZS2040800525	8.00	0.50	9.00	7.80	25.00	60.00	8.00
-	ZS2040801025	8.00	1.00	9.00	7.80	25.00	60.00	8.00
-	ZS2040801525	8.00	1.50	9.00	7.80	25.00	60.00	8.00
-	ZS2040802025	8.00	2.00	9.00	7.80	25.00	60.00	8.00
ZS104080	-	8.00	-	9.00	7.80	18.00	60.00	8.00
-	ZS2041000232	10.00	0.20	11.00	9.70	32.00	75.00	10.00
-	ZS2041000332	10.00	0.30	11.00	9.70	32.00	75.00	10.00
-	ZS2041000532	10.00	0.50	11.00	9.70	32.00	75.00	10.00
-	ZS2041001032	10.00	1.00	11.00	9.70	32.00	75.00	10.00
-	ZS2041001532	10.00	1.50	11.00	9.70	32.00	75.00	10.00
-	ZS2041002032	10.00	2.00	11.00	9.70	32.00	75.00	10.00
-	ZS204100	10.00	0.20	12.00	9.70	25.00	75.00	10.00
ZS104100	-	10.00	-	12.00	9.70	25.00	75.00	10.00
-	ZS2041200238	12.00	0.20	12.00	11.70	38.00	75.00	12.00
-	ZS2041200338	12.00	0.30	12.00	11.70	38.00	75.00	12.00
-	ZS2041200538	12.00	0.50	12.00	11.70	38.00	75.00	12.00
-	ZS2041201038	12.00	1.00	12.00	11.70	38.00	75.00	12.00
-	ZS2041201538	12.00	1.50	12.00	11.70	38.00	75.00	12.00
-	ZS2041202038	12.00	2.00	12.00	11.70	38.00	75.00	12.00
-	ZS204120	12.00	0.30	15.00	11.70	30.00	75.00	12.00
ZS104120	-	12.00	-	15.00	11.70	30.00	75.00	12.00

ZS104, ZS204 series

Work Material	Hardened Steels									
Hardness	40 ~ 50 HRc		50 ~ 55 HRc		55 ~ 60 HRc		60 ~ 65 HRc		65 ~ 70 HRc	
Cutting Diameter(metric)	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.

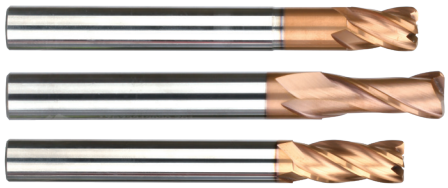


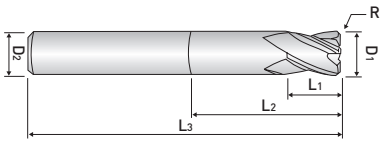
ULTRA FINE | Slotting | Side milling

ZAMUS STAR

ZR724, ZR732 & ZR734 Series

LONG SHANK CORNER RADIUS / 2 & 4 FLUTES /
REGULAR & LONG / AlTiN-HH COATING





TOLERANCE (metric)

D_1 = +0 / -0.012 (D1≤6.0)
D_1 = +0 / -0.015 (D1>6.0)
D_2 = h6
R = ±0.010 (D1≤6.0)
R = ±0.015 (D1>6.0)

HARDNESS (HRc)

20 30 40 50 60 70

EDP. No.			Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute	4 Flute							
AlTiN-HH	AlTiN-HH							
Helix 30°	Helix 30°							
ZR732	ZR724	ZR734	D1	R	L1	L2	L3	D2
ZR73201001	-	ZR73401001	1.00	0.10	2.00	-	50.00	6.00
ZR73201002	-	ZR73401002	1.00	0.20	2.00	-	50.00	6.00
ZR73201003	-	ZR73401003	1.00	0.30	2.00	-	50.00	6.00
ZR73201501	-	ZR73401501	1.50	0.10	3.00	-	50.00	6.00
ZR73201502	-	ZR73401502	1.50	0.20	3.00	-	50.00	6.00
ZR73201503	-	ZR73401503	1.50	0.30	3.00	-	50.00	6.00
ZR73201505	-	ZR73401505	1.50	0.50	3.00	-	50.00	6.00
ZR73202001	-	ZR73402001	2.00	0.10	5.00	-	50.00	6.00
ZR73202002	-	ZR73402002	2.00	0.20	5.00	-	50.00	6.00
ZR73202003	-	ZR73402003	2.00	0.30	5.00	-	50.00	6.00
ZR73202005	-	ZR73402005	2.00	0.50	5.00	-	50.00	6.00
ZR73202501	-	ZR73402501	2.50	0.10	7.00	-	60.00	6.00
ZR73202502	-	ZR73402502	2.50	0.20	7.00	-	60.00	6.00
ZR73202503	-	ZR73402503	2.50	0.30	7.00	-	60.00	6.00
ZR73202505	-	ZR73402505	2.50	0.50	7.00	-	60.00	6.00
ZR73203001	-	ZR73403001	3.00	0.10	8.00	-	60.00	6.00
ZR73203002	-	ZR73403002	3.00	0.20	8.00	-	60.00	6.00
ZR73203003	-	ZR73403003	3.00	0.30	8.00	-	60.00	6.00
ZR73203005	-	ZR73403005	3.00	0.50	8.00	-	60.00	6.00
ZR73204001	-	ZR73404001	4.00	0.10	10.00	-	70.00	6.00
ZR73204002	-	ZR73404002	4.00	0.20	10.00	-	70.00	6.00
ZR73204003	-	ZR73404003	4.00	0.30	10.00	-	70.00	6.00
ZR73204005	-	ZR73404005	4.00	0.50	10.00	-	70.00	6.00
ZR73204010	-	ZR73404010	4.00	1.00	10.00	-	70.00	6.00
ZR73205001	-	ZR73405001	5.00	0.10	13.00	-	80.00	6.00
ZR73205002	-	ZR73405002	5.00	0.20	13.00	-	80.00	6.00
ZR73205003	-	ZR73405003	5.00	0.30	13.00	-	80.00	6.00
ZR73205005	-	ZR73405005	5.00	0.50	13.00	-	80.00	6.00
ZR73205010	-	ZR73405010	5.00	1.00	13.00	-	80.00	6.00
-	ZR7240600520	-	6.00	0.50	9.00	20.00	90.00	6.00
-	ZR7240601020	-	6.00	1.00	9.00	20.00	90.00	6.00
ZR73206001	-	ZR73406001	6.00	0.10	15.00	-	90.00	6.00
ZR73206002	-	ZR73406002	6.00	0.20	15.00	-	90.00	6.00
ZR73206003	-	ZR73406003	6.00	0.30	15.00	-	90.00	6.00
ZR73206005	-	ZR73406005	6.00	0.50	15.00	-	90.00	6.00

Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
All				○	○									○	○	◎	◎		○		

ZAMUS STAR

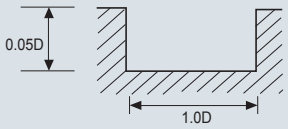
ZR724, ZR732 & ZR734 Series

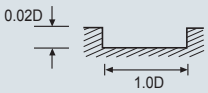
EDP. No.			Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute	4 Flute							
AlTiN-HH	AlTiN-HH							
Helix 30°	Helix 30°							
ZR732	ZR724	ZR734	D1	R	L1	L2	L3	D2
ZR73206010	-	ZR73406010	6.00	1.00	15.00	-	90.00	6.00
-	ZR7240800525	-	8.00	0.50	12.00	25.00	100.00	8.00
-	ZR7240801025	-	8.00	1.00	12.00	25.00	100.00	8.00
ZR73208001	-	ZR73408001	8.00	0.10	20.00	-	100.00	8.00
ZR73208002	-	ZR73408002	8.00	0.20	20.00	-	100.00	8.00
ZR73208003	-	ZR73408003	8.00	0.30	20.00	-	100.00	8.00
ZR73208005	-	ZR73408005	8.00	0.50	20.00	-	100.00	8.00
ZR73208010	-	ZR73408010	8.00	1.00	20.00	-	100.00	8.00
ZR73208020	-	ZR73408020	8.00	2.00	20.00	-	100.00	8.00
-	ZR7241000532	-	10.00	0.50	15.00	32.00	100.00	10.00
-	ZR7241001032	-	10.00	1.00	15.00	32.00	100.00	10.00
-	ZR7241002032	-	10.00	2.00	15.00	32.00	100.00	10.00
ZR73210002	-	ZR73410002	10.00	0.20	25.00	-	100.00	10.00
ZR73210003	-	ZR73410003	10.00	0.30	25.00	-	100.00	10.00
ZR73210005	-	ZR73410005	10.00	0.50	25.00	-	100.00	10.00
ZR73210010	-	ZR73410010	10.00	1.00	25.00	-	100.00	10.00
ZR73210020	-	ZR73410020	10.00	2.00	25.00	-	100.00	10.00
-	ZR7241200538	-	12.00	0.50	18.00	38.00	110.00	12.00
-	ZR7241201038	-	12.00	1.00	18.00	38.00	110.00	12.00
-	ZR7241202038	-	12.00	2.00	18.00	38.00	110.00	12.00
ZR73212002	-	ZR73412002	12.00	0.20	30.00	-	110.00	12.00
ZR73212003	-	ZR73412003	12.00	0.30	30.00	-	110.00	12.00
ZR73212005	-	ZR73412005	12.00	0.50	30.00	-	110.00	12.00
ZR73212010	-	ZR73412010	12.00	1.00	30.00	-	110.00	12.00
ZR73212020	-	ZR73412020	12.00	2.00	30.00	-	110.00	12.00

ZR732 Series

End Cutting	Slotting											
Work Material	Hardened Steels Heat Resistant Steels		Hardened Steels									
Hardness	30 ~ 40 HRc		40 ~ 50 HRc		50 ~ 55 HRc		55 ~ 60 HRc		60 ~ 65 HRc		65 ~ 70 HRc	
Cutting Diameter(metric)	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

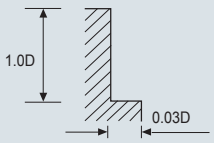
RPM = rev. / min.
FEED = mm / min.





End Cutting	Side Milling											
Work Material	Hardened Steels Heat Resistant Steels		Hardened Steels									
Hardness	30 ~ 40 HRc		40 ~ 50 HRc		50 ~ 55 HRc		55 ~ 60 HRc		60 ~ 65 HRc		65 ~ 70 HRc	
Cutting Diameter(metric)	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	27	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

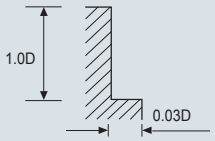
RPM = rev. / min.
FEED = mm / min.



ZR724, ZR734 Series

Work Material	Hardened Steels Heat Resistant Steels		Hardened Steels									
Hardness	30 ~ 40 HRc		40 ~ 50 HRc		50 ~ 55 HRc		55 ~ 60 HRc		60 ~ 65 HRc		65 ~ 70 HRc	
Cutting Diameter(metric)	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.

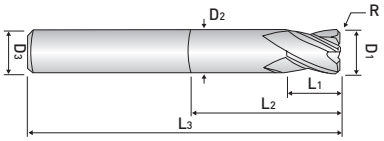


ULTRA FINE | Slotting | Side milling

ZAMUS STAR

ZR706 Series

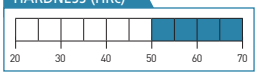
CORNER RADIUS / 6 FLUTES / STUB WITH EXTENDED NECK / HIGH HELIX / AlTliN-HH COATING



TOLERANCE (metric)

D_1 = +0 / -0.02
D_2 = h6
R = ±0.010 (D1≤6.0)
R = ±0.015 (D1>6.0)

HARDNESS (HRc)



EDP. No. 6 Flute AlTiN-HH Helix 45°	Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Neck Diameter (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
ZR706	D1	R	L1	D2	L2	L3	D3
ZR7060600314	6.00	0.30	6.00	5.80	14.00	50.00	6.00
ZR7060600514	6.00	0.50	6.00	5.80	14.00	50.00	6.00
ZR7060800524	8.00	0.50	8.00	7.80	24.00	60.00	8.00
ZR7060801024	8.00	1.00	8.00	7.80	24.00	60.00	8.00
ZR7061000530	10.00	0.50	10.00	9.80	30.00	70.00	10.00
ZR7061001030	10.00	1.00	10.00	9.80	30.00	70.00	10.00
ZR7061200530	12.00	0.50	12.00	11.80	30.00	75.00	12.00
ZR7061201030	12.00	1.00	12.00	11.80	30.00	75.00	12.00

Applicable Working Material

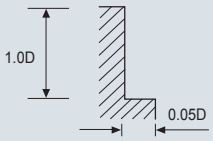
○ : GOOD ◎ : BEST

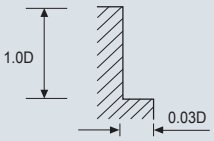
SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
ZR706				○	○									○	○	◎	◎		○		

ZR706 Series

Work Material	Hardened Steels Heat Resistant Steels		Hardened Steels									
Hardness	30 ~ 40 HRc		40 ~ 50 HRc		50 ~ 55 HRc		55 ~ 60 HRc		60 ~ 65 HRc		65 ~ 70 HRc	
Cutting Diameter(metric)	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.



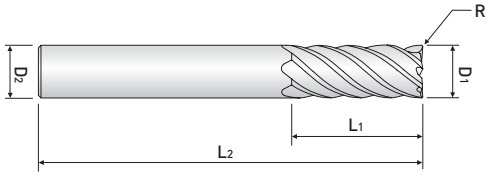


ZAMUS STAR

ZR736 Series

ULTRA FINE | Slotting | Side milling

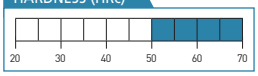
CORNER RADIUS / 6 FLUTES / REGULAR / HIGH HELIX / AlTiN-HH COATING



TOLERANCE (metric)

D_1 = +0 / -0.02
D_2 = h6
R = ±0.010 (D1≤6.0)
R = ±0.015 (D1>6.0)

HARDNESS (HRc)



EDP. No. 6 Flute AlTiN-HH Helix 45°	Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Overall Length (metric)	Shank Diameter (metric)
ZR736	D1	R	L1	L2	D2
ZR73606005	6.00	0.50	15.00	90.00	6.00
ZR73606010	6.00	1.00	15.00	90.00	6.00
ZR73608005	8.00	0.50	20.00	100.00	8.00
ZR73608010	8.00	1.00	20.00	100.00	8.00
ZR73610005	10.00	0.50	25.00	100.00	10.00
ZR73610010	10.00	1.00	25.00	100.00	10.00
ZR73612005	12.00	0.50	30.00	110.00	12.00
ZR73612010	12.00	1.00	30.00	110.00	12.00

Applicable Working Material

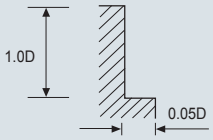
○ : GOOD ◎ : BEST

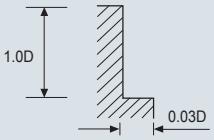
SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
ZR736				○	○									○	○	◎	◎		○		

ZR736 Series

End Cutting	Slotting											
Work Material	Hardened Steels Heat Resistant Steels		Hardened Steels									
Hardness	30 ~ 40 HRc		40 ~ 50 HRc		50 ~ 55 HRc		55 ~ 60 HRc		60 ~ 65 HRc		65 ~ 70 HRc	
Cutting Diameter(metric)	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.



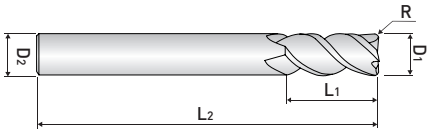


ULTRA FINE | Slotting | Side milling

ZAMUS STAR

ZR714 Series

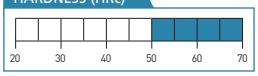
CORNER RADIUS / 4 FLUTES / REGULAR / HIGH HELIX /
ALTiN-HH COATING



TOLERANCE (metric)

D_1 = +0 / -0.012 (D1≤6.0)
D_1 = +0 / -0.015 (D1>6.0)
D_2 = h6
R = ±0.010 (D1≤6.0)
R = ±0.015 (D1>6.0)

HARDNESS (HRc)



EDP. No. 4 Flute AlTiN-HH Helix 45°	Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Overall Length (metric)	Shank Diameter (metric)
ZR714	D1	R	L1	L2	D2
ZR7140303	3.00	0.30	8.00	50.00	6.00
ZR7140305	3.00	0.50	8.00	50.00	6.00
ZR7140403	4.00	0.30	11.00	50.00	6.00
ZR7140405	4.00	0.50	11.00	50.00	6.00
ZR7140410	4.00	1.00	11.00	50.00	6.00
ZR7140603	6.00	0.30	15.00	60.00	6.00
ZR7140605	6.00	0.50	15.00	60.00	6.00
ZR7140610	6.00	1.00	15.00	60.00	6.00
ZR7140803	8.00	0.30	20.00	60.00	8.00
ZR7140805	8.00	0.50	20.00	60.00	8.00
ZR7140810	8.00	1.00	20.00	60.00	8.00
ZR7140815	8.00	1.50	20.00	60.00	8.00
ZR7140820	8.00	2.00	20.00	60.00	8.00
ZR7141003	10.00	0.30	25.00	70.00	10.00
ZR7141005	10.00	0.50	25.00	70.00	10.00
ZR7141010	10.00	1.00	25.00	70.00	10.00
ZR7141015	10.00	1.50	25.00	70.00	10.00
ZR7141020	10.00	2.00	25.00	70.00	10.00
ZR7141025	10.00	2.50	25.00	70.00	10.00
ZR7141030	10.00	3.00	25.00	70.00	10.00
ZR7141203	12.00	0.30	30.00	80.00	12.00
ZR7141205	12.00	0.50	30.00	80.00	12.00
ZR7141210	12.00	1.00	30.00	80.00	12.00
ZR7141215	12.00	1.50	30.00	80.00	12.00
ZR7141220	12.00	2.00	30.00	80.00	12.00
ZR7141225	12.00	2.50	30.00	80.00	12.00
ZR7141230	12.00	3.00	30.00	80.00	12.00

Applicable Working Material

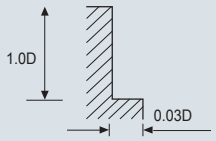
○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
ZR714				○	○									○	○	◎	◎		○		

ZR714 Series

End Cutting	Slotting											
Work Material	Hardened Steels Heat Resistant Steels		Hardened Steels									
Hardness	30 ~ 40 HRc		40 ~ 50 HRc		50 ~ 55 HRc		55 ~ 60 HRc		60 ~ 65 HRc		65 ~ 70 HRc	
Cutting Diameter(metric)	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.

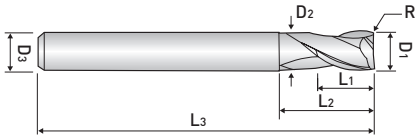


ZAMUS STAR

ZR702, ZR704 Series

ULTRA FINE | Slotting | Side milling

CORNER RADIUS / 2 & 4 FLUTES / STUB WITH EXTENDED NECK / AlTiN-HH COATING



TOLERANCE (metric)

D_1 = +0 / -0.012 (D1≤6.0)
D_1 = +0 / -0.015 (D1>6.0)
D_2 = h6
R = ±0.010 (D1≤6.0)
R = ±0.015 (D1>6.0)

HARDNESS (HRc)

EDP NO.		Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Neck Diameter (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute	4 Flute							
AlTiN-HH	AlTiN-HH							
Helix 30°	Helix 30°							
ZR702	ZR704	D1	R	L1	D2	L2	L3	D3
ZR7020100503S4	-	1.00	0.05	1.50	0.95	3.00	50.00	4.00
ZR7020100504S4	-	1.00	0.05	1.50	0.95	4.00	50.00	4.00
ZR7020100506S4	-	1.00	0.05	1.50	0.95	6.00	50.00	4.00
ZR7020100508S4	-	1.00	0.05	1.50	0.95	8.00	50.00	4.00
ZR7020100510S4	-	1.00	0.05	1.50	0.95	10.00	50.00	4.00
ZR7020100103S4	-	1.00	0.10	1.50	0.95	3.00	50.00	4.00
ZR7020100104	-	1.00	0.10	1.50	0.95	4.00	50.00	6.00
ZR7020100104S4	-	1.00	0.10	1.50	0.95	4.00	50.00	4.00
ZR7020100106	-	1.00	0.10	1.50	0.95	6.00	50.00	6.00
ZR7020100106S4	-	1.00	0.10	1.50	0.95	6.00	50.00	4.00
ZR7020100108S4	-	1.00	0.10	1.50	0.95	8.00	50.00	4.00
ZR7020100110S4	-	1.00	0.10	1.50	0.95	10.00	50.00	4.00
ZR7020100203S4	-	1.00	0.20	1.50	0.95	3.00	50.00	4.00
ZR7020100204	-	1.00	0.20	1.50	0.95	4.00	50.00	6.00
ZR7020100204S4	-	1.00	0.20	1.50	0.95	4.00	50.00	4.00
ZR7020100206	-	1.00	0.20	1.50	0.95	6.00	50.00	6.00
ZR7020100206S4	-	1.00	0.20	1.50	0.95	6.00	50.00	4.00
ZR7020100208S4	-	1.00	0.20	1.50	0.95	8.00	50.00	4.00
ZR7020100210	-	1.00	0.20	1.50	0.95	10.00	50.00	6.00
ZR7020100210S4	-	1.00	0.20	1.50	0.95	10.00	50.00	4.00
ZR7020100212	-	1.00	0.20	1.50	0.95	12.00	50.00	6.00
ZR7020100303S4	-	1.00	0.30	1.50	0.95	3.00	50.00	4.00
ZR7020100304S4	-	1.00	0.30	1.50	0.95	4.00	50.00	4.00
ZR7020100306S4	-	1.00	0.30	1.50	0.95	6.00	50.00	4.00
ZR7020100308S4	-	1.00	0.30	1.50	0.95	8.00	50.00	4.00
ZR7020100310S4	-	1.00	0.30	1.50	0.95	10.00	50.00	4.00
-	ZR7040100103S4	1.00	0.10	2.00	0.95	3.00	50.00	4.00
-	ZR7040100104S4	1.00	0.10	2.00	0.95	4.00	50.00	4.00
-	ZR7040100306S4	1.00	0.10	2.00	0.95	6.00	50.00	4.00
-	ZR7040100203S4	1.00	0.20	2.00	0.95	3.00	50.00	4.00
-	ZR7040100204S4	1.00	0.20	2.00	0.95	4.00	50.00	4.00
-	ZR7040100106S4	1.00	0.20	2.00	0.95	6.00	50.00	4.00
-	ZR7040100303S4	1.00	0.30	2.00	0.95	3.00	50.00	4.00
-	ZR7040100304S4	1.00	0.30	2.00	0.95	4.00	50.00	4.00
-	ZR7040100206S4	1.00	0.30	2.00	0.95	6.00	50.00	4.00

Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
All				○	○									○	○	◎	◎		○		

ZR702, ZR704 Series

>>Continue

EDP NO.		Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Neck Diameter (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute	4 Flute							
AlTiN-HH	AlTiN-HH							
Helix 30°	Helix 30°							
ZR702	ZR704	D1	R	L1	D2	L2	L3	D3
ZR7020120208	-	1.20	0.20	2.00	1.15	8.00	50.00	6.00
ZR7020120212	-	1.20	0.20	2.00	1.15	12.00	50.00	6.00
ZR7020150504S4	-	1.50	0.05	2.50	1.45	4.00	50.00	4.00
ZR7020150506S4	-	1.50	0.05	2.50	1.45	6.00	50.00	4.00
ZR7020150508S4	-	1.50	0.05	2.50	1.45	8.00	50.00	4.00
ZR7020150510S4	-	1.50	0.05	2.50	1.45	10.00	50.00	4.00
ZR7020150512S4	-	1.50	0.05	2.50	1.45	12.00	50.00	4.00
ZR702015010 4S4	ZR704015010 4S4	1.50	0.10	2.50	1.45	4.00	50.00	4.00
ZR702015010 6S4	ZR704015010 6S4	1.50	0.10	2.50	1.45	6.00	50.00	4.00
ZR702015010 8S4	-	1.50	0.10	2.50	1.45	8.00	50.00	4.00
ZR702015011 0S4	-	1.50	0.10	2.50	1.45	10.00	50.00	4.00
ZR702015011 2S4	-	1.50	0.10	2.50	1.45	12.00	50.00	4.00
ZR7020150204	-	1.50	0.20	2.50	1.45	4.00	50.00	6.00
ZR7020150204S4	ZR7040150204S4	1.50	0.20	2.50	1.45	4.00	50.00	4.00
ZR7020150206	ZR7040150206S4	1.50	0.20	2.50	1.45	6.00	50.00	6.00
ZR7020150206S4	-	1.50	0.20	2.50	1.45	6.00	50.00	4.00
ZR7020150208	-	1.50	0.20	2.50	1.45	8.00	50.00	6.00
ZR7020150208S4	-	1.50	0.20	2.50	1.45	8.00	50.00	4.00
ZR7020150210	-	1.50	0.20	2.50	1.45	10.00	50.00	6.00
ZR7020150210S4	-	1.50	0.20	2.50	1.45	10.00	50.00	4.00
ZR7020150212S4	-	1.50	0.20	2.50	1.45	12.00	50.00	4.00
ZR7020150215	-	1.50	0.20	2.50	1.45	15.00	50.00	6.00
ZR7020150304S4	ZR7040150304S4	1.50	0.30	2.50	1.45	4.00	50.00	4.00
ZR7020150306S4	ZR7040150306S4	1.50	0.30	2.50	1.45	6.00	50.00	4.00
ZR7020150308S4	-	1.50	0.30	2.50	1.45	8.00	50.00	4.00
ZR7020150310S4	-	1.50	0.30	2.50	1.45	10.00	50.00	4.00
ZR7020150312S4	-	1.50	0.30	2.50	1.45	12.00	50.00	4.00
ZR7020150504S4	-	1.50	0.50	2.50	1.45	4.00	50.00	4.00
ZR7020150506S4	-	1.50	0.50	2.50	1.45	6.00	50.00	4.00
ZR7020150508S4	-	1.50	0.50	2.50	1.45	8.00	50.00	4.00
ZR7020150510S4	-	1.50	0.50	2.50	1.45	10.00	50.00	4.00
ZR7020150512S4	-	1.50	0.50	2.50	1.45	12.00	50.00	4.00
ZR7020200106S4	ZR7040200106S4	2.00	0.10	3.00	1.90	6.00	50.00	4.00
ZR7020200108	-	2.00	0.10	3.00	1.90	8.00	50.00	6.00
ZR7020200108S4	ZR7040200108S4	2.00	0.10	3.00	1.90	8.00	50.00	4.00
ZR7020200110S4	-	2.00	0.10	3.00	1.90	10.00	50.00	4.00
ZR7020200112	-	2.00	0.10	3.00	1.90	12.00	50.00	6.00
ZR7020200112S4	-	2.00	0.10	3.00	1.90	12.00	50.00	4.00
ZR7020200116S4	-	2.00	0.10	3.00	1.90	16.00	50.00	4.00
ZR7020200120S4	-	2.00	0.10	3.00	1.90	20.00	50.00	4.00
ZR7020200206	-	2.00	0.20	3.00	1.90	6.00	50.00	6.00
ZR7020200206S4	ZR7040200206S4	2.00	0.20	3.00	1.90	6.00	50.00	4.00
ZR7020200208S4	ZR7040200208S4	2.00	0.20	3.00	1.90	8.00	50.00	4.00
-	ZR7040200208	2.00	0.20	3.00	1.90	8.00	50.00	6.00
ZR7020200209	-	2.00	0.20	3.00	1.90	9.00	50.00	6.00
-	ZR7040200210	2.00	0.20	3.00	1.90	10.00	50.00	6.00

>>Continue

EDP NO.		Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Neck Diameter (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute	4 Flute							
AlTiN-HH	AlTiN-HH							
Helix 30°	Helix 30°							
ZR702	ZR704	D1	R	L1	D2	L2	L3	D3
ZR7020200210S4	-	2.00	0.20	3.00	1.90	10.00	50.00	4.00
ZR7020200212S4	-	2.00	0.20	3.00	1.90	12.00	50.00	4.00
ZR7020200216	-	2.00	0.20	3.00	1.90	16.00	50.00	6.00
ZR7020200216S4	-	2.00	0.20	3.00	1.90	16.00	50.00	4.00
ZR7020200220S4	-	2.00	0.20	3.00	1.90	20.00	50.00	4.00
ZR7020200306	-	2.00	0.30	3.00	1.90	6.00	50.00	6.00
ZR7020200306S4	ZR7040200306S4	2.00	0.30	3.00	1.90	6.00	50.00	4.00
ZR7020200308S4	ZR7040200308S4	2.00	0.30	3.00	1.90	8.00	50.00	4.00
ZR7020200310S4	-	2.00	0.30	3.00	1.90	10.00	50.00	4.00
-	ZR7040200212	2.00	0.30	3.00	1.90	12.00	50.00	6.00
ZR7020200312S4	-	2.00	0.30	3.00	1.90	12.00	50.00	4.00
ZR7020200316S4	-	2.00	0.30	3.00	1.90	16.00	50.00	4.00
ZR7020200320S4	-	2.00	0.30	3.00	1.90	20.00	50.00	4.00
ZR7020200506	-	2.00	0.50	3.00	1.90	6.00	50.00	6.00
ZR7020200506S4	ZR7040200506S4	2.00	0.50	3.00	1.90	6.00	50.00	4.00
ZR7020200508S4	ZR7040200508S4	2.00	0.50	3.00	1.90	8.00	50.00	4.00
ZR7020200509	-	2.00	0.50	3.00	1.90	9.00	50.00	6.00
ZR7020200510S4	-	2.00	0.50	3.00	1.90	10.00	50.00	4.00
ZR7020200512S4	-	2.00	0.50	3.00	1.90	12.00	50.00	4.00
ZR7020200512	-	2.00	0.50	3.00	1.90	12.00	50.00	6.00
ZR7020200516S4	-	2.00	0.50	3.00	1.90	16.00	50.00	4.00
ZR7020200516	-	2.00	0.50	3.00	1.90	16.00	50.00	6.00
ZR7020200520S4	-	2.00	0.50	3.00	1.90	20.00	50.00	4.00
-	ZR7040250106	2.50	0.10	3.50	2.40	6.00	50.00	6.00
-	ZR7040250106S4	2.50	0.10	3.50	2.40	6.00	50.00	4.00
ZR7020250208S4	-	2.50	0.20	3.50	2.40	8.00	50.00	4.00
ZR7020250210S4	-	2.50	0.20	3.50	2.40	10.00	50.00	4.00
ZR7020250212S4	-	2.50	0.20	3.50	2.40	12.00	50.00	4.00
ZR7020250216S4	-	2.50	0.20	3.50	2.40	16.00	50.00	4.00
ZR7020250308S4	-	2.50	0.30	3.50	2.40	8.00	50.00	4.00
ZR7020250310S4	-	2.50	0.30	3.50	2.40	10.00	50.00	4.00
ZR7020250312S4	-	2.50	0.30	3.50	2.40	12.00	50.00	4.00
ZR7020250316S4	-	2.50	0.30	3.50	2.40	16.00	50.00	4.00
ZR7020250508S4	-	2.50	0.50	3.50	2.40	8.00	50.00	4.00
ZR7020250510S4	-	2.50	0.50	3.50	2.40	10.00	50.00	4.00
ZR7020250512S4	-	2.50	0.50	3.50	2.40	12.00	50.00	4.00
ZR7020250516S4	-	2.50	0.50	3.50	2.40	16.00	50.00	4.00
-	ZR7040300108	3.00	0.10	4.00	2.90	8.00	55.00	6.00
-	ZR7040300110	3.00	0.10	4.00	2.90	10.00	55.00	6.00
-	ZR7040300112	3.00	0.10	4.00	2.90	12.00	55.00	6.00
-	ZR7040300116	3.00	0.10	4.00	2.90	16.00	55.00	6.00
-	ZR7040300208	3.00	0.20	4.00	2.90	8.00	55.00	6.00
-	ZR7040300210	3.00	0.20	4.00	2.90	10.00	55.00	6.00
-	ZR7040300212	3.00	0.20	4.00	2.90	12.00	55.00	6.00
-	ZR7040300216	3.00	0.20	4.00	2.90	16.00	55.00	6.00
-	ZR7040300308	3.00	0.30	4.00	2.90	8.00	55.00	6.00

>>Continue

EDP NO.		Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Neck Diameter (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute	4 Flute							
AlTiN-HH	AlTiN-HH							
Helix 30°	Helix 30°							
ZR702	ZR704	D1	R	L1	D2	L2	L3	D3
-	ZR7040300309	3.00	0.30	4.00	2.90	9.00	55.00	6.00
-	ZR7040300310	3.00	0.30	4.00	2.90	10.00	55.00	6.00
-	ZR7040300312	3.00	0.30	4.00	2.90	12.00	55.00	6.00
-	ZR7040300316	3.00	0.30	4.00	2.90	16.00	55.00	6.00
-	ZR7040300508	3.00	0.50	4.00	2.90	8.00	55.00	6.00
-	ZR7040300509	3.00	0.50	4.00	2.90	9.00	55.00	6.00
-	ZR7040300510	3.00	0.50	4.00	2.90	10.00	55.00	6.00
-	ZR7040300512	3.00	0.50	4.00	2.90	12.00	55.00	6.00
-	ZR7040300516	3.00	0.50	4.00	2.90	16.00	55.00	6.00
-	ZR7040301008	3.00	1.00	4.00	2.90	8.00	55.00	6.00
-	ZR7040301010	3.00	1.00	4.00	2.90	10.00	55.00	6.00
-	ZR7040301012	3.00	1.00	4.00	2.90	12.00	55.00	6.00
-	ZR7040301016	3.00	1.00	4.00	2.90	16.00	55.00	6.00
-	ZR7040300120	3.00	0.20	4.00	2.90	20.00	60.00	6.00
-	ZR7040300220	3.00	0.30	4.00	2.90	20.00	60.00	6.00
-	ZR7040300320	3.00	0.50	4.00	2.90	20.00	60.00	6.00
-	ZR7040300520	3.00	1.00	4.00	2.90	20.00	60.00	6.00
-	ZR7040301020	3.00	1.00	4.00	2.90	20.00	60.00	6.00
ZR7020300108	-	3.00	0.10	4.50	2.90	8.00	55.00	6.00
ZR7020300110	-	3.00	0.10	4.50	2.90	10.00	55.00	6.00
ZR7020300112	-	3.00	0.10	4.50	2.90	12.00	55.00	6.00
ZR7020300116	-	3.00	0.10	4.50	2.90	16.00	55.00	6.00
ZR7020300208	-	3.00	0.20	4.50	2.90	8.00	55.00	6.00
ZR7020300309	-	3.00	0.20	4.50	2.90	9.00	55.00	6.00
ZR7020300210	-	3.00	0.20	4.50	2.90	10.00	55.00	6.00
ZR7020300212	-	3.00	0.20	4.50	2.90	12.00	55.00	6.00
ZR7020300216	-	3.00	0.20	4.50	2.90	16.00	55.00	6.00
ZR7020300308	-	3.00	0.30	4.50	2.90	8.00	55.00	6.00
ZR7020300309	-	3.00	0.30	4.50	2.90	9.00	55.00	6.00
ZR7020300310	-	3.00	0.30	4.50	2.90	10.00	55.00	6.00
ZR7020300312	-	3.00	0.30	4.50	2.90	12.00	55.00	6.00
ZR7020300314	-	3.00	0.30	4.50	2.90	14.00	55.00	6.00
ZR7020300316	-	3.00	0.30	4.50	2.90	16.00	55.00	6.00
ZR7020300508	-	3.00	0.50	4.50	2.90	8.00	55.00	6.00
ZR7020300509	-	3.00	0.50	4.50	2.90	9.00	55.00	6.00
ZR7020300510	-	3.00	0.50	4.50	2.90	10.00	55.00	6.00
ZR7020300512	-	3.00	0.50	4.50	2.90	12.00	55.00	6.00
ZR7020300516	-	3.00	0.50	4.50	2.90	16.00	55.00	6.00
ZR7020301008	-	3.00	1.00	4.50	2.90	8.00	55.00	6.00
ZR7020301010	-	3.00	1.00	4.50	2.90	10.00	55.00	6.00
ZR7020301012	-	3.00	1.00	4.50	2.90	12.00	55.00	6.00
ZR7020301016	-	3.00	1.00	4.50	2.90	16.00	55.00	6.00
ZR7020300120	-	3.00	0.10	4.50	2.90	20.00	60.00	6.00
ZR7020300220	-	3.00	0.20	4.50	2.90	20.00	60.00	6.00
ZR7020300320	-	3.00	0.30	4.50	2.90	20.00	60.00	6.00
ZR7020300520	-	3.00	0.50	4.50	2.90	20.00	60.00	6.00

>>Continue

EDP NO.		Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Neck Diameter (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute	4 Flute							
AlTiN-HH	AlTiN-HH							
Helix 30°	Helix 30°							
ZR702	ZR704	D1	R	L1	D2	L2	L3	D3
ZR7020301020	-	3.00	1.00	4.50	2.90	20.00	60.00	6.00
ZR7020301025	-	3.00	1.00	4.50	2.90	25.00	60.00	6.00
ZR7020400110	ZR7040400110	4.00	0.10	6.00	3.80	10.00	55.00	6.00
ZR7020400112	ZR7040400112	4.00	0.10	6.00	3.80	12.00	55.00	6.00
ZR7020400116	ZR7040400116	4.00	0.10	6.00	3.80	16.00	55.00	6.00
ZR7020400210	ZR7040400210	4.00	0.20	6.00	3.80	10.00	55.00	6.00
ZR7020400212	ZR7040400212	4.00	0.20	6.00	3.80	12.00	55.00	6.00
ZR7020400216	ZR7040400216	4.00	0.20	6.00	3.80	16.00	55.00	6.00
ZR7020400310	ZR7040400310	4.00	0.30	6.00	3.80	10.00	55.00	6.00
ZR7020400312	ZR7040400312	4.00	0.30	6.00	3.80	12.00	55.00	6.00
ZR7020400316	ZR7040400316	4.00	0.30	6.00	3.80	16.00	55.00	6.00
ZR7020400510	ZR7040400510	4.00	0.50	6.00	3.80	10.00	55.00	6.00
ZR7020400512	ZR7040400512	4.00	0.50	6.00	3.80	12.00	55.00	6.00
ZR7020400516	ZR7040400516	4.00	0.50	6.00	3.80	16.00	55.00	6.00
ZR7020401010	ZR7040401010	4.00	1.00	6.00	3.80	10.00	55.00	6.00
ZR7020401012	ZR7040401012	4.00	1.00	6.00	3.80	12.00	55.00	6.00
ZR7020401016	ZR7040401016	4.00	1.00	6.00	3.80	16.00	55.00	6.00
ZR7020400220	ZR7040400220	4.00	0.20	6.00	3.80	20.00	60.00	6.00
ZR7020400225	ZR7040400225	4.00	0.20	6.00	3.80	25.00	60.00	6.00
ZR7020400320	ZR7040400320	4.00	0.30	6.00	3.80	20.00	60.00	6.00
ZR7020400325	ZR7040400325	4.00	0.30	6.00	3.80	25.00	60.00	6.00
ZR7020400520	ZR7040400520	4.00	0.50	6.00	3.80	20.00	60.00	6.00
ZR7020400525	ZR7040400525	4.00	0.50	6.00	3.80	25.00	60.00	6.00
ZR7020401020	ZR7040401020	4.00	1.00	6.00	3.80	20.00	60.00	6.00
ZR7020401020	ZR7040401020	4.00	1.00	6.00	3.80	20.00	60.00	6.00
ZR7020401025	ZR7040401025	4.00	1.00	6.00	3.80	25.00	60.00	6.00
ZR7020401025	ZR7040401025	4.00	1.00	6.00	3.80	25.00	60.00	6.00
ZR7020400530	-	4.00	0.50	6.00	3.80	30.00	70.00	6.00
ZR7020401030	-	4.00	1.00	6.00	3.80	30.00	70.00	6.00
ZR7020500318	-	5.00	0.30	6.00	4.80	18.00	60.00	6.00
ZR7020600220	ZR7040600220	6.00	0.20	9.00	5.80	20.00	60.00	6.00
ZR7020600320	ZR7040600320	6.00	0.30	9.00	5.80	20.00	60.00	6.00
ZR7020600520	ZR7040600520	6.00	0.50	9.00	5.80	20.00	60.00	6.00
ZR7020601020	ZR7040601020	6.00	1.00	9.00	5.80	20.00	60.00	6.00
ZR7020601520	ZR7040601520	6.00	1.50	9.00	5.80	20.00	60.00	6.00
ZR7020602020	ZR7040602020	6.00	2.00	9.00	5.80	20.00	60.00	6.00
ZR7020800225	ZR7040800225	8.00	0.20	12.00	7.80	25.00	60.00	8.00
ZR7020800325	ZR7040800325	8.00	0.30	12.00	7.80	25.00	60.00	8.00
ZR7020800525	ZR7040800525	8.00	0.50	12.00	7.80	25.00	60.00	8.00
ZR7020801025	ZR7040801025	8.00	1.00	12.00	7.80	25.00	60.00	8.00
ZR7020801525	ZR7040801525	8.00	1.50	12.00	7.80	25.00	60.00	8.00
-	ZR7040802025	8.00	2.00	12.00	7.80	25.00	60.00	8.00
ZR7021000232	ZR7041000232	10.00	0.20	15.00	9.70	32.00	70.00	10.00
ZR7021000332	ZR7041000332	10.00	0.30	15.00	9.70	32.00	70.00	10.00
ZR7021000532	ZR7041000532	10.00	0.50	15.00	9.70	32.00	70.00	10.00
ZR7021001032	ZR7041001032	10.00	1.00	15.00	9.70	32.00	70.00	10.00

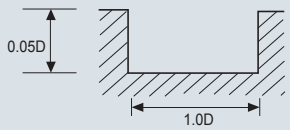
ZR702, ZR704 Series

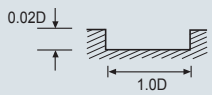
EDP NO.		Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Neck Diameter (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute	4 Flute							
AlTiN-HH	AlTiN-HH							
Helix 30°	Helix 30°							
ZR702	ZR704	D1	R	L1	D2	L2	L3	D3
ZR7021001532	ZR7041001532	10.00	1.50	15.00	9.70	32.00	70.00	10.00
ZR7021002032	ZR7041002032	10.00	2.00	15.00	9.70	32.00	70.00	10.00
ZR7021200338	ZR7041200338	12.00	0.30	18.00	11.70	38.00	80.00	12.00
ZR7021200538	ZR7041200538	12.00	0.50	18.00	11.70	38.00	80.00	12.00
ZR7021201038	ZR7041201038	12.00	1.00	18.00	11.70	38.00	80.00	12.00
ZR7021201538	ZR7041201538	12.00	1.50	18.00	11.70	38.00	80.00	12.00
ZR7021202038	ZR7041202038	12.00	2.00	18.00	11.70	38.00	80.00	12.00

ZR702 Series

End Cutting	Slotting											
Work Material	Hardened Steels Heat Resistant Steels		Hardened Steels									
Hardness	30 ~ 40 HRc		40 ~ 50 HRc		50 ~ 55 HRc		55 ~ 60 HRc		60 ~ 65 HRc		65 ~ 70 HRc	
Cutting Diameter(metric)	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

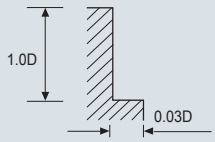
RPM = rev. / min.
FEED = mm / min.





End Cutting	Side Milling											
Work Material	Hardened Steels Heat Resistant Steels		Hardened Steels									
Hardness	30 ~ 40 HRc		40 ~ 50 HRc		50 ~ 55 HRc		55 ~ 60 HRc		60 ~ 65 HRc		65 ~ 70 HRc	
Cutting Diameter(metric)	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	27	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

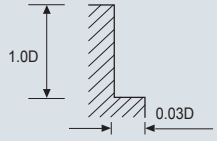
RPM = rev. / min.
FEED = mm / min.



ZR704 Series

Work Material	Hardened Steels Heat Resistant Steels		Hardened Steels									
Hardness	30 ~ 40 HRc		40 ~ 50 HRc		50 ~ 55 HRc		55 ~ 60 HRc		60 ~ 65 HRc		65 ~ 70 HRc	
Cutting Diameter(metric)	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.

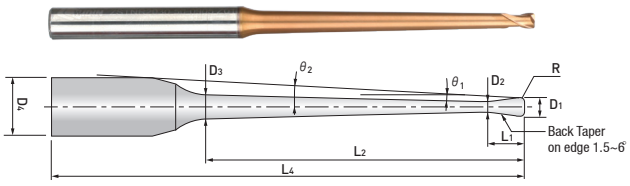


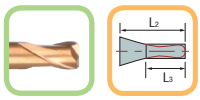
ZAMUS STAR

ZSTNR Series

ULTRA FINE | Slotting | Side milling

LONG NECK BACK DRAFT CORNER RADIUS / 2 FLUTES / REGULAR /
AlTiN-HH COATING





※R2 or higher is not applied to Back draft type.

TOLERANCE (metric)

D_1 = +0 / -0.015
D_2 = h5
R = ±0.010

HARDNESS (HRc)

20 30 40 50 60 70

EDP. No. / 2 Flute / AlTiN-HH / Helix 30°	Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Neck Diameter (metric)		Neck Length (metric)	Taper Degree°		Application Length	Overall Length (metric)	Shank Diameter (metric)	Effective Neck Length				
ZSTNR	D1	R	L1	D2	D3	L2	θ1	θ2	L3	L4	D4	0.5°	1.0°	1.5°	2.0°	3.0°
ZSTNR2002-2-09005	0.20	0.05	0.15	0.17	0.23	2.00	0.9°	10.0°	1.10	50.00	4.00	-	2.8	3.1	3.4	3.9
ZSTNR2004-4-09005	0.40	0.05	0.30	0.37	0.49	4.00	0.9°	8.4°	1.25	50.00	4.00	-	4.9	5.3	5.7	6.3
ZSTNR2004-5-09005	0.40	0.05	0.30	0.37	0.52	5.00	0.9°	7.8°	1.25	50.00	4.00	-	5.9	6.4	6.8	7.5
ZSTNR2004-4-0901	0.40	0.10	0.30	0.37	0.49	4.00	0.9°	8.5°	1.25	50.00	4.00	-	4.9	5.3	5.7	6.3
ZSTNR2004-5-0901	0.40	0.10	0.30	0.37	0.52	5.00	0.9°	7.9°	1.25	50.00	4.00	-	5.9	6.4	6.8	7.5
ZSTNR2005-5-0901	0.50	0.10	0.35	0.47	0.62	5.00	0.9°	7.8°	1.30	50.00	4.00	-	5.9	6.4	6.8	7.5
ZSTNR2005-8-0901	0.50	0.10	0.35	0.47	0.71	8.00	0.9°	6.4°	1.30	50.00	4.00	-	9.0	9.7	10.2	11.0
ZSTNR2005-10-0901	0.50	0.10	0.35	0.47	0.77	10.00	0.9°	5.8°	1.30	55.00	4.00	-	11.0	11.8	12.4	13.2
ZSTNR2006-12-0901	0.60	0.10	0.40	0.57	0.93	12.00	0.9°	5.1°	1.35	55.00	4.00	-	13.0	13.9	14.5	15.5
ZSTNR2006-15-0901	0.60	0.10	0.40	0.57	1.03	15.00	0.9°	4.5°	1.35	55.00	4.00	-	16.1	17.1	17.8	18.8
ZSTNR2008-6-0402	0.80	0.20	0.50	0.77	0.85	6.00	0.4°	7.0°	2.64	50.00	4.00	6.6	7.1	7.5	7.8	8.3
ZSTNR2008-12-0902	0.80	0.20	0.50	0.77	1.13	12.00	0.9°	5.0°	1.45	55.00	4.00	-	13.0	13.9	14.5	15.5
ZSTNR2010-8-0402	1.00	0.20	0.80	0.94	1.04	8.00	0.4°	7.4°	5.09	55.00	6.00	8.8	9.3	9.7	10.1	10.6
ZSTNR2010-10-0902	1.00	0.20	0.80	0.94	1.23	10.00	0.9°	6.8°	5.09	55.00	6.00	-	11.2	11.9	12.4	13.3
ZSTNR2010-8-0403	1.00	0.30	0.80	0.94	1.04	8.00	0.4°	7.4°	2.70	55.00	6.00	8.8	9.3	9.7	10.0	10.6
ZSTNR2010-15-0902	1.00	0.20	0.80	0.94	1.39	15.00	0.9°	5.6°	2.70	60.00	6.00	-	16.3	17.2	17.8	18.8
ZSTNR2010-15-0903	1.00	0.30	0.80	0.94	1.39	15.00	0.9°	5.6°	2.70	60.00	6.00	-	16.3	17.2	17.8	18.8
ZSTNR2010-20-0902	1.00	0.20	0.80	0.94	1.54	20.00	0.9°	4.8°	2.70	65.00	6.00	-	21.3	22.4	23.2	24.7
ZSTNR2010-25-0902	1.00	0.20	0.80	0.94	1.70	25.00	0.9°	4.1°	2.70	70.00	6.00	-	26.4	27.6	28.5	30.9
ZSTNR2010-25-0903	1.00	0.30	0.80	0.94	1.70	25.00	0.9°	4.2°	2.70	70.00	6.00	-	26.4	27.6	28.5	30.8
ZSTNR2010-30-0902	1.00	0.20	0.80	0.94	1.86	30.00	0.9°	3.7°	2.70	75.00	6.00	-	31.5	32.8	33.7	37.0
ZSTNR2010-30-0903	1.00	0.30	0.80	0.94	1.86	30.00	0.9°	3.7°	2.70	75.00	6.00	-	31.5	32.8	33.7	37.0
ZSTNR2010-35-0902	1.00	0.20	0.80	0.94	2.02	35.00	0.9°	3.3°	2.70	80.00	6.00	-	36.5	38.0	39.0	43.2
ZSTNR2015-10-0402	1.50	0.20	1.35	1.42	1.54	10.00	0.4°	6.4°	7.07	55.00	6.00	11.0	11.5	11.9	12.3	13.0
ZSTNR2015-10-0403	1.50	0.30	1.35	1.42	1.54	10.00	0.4°	6.4°	3.89	55.00	6.00	11.0	11.5	11.9	12.3	13.0
ZSTNR2015-15-0902	1.50	0.20	1.35	1.42	1.85	15.00	0.9°	5.3°	7.07	60.00	6.00	-	16.4	17.3	17.9	18.9
ZSTNR2015-20-0902	1.50	0.20	1.35	1.42	2.01	20.00	0.9°	4.5°	3.89	65.00	6.00	-	21.5	22.5	23.2	24.9
ZSTNR2015-20-0903	1.50	0.30	1.35	1.42	2.01	20.00	0.9°	4.5°	3.89	65.00	6.00	-	21.5	22.5	23.2	24.8
ZSTNR2015-25-0902	1.50	0.20	1.35	1.42	2.16	25.00	0.9°	3.9°	3.89	70.00	6.00	-	26.6	27.7	28.5	31.0
ZSTNR2015-25-0903	1.50	0.30	1.35	1.42	2.16	25.00	0.9°	3.9°	3.89	70.00	6.00	-	26.5	27.7	28.5	31.0
ZSTNR2015-30-0902	1.50	0.20	1.35	1.42	2.32	30.00	0.9°	3.4°	3.89	75.00	6.00	-	31.6	32.9	33.8	37.1
ZSTNR2015-30-0903	1.50	0.30	1.35	1.42	2.32	30.00	0.9°	3.4°	3.89	75.00	6.00	-	31.6	32.9	33.8	37.1
ZSTNR2020-8-0405	2.00	0.50	1.70	1.92	2.01	8.00	0.4°	6.8°	4.24	50.00	6.00	8.7	9.0	9.3	9.5	10.4
ZSTNR2020-12-0403	2.00	0.30	1.70	1.92	2.06	12.00	0.4°	5.5°	7.42	55.00	6.00	13.0	13.6	14.1	14.5	15.6
ZSTNR2020-12-0405	2.00	0.50	1.70	1.92	2.06	12.00	0.4°	5.6°	4.24	55.00	6.00	13.0	13.6	14.1	14.4	15.5

Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
ZSTNR20xx				○	○									○	○	◎	◎		○		

ZAMUS STAR

ZSTNR Series

EDP. No. / 2 Flute / AlTiN-HH / Helix 30°	Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Neck Diameter (metric)		Neck Length (metric)	Taper Degree°		Application Length	Overall Length (metric)	Shank Diameter (metric)	Effective Neck Length				
ZSTNR	D1	R	L1	D2	D3	L2	θ1	θ2	L3	L4	D4	0.5°	1.0°	1.5°	2.0°	3.0°
ZSTNR2020-16-0405	2.00	0.50	1.70	1.92	2.12	16.00	0.4°	4.7°	4.24	60.00	6.00	17.0	17.8	18.3	18.7	20.7
ZSTNR2020-20-0903	2.00	0.30	1.70	1.92	2.50	20.00	0.9°	4.1°	4.24	65.00	6.00	-	21.5	22.5	23.2	24.9
ZSTNR2020-20-0905	2.00	0.50	1.70	1.92	2.50	20.00	0.9°	4.2°	4.24	65.00	6.00	-	21.5	22.5	23.2	24.8
ZSTNR2020-25-0905	2.00	0.50	1.70	1.92	2.65	25.00	0.9°	3.6°	4.24	65.00	6.00	-	26.6	27.7	28.5	30.9
ZSTNR2020-30-0902	2.00	0.20	1.70	1.92	2.81	30.00	0.9°	3.1°	7.42	70.00	6.00	-	31.6	32.9	33.8	37.2
ZSTNR2020-30-0903	2.00	0.30	1.70	1.92	2.81	30.00	0.9°	3.1°	4.24	70.00	6.00	-	31.6	32.9	33.8	37.1
ZSTNR2020-30-0905	2.00	0.50	1.70	1.92	2.81	30.00	0.9°	3.1°	4.24	70.00	6.00	-	31.6	32.9	33.8	37.1
ZSTNR2020-40-0902	2.00	0.20	1.70	1.92	3.12	40.00	0.9°	2.5°	7.42	80.00	6.00	-	41.8	43.3	44.6	-
ZSTNR2020-40-0903	2.00	0.30	1.70	1.92	3.12	40.00	0.9°	2.5°	4.24	80.00	6.00	-	41.7	43.3	44.6	-
ZSTNR2020-40-0905	2.00	0.50	1.70	1.92	3.12	40.00	0.9°	2.5°	4.24	80.00	6.00	-	41.7	43.2	44.6	-
ZSTNR2020-50-0902	2.00	0.20	1.70	1.92	3.44	50.00	0.9°	2.1°	7.42	90.00	6.00	-	51.9	53.6	55.7	-
ZSTNR2020-50-0903	2.00	0.30	1.70	1.92	3.44	50.00	0.9°	2.1°	4.24	90.00	6.00	-	51.8	53.6	55.7	-
ZSTNR2020-50-0905	2.00	0.50	1.70	1.92	3.44	50.00	0.9°	2.1°	4.24	90.00	6.00	-	51.8	53.6	55.6	-
ZSTNR2030-40-0902	3.00	0.20	2.50	2.86	4.04	40.00	0.9°	2.0°	6.95	80.00	6.00	-	42.0	43.4	-	-
ZSTNR2030-40-0903	3.00	0.30	2.50	2.86	4.04	40.00	0.9°	2.0°	6.95	80.00	6.00	-	42.0	43.4	-	-
ZSTNR2030-40-0905	3.00	0.50	2.50	2.86	4.04	40.00	0.9°	2.0°	6.95	80.00	6.00	-	42.0	43.4	-	-
ZSTNR2030-50-0902	3.00	0.20	2.50	2.86	4.35	50.00	0.9°	1.6°	6.95	90.00	6.00	-	52.1	53.7	-	-
ZSTNR2030-50-0903	3.00	0.30	2.50	2.86	4.35	50.00	0.9°	1.7°	6.95	90.00	6.00	-	52.1	53.7	-	-
ZSTNR2030-50-0905	3.00	0.50	2.50	2.86	4.35	50.00	0.9°	1.7°	6.95	90.00	6.00	-	52.1	53.7	-	-
ZSTNR2030-60-0902	3.00	0.20	2.50	2.86	4.67	60.00	0.9°	1.4°	6.95	100.00	6.00	-	62.2	-	-	-
ZSTNR2030-60-0903	3.00	0.30	2.50	2.86	4.67	60.00	0.9°	1.4°	6.95	100.00	6.00	-	62.2	-	-	-
ZSTNR2030-60-0905	3.00	0.50	2.50	2.86	4.67	60.00	0.9°	1.4°	6.95	100.00	6.00	-	62.1	-	-	-

ZSTNR Series

>>Continue

ZSLNR Series				Carbon Steels, Alloy Steels (180 ~ 250 HB)		Prehardened Steels (35 ~ 45 HRc)		Hardened Steels (45 ~ 55 HRc)		Hardened Steels (55 ~ 65 HRc)	
Ratio to standard depth of cut				Depth of Cut X 100%		Depth of Cut X 80%		Depth of Cut X 65%		Depth of Cut X 60%	
Cutting Diameter(metric)	Corner Radius(metric)	Neck Length (metric)	Depth of Cut (metric)	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
0.4	0.05	5	0.007	26,752	710	22,739	528	20,064	466	18,726	373
0.4	0.1	4	0.009	31,680	946	26,928	804	23,760	631	22,176	515
0.4	0.1	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
0.5	0.1	8	0.008	24,330	678	20,681	468	18,248	350	17,031	282
0.5	0.1	10	0.007	18,248	509	15,511	351	13,686	262	12,773	211
0.6	0.1	12	0.010	20,377	791	17,320	546	15,282	408	14,264	329
0.6	0.1	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
0.8	0.2	12	0.020	28,160	943	23,936	695	21,120	613	19,712	490
1	0.2	8	0.040	28,512	1,463	24,235	1,244	21,384	976	19,958	797
1	0.2	10	0.035	28,512	1,596	24,235	1,357	21,384	1,064	19,958	869
1	0.2	15	0.028	25,344	1,261	21,542	938	19,008	828	17,741	662
1	0.2	20	0.020	19,008	828	16,157	653	14,256	532	13,306	414
1	0.2	25	0.017	15,840	690	13,464	544	11,880	443	11,088	345
1	0.2	30	0.017	15,840	690	13,464	544	11,880	443	11,088	345
1	0.2	35	0.010	15,840	690	13,464	544	11,880	443	11,088	345
1	0.3	8	0.040	28,512	1,463	24,235	1,244	21,384	976	19,958	797
1	0.3	15	0.028	25,344	1,261	21,542	938	19,008	828	17,741	662
1	0.3	25	0.017	15,840	690	13,464	544	11,880	443	11,088	345
1	0.3	30	0.017	15,840	690	13,464	544	11,880	443	11,088	345
1.5	0.2	10	0.050	21,683	1,079	18,431	803	16,262	708	15,178	567
1.5	0.2	15	0.045	19,712	981	16,755	730	14,784	644	13,798	515
1.5	0.2	20	0.047	17,347	863	14,745	642	13,010	567	12,143	453
1.5	0.2	25	0.032	14,784	644	12,566	508	11,088	414	10,349	322
1.5	0.2	30	0.028	12,320	536	10,472	423	9,240	345	8,624	268
1.5	0.3	10	0.050	21,683	1,079	18,431	803	16,262	708	15,178	567
1.5	0.3	20	0.042	17,347	863	14,745	642	13,010	567	12,143	453
1.5	0.3	25	0.032	14,784	644	12,566	508	11,088	414	10,349	322
1.5	0.3	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
2	0.2	40	0.035	10,080	823	8,568	650	7,560	529	7,056	412
2	0.2	50	0.017	8,400	686	7,140	541	6,300	441	5,880	343
2	0.3	12	0.088	22,680	1,814	19,278	1,427	17,010	1,191	15,876	1,048
2	0.3	20	0.054	18,144	1,452	15,422	1,141	13,608	953	12,701	838
2	0.3	30	0.045	13,440	1,393	11,424	1,036	10,080	914	9,408	732
2	0.3	40	0.035	10,080	914	8,568	722	7,560	588	7,056	457
2	0.3	50	0.017	8,400	762	7,140	601	6,300	490	5,880	381
2	0.5	8	0.170	22,680	1,814	19,278	1,427	17,010	1,191	15,876	1,048
2	0.5	12	0.088	22,680	1,814	19,278	1,427	17,010	1,191	15,876	1,048
2	0.5	16	0.088	19,278	1,542	16,386	1,213	14,459	1,012	13,495	891
2	0.5	20	0.054	18,114	1,452	15,422	1,141	13,608	953	12,701	838
2	0.5	25	0.054	15,876	1,270	13,495	999	11,907	833	11,113	733
2	0.5	30	0.045	13,440	1,393	11,424	1,036	10,080	914	9,408	732
2	0.5	40	0.035	10,080	814	8,568	722	7,560	588	7,056	457
2	0.5	50	0.017	8,400	762	7,140	601	6,300	490	5,880	381
3	0.2	40	0.070	10,240	956	8,704	711	7,680	627	7,168	502
3	0.2	50	0.050	7,680	627	6,528	495	5,760	403	5,376	314
3	0.2	60	0.030	6,400	523	5,440	412	4,800	336	4,480	261

ZSTNR Series

ZSLNR Series				Carbon Steels, Alloy Steels (180 ~ 250 HB)		Prehardened Steels (35 ~ 45 HRc)		Hardened Steels (45 ~ 55 HRc)		Hardened Steels (55 ~ 65 HRc)	
Ratio to standard depth of cut				Depth of Cut X 100%		Depth of Cut X 80%		Depth of Cut X 65%		Depth of Cut X 60%	
Cutting Diameter(metric)	Corner Radius(metric)	Neck Length (metric)	Depth of Cut (metric)	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	0.070	10,240	1,062	8,704	790	7,680	697	7,168	557
3	0.3	50	0.050	7,680	697	6,528	550	5,760	448	5,376	348
3	0.3	60	0.030	6,400	581	5,440	458	4,800	373	4,480	290
3	0.5	40	0.070	10,240	1,062	8,704	790	7,680	697	7,168	557
3	0.5	50	0.050	7,680	697	6,528	550	5,760	448	5,376	348
3	0.5	60	0.030	6,400	581	5,440	458	4,800	373	4,480	290

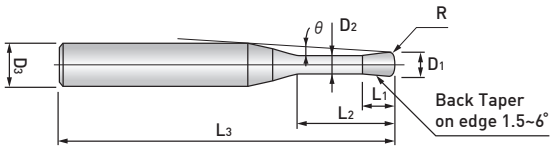
※Please adjust the cutting depth index according to the cutting depth factors of above table.
※In actual machining, the condition should be adjusted according to the machining shape, purpose and machine type.
※If RPM of the machine is low, the feed rate should be low in the same ratio as RPM.

ULTRA FINE | Slotting | Side milling

ZAMUS STAR

ZSLNR Series

TAPER NECK CORNER RADIUS / 2 FLUTES / REGULAR /
AlTiN-HH COATING



TOLERANCE (metric)

D_1 = +0 / -0.015
D_2 = h5
R = ±0.010

HARDNESS (HRc)

EDP. No. 2 Flute AlTiN-HH Helix 30°	Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Neck Diameter (metric)	Neck Length (metric)	Taper Degree°	Overall Length (metric)	Shank Diameter (metric)	Effective Neck Length				
ZSLNR	D1	R	L1	D2	L2	θ	L3	D3	0.5°	1.0°	1.5°	2.0°	3.0°
ZSLNR2002-0.5-005	0.20	0.05	0.15	0.17	0.50	11.4°	50.00	4.00	0.9	1.0	1.0	1.1	1.2
ZSLNR2002-1-005	0.20	0.05	0.15	0.17	1.00	10.9°	50.00	4.00	1.6	1.7	1.9	2.0	2.3
ZSLNR2002-1.5-005	0.20	0.05	0.15	0.17	1.50	10.3°	50.00	4.00	2.1	2.3	2.5	2.7	3.0
ZSLNR2002-2-005	0.20	0.05	0.15	0.17	2.00	9.9°	50.00	4.00	2.8	3.1	3.4	3.6	4.1
ZSLNR2003-1-005	0.30	0.05	0.25	0.27	1.00	10.8°	50.00	4.00	1.4	1.5	1.6	1.7	1.9
ZSLNR2003-1.5-005	0.30	0.05	0.25	0.27	1.50	10.3°	50.00	4.00	2.1	2.3	2.5	2.7	3.0
ZSLNR2003-2-005	0.30	0.05	0.25	0.27	2.00	9.8°	50.00	4.00	2.7	2.9	3.1	3.3	3.6
ZSLNR2003-2.5-005	0.30	0.05	0.25	0.27	2.50	9.4°	50.00	4.00	3.2	3.5	3.7	3.9	4.3
ZSLNR2003-3-005	0.30	0.05	0.25	0.27	3.00	9.0°	50.00	4.00	3.9	4.3	4.6	4.9	5.4
ZSLNR2004-1-005	0.40	0.05	0.30	0.37	1.00	10.8°	50.00	4.00	1.4	1.5	1.6	1.7	1.9
ZSLNR2004-1.5-005	0.40	0.05	0.30	0.37	1.50	10.3°	50.00	4.00	2.0	2.1	2.2	2.3	2.5
ZSLNR2004-2-005	0.40	0.05	0.30	0.37	2.00	9.8°	50.00	4.00	2.7	2.9	3.1	3.3	3.6
ZSLNR2004-2.5-005	0.40	0.05	0.30	0.37	2.50	9.4°	50.00	4.00	3.2	3.5	3.7	3.9	4.3
ZSLNR2004-3-005	0.40	0.05	0.30	0.37	3.00	9.0°	50.00	4.00	3.8	4.0	4.3	4.5	4.9
ZSLNR2004-3.5-005	0.40	0.05	0.30	0.37	3.50	8.6°	50.00	4.00	4.3	4.6	4.9	5.1	5.5
ZSLNR2004-4-005	0.40	0.05	0.30	0.37	4.00	8.3°	50.00	4.00	5.0	5.4	5.8	6.1	6.6
ZSLNR2004-2-01	0.40	0.10	0.30	0.37	2.00	9.8°	50.00	4.00	2.7	2.9	3.1	3.3	3.6
ZSLNR2004-3-01	0.40	0.10	0.30	0.37	3.00	9.0°	50.00	4.00	3.8	4.0	4.3	4.5	4.9
ZSLNR2004-4-01	0.40	0.10	0.30	0.37	4.00	8.3°	50.00	4.00	5.0	5.4	5.8	6.1	6.6
ZSLNR2005-1-005	0.50	0.05	0.35	0.47	1.00	10.8°	50.00	4.00	1.4	1.5	1.6	1.7	1.9
ZSLNR2005-2-005	0.50	0.05	0.35	0.47	2.00	9.7°	50.00	4.00	2.5	2.6	2.8	2.9	3.1
ZSLNR2005-3-005	0.50	0.05	0.35	0.47	3.00	8.9°	50.00	4.00	3.8	4.0	4.3	4.5	4.9
ZSLNR2005-4-005	0.50	0.05	0.35	0.47	4.00	8.2°	50.00	4.00	4.8	5.2	5.4	5.7	6.1
ZSLNR2005-5-005	0.50	0.05	0.35	0.47	5.00	7.6°	50.00	4.00	6.1	6.6	6.9	7.3	7.8
ZSLNR2005-6-005	0.50	0.05	0.35	0.47	6.00	7.0°	50.00	4.00	7.2	7.7	8.1	8.4	9.0
ZSLNR2005-1-01	0.50	0.10	0.35	0.47	1.00	10.8°	50.00	4.00	1.4	1.5	1.6	1.7	1.9
ZSLNR2005-2-01	0.50	0.10	0.35	0.47	2.00	9.8°	50.00	4.00	2.5	2.6	2.8	2.9	3.1
ZSLNR2005-3-01	0.50	0.10	0.35	0.47	3.00	8.9°	50.00	4.00	3.8	4.0	4.3	4.5	4.9
ZSLNR2005-4-01	0.50	0.10	0.35	0.47	4.00	8.2°	50.00	4.00	4.8	5.2	5.4	5.7	6.1
ZSLNR2005-5-01	0.50	0.10	0.35	0.47	5.00	7.6°	50.00	4.00	6.1	6.5	6.9	7.2	7.8
ZSLNR2005-6-01	0.50	0.10	0.35	0.47	6.00	7.1°	50.00	4.00	7.2	7.7	8.1	8.4	9.0
ZSLNR2006-2-01	0.60	0.10	0.40	0.57	2.00	9.7°	50.00	4.00	2.5	2.6	2.8	2.9	3.1
ZSLNR2006-4-01	0.60	0.10	0.40	0.57	4.00	8.1°	50.00	4.00	4.8	5.2	5.4	5.7	6.1
ZSLNR2006-6-01	0.60	0.10	0.40	0.57	6.00	7.0°	50.00	4.00	7.2	7.7	8.1	8.4	9.0
ZSLNR2006-8-01	0.60	0.10	0.40	0.57	8.00	6.1°	50.00	4.00	9.3	9.9	10.3	10.7	11.4
ZSLNR2006-10-01	0.60	0.10	0.40	0.57	10.00	5.5°	50.00	4.00	11.5	12.1	12.5	13.0	13.7

Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
ZSLNR20xx				○	○									○	○	◎	◎		○		

>>Continue

EDP. No. 2 Flute AlTiN-HH Helix 30°	Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Neck Diameter (metric)	Neck Length (metric)	Taper Degree°	Overall Length (metric)	Shank Diameter (metric)	Effective Neck Length				
ZSLNR	D1	R	L1	D2	L2	θ	L3	D3	0.5°	1.0°	1.5°	2.0°	3.0°
ZSLNR2008-4-01	0.80	0.10	0.50	0.77	4.00	8.0°	50.00	4.00	4.8	5.2	5.4	5.7	6.1
ZSLNR2008-6-01	0.80	0.10	0.50	0.77	6.00	6.8°	50.00	4.00	7.0	7.4	7.7	7.9	8.4
ZSLNR2008-8-01	0.80	0.10	0.50	0.77	8.00	5.9°	50.00	4.00	9.3	9.9	10.3	10.7	11.4
ZSLNR2008-4-02	0.80	0.20	0.50	0.77	4.00	8.0°	50.00	4.00	4.8	5.1	5.4	5.6	6.1
ZSLNR2008-6-02	0.80	0.20	0.50	0.77	6.00	6.9°	50.00	4.00	7.0	7.3	7.7	7.9	8.4
ZSLNR2008-12-01	0.80	0.10	0.50	0.77	12.00	4.7°	55.00	4.00	13.6	14.2	14.7	15.2	16.0
ZSLNR2010-4-01	1.00	0.10	0.80	0.94	4.00	7.7°	50.00	4.00	4.7	4.9	5.1	5.2	5.5
ZSLNR2010-6-01	1.00	0.10	0.80	0.94	6.00	6.6°	50.00	4.00	7.1	7.4	7.7	8.0	8.5
ZSLNR2010-8-01	1.00	0.10	0.80	0.94	8.00	5.7°	50.00	4.00	9.2	9.6	9.9	10.2	10.8
ZSLNR2010-10-01	1.00	0.10	0.80	0.94	10.00	5.1°	50.00	4.00	11.6	12.1	12.6	13.0	13.7
ZSLNR2010-4-02	1.00	0.20	0.80	0.94	4.00	7.8°	50.00	4.00	4.7	4.9	5.1	5.2	5.5
ZSLNR2010-6-02	1.00	0.20	0.80	0.94	6.00	6.6°	50.00	4.00	7.1	7.4	7.7	8.0	8.5
ZSLNR2010-8-02	1.00	0.20	0.80	0.94	8.00	5.8°	50.00	4.00	9.2	9.6	9.9	10.2	10.8
ZSLNR2010-10-02	1.00	0.20	0.80	0.94	10.00	5.1°	50.00	4.00	11.6	12.1	12.6	13.0	13.7
ZSLNR2010-6-03	1.00	0.30	0.80	0.94	6.00	6.7°	50.00	4.00	7.1	7.4	7.7	8.0	8.4
ZSLNR2010-10-03	1.00	0.30	0.80	0.94	10.00	5.1°	50.00	4.00	11.5	12.1	12.6	13.0	13.7
ZSLNR2010-12-01	1.00	0.10	0.80	0.94	12.00	4.5°	55.00	4.00	13.7	14.3	14.8	15.3	16.0
ZSLNR2010-12-02	1.00	0.20	0.80	0.94	12.00	4.6°	55.00	4.00	13.7	14.3	14.8	15.2	16.0
ZSLNR2010-16-01	1.00	0.10	0.80	0.94	16.00	3.8°	60.00	4.00	17.9	18.6	19.2	19.7	21.3
ZSLNR2010-20-01	1.00	0.10	0.80	0.94	20.00	3.2°	60.00	4.00	22.0	22.8	23.5	24.0	26.7
ZSLNR2010-16-02	1.00	0.20	0.80	0.94	16.00	3.8°	60.00	4.00	17.9	18.6	19.2	19.7	21.3
ZSLNR2010-20-02	1.00	0.20	0.80	0.94	20.00	3.2°	60.00	4.00	22.0	22.8	23.5	24.0	26.6
ZSLNR2010-16-03	1.00	0.30	0.80	0.94	16.00	3.8°	60.00	4.00	17.9	18.6	19.1	19.6	21.3
ZSLNR2010-20-03	1.00	0.30	0.80	0.94	20.00	3.2°	60.00	4.00	22.0	22.8	23.5	24.0	26.6
ZSLNR2015-4-01	1.50	0.10	1.35	1.42	4.00	7.2°	50.00	4.00	4.8	4.9	5.1	5.3	5.5
ZSLNR2015-8-01	1.50	0.10	1.35	1.42	8.00	5.2°	50.00	4.00	9.2	9.6	10.0	10.3	10.8
ZSLNR2015-4-02	1.50	0.20	1.35	1.42	4.00	7.3°	50.00	4.00	4.7	4.9	5.1	5.3	5.5
ZSLNR2015-8-02	1.50	0.20	1.35	1.42	8.00	5.2°	50.00	4.00	9.2	9.6	10.0	10.3	10.8
ZSLNR2015-8-03	1.50	0.30	1.35	1.42	8.00	5.2°	50.00	4.00	9.2	9.6	10.0	10.3	10.8
ZSLNR2015-12-01	1.50	0.10	1.35	1.42	12.00	4.0°	55.00	4.00	13.4	13.9	14.3	14.7	16.1
ZSLNR2015-15-01	1.50	0.10	1.35	1.42	15.00	3.5°	55.00	4.00	16.9	17.6	18.1	18.6	20.1
ZSLNR2015-12-02	1.50	0.20	1.35	1.42	12.00	4.1°	55.00	4.00	13.4	13.9	14.3	14.7	16.1
ZSLNR2015-15-02	1.50	0.20	1.35	1.42	15.00	3.5°	55.00	4.00	16.9	17.5	18.1	18.6	20.0
ZSLNR2015-15-03	1.50	0.30	1.35	1.42	15.00	3.5°	55.00	4.00	16.9	17.5	18.1	18.6	20.0
ZSLNR2015-20-01	1.50	0.10	1.35	1.42	20.00	2.8°	60.00	4.00	22.1	22.9	23.5	24.1	-
ZSLNR2015-20-02	1.50	0.20	1.35	1.42	20.00	2.8°	60.00	4.00	22.1	22.9	23.5	24.1	-
ZSLNR2015-20-03	1.50	0.30	1.35	1.42	20.00	2.8°	60.00	4.00	22.1	22.9	23.5	24.0	-
ZSLNR2020-6-02	2.00	0.20	1.70	1.92	6.00	5.4°	50.00	4.00	6.8	7.1	7.3	7.5	8.1
ZSLNR2020-8-02	2.00	0.20	1.70	1.92	8.00	4.6°	50.00	4.00	8.9	9.2	9.4	9.7	10.8
ZSLNR2020-8-03	2.00	0.30	1.70	1.92	8.00	4.6°	50.00	4.00	8.9	9.2	9.4	9.7	10.7
ZSLNR2020-6-05	2.00	0.50	1.70	1.92	6.00	5.5°	50.00	4.00	6.8	7.1	7.3	7.4	8.0
ZSLNR2020-8-05	2.00	0.50	1.70	1.92	8.00	4.7°	50.00	4.00	8.9	9.2	9.4	9.6	10.7
ZSLNR2020-8-08	2.00	0.80	1.70	1.92	8.00	4.8°	50.00	4.00	8.9	9.2	9.4	9.6	10.6
ZSLNR2020-12-02	2.00	0.20	1.70	1.92	12.00	3.5°	55.00	4.00	13.4	13.9	14.3	14.7	16.1
ZSLNR2020-16-02	2.00	0.20	1.70	1.92	16.00	2.8°	55.00	4.00	17.6	18.1	18.6	19.3	-
ZSLNR2020-16-03	2.00	0.30	1.70	1.92	16.00	2.8°	55.00	4.00	17.6	18.1	18.6	19.3	-
ZSLNR2020-12-05	2.00	0.50	1.70	1.92	12.00	3.5°	55.00	4.00	13.4	13.9	14.3	14.6	16.0

ZAMUS STAR

ZSLNR Series

EDP. No. 2 Flute AlTiN-HH Helix 30°	Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Neck Diameter (metric)	Neck Length (metric)	Taper Degree°	Overall Length (metric)	Shank Diameter (metric)	Effective Neck Length				
ZSLNR	D1	R	L1	D2	L2	θ	L3	D3	0.5°	1.0°	1.5°	2.0°	3.0°
ZSLNR2020-16-05	2.00	0.50	1.70	1.92	16.00	2.9°	55.00	4.00	17.6	18.1	18.6	19.2	-
ZSLNR2020-16-08	2.00	0.80	1.70	1.92	16.00	2.9°	55.00	4.00	17.6	18.1	18.6	19.2	-
ZSLNR2020-20-02	2.00	0.20	1.70	1.92	20.00	2.4°	60.00	4.00	22.1	22.9	23.5	24.1	-
ZSLNR2020-20-03	2.00	0.30	1.70	1.92	20.00	2.4°	60.00	4.00	22.1	22.9	23.5	24.0	-
ZSLNR2020-20-05	2.00	0.50	1.70	1.92	20.00	2.4°	60.00	4.00	22.1	22.9	23.5	24.0	-
ZSLNR2020-20-08	2.00	0.80	1.70	1.92	20.00	2.4°	60.00	4.00	22.1	22.8	23.5	24.0	-
ZSLNR2020-25-02	2.00	0.20	1.70	1.92	25.00	2.0°	65.00	4.00	27.3	28.2	28.8	-	-
ZSLNR2020-25-05	2.00	0.50	1.70	1.92	25.00	2.0°	65.00	4.00	27.3	28.1	28.8	-	-
ZSLNR2020-30-02	2.00	0.20	1.70	1.92	30.00	1.7°	70.00	4.00	32.5	33.4	34.4	-	-
ZSLNR2020-30-05	2.00	0.50	1.70	1.92	30.00	1.7°	70.00	4.00	32.5	33.4	34.3	-	-
ZSLNR2030-8-02	3.00	0.20	2.50	2.86	8.00	5.7°	55.00	6.00	9.0	9.3	9.5	9.9	10.9
ZSLNR2030-8-03	3.00	0.30	2.50	2.86	8.00	5.7°	55.00	6.00	9.0	9.3	9.5	9.9	10.9
ZSLNR2030-8-05	3.00	0.50	2.50	2.86	8.00	5.8°	55.00	6.00	9.0	9.3	9.5	9.8	10.8
ZSLNR2030-12-02	3.00	0.20	2.50	2.86	12.00	4.5°	60.00	6.00	13.1	13.5	14.0	14.7	16.2
ZSLNR2030-16-02	3.00	0.20	2.50	2.86	16.00	3.8°	60.00	6.00	17.7	18.2	18.7	19.5	21.6
ZSLNR2030-16-03	3.00	0.30	2.50	2.86	16.00	3.8°	60.00	6.00	17.7	18.2	18.7	19.4	21.5
ZSLNR2030-12-05	3.00	0.50	2.50	2.86	12.00	4.6°	60.00	6.00	13.1	13.5	13.9	14.6	16.2
ZSLNR2030-16-05	3.00	0.50	2.50	2.86	16.00	3.8°	60.00	6.00	17.7	18.2	18.7	19.4	21.5
ZSLNR2030-20-02	3.00	0.20	2.50	2.86	20.00	3.2°	65.00	6.00	21.8	22.4	23.1	24.2	26.9
ZSLNR2030-20-03	3.00	0.30	2.50	2.86	20.00	3.2°	65.00	6.00	21.8	22.4	23.1	24.2	26.8
ZSLNR2030-20-05	3.00	0.50	2.50	2.86	20.00	3.2°	65.00	6.00	21.8	22.4	23.1	24.2	26.8
ZSLNR2030-30-02	3.00	0.20	2.50	2.86	30.00	2.4°	75.00	6.00	32.6	33.5	34.5	36.2	-
ZSLNR2030-30-03	3.00	0.30	2.50	2.86	30.00	2.4°	75.00	6.00	32.6	33.5	34.5	36.2	-
ZSLNR2030-30-05	3.00	0.50	2.50	2.86	30.00	2.4°	75.00	6.00	32.6	33.5	34.5	36.1	-
ZSLNR2030-35-02	3.00	0.20	2.50	2.86	35.00	2.1°	80.00	6.00	37.7	38.7	40.2	42.2	-
ZSLNR2030-35-05	3.00	0.50	2.50	2.86	35.00	2.1°	80.00	6.00	37.7	38.7	40.2	42.1	-

ZSLNR Series

ZSLNR Series				Carbon Steels, Alloy Steels (180 ~ 250 HB)		Prehardened Steels (35 ~ 45 HRc)		Hardened Steels (45 ~ 55 HRc)		Hardened Steels (55 ~ 65 HRc)	
Ratio to standard depth of cut				Depth of Cut X 100%		Depth of Cut X 80%		Depth of Cut X 65%		Depth of Cut X 60%	
Cutting Diameter(metric)	Corner Radius(metric)	Neck Length (metric)	Depth of Cut (metric)	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	0.020	50,000	258	50,000	205	50,000	180	50,000	160
0.2	0.05	1	0.014	50,000	258	50,000	205	50,000	180	50,000	160
0.2	0.05	1.5	0.008	50,000	240	45,900	202	45,900	170	45,900	153
0.2	0.05	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
0.3	0.05	1.5	0.016	50,000	585	45,000	456	45,000	336	45,000	320
0.3	0.05	2	0.012	45,000	530	45,000	420	45,000	300	45,000	290
0.3	0.05	2.5	0.010	40,000	471	40,000	373	40,000	267	40,000	258
0.3	0.05	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
0.4	0.05	1.5	0.020	50,000	580	50,000	461	40,000	320	36,000	270
0.4	0.05	2	0.016	45,000	520	45,000	410	36,000	290	34,000	240
0.4	0.05	2.5	0.015	40,500	480	40,500	370	33,400	270	30,600	220
0.4	0.05	3	0.014	40,000	410	40,000	330	32,800	240	25,600	200
0.4	0.05	3.5	0.012	36,000	380	36,000	300	29,400	200	22,920	180
0.4	0.05	4	0.008	30,000	320	30,000	250	21,600	160	19,200	150
0.4	0.1	2	0.028	45,000	520	45,000	410	36,000	290	34,000	240
0.4	0.1	3	0.016	40,000	410	40,000	330	32,800	240	25,600	200
0.4	0.1	4	0.010	30,000	320	30,000	250	21,600	160	19,200	150
0.5	0.05	1	0.030	50,000	898	40,000	464	30,000	378	28,000	315
0.5	0.05	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
0.5	0.05	4	0.017	40,000	820	32,000	378	24,000	279	20,000	234
0.5	0.05	5	0.011	28,800	540	19,400	280	18,000	250	15,000	200
0.5	0.05	6	0.008	28,800	480	19,400	260	18,000	250	15,000	200
0.5	0.1	1	0.035	50,000	898	40,000	464	30,000	378	28,000	315
0.5	0.1	2	0.030	50,000	898	40,000	464	30,000	378	28,000	315
0.5	0.1	3	0.020	45,000	810	36,000	414	27,000	315	24,500	261
0.5	0.1	4	0.020	40,000	720	32,000	378	24,000	279	20,000	234
0.5	0.1	5	0.013	28,800	540	19,400	280	18,000	250	15,000	200
0.5	0.1	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
0.6	0.1	4	0.024	40,000	830	27,800	440	23,600	280	21,000	230
0.6	0.1	6	0.015	24,000	490	18,000	300	17,800	240	15,000	210
0.6	0.1	8	0.013	24,000	466	18,000	285	17,800	228	15,000	200
0.6	0.1	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
0.8	0.1	6	0.019	38,700	800	25,000	461	18,000	288	18,000	256
0.8	0.1	8	0.015	29,025	600	20,000	369	16,200	259	16,200	230
0.8	0.1	12	0.012	29,025	570	20,000	350	16,200	246	16,200	219
0.8	0.2	4	0.056	48,000	1,102	28,000	518	20,000	320	20,000	288
0.8	0.2	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
1	0.1	6	0.024	26,244	990	22,307	842	19,683	660	18,371	539
1	0.1	8	0.024	23,328	880	19,829	748	17,496	587	16,330	479
1	0.1	10	0.015	20,412	770	17,350	655	15,309	514	14,288	419
1	0.1	12	0.015	18,144	609	15,422	453	13,608	399	12,701	320
1	0.1	16	0.009	18,144	533	15,422	420	13,608	342	12,701	266
1	0.1	20	0.006	13,608	399	11,567	315	10,206	257	9,526	200
1	0.2	4	0.070	32,400	1,359	27,540	1,039	24,300	815	22,680	666
1	0.2	6	0.040	26,244	990	22,307	842	19,683	660	18,371	539

ZSLNR Series

>>Continue

ZSLNR Series				Carbon Steels, Alloy Steels (180 ~ 250 HB)		Prehardened Steels (35 ~ 45 HRc)		Hardened Steels (45 ~ 55 HRc)		Hardened Steels (55 ~ 65 HRc)	
Ratio to standard depth of cut				Depth of Cut X 100%		Depth of Cut X 80%		Depth of Cut X 65%		Depth of Cut X 60%	
Cutting Diameter(metric)	Corner Radius(metric)	Neck Length (metric)	Depth of Cut (metric)	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	8	0.040	23,328	880	19,829	748	17,496	587	16,330	479
1	0.2	10	0.025	20,412	770	17,350	655	15,309	514	14,288	419
1	0.2	12	0.025	18,144	609	15,422	453	13,608	399	12,701	320
1	0.2	16	0.015	18,144	533	15,422	420	13,608	342	12,701	266
1	0.2	20	0.010	13,608	399	11,567	315	10,206	257	9,526	200
1	0.3	6	0.040	26,244	990	22,307	842	19,683	660	18,371	539
1	0.3	10	0.025	20,412	770	17,350	655	15,309	514	14,288	419
1	0.3	16	0.015	18,144	533	15,422	420	13,608	342	12,701	266
1	0.3	20	0.010	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
1.5	0.1	8	0.036	22,680	1,027	19,278	873	17,010	685	15,876	559
1.5	0.1	12	0.036	18,144	822	15,422	698	13,608	548	12,701	447
1.5	0.1	15	0.023	14,112	568	11,995	423	10,584	373	9,878	298
1.5	0.1	20	0.018	14,112	568	11,995	423	10,584	373	9,878	298
1.5	0.2	4	0.070	24,930	1,130	20,956	868	18,711	678	17,364	556
1.5	0.2	8	0.060	22,680	1,027	19,278	873	17,010	685	15,876	559
1.5	0.2	12	0.060	18,144	822	15,422	698	13,608	548	12,701	447
1.5	0.2	15	0.038	14,112	568	11,995	423	10,584	373	9,878	298
1.5	0.2	20	0.030	14,112	568	11,995	423	10,584	373	9,878	298
1.5	0.3	8	0.060	22,680	1,027	19,278	873	17,010	685	15,876	559
1.5	0.3	15	0.038	14,112	568	11,995	423	10,584	373	9,878	298
1.5	0.3	20	0.030	14,112	568	11,995	423	10,584	373	9,878	298
2	0.2	6	0.080	20,790	1,635	17,672	1,389	15,593	981	14,553	801
2	0.2	8	0.070	18,900	1,486	16,065	1,263	14,175	892	13,230	728
2	0.2	12	0.040	15,309	1,083	13,013	921	11,482	722	10,716	590
2	0.2	16	0.040	13,608	963	11,567	818	10,206	642	9,526	524
2	0.2	20	0.035	11,907	843	10,121	716	8,930	562	8,335	459
2	0.2	25	0.025	11,907	843	10,121	716	8,930	562	8,335	459
2	0.2	30	0.017	11,312	800	9,615	680	8,484	534	7,918	436
2	0.3	8	0.090	18,900	1,651	16,065	1,403	14,175	991	13,230	809
2	0.3	16	0.060	13,608	1,070	11,567	909	10,206	713	9,526	583
2	0.3	20	0.037	11,907	936	10,121	796	8,930	624	8,335	510
2	0.5	6	0.017	20,709	1,635	17,672	1,389	15,593	981	14,553	801
2	0.5	8	0.014	18,900	1,651	16,065	1,403	14,175	991	13,230	809
2	0.5	12	0.080	15,309	1,204	13,013	1,023	11,482	802	10,716	655
2	0.5	16	0.080	13,608	1,070	11,567	909	10,206	713	9,526	583
2	0.5	20	0.050	11,907	936	10,121	796	8,930	624	8,335	510
2	0.5	25	0.050	11,907	936	10,121	796	8,930	624	8,335	510
2	0.5	30	0.030	11,312	889	9,615	756	8,484	593	7,918	484
2	0.8	8	0.200	18,900	1,651	16,065	1,403	14,175	991	13,230	809
2	0.8	16	0.100	13,608	1,070	11,567	909	10,206	713	9,526	583
2	0.8	20	0.060	11,907	936	10,121	796	8,930	624	8,335	510
3	0.2	8	0.090	14,400	1,415	12,240	1,203	10,800	849	10,080	693
3	0.2	12	0.070	14,400	1,415	12,240	1,203	10,800	849	10,080	693
3	0.2	16	0.050	14,400	1,415	12,240	1,203	10,800	849	10,080	693
3	0.2	20	0.050	11,664	1,146	9,914	974	8,748	764	8,165	624
3	0.2	30	0.040	9,072	1,146	7,711	974	6,804	764	6,350	624
3	0.2	35	0.035	9,072	1,146	7,711	974	6,804	764	6,350	624
3	0.3	8	0.130	14,400	1,572	12,240	1,337	10,800	943	10,080	771
3	0.3	16	0.075	14,400	1,572	12,240	1,337	10,800	943	10,080	771
3	0.3	20	0.075	11,664	1,274	9,914	1,083	8,748	849	8,165	693

ZSLNR Series

ZSLNR Series				Carbon Steels, Alloy Steels (180 ~ 250 HB)		Prehardened Steels (35 ~ 45 HRc)		Hardened Steels (45 ~ 55 HRc)		Hardened Steels (55 ~ 65 HRc)	
Ratio to standard depth of cut				Depth of Cut X 100%		Depth of Cut X 80%		Depth of Cut X 65%		Depth of Cut X 60%	
Cutting Diameter(metric)	Corner Radius(metric)	Neck Length (metric)	Depth of Cut (metric)	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	30	0.060	9,072	1,274	7,711	1,083	6,804	849	6,350	693
3	0.5	8	0.180	14,400	1,572	12,240	1,337	10,800	943	10,080	771
3	0.5	12	0.130	14,400	1,572	12,240	1,337	10,800	943	10,080	771
3	0.5	16	0.100	14,400	1,572	12,240	1,337	10,800	943	10,080	771
3	0.5	20	0.100	11,664	1,274	9,914	1,083	8,748	849	8,165	693
3	0.5	30	0.080	9,072	1,274	7,711	1,083	6,804	849	6,350	693
3	0.5	35	0.065	9,072	1,274	7,711	1,083	6,804	849	6,350	693

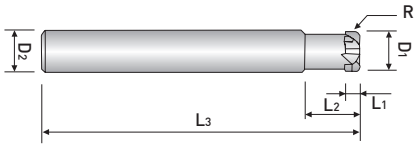
※Please adjust the cutting depth index according to the cutting depth factors of above table.
※In actual machining, the condition should be adjusted according to the machining shape, purpose and machine type.
※If RPM of the machine is low, the feed rate should be low in the same ratio as RPM.

ZAMUS STAR POWER MILL

ZSPM4A Series

POWER FEED MILL / 4 FLUTE / AlTiN-HH COATING

ULTRA FINE | Slotting | Side milling



TOLERANCE (metric)

D_1 = +0 / -0.02
D_2 = h6
R = ±0.015

HARDNESS (HRc)

EDP. No. 4 Flute AlTiN-HH	Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
ZSPM4	D1	R	L1	L2	L3	D2
ZSPM4030-05	3.00	0.50	1.20	8.00	50.00	6.00
ZSPM4040-05	4.00	0.50	1.50	10.00	50.00	6.00
ZSPM4040-10SP	4.00	1.00	1.50	10.00	50.00	6.00
ZSPM4060-05	6.00	0.50	2.50	12.00	60.00	6.00
ZSPM4060-10	6.00	1.00	2.50	12.00	60.00	6.00
ZSPM4060-15	6.00	1.50	2.50	12.00	60.00	6.00
ZSPM4060-15L	6.00	1.50	2.50	12.00	90.00	6.00
ZSPM4080-10	8.00	1.00	3.50	16.00	60.00	8.00
ZSPM4080-20	8.00	2.00	3.50	16.00	60.00	8.00
ZSPM4080-20L	8.00	2.00	3.50	16.00	100.00	8.00
ZSPM4100-10	10.00	1.00	4.00	20.00	70.00	10.00
ZSPM4100-20	10.00	2.00	4.00	20.00	70.00	10.00
ZSPM4100-20L	10.00	2.00	4.00	20.00	100.00	10.00
ZSPM4120-20	12.00	2.00	5.00	25.00	80.00	12.00
ZSPM4120-30	12.00	3.00	5.00	25.00	80.00	12.00
ZSPM4120-30L	12.00	3.00	5.00	25.00	110.00	12.00

Applicable Working Material

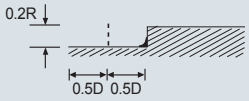
○ : GOOD ◎ : BEST

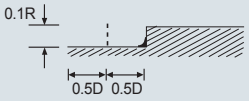
SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
ZSPM4				○	○									○	○	◎	◎		○		

ZSPM4 Series

Feed Rate		General Speed Cutting									
Work Material		Hardened Steels									
Hardness		40 ~ 50 HRc		50 ~ 55 HRc		55 ~ 60 HRc		60 ~ 65 HRc		65 ~ 70 HRc	
Cutting Diameter(metric)	Corner Radius(metric)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3	0.50	9,550	6,500	6,900	4,150	4,550	2,750	2,850	1,150	1,900	610
4	0.50	7,950	7,000	5,750	4,600	4,000	3,200	2,550	1,350	1,750	700
6	0.50	5,800	7,650	4,100	4,900	2,900	3,500	1,850	1,850	1,350	795
6	1.00	5,800	7,650	4,100	4,900	2,900	3,500	1,850	1,850	1,350	795
8	1.00	4,350	7,650	3,050	4,900	2,200	3,500	1,400	1,850	995	795
8	2.00	4,350	7,650	3,050	4,900	2,200	3,500	1,400	1,850	995	795
10	1.00	3,500	7,650	2,450	4,900	1,750	3,500	1,100	1,850	795	795
10	2.00	3,500	7,650	2,450	4,900	1,750	3,500	1,100	1,850	795	795
12	2.00	2,900	7,650	2,050	4,900	1,450	3,500	925	1,850	665	795
12	3.00	2,900	7,650	2,050	4,900	1,450	3,500	925	1,850	665	795

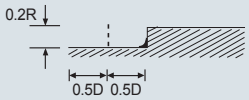
RPM = rev. / min.
FEED = mm / min.

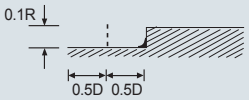




Feed Rate		High Speed Cutting									
Work Material		Hardened Steels									
Hardness		40 ~ 50 HRc		50 ~ 55 HRc		55 ~ 60 HRc		60 ~ 65 HRc		65 ~ 70 HRc	
Cutting Diameter(metric)	Corner Radius(metric)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3	0.50	22,000	16,000	17,000	10,000	12,500	8,000	9,500	4,600	6,900	2,500
4	0.50	17,000	17,500	13,000	12,000	11,000	9,200	8,000	5,500	5,600	2,900
6	0.50	13,500	18,500	10,500	13,800	9,000	11,000	6,400	6,400	4,500	3,600
6	1.00	13,500	18,500	10,500	13,800	9,000	11,000	6,400	6,400	4,500	3,600
8	1.00	10,000	18,500	8,000	14,000	6,800	11,000	4,800	6,700	3,400	4,100
8	2.00	10,000	18,500	8,000	14,000	6,800	11,000	4,800	6,700	3,400	4,100
10	1.00	8,000	18,500	6,400	14,000	5,400	11,000	3,800	6,800	2,700	3,800
10	2.00	8,000	18,500	6,400	14,000	5,400	11,000	3,800	6,800	2,700	3,800
12	2.00	6,600	18,500	5,300	14,000	4,500	11,000	3,200	7,000	2,250	3,600
12	3.00	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.





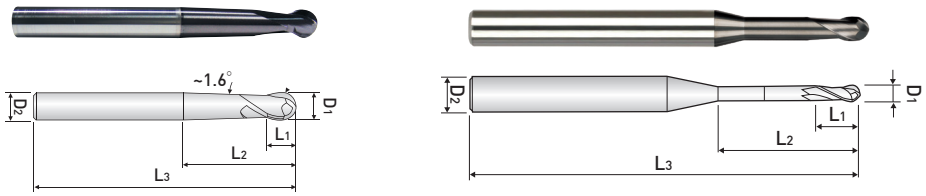
ZAMUS CLASSIC

DB4xx, DB5xx & WB712 Series

BALL / 2 & 4 FLUTES / STUB & LONG / AlTiN & W-COATINGS

DB412

ULTRA FINE | FINE GRAIN | Plunge | Profile



TOLERANCE (metric)

D_1 = +0 / -0.02
D_1 = +0 / -0.03 (DB412)
D_2 = h6

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO.			Cutting Diameter (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute		4 Flute					
AlTiN	W Coating	AlTiN					
Helix 30°	Helix 30°	Helix 30°					
DB402	WB712	DB514					
DB412	-	DB534					
DB502	-	-	D1	L1	L2	L3	D2
DB512	-	-					
DB522	-	-					
DB532	-	-					
-	WB7120502	-	0.50	0.50	2.00	45.00	4.00
-	WB7120503	-	0.50	0.50	3.00	45.00	4.00
-	WB7120504	-	0.50	0.50	4.00	45.00	4.00
-	WB7120505	-	0.50	0.50	5.00	45.00	4.00
-	WB7120506	-	0.50	0.50	6.00	45.00	4.00
-	WB7120508	-	0.50	0.50	8.00	45.00	4.00
-	WB7120510	-	0.50	0.50	10.00	45.00	4.00
-	WB7120602	-	0.60	0.60	2.00	45.00	4.00
-	WB7120603	-	0.60	0.60	3.00	45.00	4.00
-	WB7120604	-	0.60	0.60	4.00	45.00	4.00
-	WB7120605	-	0.60	0.60	5.00	45.00	4.00
-	WB7120606	-	0.60	0.60	6.00	45.00	4.00
-	WB7120608	-	0.60	0.60	8.00	45.00	4.00
-	WB7120610	-	0.60	0.60	10.00	45.00	4.00
-	WB7120612	-	0.60	0.60	12.00	45.00	4.00
-	WB7120702	-	0.70	0.70	2.00	45.00	4.00
-	WB7120704	-	0.70	0.70	4.00	45.00	4.00
-	WB7120708	-	0.70	0.70	8.00	45.00	4.00
-	WB7120802	-	0.80	0.80	2.00	45.00	4.00
-	WB7120804	-	0.80	0.80	4.00	45.00	4.00
-	WB7120805	-	0.80	0.80	5.00	45.00	4.00
-	WB7120806	-	0.80	0.80	6.00	45.00	4.00
-	WB7120807	-	0.80	0.80	7.00	45.00	4.00
-	WB7120808	-	0.80	0.80	8.00	45.00	4.00
-	WB7120810	-	0.80	0.80	10.00	45.00	4.00
-	WB7120812	-	0.80	0.80	12.00	45.00	4.00
-	WB7120816	-	0.80	0.80	16.00	50.00	4.00
-	WB7121003	-	1.00	1.00	3.00	45.00	4.00
-	WB7121004	-	1.00	1.00	4.00	45.00	4.00

Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
All	○	○	○	○	◎	○	○	○	○					◎	◎	◎	○				
WB712				○	○									○	○	◎	◎		○		

ZAMUS CLASSIC

DB4xx, DB5xx & WB712 Series

>>Continue

EDP NO.			Cutting Diameter (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute		4 Flute					
AlTiN	W Coating	AlTiN					
Helix 30°	Helix 30°	Helix 30°					
DB402 DB412 DB502 DB512 DB522 DB532	WB712 - - - - -	DB514 DB534 - - - -	D1	L1	L2	L3	D2
-	WB7121005	-	1.00	1.00	5.00	45.00	4.00
-	WB7121006	-	1.00	1.00	6.00	45.00	4.00
-	WB7121007	-	1.00	1.00	7.00	45.00	4.00
-	WB7121008	-	1.00	1.00	8.00	45.00	4.00
-	WB7121009	-	1.00	1.00	9.00	45.00	4.00
-	WB7121010	-	1.00	1.00	10.00	45.00	4.00
-	WB7121012	-	1.00	1.00	12.00	45.00	4.00
DB412010	-	-	1.00	1.00	3.00	50.00	4.00
DB502010	-	-	1.00	1.00	3.00	50.00	6.00
-	WB7121014	-	1.00	1.00	14.00	50.00	4.00
-	WB7121016	-	1.00	1.00	16.00	50.00	4.00
-	WB7121018	-	1.00	1.00	18.00	50.00	4.00
-	WB7121020	-	1.00	1.00	20.00	55.00	4.00
-	WB7121022	-	1.00	1.00	22.00	60.00	4.00
-	WB7121025	-	1.00	1.00	25.00	60.00	4.00
DB402010	-	-	1.00	3.00	-	38.00	4.00
DB512010	-	-	1.00	3.00	-	50.00	6.00
-	WB7121204	-	1.20	1.20	4.00	45.00	4.00
-	WB7121206	-	1.20	1.20	6.00	45.00	4.00
-	WB7121208	-	1.20	1.20	8.00	45.00	4.00
-	WB7121210	-	1.20	1.20	10.00	45.00	4.00
-	WB7121212	-	1.20	1.20	12.00	45.00	4.00
-	WB7121216	-	1.20	1.20	16.00	50.00	4.00
-	WB7121220	-	1.20	1.20	20.00	55.00	4.00
-	WB7121224	-	1.20	1.20	24.00	60.00	4.00
DB402012	-	-	1.20	3.00	-	38.00	4.00
-	WB7121406	-	1.40	1.40	6.00	45.00	4.00
-	WB7121408	-	1.40	1.40	8.00	45.00	4.00
-	WB7121412	-	1.40	1.40	12.00	45.00	4.00
-	WB7121416	-	1.40	1.40	16.00	50.00	4.00
-	WB7121503	-	1.50	1.50	3.00	45.00	4.00
-	WB7121504	-	1.50	1.50	4.00	45.00	4.00
-	WB7121506	-	1.50	1.50	6.00	45.00	4.00
-	WB7121508	-	1.50	1.50	8.00	45.00	4.00
-	WB7121510	-	1.50	1.50	10.00	45.00	4.00
-	WB7121512	-	1.50	1.50	12.00	45.00	4.00
DB502015	-	-	1.50	1.50	4.00	50.00	6.00
-	WB7121514	-	1.50	1.50	14.00	50.00	4.00
-	WB7121516	-	1.50	1.50	16.00	50.00	4.00
-	WB7121518	-	1.50	1.50	18.00	50.00	4.00

>>Continue

EDP NO.			Cutting Diameter (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute		4 Flute					
AlTiN	W Coating	AlTiN					
Helix 30°	Helix 30°	Helix 30°					
DB402	WB712	DB514					
DB412	-	DB534					
DB502	-	-	D1	L1	L2	L3	D2
DB512	-	-					
DB522	-	-					
DB532	-	-					
-	WB7121520	-	1.50	1.50	20.00	55.00	4.00
-	WB7121522	-	1.50	1.50	22.00	60.00	4.00
-	WB7121525	-	1.50	1.50	25.00	60.00	4.00
-	WB7121530	-	1.50	1.50	30.00	70.00	4.00
-	WB7121535	-	1.50	1.50	35.00	70.00	4.00
DB412015	-	-	1.50	2.00	5.00	50.00	4.00
DB402015	-	-	1.50	3.00	-	42.00	4.00
DB512015	-	-	1.50	4.00	-	50.00	6.00
-	WB7121606	-	1.60	1.60	6.00	45.00	4.00
-	WB7121608	-	1.60	1.60	8.00	45.00	4.00
-	WB7121610	-	1.60	1.60	10.00	45.00	4.00
-	WB7121612	-	1.60	1.60	12.00	45.00	4.00
-	WB7121616	-	1.60	1.60	16.00	50.00	4.00
-	WB7121620	-	1.60	1.60	20.00	55.00	4.00
-	WB7121806	-	1.80	1.80	6.00	45.00	4.00
-	WB7121808	-	1.80	1.80	8.00	45.00	4.00
-	WB7121812	-	1.80	1.80	12.00	45.00	4.00
-	WB7121816	-	1.80	1.80	16.00	50.00	4.00
-	WB7121820	-	1.80	1.80	20.00	55.00	4.00
-	WB7122004	-	2.00	2.00	4.00	45.00	4.00
-	WB7122006	-	2.00	2.00	6.00	45.00	4.00
-	WB7122008	-	2.00	2.00	8.00	45.00	4.00
-	WB7122010	-	2.00	2.00	10.00	45.00	4.00
-	WB7122012	-	2.00	2.00	12.00	45.00	4.00
-	WB7122014	-	2.00	2.00	14.00	50.00	4.00
-	WB7122016	-	2.00	2.00	16.00	50.00	4.00
-	WB7122018	-	2.00	2.00	18.00	55.00	4.00
-	WB7122020	-	2.00	2.00	20.00	55.00	4.00
DB502020	-	-	2.00	2.00	6.00	60.00	6.00
-	WB7122022	-	2.00	2.00	22.00	60.00	4.00
-	WB7122025	-	2.00	2.00	25.00	65.00	4.00
-	WB7122030	-	2.00	2.00	30.00	70.00	4.00
-	WB7122035	-	2.00	2.00	35.00	70.00	4.00
-	WB7122040	-	2.00	2.00	40.00	80.00	4.00
-	WB7122045	-	2.00	2.00	45.00	80.00	4.00
DB402020	-	-	2.00	3.00	-	42.00	6.00
DB412020	-	-	2.00	3.00	6.00	50.00	6.00
DB512020	-	-	2.00	5.00	-	60.00	6.00
-	WB7122508	-	2.50	2.50	8.00	50.00	4.00
-	WB7122510	-	2.50	2.50	10.00	50.00	4.00

>>Continue

EDP NO.			Cutting Diameter (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute		4 Flute					
AlTiN	W Coating	AlTiN					
Helix 30°	Helix 30°	Helix 30°					
DB402 DB412 DB502 DB512 DB522 DB532	WB712 - - - - -	DB514 DB534 - - - -	D1	L1	L2	L3	D2
-	WB7122516	-	2.50	2.50	16.00	50.00	4.00
-	WB7122520	-	2.50	2.50	20.00	60.00	4.00
-	WB7122525	-	2.50	2.50	25.00	60.00	4.00
-	WB7122530	-	2.50	2.50	30.00	70.00	4.00
-	WB7122535	-	2.50	2.50	35.00	70.00	4.00
DB402025	-	-	2.50	3.00	-	42.00	6.00
DB512025	-	-	2.50	6.00	-	60.00	6.00
DB532031	-	-	3.00	2.30	30.00	80.00	6.00
-	WB7123006	-	3.00	3.00	6.00	50.00	6.00
-	WB7123008	-	3.00	3.00	8.00	50.00	6.00
-	WB7123010	-	3.00	3.00	10.00	50.00	6.00
-	WB7123012	-	3.00	3.00	12.00	50.00	6.00
-	WB7123014	-	3.00	3.00	14.00	55.00	6.00
-	WB7123016	-	3.00	3.00	16.00	55.00	6.00
-	WB7123018	-	3.00	3.00	18.00	60.00	6.00
-	WB7123020	-	3.00	3.00	20.00	60.00	6.00
-	WB7123025	-	3.00	3.00	25.00	65.00	6.00
-	WB7123030	-	3.00	3.00	30.00	70.00	6.00
-	WB7123035	-	3.00	3.00	35.00	80.00	6.00
-	WB7123040	-	3.00	3.00	40.00	80.00	6.00
-	WB7123045	-	3.00	3.00	45.00	90.00	6.00
-	WB7123050	-	3.00	3.00	50.00	100.00	6.00
-	WB7123060	-	3.00	3.00	60.00	100.00	6.00
DB412030	-	-	3.00	4.00	8.00	50.00	6.00
DB412030S	-	-	3.00	4.00	8.00	50.00	4.00
DB402030	-	-	3.00	4.00	-	50.00	6.00
DB502030	-	-	3.00	4.00	9.00	70.00	6.00
DB412030L	-	-	3.00	4.00	8.00	75.00	6.00
DB532030	-	-	3.00	4.00	30.00	80.00	6.00
DB522030	-	-	3.00	4.00	35.00	100.00	6.00
DB512030	-	DB514030	3.00	8.00	-	70.00	6.00
DB402035	-	-	3.50	4.00	-	50.00	6.00
DB512035	-	-	3.50	8.00	-	70.00	6.00
DB532041	-	-	4.00	3.10	30.00	80.00	6.00
-	WB7124008	-	4.00	4.00	8.00	60.00	6.00
-	WB7124010	-	4.00	4.00	10.00	60.00	6.00
-	WB7124012	-	4.00	4.00	12.00	60.00	6.00
-	WB7124016	-	4.00	4.00	16.00	60.00	6.00
-	WB7124020	-	4.00	4.00	20.00	65.00	6.00
-	WB7124025	-	4.00	4.00	25.00	70.00	6.00

>>Continue

EDP NO.			Cutting Diameter (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute		4 Flute					
AlTiN	W Coating	AlTiN					
Helix 30°	Helix 30°	Helix 30°					
DB402	WB712	DB514	D1	L1	L2	L3	D2
DB412	-	DB534					
DB502	-	-					
DB512	-	-					
DB522	-	-					
DB532	-	-					
-	WB7124030	-	4.00	4.00	30.00	80.00	6.00
-	WB7124035	-	4.00	4.00	35.00	80.00	6.00
-	WB7124040	-	4.00	4.00	40.00	90.00	6.00
-	WB7124045	-	4.00	4.00	45.00	90.00	6.00
-	WB7124050	-	4.00	4.00	50.00	100.00	6.00
-	WB7124060	-	4.00	4.00	60.00	100.00	6.00
DB412040	-	-	4.00	5.00	10.00	50.00	6.00
DB412040S	-	-	4.00	5.00	10.00	50.00	4.00
DB402040	-	-	4.00	5.00	-	50.00	6.00
DB502040	-	-	4.00	5.00	12.00	70.00	6.00
DB412040L	-	-	4.00	5.00	10.00	75.00	6.00
DB532040	-	-	4.00	5.00	30.00	80.00	6.00
DB522040	-	-	4.00	6.00	35.00	100.00	6.00
DB512040	-	DB514040	4.00	8.00	-	70.00	6.00
DB402045	-	-	4.50	5.00	-	50.00	6.00
DB512045	-	-	4.50	10.00	-	70.00	6.00
DB532051	-	DB534051	5.00	3.90	38.00	80.00	6.00
DB412050	-	-	5.00	5.00	10.00	50.00	6.00
-	WB7125015	-	5.00	5.00	15.00	60.00	6.00
-	WB7125020	-	5.00	5.00	20.00	60.00	6.00
-	WB7125025	-	5.00	5.00	25.00	70.00	6.00
-	WB7125030	-	5.00	5.00	30.00	80.00	6.00
-	WB7125035	-	5.00	5.00	35.00	80.00	6.00
-	WB7125040	-	5.00	5.00	40.00	90.00	6.00
-	WB7125045	-	5.00	5.00	45.00	90.00	6.00
-	WB7125050	-	5.00	5.00	50.00	100.00	6.00
-	WB7125060	-	5.00	5.00	60.00	100.00	6.00
DB402050	-	-	5.00	6.00	-	50.00	6.00
DB502050	-	-	5.00	6.00	15.00	80.00	6.00
DB532050	-	DB534050	5.00	6.00	43.00	80.00	6.00
DB522050	-	-	5.00	7.00	40.00	115.00	6.00
DB512050	-	DB514050	5.00	12.00	-	80.00	6.00
DB402055	-	-	5.50	6.00	-	50.00	6.00
DB512055	-	-	5.50	12.00	-	80.00	6.00
DB532061	-	DB534061	6.00	4.90	28.00	100.00	6.00
DB412060S	-	-	6.00	6.00	12.00	50.00	6.00
DB412060	-	-	6.00	6.00	12.00	75.00	6.00
DB412060L	-	-	6.00	6.00	16.00	100.00	6.00
DB402060	-	-	6.00	7.00	-	50.00	6.00
DB502060	-	-	6.00	7.00	18.00	90.00	6.00

>>Continue

EDP NO.			Cutting Diameter (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute		4 Flute					
AlTiN	W Coating	AlTiN					
Helix 30°	Helix 30°	Helix 30°					
DB402 DB412 DB502 DB512 DB522 DB532	WB712 - - - - -	DB514 DB534 - - - -	D1	L1	L2	L3	D2
DB532060	-	DB534060	6.00	7.00	30.00	100.00	6.00
DB522060	-	-	6.00	8.00	45.00	115.00	6.00
DB522061	-	-	6.00	8.00	45.00	115.00	8.00
DB512060	-	DB514060	6.00	12.00	-	90.00	6.00
DB512065	-	-	6.50	12.00	-	90.00	8.00
DB402070	-	-	7.00	8.00	-	60.00	8.00
DB522070	-	-	7.00	10.00	45.00	125.00	8.00
DB512070	-	DB514070	7.00	15.00	-	90.00	8.00
DB532081	-	DB534081	8.00	6.30	33.00	100.00	8.00
DB412080	-	-	8.00	8.00	16.00	60.00	8.00
DB412080L	-	-	8.00	8.00	25.00	100.00	8.00
DB402080	-	-	8.00	9.00	-	60.00	8.00
DB532080	-	DB534080	8.00	9.00	36.00	100.00	8.00
DB502080	-	-	8.00	10.00	24.00	90.00	8.00
DB522080	-	-	8.00	12.00	55.00	125.00	8.00
DB522081	-	-	8.00	12.00	55.00	125.00	10.00
DB512080	-	DB514080	8.00	15.00	-	100.00	8.00
DB402090	-	-	9.00	10.00	-	70.00	10.00
DB522090	-	-	9.00	15.00	65.00	140.00	10.00
DB512090	-	DB514090	9.00	20.00	-	100.00	10.00
DB532101	-	DB534101	10.00	7.90	40.00	100.00	10.00
DB412100	-	-	10.00	10.00	20.00	70.00	10.00
DB412100L	-	-	10.00	10.00	30.00	100.00	10.00
DB402100	-	-	10.00	11.00	-	70.00	10.00
DB532100	-	DB534100	10.00	11.00	43.00	100.00	10.00
DB502100	-	-	10.00	12.00	30.00	100.00	10.00
DB522100	-	-	10.00	15.00	65.00	140.00	10.00
DB512100	-	DB514100	10.00	20.00	-	100.00	10.00
DB512101	-	-	10.00	25.00	-	150.00	10.00
DB512110	-	DB514110	11.00	25.00	-	110.00	12.00
DB532121	-	DB534121	12.00	9.50	49.00	100.00	12.00
DB402120	-	-	12.00	12.00	-	75.00	12.00
DB532120	-	DB534120	12.00	13.00	52.00	100.00	12.00
DB502120	-	-	12.00	14.00	36.00	110.00	12.00
DB522120	-	-	12.00	18.00	75.00	150.00	12.00
DB512120	-	DB514120	12.00	25.00	-	110.00	12.00
DB512121	-	-	12.00	30.00	-	150.00	12.00
DB512122	-	-	12.00	35.00	-	200.00	12.00
DB512130	-	DB514130	13.00	30.00	-	110.00	14.00
DB402140	-	-	14.00	14.00	-	80.00	14.00

ZAMUS CLASSIC

DB4xx, DB5xx & WB712 Series

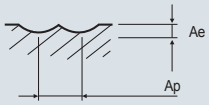
EDP NO.			Cutting Diameter (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute		4 Flute					
AlTiN	W Coating	AlTiN					
Helix 30°	Helix 30°	Helix 30°					
DB402	WB712	DB514	D1	L1	L2	L3	D2
DB412	-	DB534					
DB502	-	-					
DB512	-	-					
DB522	-	-					
DB532	-	-					
DB522140	-	-	14.00	23.00	75.00	155.00	14.00
DB512140	-	DB514140	14.00	30.00	-	110.00	14.00
DB512150	-	DB514150	15.00	35.00	-	140.00	16.00
DB532161	-	DB534161	16.00	12.40	59.00	150.00	16.00
DB532160	-	DB534160	16.00	15.00	61.00	150.00	16.00
DB402160	-	-	16.00	16.00	-	82.00	16.00
DB522160	-	-	16.00	30.00	75.00	155.00	16.00
DB512160	-	DB514160	16.00	35.00	-	140.00	16.00
DB512161	-	-	16.00	40.00	-	200.00	16.00
DB512162	-	-	16.00	45.00	-	250.00	16.00
-	-	DB514180	18.00	40.00	-	150.00	18.00
DB512180	-	-	18.00	40.00	-	150.00	18.00
DB402200	-	-	20.00	20.00	-	100.00	20.00
DB512200	-	DB514200	20.00	40.00	-	160.00	20.00
DB512201	-	-	20.00	45.00	-	200.00	20.00
DB512202	-	-	20.00	50.00	-	250.00	20.00
DB512250	-	DB514250	25.00	50.00	-	180.00	25.00

DB402, DB412, DB502, DB512 & DB522 Series

Feed Rate	General Speed Cutting					
Work Material	Non-Alloyed Steels, Alloy Steels, Cast Iron		Alloy Steels, Heat Resistant Steels		Hardened Steels	
Hardness	≤ 30 HRc		30 ~ 40 HRc		40 ~ 55 HRc	
Strength	~ 1000N / mm²		1000 ~ 1250N / mm²		1500N / mm²	
Cutting Diameter(metric)	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.

Ae : D1~D6=0.2mm
D8~D20=0.3mm
Ap : 0.2XD

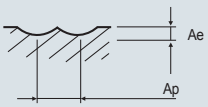


Ae : D1~D6=0.2mm
D8~D20=0.3mm
Ap : 0.1XD

Feed Rate	General Speed Cutting			
Work Material	Non-Alloyed Steels, Alloy Steels, Cast Iron		Alloy Steels, Heat Resistant Steels	
Hardness	≤ 30 HRc		30 ~ 40 HRc	
Strength	~ 1000N / mm²		1000 ~ 1250N / mm²	
Cutting Diameter(metric)	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.

Ae : D1~D6=0.2mm
D8~D20=0.3mm
Ap : 0.2XD

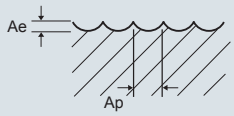


DB514 Series

Feed Rate	General Speed Cutting					
Work Material	Non-Alloyed Steels, Alloy Steels, Cast Iron		Alloy Steels, Heat Resistant Steels		Hardened Steels	
Hardness	≤ 30 HRc		30 ~ 40 HRc		40 ~ 55 HRc	
Strength	~ 1000N / mm²		1000 ~ 1250N / mm²		1500N / mm²	
Cutting Diameter(metric)	RPM	FEED	RPM	FEED	RPM	FEED
3	13,100	1,020	10,000	690	4,520	220
4	10,500	1,110	8,400	800	4,200	270
5	9,140	1,230	7,300	870	3,680	270
6	7,780	1,260	6,300	950	3,160	280
8	5,260	1,430	4,420	990	2,100	280
10	4,620	1,530	3,780	1,070	1,780	280
12	3,780	1,350	2,940	990	1,360	280
16	2,740	1,380	2,320	980	1,160	280
20	2,100	1,260	1,900	950	840	280

RPM = rev. / min.
FEED = mm / min.

Ae: D1~D6=0.2mm
D8~D20=0.3mm
Ap: 0.2 X D

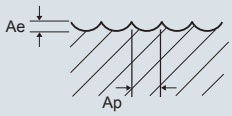


Ae: D1~D6=0.2mm
D8~D20=0.3mm
Ap: 0.1 X D

Feed Rate	General Speed Cutting			
Work Material	Non-Alloyed Steels, Alloy Steels, Cast Iron		Alloy Steels, Heat Resistant Steels	
Hardness	≤ 45 HRc		30 ~ 40 HRc	
Strength	~ 1500N / mm²		1500 ~ 2000N / mm²	
Cutting Diameter(metric)	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.

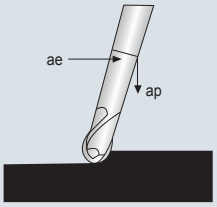
Ae: D1~D6=0.2mm
D8~D20=0.3mm
Ap: 0.05 X D



DB532 Series

Feed Rate	General Speed Cutting					
Work Material	Non-Alloyed Steels, Alloy Steels, Cast Iron		Alloy Steels, Heat Resistant Steels		Hardened Steels	
Hardness	≤ 30 HRc		30 ~ 40 HRc		40 ~ 55 HRc	
Strength	~ 1000N / mm²		1000 ~ 1250N / mm²		1500N / mm²	
Cutting Diameter(metric)	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
16	6,000	1,200	5,500	1,100	2,000	400

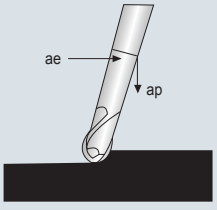
RPM = rev. / min.
FEED = mm / min.



ae = 0.05 x d1
ap = 0.02 x d1

Feed Rate	High Speed Cutting					
Work Material	Non-Alloyed Steels, Alloy Steels, Cast Iron		Alloy Steels, Heat Resistant Steels		Hardened Steels	
Hardness	≤ 30 HRc		30 ~ 40 HRc		40 ~ 55 HRc	
Strength	~ 1000N / mm²		1000 ~ 1250N / mm²		1500N / mm²	
Cutting Diameter(metric)	RPM	FEED	RPM	FEED	RPM	FEED
3	47,000	3,700	44,000	3,500	17,000	1,400
4	35,000	3,200	33,000	3,000	13,000	1,200
5	28,000	2,800	27,000	2,600	10,000	1,100
6	23,000	2,600	22,000	2,400	8,000	950
8	18,000	2,300	17,000	2,100	6,000	850
10	14,000	2,000	13,000	1,900	5,000	750
12	12,000	1,800	11,000	1,800	4,000	700
16	9,000	1,600	8,000	1,500	3,300	600

RPM = rev. / min.
FEED = mm / min.

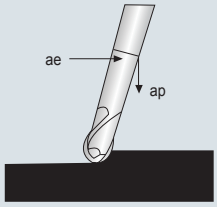


ae = 0.05 x d1
ap = 0.02 x d1

DB534 Series

Feed Rate	General Speed Cutting					
Work Material	Non-Alloyed Steels, Alloy Steels, Cast Iron		Alloy Steels, Heat Resistant Steels		Hardened Steels	
Hardness	≤ 30 HRc		30 ~ 40 HRc		40 ~ 55 HRc	
Strength	~ 1000N / mm²		1000 ~ 1250N / mm²		1500N / mm²	
Cutting Diameter(metric)	RPM	FEED	RPM	FEED	RPM	FEED
5	21,000	4,000	20,000	4,000	7,000	1,400
6	17,000	4,000	16,000	3,500	6,000	1,300
8	13,000	3,500	12,000	3,000	4,500	1,100
10	10,500	3,000	10,000	2,500	3,500	1,000
12	9,000	2,800	8,000	2,500	3,000	950
16	6,000	2,800	5,500	2,200	2,000	800

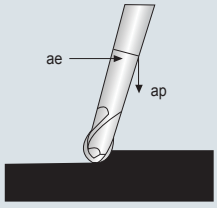
RPM = rev. / min.
FEED = mm / min.



ae = 0.05 x d1
ap = 0.02 x d1

Feed Rate	High Speed Cutting					
Work Material	Non-Alloyed Steels, Alloy Steels, Cast Iron		Alloy Steels, Heat Resistant Steels		Hardened Steels	
Hardness	≤ 30 HRc		30 ~ 40 HRc		40 ~ 55 HRc	
Strength	~ 1000N / mm²		1000 ~ 1250N / mm²		1500N / mm²	
Cutting Diameter(metric)	RPM	FEED	RPM	FEED	RPM	FEED
5	28,000	5,600	27,000	5,300	11,000	2,100
6	23,000	5,100	22,000	4,900	9,000	1,900
8	18,000	4,600	17,000	4,300	7,000	1,700
10	14,000	3,900	13,000	3,700	5,000	1,400
12	12,000	3,700	11,000	3,500	4,500	1,300
16	9,000	3,100	8,000	3,000	3,300	1,100

RPM = rev. / min.
FEED = mm / min.

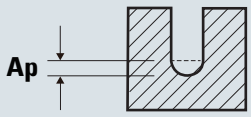


ae = 0.05 x d1
ap = 0.02 x d1

WB712 Series

Feed Rate	Slotting								
Work Material	Non-Alloyed Steels, Alloy Steels, Cast Iron			Alloy Steels, Heat Resistant Steels			Hardened Steels		
Hardness	≤ 30 HRc			30 ~ 45 HRc			45 ~ 55 HRc		
Strength	~ 1000N / mm²			1000 ~ 1500N / mm²			1500 ~ 2000N / mm²		
Cutting Diameter(metric)	RPM	FEED	Ae (mm)	RPM	FEED	Ae (mm)	RPM	FEED	Ae (mm)
0.5	33000~42000	200~540	0.023~0.045	24000~30000	100~300	0.023~0.045	15000~19000	100~200	0.005~0.009
0.6	33000~42000	250~700	0.027~0.054	24000~30000	120~385	0.027~0.054	15000~19000	120~250	0.005~0.011
0.8	33000~42000	250~700	0.036~0.072	24000~30000	120~385	0.036~0.072	15000~19000	120~250	0.007~0.014
1.0	30000~38000	275~770	0.045~0.090	22000~27000	140~420	0.045~0.090	13500~17500	140~280	0.009~0.018
1.2	25000~32000	275~860	0.055~0.100	18000~23000	140~430	0.055~0.100	11500~14500	140~280	0.010~0.022
1.4	22000~27000	275~860	0.062~0.125	16000~19000	140~430	0.062~0.125	10000~12500	140~280	0.012~0.025
1.5	20000~25000	275~860	0.070~0.135	14500~18500	140~430	0.070~0.135	9500~11500	140~280	0.014~0.028
1.6	19000~25000	275~860	0.075~0.145	14000~17500	140~430	0.075~0.145	9000~10000	140~280	0.015~0.030
1.8	18000~23000	275~860	0.080~0.160	12500~16000	140~430	0.080~0.160	8000~10000	140~280	0.016~0.032
2.0	16000~20000	275~860	0.090~0.180	11500~14500	140~430	0.090~0.180	7500~9000	140~280	0.018~0.035
3.0	11000~14000	275~860	0.135~0.270	7500~9500	140~430	0.135~0.270	5000~6000	140~280	0.028~0.055
4.0	9000~12000	275~860	0.180~0.360	6100~8200	140~430	0.180~0.360	4000~5000	140~280	0.035~0.070

RPM = rev. / min.
FEED = mm / min.

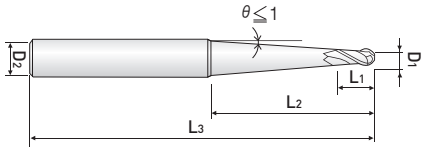


ZAMUS CLASSIC

DB4xx, DB5xx & WB712 Series

ULTRA FINE | Plunge | Profile

TAPER NECK BALL / 2 FLUTES / STUB / AlTiN COATING



TOLERANCE (metric)

D_1 = +0 / -0.02
D_2 = h6

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO. 2 Flute AlTiN Helix 30° DB542 DB552	Cutting Diameter (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
	D1	L1	L2	L3	D2
DB542020	2	3	60	110	6
DB552020	2	5	80	155	6
DB542030	3	5	60	110	6
DB552030	3	7	80	155	6
DB542040	4	7	60	110	6
DB552040	4	10	80	155	8
DB542050	5	10	60	110	6
DB552050	5	15	80	155	8
DB542060	6	18	60	155	10
DB552060	6	20	90	200	10
DB542080	8	30	70	155	12
DB552080	8	30	90	200	12
DB542100	10	40	60	155	12
DB552100	10	40	80	200	12
DB542120	12	50	60	155	16
DB552120	12	50	80	200	16

Applicable Working Material

○ : GOOD ◎ : BEST

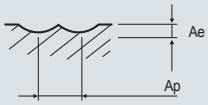
SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
All	○	○	○	○	◎	○	○	○	○					◎	◎	◎	○				

DB542, DB522 Series

Feed Rate	General Speed Cutting					
Work Material	Non-Alloyed Steels, Alloy Steels, Cast Iron		Alloy Steels, Heat Resistant Steels		Hardened Steels	
Hardness	≤ 30 HRc		30 ~ 40 HRc		40 ~ 55 HRc	
Strength	~ 1000N / mm²		1000 ~ 1250N / mm²		1500N / mm²	
Cutting Diameter(metric)	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.

Ae : D1~D6=0.2mm
D8~D20=0.3mm
Ap : 0.2XD

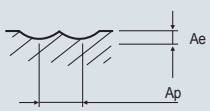


Ae : D1~D6=0.2mm
D8~D20=0.3mm
Ap : 0.1XD

Feed Rate	High Speed Cutting			
Work Material	Non-Alloyed Steels, Alloy Steels, Cast Iron		Alloy Steels, Heat Resistant Steels	
Hardness	≤ 45 HRc		30 ~ 40 HRc	
Strength	~ 1500N / mm²		1500 ~ 2000N / mm²	
Cutting Diameter(metric)	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.

Ae : D1~D6=0.2mm
D8~D20=0.3mm
Ap : 0.2XD

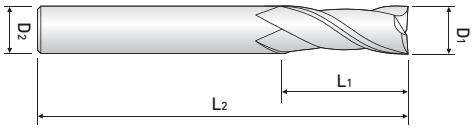


ZAMUS CLASSIC

ZM502, ZM504 Series

ULTRA FINE | Slotting | Side milling

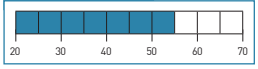
SQUARE / 2 & 4 FLUTES / REGULAR & LONG / AlTiN COATING



TOLERANCE (metric)

D_1 = +0 / -0.03
D_2 = h6

HARDNESS (HRc)



EDP NO.		Cutting Diameter (metric)	Cutting Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute	4 Flute				
AlTiN	AlTiN				
Helix 30°	Helix 30°				
ZM502	ZM504	D1	L1	L2	D2
ZM502020	ZM504020	2.00	8.00	40.00	4.00
-	ZM522030	3.00	10.00	70.00	6.00
-	ZM524030	3.00	10.00	70.00	6.00
ZM502030	ZM504030	3.00	12.00	50.00	6.00
-	ZM522040	4.00	12.00	70.00	6.00
-	ZM524040	4.00	12.00	70.00	6.00
ZM502040	ZM504040	4.00	15.00	50.00	6.00
-	ZM522050	5.00	15.00	80.00	6.00
-	ZM524050	5.00	15.00	80.00	6.00
ZM502050	ZM504050	5.00	20.00	60.00	6.00
-	ZM522060	6.00	15.00	80.00	6.00
-	ZM524060	6.00	15.00	80.00	6.00
ZM502060	ZM504060	6.00	20.00	60.00	6.00
-	ZM522080	8.00	20.00	100.00	8.00
-	ZM524080	8.00	20.00	100.00	8.00
ZM502080	ZM504080	8.00	25.00	70.00	8.00
-	ZM522100	10.00	25.00	100.00	10.00
-	ZM524100	10.00	25.00	100.00	10.00
ZM502100	ZM504100	10.00	30.00	90.00	10.00
ZM502120	ZM504120	12.00	30.00	90.00	12.00
-	ZM522120	12.00	30.00	110.00	12.00
-	ZM524120	12.00	30.00	110.00	12.00
ZM502140	ZM504140	14.00	40.00	110.00	16.00
-	ZM522160	16.00	40.00	125.00	16.00
-	ZM524160	16.00	40.00	125.00	16.00
ZM502160	ZM504160	16.00	50.00	110.00	16.00
ZM502180	ZM504180	18.00	50.00	110.00	20.00
-	ZM522200	20.00	45.00	150.00	20.00
-	ZM524200	20.00	45.00	150.00	20.00
ZM502200	ZM504200	20.00	55.00	110.00	20.00
ZM502250	ZM504250	25.00	75.00	140.00	25.00

Applicable Working Material

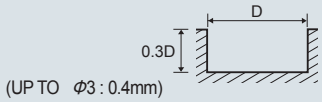
○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
All	○	○	○	○	◎	○	○	○	○					◎	◎	◎	○				

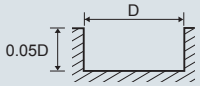
ZM502 Series

Work Material	Non-Alloyed Steels, Alloy Steels, Cast Iron		Alloy Steels, Heat Resistant Steels		Hardened Steels	
Hardness	≤ 30 HRc		30 ~ 45 HRc		45 ~ 55 HRc	
Strength	~ 1000N / mm²		1000 ~ 1500N / mm²		1500 ~ 2000N / mm²	
Cutting Diameter(metric)	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.



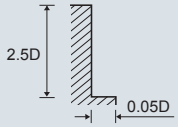
(UP TO Φ3 : 0.4mm)

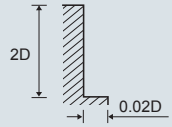


ZM504 Series

Work Material	Non-Alloyed Steels, Alloy Steels, Cast Iron		Alloy Steels, Heat Resistant Steels		Hardened Steels			
Hardness	≤ 30 HRc		30 ~ 45 HRc		45 ~ 55 HRc		55 ~ 65 HRc	
Strength	~ 1000N / mm²		1000 ~ 1500N / mm²		1500 ~ 2000N / mm²		2000N / mm²	
Cutting Diameter(metric)	RPM	FEED	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	1,890	30
4	3,570	140	2,840	115	1,790	60	1,470	35
5	3,050	180	2,420	140	1,580	70	1,260	40
6	2,630	215	2,100	180	1,370	90	1,160	50
8	2,000	230	1,580	180	1,050	90	840	50
10	1,680	230	1,370	180	840	90	670	50
12	1,370	180	1,160	160	700	70	560	40
16	1,160	160	890	125	560	60	440	35
20	840	115	680	90	420	45	340	25

RPM = rev. / min.
FEED = mm / min.



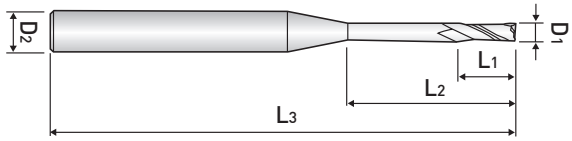


ULTRA FINE | Slotting | Side milling

ZAMUS CLASSIC

ZE5xx, WE7xx Series

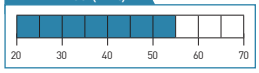
SQUARE / 2, 3 & 4 FLUTES / STUB & REGULAR /
AlTiN & W-COATINGS



TOLERANCE (metric)

D_1 = +0 / -0.02
D_1 = +0 / -0.03 (ZE503, ZE506)
D_2 = h6

HARDNESS (HRc)



EDP NO.						Cutting Diameter (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute		3 Flute	4 Flute		6 Flute					
W Coating	AlTiN	AlTiN	AlTiN		AlTiN					
Helix 30°	Helix 30°	Helix 45°	Helix 30°	Helix 45°	Helix 50°					
WE712	ZE502	ZE503	ZE504	ZE514	ZE506	D1	L1	L2	L3	D2
WE7120402	-	-	-	-	-	0.40	0.60	2.00	45.00	4.00
WE7120403	-	-	-	-	-	0.40	0.60	3.00	45.00	4.00
WE7120404	-	-	-	-	-	0.40	0.60	4.00	45.00	4.00
WE7120405	-	-	-	-	-	0.40	0.60	5.00	45.00	4.00
WE7120406	-	-	-	-	-	0.40	0.60	6.00	45.00	4.00
WE7120408	-	-	-	-	-	0.40	0.60	8.00	45.00	4.00
WE7120502	-	-	-	-	-	0.50	0.70	2.00	45.00	4.00
WE7120503	-	-	-	-	-	0.50	0.70	3.00	45.00	4.00
WE7120504	-	-	-	-	-	0.50	0.70	4.00	45.00	4.00
WE7120505	-	-	-	-	-	0.50	0.70	5.00	45.00	4.00
WE7120506	-	-	-	-	-	0.50	0.70	6.00	45.00	4.00
WE7120508	-	-	-	-	-	0.50	0.70	8.00	45.00	4.00
WE7120602	-	-	-	-	-	0.60	0.90	2.00	45.00	4.00
WE7120603	-	-	-	-	-	0.60	0.90	3.00	45.00	4.00
WE7120604	-	-	-	-	-	0.60	0.90	4.00	45.00	4.00
WE7120605	-	-	-	-	-	0.60	0.90	5.00	45.00	4.00
WE7120606	-	-	-	-	-	0.60	0.90	6.00	45.00	4.00
WE7120608	-	-	-	-	-	0.60	0.90	8.00	45.00	4.00
WE7120610	-	-	-	-	-	0.60	0.90	10.00	45.00	4.00
WE7120612	-	-	-	-	-	0.60	0.90	12.00	45.00	4.00
WE7120702	-	-	-	-	-	0.70	1.00	2.00	45.00	4.00
WE7120704	-	-	-	-	-	0.70	1.00	4.00	45.00	4.00
WE7120706	-	-	-	-	-	0.70	1.00	6.00	45.00	4.00
WE7120708	-	-	-	-	-	0.70	1.00	8.00	45.00	4.00
WE7120710	-	-	-	-	-	0.70	1.00	10.00	45.00	4.00
WE7120802	-	-	-	-	-	0.80	1.20	2.00	45.00	4.00
WE7120804	-	-	-	-	-	0.80	1.20	4.00	45.00	4.00
WE7120806	-	-	-	-	-	0.80	1.20	6.00	45.00	4.00
WE7120808	-	-	-	-	-	0.80	1.20	8.00	45.00	4.00
WE7120810	-	-	-	-	-	0.80	1.20	10.00	45.00	4.00
WE7120812	-	-	-	-	-	0.80	1.20	12.00	45.00	4.00
WE7120906	-	-	-	-	-	0.90	1.40	6.00	45.00	4.00
WE7120908	-	-	-	-	-	0.90	1.40	8.00	45.00	4.00
WE7120910	-	-	-	-	-	0.90	1.40	10.00	45.00	4.00
WE7121003	-	-	-	-	-	1.00	1.50	3.00	45.00	4.00

Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
WE712				○	○									○	○	◎	◎		○		
All	○	○	○	○	◎	○	○	○	○					◎	◎	◎	○				

ZAMUS CLASSIC

ZE5xx, WE7xx Series

>>Continue

EDP NO.						Cutting Diameter (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute		3 Flute	4 Flute		6 Flute					
W Coating	AlTiN	AlTiN	AlTiN		AlTiN					
Helix 30°	Helix 30°	Helix 45°	Helix 30°	Helix 45°	Helix 50°					
WE712	ZE502	ZE503	ZE504	ZE514	ZE506	D1	L1	L2	L3	D2
WE7121004	-	-	-	-	-	1.00	1.50	4.00	45.00	4.00
WE7121005	-	-	-	-	-	1.00	1.50	5.00	45.00	4.00
WE7121006	-	-	-	-	-	1.00	1.50	6.00	45.00	4.00
WE7121008	-	-	-	-	-	1.00	1.50	8.00	45.00	4.00
WE7121010	-	-	-	-	-	1.00	1.50	10.00	45.00	4.00
WE7121012	-	-	-	-	-	1.00	1.50	12.00	45.00	4.00
WE7121014	-	-	-	-	-	1.00	1.50	14.00	45.00	4.00
WE7121016	-	-	-	-	-	1.00	1.50	16.00	50.00	4.00
WE7121018	-	-	-	-	-	1.00	1.50	18.00	50.00	4.00
WE7121020	-	-	-	-	-	1.00	1.50	20.00	50.00	4.00
WE7121025	-	-	-	-	-	1.00	1.50	25.00	60.00	4.00
-	ZE502010	-	ZE504010	-	-	1.00	3.00	-	42.00	6.00
WE7121206	-	-	-	-	-	1.20	1.80	6.00	45.00	4.00
WE7121208	-	-	-	-	-	1.20	1.80	8.00	45.00	4.00
WE7121210	-	-	-	-	-	1.20	1.80	10.00	45.00	4.00
WE7121212	-	-	-	-	-	1.20	1.80	12.00	45.00	4.00
WE7121216	-	-	-	-	-	1.20	1.80	16.00	50.00	4.00
WE7121220	-	-	-	-	-	1.20	1.80	20.00	50.00	4.00
WE7121225	-	-	-	-	-	1.20	1.80	25.00	60.00	4.00
WE7121406	-	-	-	-	-	1.40	2.10	6.00	45.00	4.00
WE7121408	-	-	-	-	-	1.40	2.10	8.00	45.00	4.00
WE7121410	-	-	-	-	-	1.40	2.10	10.00	45.00	4.00
WE7121412	-	-	-	-	-	1.40	2.10	12.00	45.00	4.00
WE7121414	-	-	-	-	-	1.40	2.10	14.00	50.00	4.00
WE7121416	-	-	-	-	-	1.40	2.10	16.00	50.00	4.00
WE7121420	-	-	-	-	-	1.40	2.10	20.00	50.00	4.00
WE7121506	-	-	-	-	-	1.50	2.30	6.00	45.00	4.00
WE7121508	-	-	-	-	-	1.50	2.30	8.00	45.00	4.00
WE7121510	-	-	-	-	-	1.50	2.30	10.00	45.00	4.00
WE7121512	-	-	-	-	-	1.50	2.30	12.00	45.00	4.00
WE7121514	-	-	-	-	-	1.50	2.30	14.00	50.00	4.00
WE7121516	-	-	-	-	-	1.50	2.30	16.00	50.00	4.00
WE7121518	-	-	-	-	-	1.50	2.30	18.00	55.00	4.00
WE7121520	-	-	-	-	-	1.50	2.30	20.00	55.00	4.00
WE7121525	-	-	-	-	-	1.50	2.30	25.00	60.00	4.00
-	ZE502015	-	ZE504015	-	-	1.50	4.00	-	42.00	6.00
WE7121606	-	-	-	-	-	1.60	2.50	6.00	45.00	4.00
WE7121608	-	-	-	-	-	1.60	2.50	8.00	45.00	4.00
WE7121610	-	-	-	-	-	1.60	2.50	10.00	45.00	4.00
WE7121612	-	-	-	-	-	1.60	2.50	12.00	45.00	4.00
WE7121614	-	-	-	-	-	1.60	2.50	14.00	50.00	4.00
WE7121616	-	-	-	-	-	1.60	2.50	16.00	50.00	4.00
WE7121618	-	-	-	-	-	1.60	2.50	18.00	55.00	4.00
WE7121620	-	-	-	-	-	1.60	2.50	20.00	55.00	4.00
WE7121806	-	-	-	-	-	1.80	2.80	6.00	45.00	4.00
WE7121808	-	-	-	-	-	1.80	2.80	8.00	45.00	4.00

>>Continue

EDP NO.						Cutting Diameter (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute		3 Flute	4 Flute		6 Flute					
W Coating	AlTiN	AlTiN	AlTiN		AlTiN					
Helix 30°	Helix 30°	Helix 45°	Helix 30°	Helix 45°	Helix 50°					
WE712	ZE502	ZE503	ZE504	ZE514	ZE506	D1	L1	L2	L3	D2
WE7121810	-	-	-	-	-	1.80	2.80	10.00	45.00	4.00
WE7121812	-	-	-	-	-	1.80	2.80	12.00	45.00	4.00
WE7121814	-	-	-	-	-	1.80	2.80	14.00	50.00	4.00
WE7121816	-	-	-	-	-	1.80	2.80	16.00	50.00	4.00
WE7121818	-	-	-	-	-	1.80	2.80	18.00	55.00	4.00
WE7121820	-	-	-	-	-	1.80	2.80	20.00	55.00	4.00
WE7122006	-	-	-	-	-	2.00	3.00	6.00	45.00	4.00
WE7122008	-	-	-	-	-	2.00	3.00	8.00	45.00	4.00
WE7122010	-	-	-	-	-	2.00	3.00	10.00	45.00	4.00
WE7122012	-	-	-	-	-	2.00	3.00	12.00	45.00	4.00
WE7122014	-	-	-	-	-	2.00	3.00	14.00	50.00	4.00
WE7122016	-	-	-	-	-	2.00	3.00	16.00	50.00	4.00
WE7122018	-	-	-	-	-	2.00	3.00	18.00	55.00	4.00
WE7122020	-	-	-	-	-	2.00	3.00	20.00	55.00	4.00
WE7122022	-	-	-	-	-	2.00	3.00	22.00	60.00	4.00
WE7122025	-	-	-	-	-	2.00	3.00	25.00	60.00	4.00
WE7122030	-	-	-	-	-	2.00	3.00	30.00	70.00	4.00
WE7122035	-	-	-	-	-	2.00	3.00	35.00	70.00	4.00
-	-	-	-	ZE514020	-	2.00	5.00	-	40.00	6.00
-	ZE502020	-	ZE504020	-	-	2.00	6.00	-	42.00	6.00
WE7122508	-	-	-	-	-	2.50	3.70	8.00	45.00	4.00
WE7122510	-	-	-	-	-	2.50	3.70	10.00	45.00	4.00
WE7122512	-	-	-	-	-	2.50	3.70	12.00	45.00	4.00
WE7122514	-	-	-	-	-	2.50	3.70	14.00	50.00	4.00
WE7122516	-	-	-	-	-	2.50	3.70	16.00	50.00	4.00
WE7122518	-	-	-	-	-	2.50	3.70	18.00	55.00	4.00
WE7122520	-	-	-	-	-	2.50	3.70	20.00	55.00	4.00
WE7122525	-	-	-	-	-	2.50	3.70	25.00	60.00	4.00
WE7122530	-	-	-	-	-	2.50	3.70	30.00	70.00	4.00
WE7122535	-	-	-	-	-	2.50	3.70	35.00	70.00	4.00
WE7122540	-	-	-	-	-	2.50	3.70	40.00	80.00	4.00
-	-	-	-	ZE514025	-	2.50	6.00	-	40.00	6.00
-	ZE502025	-	ZE504025	-	-	2.50	8.00	-	42.00	6.00
WE7123008	-	-	-	-	-	3.00	4.50	8.00	45.00	6.00
WE7123010	-	-	-	-	-	3.00	4.50	10.00	45.00	6.00
WE7123012	-	-	-	-	-	3.00	4.50	12.00	45.00	6.00
WE7123014	-	-	-	-	-	3.00	4.50	14.00	50.00	6.00
WE7123016	-	-	-	-	-	3.00	4.50	16.00	50.00	6.00
WE7123018	-	-	-	-	-	3.00	4.50	18.00	55.00	6.00
WE7123020	-	-	-	-	-	3.00	4.50	20.00	55.00	6.00
WE7123025	-	-	-	-	-	3.00	4.50	25.00	60.00	6.00
WE7123030	-	-	-	-	-	3.00	4.50	30.00	70.00	6.00
WE7123035	-	-	-	-	-	3.00	4.50	35.00	80.00	6.00
WE7123040	-	-	-	-	-	3.00	4.50	40.00	90.00	6.00
WE7123045	-	-	-	-	-	3.00	4.50	45.00	90.00	6.00
WE7123050	-	-	-	-	-	3.00	4.50	50.00	100.00	6.00

ZAMUS CLASSIC

ZE5xx, WE7xx Series

>>Continue

EDP NO.						Cutting Diameter (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute		3 Flute	4 Flute		6 Flute					
W Coating	AlTiN	AlTiN	AlTiN		AlTiN					
Helix 30°	Helix 30°	Helix 45°	Helix 30°	Helix 45°	Helix 50°					
WE712	ZE502	ZE503	ZE504	ZE514	ZE506	D1	L1	L2	L3	D2
-	-	-	-	ZE514030	-	3.00	8.00	-	45.00	6.00
-	ZE502030	-	ZE504030	-	-	3.00	10.00	-	50.00	6.00
-	ZE502035	-	ZE504035	-	-	3.50	10.00	-	50.00	6.00
WE7124010	-	-	-	-	-	4.00	6.00	10.00	50.00	6.00
WE7124012	-	-	-	-	-	4.00	6.00	12.00	50.00	6.00
WE7124016	-	-	-	-	-	4.00	6.00	16.00	60.00	6.00
WE7124020	-	-	-	-	-	4.00	6.00	20.00	60.00	6.00
WE7124025	-	-	-	-	-	4.00	6.00	25.00	70.00	6.00
WE7124030	-	-	-	-	-	4.00	6.00	30.00	70.00	6.00
WE7124035	-	-	-	-	-	4.00	6.00	35.00	80.00	6.00
WE7124040	-	-	-	-	-	4.00	6.00	40.00	90.00	6.00
WE7124045	-	-	-	-	-	4.00	6.00	45.00	90.00	6.00
WE7124050	-	-	-	-	-	4.00	6.00	50.00	100.00	6.00
-	-	-	-	ZE514040	-	4.00	10.00	-	45.00	6.00
-	ZE502040	-	ZE504040	-	-	4.00	12.00	-	50.00	6.00
-	ZE502045	-	ZE504045	-	-	4.50	14.00	-	50.00	6.00
WE7125016	-	-	-	-	-	5.00	7.50	16.00	60.00	6.00
WE7125020	-	-	-	-	-	5.00	7.50	20.00	60.00	6.00
WE7125025	-	-	-	-	-	5.00	7.50	25.00	70.00	6.00
WE7125030	-	-	-	-	-	5.00	7.50	30.00	70.00	6.00
WE7125035	-	-	-	-	-	5.00	7.50	35.00	80.00	6.00
WE7125040	-	-	-	-	-	5.00	7.50	40.00	90.00	6.00
WE7125050	-	-	-	-	-	5.00	7.50	50.00	100.00	6.00
-	-	-	-	ZE514050	-	5.00	13.00	-	50.00	6.00
-	ZE502050	-	ZE504050	-	-	5.00	15.00	-	50.00	6.00
-	ZE502055	-	ZE504055	-	-	5.50	15.00	-	50.00	6.00
-	-	-	-	ZE514060	-	6.00	13.00	-	50.00	6.00
-	-	-	-	-	ZE506060	6.00	15.00	-	50.00	6.00
-	ZE502060	ZE503060	ZE504060	-	-	6.00	15.00	-	50.00	6.00
-	-	-	-	-	ZE506061	6.00	26.00	-	70.00	6.00
-	ZE502065	-	ZE504065	-	-	6.50	18.00	-	60.00	8.00
-	-	ZE503070	-	-	ZE506070	7.00	18.00	-	60.00	8.00
-	ZE502070	-	ZE504070	-	-	7.00	20.00	-	60.00	8.00
-	ZE502075	-	ZE504075	-	-	7.50	20.00	-	60.00	8.00
-	-	ZE503080	-	-	ZE506080	8.00	18.00	-	60.00	8.00
-	-	-	-	ZE514080	-	8.00	19.00	-	60.00	8.00
-	ZE502080	-	ZE504080	-	-	8.00	20.00	-	60.00	8.00
-	-	-	-	-	ZE506081	8.00	36.00	-	90.00	8.00
-	ZE502085	-	ZE504085	-	-	8.50	23.00	-	70.00	10.00
-	-	ZE503090	-	-	ZE506090	9.00	22.00	-	70.00	10.00
-	ZE502090	-	ZE504090	-	-	9.00	25.00	-	70.00	10.00
-	ZE502095	-	ZE504095	-	-	9.50	25.00	-	70.00	10.00
-	-	ZE503100	-	ZE514100	ZE506100	10.00	22.00	-	70.00	10.00
-	ZE502100	-	ZE504100	-	-	10.00	25.00	-	70.00	10.00
-	-	-	-	-	ZE506101	10.00	46.00	-	100.00	10.00
-	ZE502105	-	ZE504105	-	-	10.50	28.00	-	75.00	12.00

ZAMUS CLASSIC

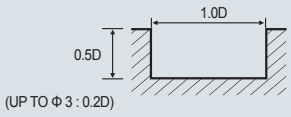
ZE5xx, WE7xx Series

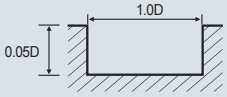
EDP NO.						Cutting Diameter (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute		3 Flute	4 Flute		6 Flute					
W Coating	AlTiN	AlTiN	AlTiN		AlTiN					
Helix 30°	Helix 30°	Helix 45°	Helix 30°	Helix 45°	Helix 50°					
WE712	ZE502	ZE503	ZE504	ZE514	ZE506	D1	L1	L2	L3	D2
-	-	ZE503110	-	-	ZE506110	11.00	26.00	-	75.00	12.00
-	ZE502110	-	ZE504110	-	-	11.00	30.00	-	75.00	12.00
-	ZE502115	-	ZE504115	-	-	11.50	30.00	-	75.00	12.00
-	-	ZE503120	-	ZE514120	ZE506120	12.00	26.00	-	75.00	12.00
-	ZE502120	-	ZE504120	-	-	12.00	30.00	-	75.00	12.00
-	-	-	-	-	ZE506121	12.00	56.00	-	110.00	12.00
-	-	-	ZE504125S12	-	-	12.50	30.00	-	80.00	12.00
-	ZE502130S12	-	ZE504130S12	-	-	13.00	30.00	-	80.00	12.00
-	-	ZE503130	-	-	ZE506130	13.00	32.00	-	85.00	14.00
-	ZE502130	-	ZE504130	-	-	13.00	35.00	-	85.00	14.00
-	ZE502130S16	-	ZE504130S16	-	-	13.00	35.00	-	90.00	16.00
-	-	ZE503140	-	-	ZE506140	14.00	32.00	-	85.00	14.00
-	ZE502140	-	ZE504140	-	-	14.00	35.00	-	85.00	14.00
-	ZE502140S16	-	ZE504140S16	-	-	14.00	35.00	-	90.00	16.00
-	-	ZE503150	-	-	ZE506150	15.00	35.00	-	90.00	16.00
-	ZE502150	-	ZE504150	-	-	15.00	40.00	-	90.00	16.00
-	-	ZE503160	-	-	ZE506160	16.00	35.00	-	90.00	16.00
-	ZE502160	-	ZE504160	-	-	16.00	40.00	-	90.00	16.00
-	-	-	-	-	ZE506161	16.00	66.00	-	130.00	16.00
-	ZE502170	-	ZE504170	-	-	17.00	40.00	-	100.00	16.00
-	-	ZE503180	-	-	-	18.00	40.00	-	100.00	18.00
-	-	-	-	-	ZE506180	18.00	44.00	-	100.00	18.00
-	ZE502180	-	ZE504180	-	-	18.00	45.00	-	100.00	18.00
-	ZE502190	-	ZE504190	-	-	19.00	45.00	-	100.00	20.00
-	-	ZE503200	-	-	-	20.00	40.00	-	100.00	20.00
-	-	-	-	-	ZE506200	20.00	44.00	-	100.00	20.00
-	ZE502200	-	ZE504200	-	-	20.00	45.00	-	100.00	20.00
-	-	-	-	-	ZE506201	20.00	76.00	-	150.00	20.00
-	ZE502220	-	ZE504220	-	-	22.00	45.00	-	100.00	20.00
-	ZE502240	-	ZE504240	-	-	24.00	50.00	-	120.00	25.00
-	ZE502250	ZE503250	ZE504250	-	ZE506250	25.00	50.00	-	120.00	25.00
-	-	-	-	-	ZE506251	25.00	92.00	-	180.00	25.00
-	-	ZE503320	-	-	ZE506320	32.00	70.00	-	150.00	32.00

ZE502 Series

Feed Rate	General Speed Cutting					
Work Material	Alloy Steels, Heat Resistant Steels		Hardened Steels		Stainless Steels	
Hardness	30 ~ 40 HRc		40 ~ 50 HRc		-	
Strength	1000 ~ 1250N / mm²		1250 ~ 1750N / mm²		-	
Cutting Diameter(metric)	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

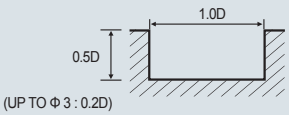
RPM = rev. / min.
FEED = mm / min.

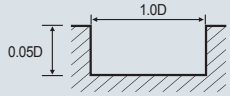




Feed Rate	General Speed Cutting							
Work Material	Alloy Steels, Heat Resistant Steels		Hardened Steels				Stainless Steels	
Hardness	30 ~ 40 HRc		40 ~ 50 HRc		40 ~ 50 HRc		-	
Strength	1000 ~ 1250N / mm²		1250 ~ 1750N / mm²		1250 ~ 1750N / mm²		-	
Cutting Diameter(metric)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2	18,000	665	11,800	415	8,700	175	9,800	345
3	11,000	655	6,800	435	5,600	185	6,200	370
4	10,300	725	6,300	430	4,300	185	5,300	370
5	9,350	715	5,570	420	3,700	185	4,620	355
6	8,200	750	4,930	470	3,250	185	4,100	390
8	6,300	770	3,780	410	2,470	185	3,120	355
10	4,830	750	2,940	360	2,000	160	2,470	310
12	4,100	750	2,520	345	1,680	160	2,100	300
16	3,260	715	2,000	355	1,890	150	1,940	290
20	2,520	665	1,580	310	1,680	150	1,630	275
25	2,000	635	1,260	340	1,570	150	1,420	290

RPM = rev. / min.
FEED = mm / min.

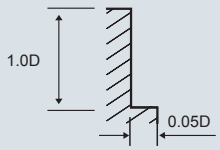




ZE503 Series

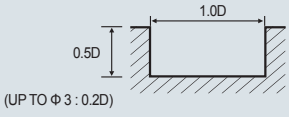
End Cutting	Side Milling									
Work Material	Non-Alloyed Steels Alloy Steels, Cast Iron		Alloy Steels, Heat Resistant Steels		Stainless Steels		Hardened Steels			
Hardness	≤ 30 HRc		30 ~ 45 HRc		-		45 ~ 55 HRc		55 ~ 65 HRc	
Strength	~ 1000N / mm²		1000 ~ 1500N / mm²		-		1500 ~ 20000N / mm²		2000N / mm² ≥	
Cutting Diameter(metric)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
6	5,560	500	3,360	310	2,840	250	2,000	60	1,100	45
8	4,200	530	2,520	290	2,100	265	1,680	80	840	45
10	3,260	460	2,000	230	1,680	230	1,360	70	680	35
12	2,740	390	1,680	190	1,360	180	1,160	60	560	35
16	2,200	310	1,360	150	1,060	150	900	45	440	20
18	1,940	280	1,210	135	950	130	790	35	380	20
20	1,680	240	1,060	120	840	115	680	30	320	20

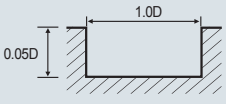
RPM = rev. / min.
FEED = mm / min.



End Cutting	Slotting									
Work Material	Non-Alloyed Steels Alloy Steels, Cast Iron		Alloy Steels, Heat Resistant Steels		Stainless Steels		Hardened Steels			
Hardness	≤ 30 HRc		30 ~ 45 HRc		-		45 ~ 55 HRc		55 ~ 65 HRc	
Strength	~ 1000N / mm²		1000 ~ 1500N / mm²		-		1500 ~ 20000N / mm²		2000N / mm² ≥	
Cutting Diameter(metric)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
6	5,560	310	3,360	200	2,840	160	2,000	50	1,100	35
8	4,200	340	2,520	180	2,100	160	1,680	65	840	35
10	3,260	300	2,000	140	1,680	145	1,360	55	680	30
12	2,740	250	1,680	120	1,360	120	1,160	50	560	30
16	2,200	200	1,360	100	1,060	100	900	35	440	20
20	1,940	175	1,210	85	950	85	790	30	380	20
25	1,680	150	1,060	70	840	70	680	25	320	20

RPM = rev. / min.
FEED = mm / min.

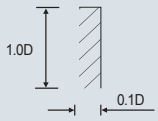


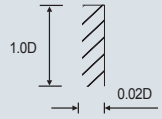


ZE504, ZE514 Series

Feed Rate	General Speed Cutting							
Work Material	Alloy Steels, Heat Resistant Steels		Hardened Steels				Stainless Steels	
Hardness	≤ 30 HRc		30 ~ 45 HRc		45 ~ 55 HRc		-	
Strength	~ 1000N / mm²		1000 ~ 1500N / mm²		1500 ~ 2000N / mm²		-	
Cutting Diameter(metric)	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	4,320	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

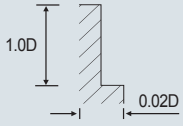
RPM = rev. / min.
FEED = mm / min.





Feed Rate	General Speed Cutting							
Work Material	Alloy Steels, Heat Resistant Steels		Hardened Steels				Stainless Steels	
Hardness	≤ 30 HRc		30 ~ 45 HRc		45 ~ 55 HRc		-	
Strength	~ 1000N / mm²		1000 ~ 1500N / mm²		1500 ~ 2000N / mm²		-	
Cutting Diameter(metric)	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	990
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

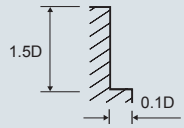
RPM = rev. / min.
FEED = mm / min.

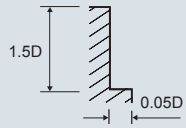


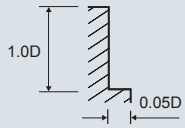
ZE506 Series

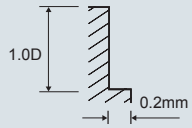
Feed Rate	General Speed Cutting							
Work Material	Non-Alloyed Steels Alloy Steels, Cast Iron		Alloy Steels, Heat Resistant Steels		Hardened Steels			
Hardness	≤ 30 HRc		30 ~ 50 HRc		50 ~ 60 HRc		60 ~ 65 HRc	
Strength	~ 1000N / mm²		1000 ~ 1750N / mm²		1750 ~ 2080N / mm²		2080N / mm²	
Cutting Diameter(metric)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
6	5,560	2,000	3,880	1,370	1,580	210	1,100	130
8	4,200	2,000	2,940	1,370	1,160	210	840	130
10	3,360	2,000	2,320	1,370	1,000	210	680	130
12	2,840	1,680	2,000	1,160	840	180	560	110
16	2,100	1,260	1,480	880	640	130	420	70
20	1,680	1,010	1,160	690	500	110	320	60
25	1,500	900	1,100	600	430	90	260	50

RPM = rev. / min.
FEED = mm / min.



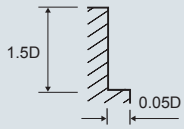


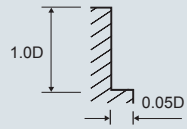


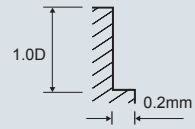


Feed Rate	High Speed Cutting					
Work Material	Non-Alloyed Steels Alloy Steels, Cast Iron		Hardened Steels			
Hardness	≤ 50 HRc		50 ~ 60 HRc		60 ~ 65 HRc	
Strength	~ 1750N / mm²		1750 ~ 2080N / mm²		2080N / mm²	
Cutting Diameter(metric)	RPM	FEED	RPM	FEED	RPM	FEED
6	16,800	6,090	8,400	3,050	4,200	1,470
8	12,600	6,090	6,300	3,050	3,160	1,470
10	9,980	5,990	5,040	3,050	2,520	1,470
12	8,400	5,040	4,200	2,520	2,100	1,260
16	6,300	3,780	3,160	1,890	1,580	950
20	5,040	3,050	2,520	1,470	1,260	760
25	4,500	2,750	2,200	1,300	1,120	670

RPM = rev. / min.
FEED = mm / min.



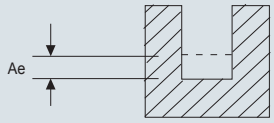




WE712 Series

End Cutting	Rib Processing								
Work Material	Non-Alloyed Steels, Alloy Steels, Cast Iron			Alloy Steels, Heat Resistant Steels			Hardened Steels		
Hardness	≤ 30 HRc			30 ~ 45 HRc			45 ~ 55 HRc		
Strength	~ 1000N / mm²			1000 ~ 1500N / mm²			1500 ~ 2000N / mm²		
Cutting Diameter(metric)	RPM	FEED	Ae (mm)	RPM	FEED	Ae (mm)	RPM	FEED	Ae (mm)
0.4	33000~42000	220~490	0.007~0.018	24000~30000	100~375	0.007~0.018	15000~18000	35~100	0.004~0.008
0.5	33000~42000	220~490	0.009~0.022	24000~30000	100~375	0.009~0.022	15000~18000	35~100	0.004~0.009
0.6	33000~42000	275~630	0.011~0.026	24000~30000	120~485	0.011~0.026	15000~18000	45~120	0.005~0.011
0.7	33000~42000	275~630	0.012~0.031	24000~30000	120~485	0.012~0.031	15000~18000	45~120	0.006~0.013
0.8	28500~37000	310~700	0.014~0.035	20500~26000	130~530	0.014~0.035	13000~15500	50~140	0.007~0.015
0.9	26000~33000	310~800	0.030~0.060	19000~24000	180~600	0.030~0.060	11500~13500	60~145	0.008~0.016
1.0	24000~30000	310~900	0.045~0.090	16500~21000	210~660	0.045~0.090	10500~13500	75~145	0.009~0.018
1.2	19500~24000	310~990	0.055~0.100	14000~17000	210~660	0.055~0.100	9000~11000	75~145	0.010~0.022
1.4	17000~21000	310~990	0.062~0.125	12000~15000	210~660	0.062~0.125	7500~9500	75~145	0.012~0.025
1.5	15500~20000	310~990	0.070~0.135	11000~14500	210~660	0.070~0.135	7000~8500	75~145	0.014~0.028
1.6	15000~19000	310~990	0.075~0.145	11000~13500	210~660	0.075~0.145	6500~8500	75~145	0.015~0.030
1.8	14000~18000	310~990	0.080~0.160	10000~12000	210~660	0.080~0.160	6000~7500	75~145	0.016~0.032
2.0	12500~15500	310~990	0.090~0.180	9000~11000	210~660	0.090~0.180	5500~7000	75~145	0.018~0.035
2.5	10000~13000	310~990	0.112~0.235	7000~9000	210~660	0.112~0.235	4500~5500	75~145	0.022~0.045
3.0	8500~10500	310~990	0.135~0.270	6000~7500	210~660	0.135~0.270	3500~4500	75~145	0.048~0.055
4.0	6500~8000	310~990	0.180~0.360	4500~5500	210~660	0.180~0.360	2700~3500	75~145	0.036~0.072

RPM = rev. / min.
FEED = mm / min.

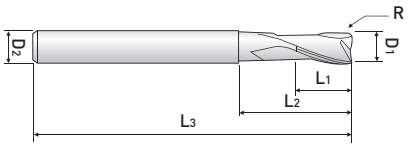


ZAMUS CLASSIC

ZR5xx Series

ULTRA FINE | Slotting | Side milling

CORNER RADIUS / 2 & 4 FLUTES / STUB & REGULAR / AlTiN COATING



TOLERANCE (metric)

D_1 = +0 / -0.02
D_1 = +0 / -0.03 (ZR512, ZR514)
D_2 = h6
R = ±0.02

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO.		Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute	4 Flute						
AlTiN	AlTiN						
Helix 30°	Helix 30°						
ZR502 ZR512 ZR522	ZR504 ZR514 ZR524	D1	R	L1	L2	L3	D2
ZR5220302	ZR5240302	3.00	0.200	8.00	-	60.00	6.00
ZR5220302S4	-	3.00	0.200	8.00	-	60.00	4.00
ZR5220305	ZR5240305	3.00	0.500	8.00	-	60.00	6.00
ZR5220305S4	-	3.00	0.500	8.00	-	60.00	4.00
ZR5020405	ZR5040405	4.00	0.500	6.00	10.00	55.00	6.00
ZR5020410	ZR5040410	4.00	1.000	6.00	10.00	55.00	6.00
ZR5220402	ZR5240402	4.00	0.200	11.00	-	70.00	6.00
ZR5220402S4	-	4.00	0.200	11.00	-	70.00	4.00
ZR5220405	ZR5240405	4.00	0.500	11.00	-	70.00	6.00
ZR5220405S4	ZR5240405S4	4.00	0.500	11.00	-	70.00	4.00
ZR5220410	ZR5240410	4.00	1.000	11.00	-	70.00	6.00
ZR5220502	ZR5240502	5.00	0.200	13.00	-	80.00	6.00
ZR5220505	ZR5240505	5.00	0.500	13.00	-	80.00	6.00
ZR5220510	ZR5240510	5.00	1.000	13.00	-	80.00	6.00
ZR5020605	ZR5040605	6.00	0.500	8.00	15.00	55.00	6.00
ZR5020610	ZR5040610	6.00	1.000	8.00	15.00	55.00	6.00
ZR5220602	ZR5240602	6.00	0.200	13.00	-	90.00	6.00
ZR5220605	ZR5240605	6.00	0.500	13.00	-	90.00	6.00
ZR5220610	ZR5240610	6.00	1.000	13.00	-	90.00	6.00
ZR5120605	ZR5140605	6.00	0.500	15.00	-	55.00	6.00
ZR5120610	ZR5140610	6.00	1.000	15.00	-	55.00	6.00
ZR5020805	ZR5040805	8.00	0.500	10.00	20.00	65.00	8.00
ZR5020810	ZR5040810	8.00	1.000	10.00	20.00	65.00	8.00
ZR5020815	ZR5040815	8.00	1.500	10.00	20.00	65.00	8.00
ZR5020820	ZR5040820	8.00	2.000	10.00	20.00	65.00	8.00
ZR5220805	ZR5240805	8.00	0.500	19.00	-	100.00	8.00
ZR5220810	ZR5240810	8.00	1.000	19.00	-	100.00	8.00
ZR5220815	ZR5240815	8.00	1.500	19.00	-	100.00	8.00
ZR5220820	ZR5240820	8.00	2.000	19.00	-	100.00	8.00
ZR5120805	ZR5140805	8.00	0.500	20.00	-	65.00	8.00
ZR5120810	ZR5140810	8.00	1.000	20.00	-	65.00	8.00
ZR5120815	ZR5140815	8.00	1.500	20.00	-	65.00	8.00
ZR5120820	ZR5140820	8.00	2.000	20.00	-	65.00	8.00

Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
All	○	○	○	○	◎	○	○	○	○					◎	◎	◎	○				

ZAMUS CLASSIC

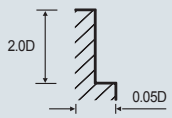
ZR5xx Series

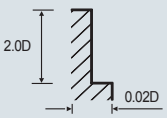
EDP NO.		Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute	4 Flute						
AlTiN	AlTiN						
Helix 30°	Helix 30°						
ZR502 ZR512 ZR522	ZR504 ZR514 ZR524	D1	R	L1	L2	L3	D2
ZR5021005	ZR5041005	10.00	0.500	12.00	28.00	80.00	10.00
ZR5021010	ZR5041010	10.00	1.000	12.00	28.00	80.00	10.00
ZR5021015	ZR5041015	10.00	1.500	12.00	28.00	80.00	10.00
ZR5021020	ZR5041020	10.00	2.000	12.00	28.00	80.00	10.00
ZR5221005	ZR5241005	10.00	0.500	22.00	-	100.00	10.00
ZR5221010	ZR5241010	10.00	1.000	22.00	-	100.00	10.00
ZR5221015	ZR5241015	10.00	1.500	22.00	-	100.00	10.00
ZR5221020	ZR5241020	10.00	2.000	22.00	-	100.00	10.00
ZR5221025	ZR5241025	10.00	2.500	22.00	-	100.00	10.00
ZR5121005	ZR5141005	10.00	0.500	25.00	-	80.00	10.00
ZR5121010	ZR5141010	10.00	1.000	25.00	-	80.00	10.00
ZR5121015	ZR5141015	10.00	1.500	25.00	-	80.00	10.00
ZR5121020	ZR5141020	10.00	2.000	25.00	-	80.00	10.00
ZR5121025	ZR5141025	10.00	2.500	25.00	-	80.00	10.00
ZR5121030	ZR5141030	10.00	3.000	25.00	-	80.00	10.00
ZR5021205	ZR5041205	12.00	0.500	15.00	30.00	82.00	12.00
ZR5021210	ZR5041210	12.00	1.000	15.00	30.00	82.00	12.00
ZR5021215	ZR5041215	12.00	1.500	15.00	30.00	82.00	12.00
ZR5021220	ZR5041220	12.00	2.000	15.00	30.00	82.00	12.00
ZR5221205	ZR5241205	12.00	0.500	26.00	-	110.00	12.00
ZR5221210	ZR5241210	12.00	1.000	26.00	-	110.00	12.00
ZR5221215	ZR5241215	12.00	1.500	26.00	-	110.00	12.00
ZR5221220	ZR5241220	12.00	2.000	26.00	-	110.00	12.00
ZR5221225	ZR5241225	12.00	2.500	26.00	-	110.00	12.00
ZR5221230	ZR5241230	12.00	3.000	26.00	-	110.00	12.00
ZR5121205	ZR5141205	12.00	0.500	30.00	-	82.00	12.00
ZR5121210	ZR5141210	12.00	1.000	30.00	-	82.00	12.00
ZR5121215	ZR5141215	12.00	1.500	30.00	-	82.00	12.00
ZR5121220	ZR5141220	12.00	2.000	30.00	-	82.00	12.00
ZR5121225	ZR5141225	12.00	2.500	30.00	-	82.00	12.00
ZR5121230	ZR5141230	12.00	3.000	30.00	-	82.00	12.00
ZR5121605	ZR5141605	16.00	0.500	40.00	-	100.00	16.00
ZR5121610	ZR5141610	16.00	1.000	40.00	-	100.00	16.00
ZR5121615	ZR5141615	16.00	1.500	40.00	-	100.00	16.00
ZR5121620	ZR5141620	16.00	2.000	40.00	-	100.00	16.00
ZR5121630	ZR5141630	16.00	3.000	40.00	-	100.00	16.00
ZR5122005	ZR5142005	20.00	0.500	45.00	-	110.00	20.00
ZR5122010	ZR5142010	20.00	1.000	45.00	-	110.00	20.00
ZR5122015	ZR5142015	20.00	1.500	45.00	-	110.00	20.00
ZR5122020	ZR5142020	20.00	2.000	45.00	-	110.00	20.00
ZR5122030	ZR5142030	20.00	3.000	45.00	-	110.00	20.00

ZR502, ZR512, ZR522, ZR504, ZR514, ZR524 Series

End Cutting	Side Milling					
Work Material	Non-Alloyed Steels, Alloy Steels, Cast Iron		Alloy Steels, Heat Resistant Steels		Hardened Steels	
Hardness	≤ 30 HRc		30 ~ 45 HRc		45 ~ 55 HRc	
Strength	~ 1000N / mm²		1000 ~ 1500N / mm²		1500 ~ 2000N / mm²	
Cutting Diameter(metric)	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.

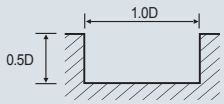




ZR502, ZR512, ZR5224 Series

End Cutting	Side Milling					
Work Material	Non-Alloyed Steels, Alloy Steels, Cast Iron		Alloy Steels, Heat Resistant Steels		Hardened Steels	
Hardness	≤ 30 HRc		30 ~ 45 HRc		45 ~ 55 HRc	
Strength	~ 1000N / mm²		1000 ~ 1500N / mm²		1500 ~ 2000N / mm²	
Cutting Diameter(metric)	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.

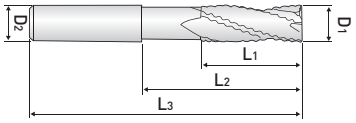


ULTRA FINE | Plunge | Slotting | Side milling

ZAMUS CLASSIC

PK503, ZF60x, ZF61x Series

ROUGHERS / 3, 4, 5 & 6 FLUTES / REGULAR / AlTiN COATING



TOLERANCE (metric)

PK503 Series

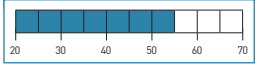
D_1 = -0.030 / -0.105 (D1<6)
D_1 = -0.040 / -0.150 (D1=8 to 10)
D_1 = -0.050 / -0.180 (D1=12 to 16)
D_1 = -0.065 / -0.225 (D1=20)
D_2 = h6

TOLERANCE (metric)

ZF60x, ZF61x Series

D_1 = +0 / -0.048 (D1≤6)
D_1 = +0 / -0.058 (D1=7 to 10))
D_1 = +0 / -0.070 (D1=11 to 18)
D_1 = +0 / -0.084 (D1=20 to 25)
D_1 = +0 / -0.100 (D1>25)
D_2 = h6

HARDNESS (HRc)



EDP NO.				Cutting Diameter (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
3 Flute	4 Flute	5 Flute	6 Flute					
AlTiN	AlTiN	AlTiN	AlTiN					
Helix 30°	Helix 30°	Helix 30°	Helix 30°					
PK503 ZF603 ZF613	ZF604 ZF614 -	ZF605 ZF615 -	ZF606 - -	D1	L1	L2	L3	D2
PK503060	-	-	-	6.00	9.00	15.00	57.00	6.00
ZF603060	-	-	-	6.00	15.00	-	50.00	6.00
ZF613060	-	-	-	6.00	16.00	-	57.00	6.00
ZF613060F	-	-	-	6.00	16.00	-	57.00	6.00
ZF613070	-	-	-	7.00	16.00	-	63.00	8.00
ZF613070F	-	-	-	7.00	16.00	-	63.00	8.00
ZF603070	-	-	-	7.00	18.00	-	60.00	8.00
PK503080	-	-	-	8.00	12.00	20.00	63.00	8.00
ZF613080	-	-	-	8.00	16.00	-	63.00	8.00
ZF613080F	-	-	-	8.00	16.00	-	63.00	8.00
ZF603080	-	-	-	8.00	18.00	-	60.00	8.00
-	ZF614090	-	-	9.00	19.00	-	72.00	10.00
-	ZF614090F	-	-	9.00	19.00	-	72.00	10.00
-	ZF604090	-	-	9.00	22.00	-	70.00	10.00
PK503100	-	-	-	10.00	15.00	25.00	72.00	10.00
-	ZF604100	-	-	10.00	22.00	-	70.00	10.00
-	ZF614100	-	-	10.00	22.00	-	72.00	10.00
-	ZF614100F	-	-	10.00	22.00	-	72.00	10.00
-	ZF604110	-	-	11.00	26.00	-	75.00	12.00
PK503120	-	-	-	12.00	18.00	30.00	83.00	12.00
-	ZF604120	-	-	12.00	26.00	-	75.00	12.00
-	ZF614120	-	-	12.00	26.00	-	83.00	12.00
-	ZF614120F	-	-	12.00	26.00	-	83.00	12.00
-	ZF604130	-	-	13.00	32.00	-	85.00	14.00
PK503140	-	-	-	14.00	21.00	35.00	83.00	14.00
-	ZF614140	-	-	14.00	32.00	-	83.00	14.00
-	ZF614140F	-	-	14.00	32.00	-	83.00	14.00
-	ZF604140	-	-	14.00	32.00	-	85.00	14.00
-	ZF604150	-	-	15.00	35.00	-	90.00	16.00
PK503160	-	-	-	16.00	24.00	40.00	92.00	16.00
-	ZF604160	-	-	16.00	35.00	-	90.00	16.00
-	ZF614160	-	-	16.00	35.00	-	92.00	16.00
-	ZF614160F	-	-	16.00	35.00	-	92.00	16.00

Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
All	○	○	○	○	◎	○	○	○	○					◎	◎	◎	○				

ZAMUS CLASSIC

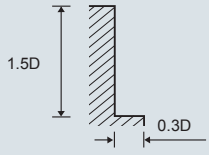
PK503, ZF60x, ZF61x Series

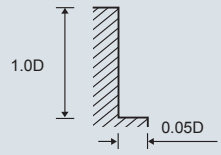
EDP NO.				Cutting Diameter (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
3 Flute	4 Flute	5 Flute	6 Flute					
AlTiN	AlTiN	AlTiN	AlTiN					
Helix 30°	Helix 30°	Helix 30°	Helix 30°					
PK503	ZF604	ZF605	ZF606					
ZF603	ZF614	ZF615	-	D1	L1	L2	L3	D2
ZF613	-	-	-					
-	ZF614180	-	-	18.00	40.00	-	100.00	18.00
-	ZF614180F	-	-	18.00	40.00	-	100.00	18.00
-	ZF604180	-	-	18.00	44.00	-	100.00	18.00
PK503200	-	-	-	20.00	30.00	50.00	104.00	20.00
-	ZF604200	-	-	20.00	44.00	-	100.00	20.00
-	ZF614200	-	-	20.00	44.00	-	104.00	20.00
-	ZF614200F	-	-	20.00	44.00	-	104.00	20.00
-	-	ZF605250	-	25.00	50.00	-	120.00	25.00
-	-	ZF615250	-	25.00	50.00	-	120.00	25.00
-	-	ZF615250F	-	25.00	50.00	-	120.00	25.00
-	-	-	ZF606320	32.00	70.00	-	150.00	32.00

ZF60x, ZF61x Series

End Cutting	Side Milling									
Work Material	Non-Alloyed Steels, Alloy Steels, Cast Iron		Alloy Steels, Heat Resistant Steels		Stainless Steels		Hardened Steels		Hardened Steels	
Hardness	≤ 30 HRc		30 ~ 38 HRc		38 ~ 45 HRc		45 ~ 55 HRc		55 ~ 65 HRc	
Strength	~ 1000N / mm²		1000 ~ 1200N / mm²		1200 ~ 1400N / mm²		1400 ~ 2000N / mm²		2000N / mm² ~	
Cutting Diameter(metric)	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.





PK503 Series

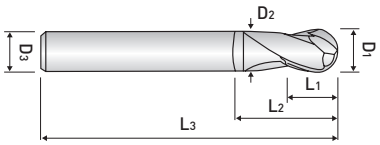
Work Material	Alloy Steels, High Carbon Steels				Prehardened Steels, Tool Steels 30 ~ 40 HRc				SUS304 · 316, Prehardened Steel 40 ~ 45 HRc				Titanium Alloys			
(V) m / min	130 ~ 150				100 ~ 120				50 ~ 70				30 ~ 50			
Cutting Diameter (metric)	RPM	fz			RPM	fz			(r.p.m)	fz			(r.p.m)	fz		
		Slotting	Side Milling	Slotting		Slotting	Side Milling	Slotting		Slot	Side Milling	Slot		Slot	Side Milling	Slot
6	7,400	0.030	0.045	0.018	5,800	0.025	0.030	0.012	3,200	0.020	0.030	0.012	2,100	0.017	0.020	0.008
8	5,600	0.035	0.062	0.025	4,400	0.030	0.045	0.018	2,400	0.030	0.040	0.016	1,600	0.025	0.025	0.010
10	4,600	0.045	0.075	0.030	3,500	0.040	0.048	0.019	1,900	0.040	0.055	0.022	1,300	0.036	0.040	0.016
12	3,700	0.050	0.087	0.035	3,000	0.045	0.052	0.020	1,600	0.045	0.065	0.026	1,100	0.040	0.050	0.020
14	3,200	0.055	0.090	0.036	2,500	0.053	0.056	0.022	1,360	0.048	0.070	0.028	900	0.043	0.053	0.021
16	2,800	0.055	0.090	0.036	2,200	0.060	0.060	0.024	1,200	0.050	0.075	0.030	800	0.045	0.055	0.022
20	2,200	0.080	0.095	0.038	1,800	0.066	0.066	0.026	1,000	0.052	0.083	0.033	600	0.050	0.057	0.023
Ap		1.0D	1.0D	0.5D		1.0D	1.0D	0.5D		0.5D	1.0D	0.5D		0.5D	1.0D	0.5D
Ae		1.0D	0.5D	1.0D		1.0D	0.3D	1.0D		1.0D	0.5D	1.0D		1.0D	0.3D	1.0D

ZAMUS COPPER MATE

BC502 Series

BALL / 2 FLUTES / STUB / CrN COATING

ULTRA FINE | Plunge | Profile



TOLERANCE (metric)

D_1 = +0 / -0.03
D_2 = h6

HARDNESS (HRc)

for COPPER

EDP NO. 2 Flute CrN Helix 30°	Cutting Diameter (metric)	Cutting Length (metric)	Neck Diameter (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
BC502	D1	L1	D2	L2	L3	D3
BC502010	1.00	1.50	0.80	3.00	50.00	6.00
BC502015	1.50	2.00	1.30	4.00	50.00	6.00
BC502020	2.00	2.50	1.80	5.00	50.00	6.00
BC502025	2.50	3.00	2.30	7.00	50.00	6.00
BC502030	3.00	4.00	2.80	10.00	60.00	6.00
BC502040	4.00	5.00	3.80	10.00	60.00	6.00
BC502050	5.00	6.00	4.80	12.00	60.00	6.00
BC502060	6.00	7.00	5.80	12.00	60.00	6.00
BC502061	6.00	7.00	5.80	12.00	90.00	6.00
BC502080	8.00	9.00	7.80	15.00	70.00	8.00
BC502081	8.00	9.00	7.80	16.00	100.00	8.00
BC502100	10.00	11.00	9.80	25.00	75.00	10.00
BC502101	10.00	11.00	9.80	25.00	100.00	10.00
BC502120	12.00	12.00	11.80	25.00	80.00	12.00
BC502121	12.00	12.00	11.80	25.00	110.00	12.00

Applicable Working Material

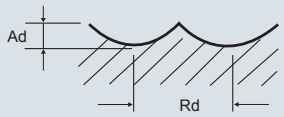
○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
BC502	○	○	○	○						○	○								◎		

BC502 Series

Work Material	Copper			
Cutting Diameter(metric)	RPM	FEED	Rd	Ad
1	41,000	1,660	0.040	0.063
1.5	27,000	1,830	0.068	0.087
2	20,000	1,780	0.089	0.112
2.5	16,000	1,840	0.115	0.090
3	13,000	2,220	0.171	0.168
4	10,000	2,080	0.208	0.200
5	8,300	1,990	0.240	0.200
6	6,900	1,940	0.281	0.250
8	5,720	1,000	0.175	0.400
10	4,550	700	0.154	0.500
12	3,770	600	0.159	0.600

RPM = rev. / min.
FEED = mm / min.

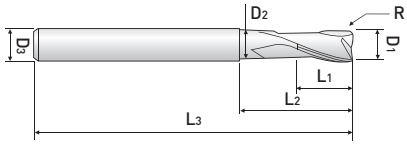


ZAMUS COPPER MATE

RC502 Series

ULTRA FINE | Slotting | Side milling

CORNER RADIUS / 2 FLUTES / STUB WITH EXTENDED NECK / CrN COATING



TOLERANCE (metric)

D_1 = +0 / -0.012 (D1≤6)
D_1 = +0 / -0.015 (D1>6)
D_2 = h6
R = ±0.010 (D1≤6)
R = ±0.015 (D1>6)

HARDNESS (HRc)

for COPPER

EDP NO. 2 Flute CrN Helix 30°	Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Neck Diameter (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
RC502	D1	R	L1	D2	L2	L3	D3
RC5020200509	2.00	0.50	3.00	1.80	9.00	55.00	6.00
RC5020300509	3.00	0.50	4.00	2.80	9.00	55.00	6.00
RC5020300516	3.00	0.50	4.00	2.80	16.00	55.00	6.00
RC5020300520	3.00	0.50	4.00	2.80	20.00	55.00	6.00
RC5020400512	4.00	0.50	5.00	3.70	12.00	55.00	6.00
RC5020400516	4.00	0.50	5.00	3.70	16.00	55.00	6.00
RC5020400520	4.00	0.50	5.00	3.70	20.00	55.00	6.00
RC5020600520	6.00	0.50	7.00	5.50	20.00	60.00	6.00
RC5020601020	6.00	1.00	7.00	5.50	20.00	60.00	6.00
RC5020800525	8.00	0.50	9.00	7.40	25.00	60.00	8.00
RC5020801025	8.00	1.00	9.00	7.40	25.00	60.00	8.00
RC5021000532	10.00	0.50	11.00	9.20	32.00	70.00	10.00
RC5021001032	10.00	1.00	11.00	9.20	32.00	70.00	10.00
RC5021200538	12.00	0.50	12.00	11.00	38.00	80.00	12.00
RC5021201038	12.00	1.00	12.00	11.00	38.00	80.00	12.00

Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
RC502	○	○	○	○						○	○								◎		

RC502 Series

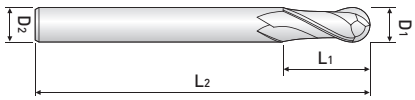
Work Material	Copper			
Cutting Diameter(metric)	RPM	FEED	Rd	Ad
3	44,500	2,350	50,000	3,700
4	33,400	2,100	50,000	4,700
6	22,300	2,100	33,400	4,900
8	16,700	2,100	25,000	4,700
10	13,370	2,100	20,000	4,800
12	11,100	2,100	16,700	4,700

ZAMUS SUS MATE

DS502 Series

BALL / 2 FLUTES / REGULAR/ TiAlN+SH COATING

ULTRA FINE | Plunge | Profile



TOLERANCE (metric)

D_1 = +0 / -0.02
D_2 = h6

HARDNESS (HRc)

for STAINLESS

EDP NO. 2 Flute TiAlN-SH Helix 38°	Cutting Diameter (metric)	Cutting Length (metric)	Overall Length (metric)	Shank Diameter (metric)
DS502	D1	L1	L2	D2
DS502010	1.00	3.00	50.00	6.00
DS502020	2.00	6.00	50.00	6.00
DS502030	3.00	8.00	50.00	6.00
DS502031	3.00	8.00	70.00	6.00
DS502040	4.00	10.00	50.00	6.00
DS502041	4.00	10.00	70.00	6.00
DS502050	5.00	13.00	50.00	6.00
DS502051	5.00	13.00	80.00	6.00
DS502060	6.00	13.00	50.00	6.00
DS502061	6.00	13.00	90.00	6.00
DS502080	8.00	19.00	60.00	8.00
DS502081	8.00	19.00	100.00	8.00
DS502100	10.00	22.00	70.00	10.00
DS502101	10.00	22.00	100.00	10.00
DS502120	12.00	26.00	75.00	12.00
DS502121	12.00	26.00	110.00	12.00

Applicable Working Material

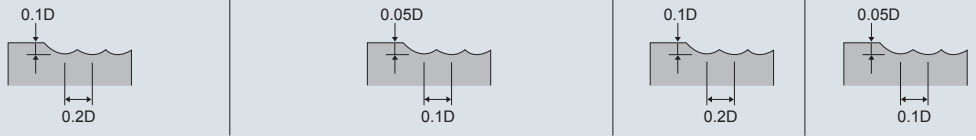
○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
DS502	○	○	○	○	○	◎	◎	◎											○		

DS502 Series

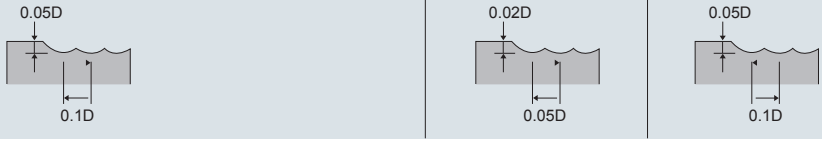
Feed Rate	General Speed Cutting											
Work Material	Carbon Steels, Cast Iron		Alloy Steels Prehardened Steels		Hardened Steels				Stainless Steels		Nickel Alloy Titanium Alloys	
Hardness	150~250HB		25~35HRc		35~45HRc		45~55HRc		SUS304, 316		-	
Cutting Diameter(metric)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2	19,100	770	12,800	370	10,200	270	8,900	190	8,900	210	6,400	120
4	10,800	1,100	7,200	550	5,700	400	5,000	280	5,000	310	3,600	180
6	7,700	1,300	5,200	660	4,100	480	3,600	330	3,600	380	2,600	210
8	6,000	1,400	4,000	700	3,200	510	2,800	360	2,800	400	2,000	230
10	4,800	1,400	3,200	700	2,600	520	2,300	370	2,300	410	1,600	230
12	4,000	1,400	2,700	710	2,200	530	1,900	370	1,900	410	1,400	240

RPM = rev. / min.
FEED = mm / min.



Feed Rate	General Speed Cutting									
Work Material	Carbon Steels, Cast Iron		Alloy Steels Prehardened Steels		Hardened Steels				Stainless Steels	
Hardness	150~250HB		25~35HRc		35~45HRc		45~55HRc		SUS304, 316	
Cutting Diameter(metric)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2	51,000	2,100	29,800	1,300	35,700	960	23,700	640	35,700	960
4	2,550	2,700	19,900	1,700	17,900	1,300	11,900	830	17,900	1,300
6	17,000	3,000	13,300	1,900	11,900	1,400	7,900	920	11,900	1,400
8	12,800	3,100	10,000	2,000	9,000	1,500	6,000	960	9,000	1,500
10	10,200	3,100	8,000	2,000	7,200	1,500	4,800	960	7,200	1,500
12	8,500	3,100	6,700	2,000	6,000	1,500	4,000	960	6,000	1,500

RPM = rev. / min.
FEED = mm / min.

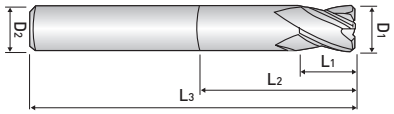


ZAMUS SUS MATE

SM503, XE5xx,XCE5xx

SM503 ULTRA FINE | MG FINE GRAIN | Slotting | Side milling | Variable index

SQUARE / 3, 4 & 5 FLUTES / STUB &REGULAR/ VARIABLE HELIX / AlTiN & TiAlN+SH COATING



TOLERANCE (metric)
SM503, XCE503, XCE504 Series
D_1 = +0 / -0.02
D_2 = h6

TOLERANCE (metric)
XE504, XE514, XE524 Series
D_1 = +0 / -0.02 (D1≤12)
D_1 = +0 / -0.03 (D1>12)
D_2 = h6

TOLERANCE (metric)
XE505, XE515 Series
D_1 = +0 / -0.04 (D1≤8)
D_1 = +0 / -0.05 (D1>8)
D_2 = h6

HARDNESS (HRc)
for STAINLESS

EDP NO.							Cutting Diameter (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
3 Flute		4 Flute			5 Flute						
TiAlN-SH		AlTiN-H		TiAlN-SH	TiAlN-SH						
Variable Helix	Helix 48°	Helix 38°	Variable Helix	Variable Helix	Helix 45°	Variable Helix					
SM503	XCE503	XE524	XE504	XCE504	XE515	XE505	D1	L1	L2	L3	D2
-	-	-	XE514	-	-	-					
-	-	-	XE514010	-	-	-	1.00	2.00	10.00	45.00	4.00
SM503010	-	-	-	-	-	-	1.00	2.00	-	45.00	4.00
-	-	-	XE504010	-	-	-	1.00	2.50	-	45.00	4.00
SM503015	-	-	-	-	-	-	1.50	3.00	-	45.00	4.00
-	-	-	XE514020	-	-	-	2.00	3.00	12.00	45.00	4.00
SM503020	-	-	-	-	-	-	2.00	4.00	-	50.00	6.00
-	-	-	XE504020	-	-	-	2.00	5.00	-	45.00	4.00
-	XCE503020	-	-	-	-	-	2.00	6.00	-	50.00	6.00
-	XCE503025	-	-	-	-	-	2.50	8.00	-	50.00	6.00
-	-	-	XE514030	-	-	-	3.00	4.00	14.00	50.00	6.00
SM503030	-	-	-	-	-	-	3.00	6.00	-	50.00	6.00
-	-	-	XE504030	-	-	-	3.00	8.00	-	50.00	6.00
-	XCE503030	-	-	-	-	-	3.00	10.00	-	50.00	6.00
-	XCE503035	-	-	-	-	-	3.50	10.00	-	50.00	6.00
-	-	-	XE514040	-	-	-	4.00	5.00	16.00	50.00	6.00
SM503040	-	-	-	-	-	-	4.00	8.00	-	50.00	6.00
-	-	-	XE504040	-	-	-	4.00	11.00	-	50.00	6.00
-	XCE503040	-	-	-	-	-	4.00	12.00	-	50.00	6.00
-	XCE503045	-	-	-	-	-	4.50	14.00	-	50.00	6.00
-	-	-	XE514050	-	-	-	5.00	6.00	18.00	50.00	6.00
SM503050	-	-	-	-	-	-	5.00	10.00	-	50.00	6.00
-	-	-	XE504050	-	-	-	5.00	13.00	-	50.00	6.00
-	XCE503050	-	-	-	-	-	5.00	15.00	-	50.00	6.00
-	XCE503055	-	-	-	-	-	5.50	15.00	-	50.00	6.00
-	-	-	XE514060	-	-	-	6.00	7.00	20.00	50.00	6.00
-	-	XE524060	-	-	-	-	6.00	7.00	33.00	70.00	6.00
-	-	-	XE504060	-	-	-	6.00	13.00	-	50.00	6.00
-	-	-	-	-	-	XE505060	6.00	13.00	-	57.00	6.00
SM503060	-	-	-	-	-	-	6.00	13.00	-	60.00	6.00
-	XCE503060	-	-	XCE504060	-	-	6.00	15.00	-	50.00	6.00
-	-	-	-	-	XE515060	-	6.00	25.00	-	75.00	6.00
-	-	-	XE504070	-	-	-	7.00	16.00	-	60.00	8.00
-	-	-	XE514080	-	-	-	8.00	9.00	26.00	60.00	8.00
-	-	XE524080	-	-	-	-	8.00	9.00	43.00	80.00	8.00

Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
All	○	○	○	○	○	◎	◎	◎											○		

ZAMUS SUS MATE

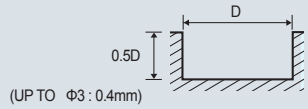
SM503, XE5xx,XCE5xx

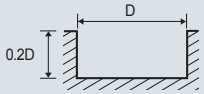
EDP NO.							Cutting Diameter (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
3 Flute		4 Flute			5 Flute						
TiAlN-SH		AlTiN-H		TiAlN-SH	TiAlN-SH						
Variable Helix	Helix 48°	Helix 38°	Variable Helix	Variable Helix	Helix 45°	Variable Helix					
SM503	XCE503	XE524	XE504	XCE504	XE515	XE505	D1	L1	L2	L3	D2
-	-	-	XE514	-	-	-					
-	-	-	XE504080	-	-	-	8.00	19.00	-	60.00	8.00
-	-	-	-	-	-	XE505080	8.00	19.00	-	63.00	8.00
SM503080	-	-	-	-	-	-	8.00	19.00	-	70.00	8.00
-	XCE503080	-	-	XCE504080	-	-	8.00	20.00	-	60.00	8.00
-	-	-	-	-	XE515080	-	8.00	30.00	-	75.00	8.00
-	-	-	XE504090	-	-	-	9.00	19.00	-	70.00	10.00
-	-	-	XE514100	-	-	-	10.00	11.00	31.00	70.00	10.00
-	-	XE524100	-	-	-	-	10.00	11.00	43.00	84.00	10.00
-	-	-	XE504100	-	-	-	10.00	22.00	-	70.00	10.00
-	-	-	-	-	-	XE505100	10.00	22.00	-	72.00	10.00
SM503100	-	-	-	-	-	-	10.00	22.00	-	80.00	10.00
-	XCE503100	-	-	XCE504100	-	-	10.00	25.00	-	70.00	10.00
-	-	-	-	-	XE515100	-	10.00	45.00	-	100.00	10.00
-	-	-	XE504110	-	-	-	11.00	22.00	-	75.00	12.00
-	-	-	XE514120	-	-	-	12.00	13.00	37.00	75.00	12.00
-	-	XE524120	-	-	-	-	12.00	13.00	51.00	97.00	12.00
-	-	-	XE504120	-	-	-	12.00	26.00	-	75.00	12.00
-	-	-	-	-	-	XE505120	12.00	26.00	-	83.00	12.00
SM503120	-	-	-	-	-	-	12.00	26.00	-	90.00	12.00
-	XCE503120	-	-	XCE504120	-	-	12.00	30.00	-	75.00	12.00
-	-	-	-	-	XE515120	-	12.00	75.00	-	150.00	12.00
-	-	-	XE504130	-	-	-	13.00	26.00	-	80.00	12.00
-	-	-	XE504140	-	-	-	14.00	26.00	-	80.00	14.00
-	-	-	-	-	-	XE505140	14.00	26.00	-	83.00	14.00
SM503140	-	-	-	-	-	-	14.00	26.00	-	90.00	12.00
-	-	-	XE514160	-	-	-	16.00	17.00	43.00	90.00	16.00
-	-	XE524160	-	-	-	-	16.00	17.00	66.00	115.00	16.00
SM503160	-	-	-	-	-	-	16.00	30.00	-	110.00	16.00
-	-	-	XE504160	-	-	-	16.00	32.00	-	90.00	16.00
-	-	-	-	-	-	XE505160	16.00	32.00	-	92.00	16.00
-	XCE503160	-	-	XCE504160	-	-	16.00	40.00	-	90.00	16.00
-	-	-	-	-	XE515160	-	16.00	75.00	-	150.00	16.00
-	-	-	-	-	-	XE505180	18.00	32.00	-	92.00	18.00
-	-	-	XE504180	-	-	-	18.00	32.00	-	100.00	18.00
SM503180	-	-	-	-	-	-	18.00	32.00	-	110.00	18.00
-	-	-	XE514200	-	-	-	20.00	21.00	53.00	100.00	20.00
SM503200	-	-	-	-	-	-	20.00	32.00	-	140.00	20.00
-	-	-	XE504200	-	-	-	20.00	38.00	-	100.00	20.00
-	-	-	-	-	-	XE505200	20.00	38.00	-	104.00	20.00
-	XCE503200	-	-	XCE504200	-	-	20.00	45.00	-	100.00	20.00
-	-	-	-	-	XE515200	-	20.00	75.00	-	150.00	20.00
-	-	-	-	-	-	XE505250	25.00	38.00	-	104.00	25.00
-	-	-	XE504250	-	-	-	25.00	45.00	-	120.00	25.00
-	XCE503250	-	-	XCE504250	-	-	25.00	50.00	-	120.00	25.00

SM503 Series

End Cutting	Slotting															
Work Material	Carbon Steels, Alloy Steels, Tool Steels						Cast Iron		Stainless Steels		Copper Alloys		Titanium Alloys		Inconel	
Hardness	≤ 20 HRc		20~30HRc		30~45HRc		-		-		-		-		-	
Strength	1000N / mm²		800~1000N / mm²		1500~1500N / mm²		-		-		-		-		-	
Cutting Diameter (metric)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2	10,080	950	7,750	740	5,550	395	6,700	520	5,550	320	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
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	655	2,000	630	1,650	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

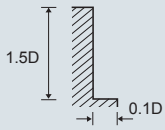
RPM = rev. / min.
FEED = mm / min.

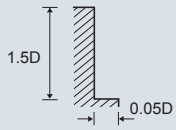




End Cutting	Side Millin															
Work Material	Carbon Steels, Alloy Steels, Tool Steels						Cast Iron		Stainless Steels		Copper Alloys		Titanium Alloys		Inconel	
Hardness	≤ 20 HRc		20~30HRc		30~45HRc		-		-		-		-		-	
Strength	1000N / mm²		800~1000N / mm²		1500~1500N / mm²		-		-		-		-		-	
Cutting Diameter (metric)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2	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
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	1,650	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

RPM = rev. / min.
FEED = mm / min.



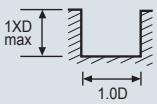


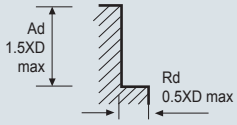
XE504, XE505, XE514, XE515, XE524, XCE503, XCE504 Series

Work Material	Low Carbon Steels				Medical Alloy Steels		Mold & Die Steels		Cast Iron Gray		Cast Iron Ductile	
Hardness	≤ 175 HB		≤ 275 HB		≤ 275 HB		≤ 275 HB		≤ 200 HB		≤ 300 HB	
Cutting Diameter(metric)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
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

Work Material	Cast Iron Malleable		Stainless 300 Series		Stainless 400 Series		Stainless PH Series		Titanium Alloys		High Temp Alloys	
Hardness	≤ 300 HB		≤ 275 HB		≤ 185 HB		≤ 232 HB		≤ 295 HB		≤ 300 HB	
Cutting Diameter(metric)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
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.

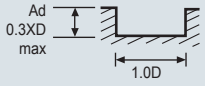


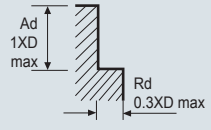


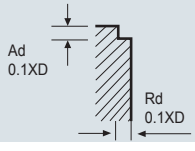
※Use a rigid and precise machines and holders.
※Use a suitable cutting oil.

End Cutting / Feed Speed	Slotting		Side Milling		High Speed Cutting	
Work Material	Hardened Steels		Hardened Steels		Hardened Steels	
Hardness	30 ~ 45 HRc		30 ~ 45 HRc		30 ~ 45 HRc	
Cutting Diameter(metric)	RPM	FEED	RPM	FEED	RPM	FEED
6	3,450	414	4,246	849	9,023	2,166
8	2,588	414	3,185	764	6,768	1,895
10	2,070	414	2,548	713	5,414	1,732
12	1,725	414	2,123	764	4,512	1,985
14	1,479	414	1,820	728	3,867	1,856
16	1,294	414	1,592	701	3,384	1,895
18	1,150	368	1,415	679	3,008	1,805
20	1,035	414	1,274	662	2,707	1,841
25	828	397	1,019	611	2,166	1,646

RPM = rev. / min.
FEED = mm / min.







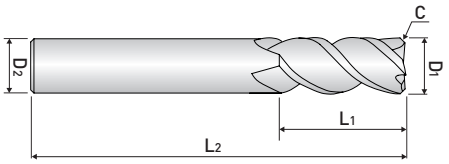
※Use a rigid and precise machines and holders.
※Use a suitable cutting oil.

ZAMUS SUS MATE

XCC5xx Series

FINE GRAIN | Slotting | Side milling | Ramping | Variable index

CHAMPER / 3 & 4 FLUTES / REGULAR / VARIABLE HELIX /
TiAlN+SH COATING



TOLERANCE (metric)

D_1 = +0 / -0.02
D_2 = h6

HARDNESS (HRc)

for STAINLESS

EDP NO.		Cutting Diameter (metric)	Chamfer (metric)	Cutting Length (metric)	Overall Length (metric)	Shank Diameter (metric)
3 Flute	4 Flute					
TiAlN-SH	TiAlN-SH					
Helix 48°	Variable Helix					
XCC503	XCC504	D1	C	L1	L2	D2
XCC503020	-	2.00	0.025	6.00	50.00	6.00
XCC503025	-	2.50	0.025	8.00	50.00	6.00
XCC503030	-	3.00	0.035	10.00	50.00	6.00
XCC503035	-	3.50	0.035	10.00	50.00	6.00
XCC503040	-	4.00	0.045	12.00	50.00	6.00
XCC503045	-	4.50	0.045	14.00	50.00	6.00
XCC503050	-	5.00	0.055	15.00	50.00	6.00
XCC503055	-	5.50	0.055	15.00	50.00	6.00
XCC503060	XCC504060	6.00	0.075	15.00	50.00	6.00
XCC503080	XCC504080	8.00	0.100	20.00	60.00	8.00
XCC503100	XCC504100	10.00	0.125	25.00	70.00	10.00
XCC503120	XCC504120	12.00	0.150	30.00	75.00	12.00
XCC503160	XCC504160	16.00	0.200	40.00	90.00	16.00
XCC503200	-	20.00	0.250	45.00	100.00	20.00
-	XCC504200	20.00	0.300	45.00	100.00	20.00
XCC503250	XCC504250	25.00	0.300	50.00	120.00	25.00

Applicable Working Material

○ : GOOD ◎ : BEST

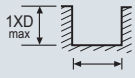
SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
All	◎	◎	◎	◎	○	◎	◎	◎				○	○						○		

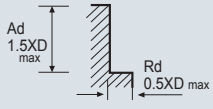
XCC503, XCC504 Series

Work Material	Low Carbon Steels				Medical Alloy Steels		Mold & Die Steels		Cast Iron Gray		Cast Iron Ductile	
Hardness	≤ 175 HB		≤ 275 HB		≤ 275 HB		≤ 275 HB		≤ 200 HB		≤ 300 HB	
Cutting Diameter(metric)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
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

Work Material	Cast Iron Malleable		Stainless 300 Series		Stainless 400 Series		Stainless PH Series		Titanium Alloys		High Temp Alloys	
Hardness	≤ 300 HB		≤ 275 HB		≤ 185 HB		≤ 232 HB		≤ 295 HB		≤ 300 HB	
Cutting Diameter(metric)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
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.

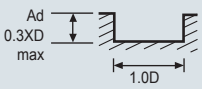


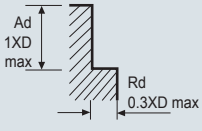


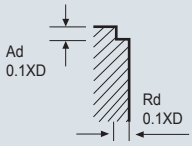
※Use a rigid and precise machines and holders.
※Use a suitable cutting oil.

End Cutting / Feed Speed	Slotting		Side Milling		High Speed Cutting	
Work Material	Hardened Steels		Hardened Steels		Hardened Steels	
Hardness	30 ~ 45 HRc		30 ~ 45 HRc		30 ~ 45 HRc	
Cutting Diameter(metric)	RPM	FEED	RPM	FEED	RPM	FEED
6	3,450	414	4,246	849	9,023	2,166
8	2,588	414	3,185	764	6,768	1,895
10	2,070	414	2,548	713	5,414	1,732
12	1,725	414	2,123	764	4,512	1,985
14	1,479	414	1,820	728	3,867	1,856
16	1,294	414	1,592	701	3,384	1,895
18	1,150	368	1,415	679	3,008	1,805
20	1,035	414	1,274	662	2,707	1,841
25	828	397	1,019	611	2,166	1,646

RPM = rev. / min.
FEED = mm / min.







※Use a rigid and precise machines and holders.
※Use a suitable cutting oil.

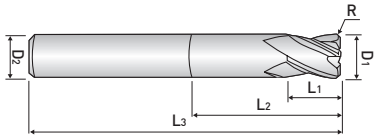
ZAMUS SUS MATE

XCR5xx, SM504, XR5xx

SM504

ULTRA FINE | FINE GRAIN | Slotting | Side milling | Ramping | Variable index

CORNER RADIUS / 3, 4 & 5 FLUTES / STUB &REGULAR /
VARIABLE HELIX / AlTiN & TiAlN+SH COATING



TOLERANCE (metric)
XCR503, XCR504 Series
D_1 = +0 / -0.02
D_2 = h6
R = ±0.02

TOLERANCE (metric)
XR505 Series
D_1 = +0 / -0.04 (D1≤8)
D_1 = +0 / -0.05 (D1>8)
D_2 = h6
R = ±0.01

TOLERANCE (metric)
XR504, XR514, XR524 Series
D_1 = +0 / -0.02 (D1≤12)
D_1 = +0 / -0.03 (D1>12)
D_2 = h6 R = ±0.02

HARDNESS (HRc)
for STAINLESS

EDP NO.						Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
3 Flute	4 Flute				5 Flute						
TiAlN-SH	TiAlN-SH		AlTiN-H		TiAlN-SH						
Helix 48°	Variable Helix		Helix 48°	Variable Helix	Variable Helix						
XCR503	XCR504	SM504	XR524	XR504	XR505	D1	R	L1	L2	L3	D2
-	-	-	-	XR514	-						
-	-	-	-	XR504020	-	2.00	0.10	5.00	-	45.00	4.00
-	-	-	-	XR5140201	-	2.00	0.10	5.00	-	45.00	4.00
-	-	-	-	XR5140202	-	2.00	0.20	5.00	-	45.00	4.00
-	-	SM504020	-	-	-	2.00	0.10	6.00	-	45.00	6.00
-	-	-	-	XR504030	-	3.00	0.10	8.00	-	50.00	6.00
-	-	-	-	XR5140302	-	3.00	0.20	8.00	-	50.00	6.00
-	-	-	-	XR5140303	-	3.00	0.30	8.00	-	50.00	6.00
-	-	-	-	XR5140305	-	3.00	0.50	8.00	-	50.00	6.00
-	-	SM504030	-	-	-	3.00	0.10	10.00	-	45.00	6.00
-	-	-	-	XR5140403	-	4.00	0.30	10.00	-	50.00	6.00
-	-	-	-	XR5140405	-	4.00	0.50	10.00	-	50.00	6.00
-	-	-	-	XR5140410	-	4.00	1.00	10.00	-	50.00	6.00
-	-	-	-	XR504040	-	4.00	0.20	11.00	-	50.00	6.00
-	-	SM504040	-	-	-	4.00	0.20	12.00	-	50.00	6.00
-	-	SM504050	-	XR504050	-	5.00	0.20	13.00	-	50.00	6.00
-	-	-	-	XR5140505	-	5.00	0.50	13.00	-	50.00	6.00
-	-	-	-	XR5140510	-	5.00	1.00	13.00	-	50.00	6.00
XCR5030502	-	-	-	-	-	5.00	0.20	15.00	-	50.00	6.00
-	-	-	-	XR5040602SP	-	6.00	0.20	13.00	25.40	50.00	6.00
-	-	SM504060	-	XR504060	-	6.00	0.20	13.00	-	50.00	6.00
-	-	-	-	XR5140605	-	6.00	0.50	13.00	-	50.00	6.00
-	-	-	-	XR5140610	-	6.00	1.00	13.00	-	50.00	6.00
-	-	-	-	XR5140615	-	6.00	1.50	13.00	-	50.00	6.00
-	-	-	-	-	XR50506050	6.00	0.50	13.00	-	57.00	6.00
-	-	-	XR5240605SP	-	-	6.00	0.50	13.00	30.00	80.00	6.00
XCR5030602	XCR5040602	-	-	-	-	6.00	0.20	15.00	-	50.00	6.00
XCR5030605	XCR5040605	-	-	-	-	6.00	0.50	15.00	-	50.00	6.00
XCR5030610	XCR5040610	-	-	-	-	6.00	1.00	15.00	-	50.00	6.00
-	-	SM504070	-	XR504070	-	7.00	0.20	16.00	-	60.00	8.00
-	-	SM504080	-	-	-	8.00	0.20	16.00	-	60.00	8.00
-	-	-	-	XR504080	-	8.00	0.20	19.00	-	60.00	8.00
-	-	-	-	XR5140805	-	8.00	0.50	19.00	-	60.00	8.00
-	-	-	-	XR5140810	-	8.00	1.00	19.00	-	60.00	8.00
-	-	-	-	XR5140815	-	8.00	1.50	19.00	-	60.00	8.00

Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
All	○	○	○	○	○	◎	◎	◎											○		

ZAMUS SUS MATE

XCR5xx, SM504, XR5xx

EDP NO.						Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
3 Flute	4 Flute				5 Flute						
TiAlN-SH	TiAlN-SH		AlTiN-H		TiAlN-SH						
Helix 48°	Variable Helix		Helix 48°	Variable Helix	Variable Helix						
XCR503	XCR504	SM504	XR524	XR504	XR505	D1	R	L1	L2	L3	D2
-	-	-	-	XR514	-						
-	-	-	-	XR5140820	-	8.00	2.00	19.00	-	60.00	8.00
-	-	-	-	-	XR50508050	8.00	0.50	19.00	-	63.00	8.00
XCR5030805	XCR5040805	-	-	-	-	8.00	0.50	20.00	-	60.00	8.00
XCR5030810	XCR5040810	-	-	-	-	8.00	1.00	20.00	-	60.00	8.00
-	-	SM504090	-	XR504090	-	9.00	0.20	19.00	-	70.00	10.00
-	-	SM504100S	-	-	-	10.00	0.30	21.00	-	74.00	10.00
-	-	-	-	XR5041003SP	-	10.00	0.30	22.00	38.10	70.00	10.00
-	-	SM504100	-	XR504100	-	10.00	0.30	22.00	-	70.00	10.00
-	-	-	-	XR5141005	-	10.00	0.50	22.00	-	70.00	10.00
-	-	-	-	XR5141010	-	10.00	1.00	22.00	-	70.00	10.00
-	-	-	-	XR5141015	-	10.00	1.50	22.00	-	70.00	10.00
-	-	-	-	XR5141020	-	10.00	2.00	22.00	-	70.00	10.00
-	-	-	-	-	XR50510050	10.00	0.50	22.00	-	72.00	10.00
-	-	-	XR5241005SP1	-	-	10.00	0.50	22.00	38.00	82.55	10.00
XCR5031005	XCR5041005	-	-	-	-	10.00	0.50	25.00	-	70.00	10.00
XCR5031010	XCR5041010	-	-	-	-	10.00	1.00	25.00	-	70.00	10.00
-	-	-	-	XR504110	-	11.00	0.30	22.00	-	75.00	12.00
-	-	-	-	XR5041203SP	-	12.00	0.30	26.00	38.10	75.00	12.00
-	-	SM504120	-	XR504120	-	12.00	0.30	26.00	-	75.00	12.00
-	-	-	-	XR5141205	-	12.00	0.50	26.00	-	75.00	12.00
-	-	-	-	XR5141210	-	12.00	1.00	26.00	-	75.00	12.00
-	-	-	-	XR5141215	-	12.00	1.50	26.00	-	75.00	12.00
-	-	-	-	XR5141220	-	12.00	2.00	26.00	-	75.00	12.00
-	-	-	-	XR5141230	-	12.00	3.00	26.00	-	75.00	12.00
-	-	-	-	-	XR50512075	12.00	0.75	26.00	-	83.00	12.00
XCR5031205	XCR5041205	-	-	-	-	12.00	0.50	30.00	-	75.00	12.00
XCR5031210	XCR5041210	-	-	-	-	12.00	1.00	30.00	-	75.00	12.00
-	-	-	-	XR504130	-	13.00	0.30	26.00	-	80.00	12.00
-	-	SM504140	-	XR504140	-	14.00	0.30	26.00	-	80.00	14.00
-	-	-	-	-	XR50514075	14.00	0.75	26.00	-	83.00	14.00
-	-	-	-	-	XR50514075S16	14.00	0.75	26.00	-	92.00	16.00
-	-	SM504160	-	XR504160	-	16.00	0.30	32.00	-	90.00	16.00
-	-	-	-	XR5141615	-	16.00	1.50	32.00	-	90.00	16.00
-	-	-	-	XR5141620	-	16.00	2.00	32.00	-	90.00	16.00
-	-	-	-	XR5141630	-	16.00	3.00	32.00	-	90.00	16.00
-	-	-	-	-	XR50516100	16.00	1.00	32.00	-	92.00	16.00
XCR5031605	XCR5041605	-	-	-	-	16.00	0.50	40.00	-	90.00	16.00
XCR5031610	XCR5041610	-	-	-	-	16.00	1.00	40.00	-	90.00	16.00
-	-	-	-	-	XR50518100	18.00	1.00	32.00	-	92.00	18.00
-	-	SM504180	-	XR504180	-	18.00	0.30	32.00	-	100.00	18.00
-	-	-	-	-	XR50518100S20	18.00	1.00	32.00	-	104.00	20.00
-	-	SM504200	-	XR504200	-	20.00	0.30	38.00	-	100.00	20.00
-	-	-	-	XR5142030	-	20.00	3.00	38.00	-	100.00	20.00
-	-	-	-	XR5142040	-	20.00	4.00	38.00	-	100.00	20.00
-	-	-	-	XR5142050	-	20.00	5.00	38.00	-	100.00	20.00

ZAMUS SUS MATE

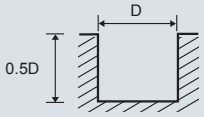
XCR5xx, SM504, XR5xx

EDP NO.						Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
3 Flute	4 Flute				5 Flute						
TiAlN-SH	TiAlN-SH		AlTiN-H		TiAlN-SH						
Helix 48°	Variable Helix		Helix 48°	Variable Helix	Variable Helix						
XCR503 -	XCR504 -	SM504 -	XR524 -	XR504 XR514	XR505 -	D1	R	L1	L2	L3	D2
-	-	-	-	-	XR50520100	20.00	1.00	38.00	-	104.00	20.00
XCR5032005	XCR5042005	-	-	-	-	20.00	0.50	45.00	-	100.00	20.00
XCR5032010	XCR5042010	-	-	-	-	20.00	1.00	45.00	-	100.00	20.00
-	-	-	-	-	XR50525100	25.00	1.00	38.00	-	104.00	25.00
-	-	-	-	XR504250	-	25.00	0.30	45.00	-	120.00	25.00
XCR5032505	XCR5042505	-	-	-	-	25.00	0.50	50.00	-	120.00	25.00
XCR5032510	XCR5042510	-	-	-	-	25.00	1.00	50.00	-	120.00	25.00

SM504 Series

End Cutting	Slotting					
Work Material	Alloy Steels, Cast Iron		Stainless 300 Series, Titanium Alloys		Stainless 400 Series	
Hardness	≤ 230 HB		-		-	
Cutting Diameter(metric)	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
14	2,890	670	1,400	280	2,000	405
16	2,500	630	1,250	265	1,750	370
18	2,250	630	1,100	260	1,550	365
20	2,000	620	1,000	260	1,400	365

RPM = rev. / min.
FEED = mm / min.

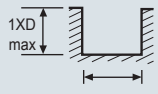


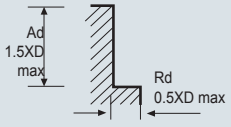
XR504, XR505, XR514, XR524, XCR503, XCR504 Series

Work Material	Low Carbon Steels				Medical Alloy Steels		Mold & Die Steels		Cast Iron Gray		Cast Iron Ductile	
Hardness	≤ 175 HB		≤ 275 HB		≤ 275 HB		≤ 275 HB		≤ 200 HB		≤ 300 HB	
Cutting Diameter(metric)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
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

Work Material	Cast Iron Malleable		Stainless 300 Series		Stainless 400 Series		Stainless PH Series		Titanium Alloys		High Temp Alloys	
Hardness	≤ 300 HB		≤ 275 HB		≤ 185 HB		≤ 232 HB		≤ 295 HB		≤ 300 HB	
Cutting Diameter(metric)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
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.

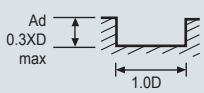


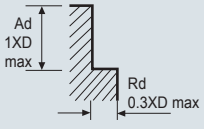


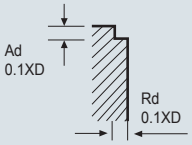
※Use a rigid and precise machines and holders.
※Use a suitable cutting oil.

End Cutting / Feed Speed	Slotting		Side Milling		High Speed Cutting	
Work Material	Hardened Steels		Hardened Steels		Hardened Steels	
Hardness	30 ~ 45 HRc		30 ~ 45 HRc		30 ~ 45 HRc	
Cutting Diameter(metric)	RPM	FEED	RPM	FEED	RPM	FEED
6	3,450	414	4,246	849	9,023	2,166
8	2,588	414	3,185	764	6,768	1,895
10	2,070	414	2,548	713	5,414	1,732
12	1,725	414	2,123	764	4,512	1,985
14	1,479	414	1,820	728	3,867	1,856
16	1,294	414	1,592	701	3,384	1,895
18	1,150	368	1,415	679	3,008	1,805
20	1,035	414	1,274	662	2,707	1,841
25	828	397	1,019	611	2,166	1,646

RPM = rev. / min.
FEED = mm / min.







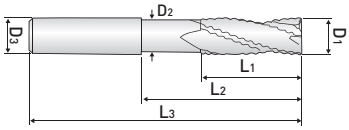
※Use a rigid and precise machines and holders.
※Use a suitable cutting oil.

ZAMUS SUS MATE

ZF62xx Series

ROUGHER / 4, 5 & 6 FLUTES / STUB & REGULAR / HIGH HELIX / TiAlN+SH COATING

ULTRA FINE | Conventional Pitch | DIN 6535HA | DIN6535HB



TOLERANCE (metric)

D_1 = +0 / -0.048 (D1≤6)
D_1 = +0 / -0.058 (D1=8 to 10)
D_1 = +0 / -0.070 (D1=12 to 16)
D_1 = +0 / -0.084 (D1≥20)
D_2 = h6

HARDNESS (HRc)

for STAINLESS

EDP NO.						Cutting Diameter (metric)	Cutting Length (metric)	Neck Diameter (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
4 Flute		5 Flute		6 Flute							
TiAlN-SH		TiAlN-SH		TiAlN-SH							
Helix 45°		Helix 45°		Helix 45°							
ZF624	ZF624F	ZF625	ZF625F	ZF626	ZF626F	D1	L1	D2	L2	L3	D3
ZF624060	ZF624060F	-	-	-	-	6.00	7.00	-	-	54.00	6.00
ZF624061	ZF624061F	-	-	-	-	6.00	16.00	-	-	57.00	6.00
ZF624062	ZF624062F	-	-	-	-	6.00	16.00	5.50	20.00	57.00	6.00
ZF624080	ZF624080F	-	-	-	-	8.00	9.00	-	-	58.00	8.00
ZF624081	ZF624081F	-	-	-	-	8.00	16.00	-	-	63.00	8.00
ZF624082	ZF624082F	-	-	-	-	8.00	16.00	7.50	26.00	63.00	8.00
ZF624100	ZF624100F	-	-	-	-	10.00	14.00	-	-	66.00	10.00
ZF624101	ZF624101F	-	-	-	-	10.00	22.00	-	-	72.00	10.00
ZF624102	ZF624102F	-	-	-	-	10.00	22.00	9.50	31.00	72.00	10.00
ZF624120	ZF624120F	-	-	-	-	12.00	16.00	-	-	73.00	12.00
ZF624121	ZF624121F	-	-	-	-	12.00	26.00	-	-	83.00	12.00
ZF624122	ZF624122F	-	-	-	-	12.00	26.00	11.50	37.00	83.00	12.00
-	-	ZF625160	ZF625160F	-	-	16.00	22.00	-	-	82.00	16.00
-	-	ZF625161	ZF625161F	-	-	16.00	32.00	-	-	92.00	16.00
-	-	ZF625162	ZF625162F	-	-	16.00	32.00	15.50	51.00	100.00	16.00
-	-	-	-	ZF626200	ZF626200F	20.00	26.00	-	-	92.00	20.00
-	-	-	-	ZF626201	ZF626201F	20.00	38.00	-	-	104.00	20.00
-	-	-	-	ZF626202	ZF626202F	20.00	38.00	19.20	59.00	110.00	20.00

Applicable Working Material

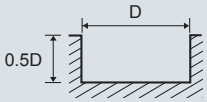
○ : GOOD ◎ : BEST

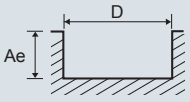
SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
All	○	○	○	○	○	◎	◎	◎											○		

ZF62xx Series

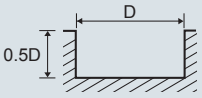
End Cutting	Slotting							
Work Material	Non-Alloyed Steels Alloy Steels, Cast Iron		Alloy Steels, Heat Resistant Steels		Stainless Series		Inconel	
Hardness	≤ 30 HRc		30 ~ 45 HRc		-		-	
Strength	~ 1000N / mm²		1000 ~ 1500N / mm²		-		-	
Cutting Diameter(metric)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
6	16,380	2,680	13,020	970	8,820	670	3,000	285
8	12,180	2,680	9,660	970	6,615	670	2,250	270
10	9,660	2,680	7,980	970	5,355	660	1,625	285
12	8,400	2,770	6,300	925	4,410	660	1,500	285
16	6,300	2,770	5,040	880	3,465	590	1,000	165
20	5,040	2,495	3,780	650	2,520	415	825	150

RPM = rev. / min.
FEED = mm / min.



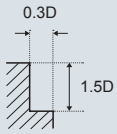


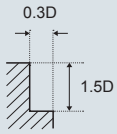
Ae : Φ4 ~ Φ10 = 0.25 x D
Φ12 ~ Φ16 = 0.15 x D
Φ18 ~ Φ20 = 0.10 x D

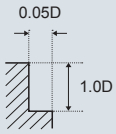


End Cutting	Side Milling							
Work Material	Non-Alloyed Steels Alloy Steels, Cast Iron		Alloy Steels, Heat Resistant Steels		Stainless Series		Inconel	
Hardness	≤ 30 HRc		30 ~ 45 HRc		-		-	
Strength	~ 1000N / mm²		1000 ~ 1500N / mm²		-		-	
Cutting Diameter(metric)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
6	16,380	2,680	13,020	970	8,820	670	3,000	285
8	12,180	2,680	9,660	970	6,615	670	2,250	270
10	9,660	2,680	7,980	970	5,355	660	1,625	285
12	8,400	2,770	6,300	925	4,410	660	1,500	285
16	6,300	2,770	5,040	880	3,465	590	1,000	165
20	5,040	2,495	3,780	650	2,520	415	825	150

RPM = rev. / min.
FEED = mm / min.







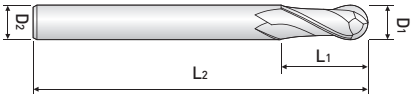
ZAMUS THUNDER

DB312, TXB2xx,& TXB3xx Series

BALL / 2 FLUTES / REGULAR, LONG / TiAlN COATING

DB312

MG FINE GRAIN | Plunge | Profile | Slotting | Side milling



TOLERANCE (metric)

D_1 = +0 / -0.02 (DB312)
D_1 = +0 / -0.04
D_2 = h6

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO.						Cutting Diameter (metric)	Cutting Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute				4 Flute					
TiAlN				TiAlN					
Helix 30°				Helix 30°					
DB312 -	TXB202 -	TXB222 TXB232	TXB302 -	TXB204 -	TXB304 -	D1	L1	L2	D2
-	-	-	TXB302010	-	TXB304010	1.00	2.00	50.00	4.00
DB312010	-	-	-	-	-	1.00	2.50	50.00	6.00
DB312010S4	-	-	-	-	-	1.00	2.50	50.00	4.00
-	TXB202010	-	-	-	-	1.00	3.00	39.00	3.00
DB312012	-	-	-	-	-	1.20	3.00	50.00	6.00
-	-	-	TXB302015	-	TXB304015	1.50	3.00	50.00	4.00
DB312015	-	-	-	-	-	1.50	4.00	50.00	6.00
-	TXB202015	-	-	-	-	1.50	5.00	39.00	3.00
-	-	-	TXB302020	-	TXB304020	2.00	4.00	50.00	4.00
DB312020	-	-	-	-	-	2.00	5.00	50.00	6.00
DB312020S4	-	-	-	-	-	2.00	5.00	50.00	4.00
-	TXB202020	-	-	TXB204020	-	2.00	7.00	39.00	3.00
-	-	-	TXB302025	-	-	2.50	6.00	50.00	4.00
DB312025	-	-	-	-	-	2.50	6.00	60.00	6.00
-	TXB202025	-	-	-	-	2.50	8.00	39.00	3.00
-	-	TXB232030	-	-	-	3.00	5.00	75.00	3.00
-	-	-	TXB302030	-	TXB304030	3.00	6.00	50.00	4.00
DB312030	-	-	-	-	-	3.00	8.00	60.00	6.00
DB312030S3	-	-	-	-	-	3.00	8.00	60.00	3.00
DB312030S4	-	-	-	-	-	3.00	8.00	60.00	4.00
-	TXB202030	-	-	TXB204030	-	3.00	10.00	39.00	3.00
-	-	TXB222030	-	-	-	3.00	20.00	60.00	3.00
DB312035	-	-	-	-	-	3.50	8.00	70.00	6.00
-	-	-	TXB302040	-	TXB304040	4.00	8.00	50.00	4.00
DB312040	-	-	-	-	-	4.00	8.00	70.00	6.00
DB312040S4	-	-	-	-	-	4.00	8.00	70.00	4.00
-	-	TXB232040	-	-	-	4.00	8.00	75.00	4.00
-	TXB202040	-	-	TXB204040	-	4.00	14.00	51.00	4.00
-	-	TXB222040	-	-	-	4.00	20.00	60.00	4.00
DB312045	-	-	-	-	-	4.50	8.00	70.00	6.00
-	-	TXB232050	-	-	-	5.00	9.00	75.00	5.00
-	-	-	TXB302050	-	TXB304050	5.00	10.00	50.00	6.00
DB312050	-	-	-	-	-	5.00	10.00	80.00	6.00

Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
DB312	◎	◎	◎	◎	◎									◎	○						
All	◎	◎	◎	◎	◎	○								◎	○						

ZAMUS THUNDER

DB312, TXB2xx,& TXB3xx Series

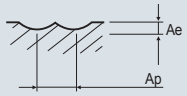
EDP NO.						Cutting Diameter (metric)	Cutting Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute				4 Flute					
TiAlN				TiAlN					
Helix 30°				Helix 30°					
DB312	TXB202	TXB222	TXB302	TXB204	TXB304	D1	L1	L2	D2
-	-	TXB232	-	-	-				
-	TXB202050	-	-	TXB204050	-	5.00	16.00	51.00	5.00
-	-	TXB222050	-	-	-	5.00	25.00	75.00	5.00
DB312055	-	-	-	-	-	5.50	10.00	80.00	6.00
-	-	TXB232060	-	-	-	6.00	10.00	100.00	6.00
-	-	-	TXB302060	-	TXB304060	6.00	12.00	50.00	6.00
DB312060S	-	-	-	-	-	6.00	12.00	60.00	6.00
DB312060	-	-	-	-	-	6.00	12.00	90.00	6.00
-	TXB202060	-	-	TXB204060	-	6.00	19.00	64.00	6.00
-	-	TXB222060	-	-	-	6.00	30.00	75.00	6.00
DB312065	-	-	-	-	-	6.50	12.00	90.00	8.00
DB312070	-	-	-	-	-	7.00	14.00	90.00	8.00
-	-	TXB232080	-	-	-	8.00	12.00	100.00	8.00
DB312080S	-	-	TXB302080	-	TXB304080	8.00	14.00	60.00	8.00
DB312080	-	-	-	-	-	8.00	14.00	100.00	8.00
-	TXB202080	-	-	TXB204080	-	8.00	21.00	64.00	8.00
-	-	TXB222080	-	-	-	8.00	30.00	100.00	8.00
DB312090	-	-	-	-	-	9.00	18.00	100.00	10.00
-	-	TXB232100	-	-	-	10.00	14.00	100.00	10.00
DB312100S	-	-	-	-	-	10.00	18.00	60.00	10.00
-	-	-	TXB302100	-	TXB304100	10.00	18.00	75.00	10.00
DB312100	-	-	-	-	-	10.00	18.00	100.00	10.00
-	TXB202100	-	-	TXB204100	-	10.00	25.00	70.00	10.00
-	-	TXB222100	-	-	-	10.00	40.00	100.00	10.00
-	-	TXB232120	-	-	-	12.00	16.00	100.00	12.00
-	-	-	TXB302120	-	TXB304120	12.00	22.00	75.00	12.00
DB312120	-	-	-	-	-	12.00	22.00	110.00	12.00
-	TXB202120	-	-	TXB204120	-	12.00	25.00	76.00	12.00
-	-	TXB222120	-	-	-	12.00	45.00	100.00	12.00
-	-	TXB232140	-	-	-	14.00	18.00	100.00	14.00
DB312140	-	-	-	-	-	14.00	26.00	110.00	14.00
-	-	-	TXB302140	-	TXB304140	14.00	32.00	75.00	14.00
-	-	TXB222140	-	-	-	14.00	45.00	100.00	14.00
-	-	TXB232160	-	-	-	16.00	22.00	150.00	16.00
DB312160	-	-	-	-	-	16.00	30.00	140.00	16.00
-	TXB202160	-	-	TXB204160	-	16.00	32.00	89.00	16.00
-	-	-	TXB302160	-	TXB304160	16.00	32.00	100.00	16.00
-	-	TXB222160	-	-	-	16.00	45.00	100.00	16.00
-	-	-	TXB302180	-	TXB304180	18.00	32.00	100.00	18.00
DB312180	-	-	-	-	-	18.00	34.00	140.00	18.00
-	-	TXB222180	-	-	-	18.00	45.00	100.00	18.00
-	-	TXB232200	-	-	-	20.00	26.00	150.00	20.00
-	TXB202200	-	TXB302200	TXB204200	TXB304200	20.00	38.00	100.00	20.00
DB312200	-	-	-	-	-	20.00	38.00	160.00	20.00
-	-	TXB222200	-	-	-	20.00	45.00	100.00	20.00

DB312 Series

Feed Rate	General Speed Cutting					
Work Material	Non-Alloyed Steels Alloy Steels, Cast Iron		Alloy Steels, Heat Resistant Steels		Stainless Series	
Hardness	≤ 30 HRc		30 ~ 40 HRc		40 ~ 55 HRc	
Strength	~ 1000N / mm²		1000 ~ 1250N / mm²		1500N / mm²	
Cutting Diameter(metric)	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.

Ae : D1~D6=0.2mm
D8~D20=0.3mm
Ap : 0.2XD

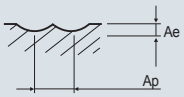


Ae : D1~D6=0.2mm
D8~D20=0.3mm
Ap : 0.1XD

Feed Rate	High Speed Cutting			
Work Material	Non-Alloyed Steels, Alloy Steels, Cast Iron		Alloy Steels, Heat Resistant Steels	
Hardness	≤450 HRc		30 ~ 40 HRc	
Strength	~ 1500N / mm²		1500 ~ 2000N / mm²	
Cutting Diameter(metric)	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.

Ae : D1~D6=0.2mm
D8~D20=0.3mm
Ap : 0.2XD

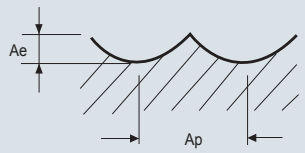


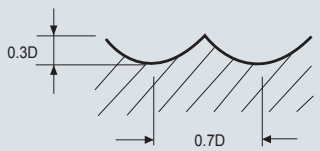
TXB202, TXB222, TXB232 & TXB302 Series

Work Material	Carbon Steels, Alloy Steels, Tool Steels				Hardened Steels		Cast Iron		Aluminum Alloy	
Hardness	≤ 30 HRc		30 ~ 45 HRc		45 ~ 50 HRc		-		-	
Strength	~ 1000N / mm²		1000 ~ 1500N / mm²		1500N / mm²		-		-	
Cutting Diameter(metric)	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.

Ae : D1~D6=0.2mm
D8~D20=0.3mm
Ap : 0.2D





TXB204, TXB304 Series

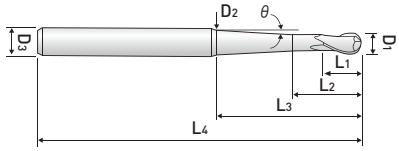
Work Material	Alloy Steels, Tool Steels				Hardened Steels		Cast Iron		Aluminum Alloy	
Hardness	≤ 30 HRc		30 ~ 45 HRc		45 ~ 50 HRc		-		-	
Strength	~ 1000N / mm²		1000 ~ 1500N / mm²		1500N / mm²		-		-	
Cutting Diameter(metric)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2	15,400	1,000	11,400	600	5,000	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

ZAMUS THUNDER

DB342 Series

TAPER NECK BALL / 2 FLUTES / REGULAR / TiAlN COATING

FINE GRAIN | Plunge | Profile



TOLERANCE (metric)

D_1 = +0 / -0.02
D_2 = h6

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO. 2 Flute TiAlN Helix 30°	Cutting Diameter (metric)	Cutting Length (metric)	Neck Diameter (metric)	Neck Length (metric)	Taper Degree°	Taper Length (metric)	Overall Length (metric)	Shank Diameter (metric)
DB342	D1	L1	D2	L2	θ	L3	L4	D3
DB34201015	1.00	2.00	2.00	4.00	1°30′	23.00	60.00	6.00
DB34201050	1.00	2.00	4.30	4.00	5°	23.00	60.00	6.00
DB34201030	1.00	2.00	5.00	4.00	3°	42.00	80.00	6.00
DB34202015	2.00	4.00	2.90	6.00	1°30′	23.00	60.00	6.00
DB34202050	2.00	4.00	5.00	6.00	5°	23.00	60.00	6.00
DB34202030	2.00	4.00	5.70	6.00	3°	41.00	80.00	6.00
DB34203030	3.00	6.00	5.60	8.00	3°	32.00	70.00	6.00
DB34203015	3.00	6.00	5.30	8.00	1°30′	52.00	90.00	6.00
DB34204030	4.00	8.00	6.00	10.00	3°	28.00	70.00	6.00
DB34204015	4.00	8.00	6.00	10.00	1°30′	49.00	90.00	6.00
DB34205030	5.00	10.00	8.00	12.00	3°	41.00	90.00	8.00
DB34205015	5.00	10.00	7.60	12.00	1°30′	61.00	110.00	8.00
DB34206030	6.00	12.00	8.00	15.00	3°	34.00	90.00	8.00
DB34206015	6.00	12.00	8.00	15.00	1°30′	53.00	110.00	8.00
DB34208030	8.00	14.00	10.00	17.00	3°	36.00	100.00	10.00
DB34208015	8.00	14.00	10.00	17.00	1°30′	55.00	120.00	10.00
DB34210030	10.00	18.00	12.00	21.00	3°	40.00	110.00	12.00
DB34210015	10.00	18.00	12.00	21.00	1°30′	59.00	130.00	12.00
DB34212030	12.00	22.00	16.00	25.00	3°	63.00	140.00	16.00
DB34212015	12.00	22.00	15.00	25.00	1°30′	83.00	160.00	16.00

Applicable Working Material

○ : GOOD ◎ : BEST

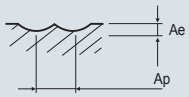
SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
DB342	◎	◎	◎	◎	◎									◎	○						

DB342 Series

Feed Rate	General Speed Cutting					
Work Material	Non-Alloyed Steels, Alloy Steels, Cast Iron		Alloy Steels, Heat Resistant Steels		Stainless Series	
Hardness	≤ 30 HRc		30 ~ 40 HRc		40 ~ 55 HRc	
Strength	~ 1000N / mm²		1000 ~ 1250N / mm²		1500N / mm²	
Cutting Diameter(metric)	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.

Ae : D1~D6=0.2mm
D8~D20=0.3mm
Ap : 0.2XD

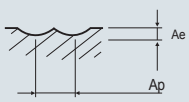


Ae : D1~D6=0.2mm
D8~D20=0.3mm
Ap : 0.1XD

Feed Rate	High Speed Cutting			
Work Material	Non-Alloyed Steels, Alloy Steels, Cast Iron		Alloy Steels, Heat Resistant Steels	
Hardness	≤450 HRc		30 ~ 40 HRc	
Strength	~ 1500N / mm²		1500 ~ 2000N / mm²	
Cutting Diameter(metric)	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.

Ae : D1~D6=0.2mm
D8~D20=0.3mm
Ap : 0.2XD

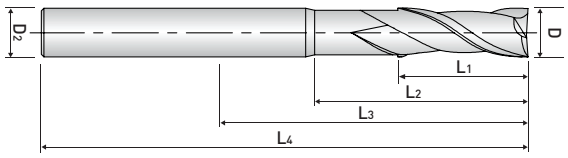


ZAMUS THUNDER

TX2xx, ZE3xx Series

MG FINE GRAIN | Slotting | Side milling

SQUARE / 2 & 4 FLUTES / REGULAR, LONG / TiAlN COATING



TOLERANCE (metric)

D_1 = -0.014 / -0.028 (D1≤3)
D_1 = -0.020 / -0.038 (D1= 4 to 6)
D_1 = -0.025 / -0.047 (D1= 8 to 10)
D_1 = -0.032 / -0.059 (D1=12 To 16)
D_1 = -0.040 / -0.073 (D1≥20)
D_1 = +0 / -0.020 (ZE302, ZE304)
D_1 = +0 / -0.030 (ZE322, ZE324)
D_2 = h6

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO.								Cutting Diameter (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute				4 Flute								
TiAlN				TiAlN								
Helix 30°				Helix 30°								
TX202	TX222 ZE322	TX302 -	ZE302 -	TX204 -	TX224 ZE324	TX304 -	ZE304 -	D1	L1	L2	L3	D2
-	-	-	ZE3020402	-	-	-	-	0.40	0.60	2.00	45.00	4.00
-	-	-	ZE3020403	-	-	-	-	0.40	0.60	3.00	45.00	4.00
-	-	-	ZE3020404	-	-	-	-	0.40	0.60	4.00	45.00	4.00
-	-	-	ZE3020502	-	-	-	-	0.50	0.70	2.00	45.00	4.00
-	-	-	ZE3020504	-	-	-	-	0.50	0.70	4.00	45.00	4.00
-	-	-	ZE3020506	-	-	-	-	0.50	0.70	6.00	45.00	4.00
-	-	-	ZE3020508	-	-	-	-	0.50	0.70	8.00	45.00	4.00
-	-	-	ZE3020602	-	-	-	-	0.60	0.90	2.00	45.00	4.00
-	-	-	ZE3020604	-	-	-	-	0.60	0.90	4.00	45.00	4.00
-	-	-	ZE3020606	-	-	-	-	0.60	0.90	6.00	45.00	4.00
-	-	-	ZE3020608	-	-	-	-	0.60	0.90	8.00	45.00	4.00
-	-	-	ZE3020610	-	-	-	-	0.60	0.90	10.00	45.00	4.00
-	-	-	ZE3020702	-	-	-	-	0.70	1.00	2.00	45.00	4.00
-	-	-	ZE3020704	-	-	-	-	0.70	1.00	4.00	45.00	4.00
-	-	-	ZE3020706	-	-	-	-	0.70	1.00	6.00	45.00	4.00
-	-	-	ZE3020804	-	-	-	-	0.80	1.20	4.00	45.00	4.00
-	-	-	ZE3020806	-	-	-	-	0.80	1.20	6.00	45.00	4.00
-	-	-	ZE3020808	-	-	-	-	0.80	1.20	8.00	45.00	4.00
-	-	-	ZE3020810	-	-	-	-	0.80	1.20	10.00	45.00	4.00
-	-	-	ZE3020812	-	-	-	-	0.80	1.20	12.00	45.00	4.00
-	-	-	ZE3020906	-	-	-	-	0.90	1.40	6.00	45.00	4.00
-	-	-	ZE3020908	-	-	-	-	0.90	1.40	8.00	45.00	4.00
-	-	-	ZE3020910	-	-	-	-	0.90	1.40	10.00	45.00	4.00
-	-	-	ZE3021004	-	-	-	-	1.00	1.50	4.00	45.00	4.00
-	-	-	ZE3021006	-	-	-	-	1.00	1.50	6.00	45.00	4.00
-	-	-	ZE3021008	-	-	-	-	1.00	1.50	8.00	45.00	4.00
-	-	-	ZE3021010	-	-	-	-	1.00	1.50	10.00	45.00	4.00
-	-	-	ZE3021012	-	-	-	-	1.00	1.50	12.00	45.00	4.00
-	-	-	ZE3021016	-	-	-	-	1.00	1.50	16.00	50.00	4.00
-	-	-	ZE3021020	-	-	-	-	1.00	1.50	20.00	50.00	4.00
-	-	-	ZE302010	-	-	-	-	1.00	2.50	-	40.00	6.00
TX202010	-	-	-	TX204010	-	-	-	1.00	3.00	-	39.00	3.00
-	-	TX302010	-	-	-	TX304010	-	1.00	3.00	-	50.00	4.00
-	-	-	ZE3021206	-	-	-	-	1.20	1.80	6.00	45.00	4.00

Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
All	◎	◎	◎	◎	◎	○								◎	○						

ZAMUS THUNDER

TX2xx, ZE3xx Series

>>Continue

EDP NO.								Cutting Diameter (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute				4 Flute								
TiAlN				TiAlN								
Helix 30°				Helix 30°								
TX202	TX222 ZE322	TX302 -	ZE302 -	TX204 -	TX224 ZE324	TX304 -	ZE304 -	D1	L1	L2	L3	D2
-	-	-	ZE3021208	-	-	-	-	1.20	1.80	8.00	45.00	4.00
-	-	-	ZE3021210	-	-	-	-	1.20	1.80	10.00	45.00	4.00
-	-	-	ZE3021212	-	-	-	-	1.20	1.80	12.00	45.00	4.00
-	-	-	ZE3021216	-	-	-	-	1.20	1.80	16.00	50.00	4.00
-	-	-	ZE3021406	-	-	-	-	1.40	2.00	6.00	45.00	4.00
-	-	-	ZE3021408	-	-	-	-	1.40	2.00	8.00	45.00	4.00
-	-	-	ZE3021410	-	-	-	-	1.40	2.00	10.00	45.00	4.00
-	-	-	ZE3021412	-	-	-	-	1.40	2.00	12.00	45.00	4.00
-	-	-	ZE3021414	-	-	-	-	1.40	2.00	14.00	50.00	4.00
-	-	-	ZE3021416	-	-	-	-	1.40	2.00	16.00	50.00	4.00
-	-	-	ZE3021506	-	-	-	-	1.50	2.30	6.00	45.00	4.00
-	-	-	ZE3021508	-	-	-	-	1.50	2.30	8.00	45.00	4.00
-	-	-	ZE3021510	-	-	-	-	1.50	2.30	10.00	45.00	4.00
-	-	-	ZE3021512	-	-	-	-	1.50	2.30	12.00	45.00	4.00
-	-	-	ZE3021514	-	-	-	-	1.50	2.30	14.00	50.00	4.00
-	-	-	ZE3021516	-	-	-	-	1.50	2.30	16.00	50.00	4.00
-	-	-	ZE3021518	-	-	-	-	1.50	2.30	18.00	55.00	4.00
-	-	-	ZE3021520	-	-	-	-	1.50	2.30	20.00	55.00	4.00
-	-	-	ZE302015	-	-	-	-	1.50	4.00	-	40.00	6.00
-	-	TX302015	-	-	-	TX304015	-	1.50	4.00	-	50.00	4.00
TX202015	-	-	-	TX204015	-	-	-	1.50	5.00	-	39.00	3.00
-	-	-	ZE3021606	-	-	-	-	1.60	2.50	6.00	45.00	4.00
-	-	-	ZE3021608	-	-	-	-	1.60	2.50	8.00	45.00	4.00
-	-	-	ZE3021610	-	-	-	-	1.60	2.50	10.00	45.00	4.00
-	-	-	ZE3021612	-	-	-	-	1.60	2.50	12.00	45.00	4.00
-	-	-	ZE3021614	-	-	-	-	1.60	2.50	14.00	50.00	4.00
-	-	-	ZE3021616	-	-	-	-	1.60	2.50	16.00	50.00	4.00
-	-	-	ZE3021618	-	-	-	-	1.60	2.50	18.00	55.00	4.00
-	-	-	ZE3021620	-	-	-	-	1.60	2.50	20.00	55.00	4.00
-	-	-	ZE3021806	-	-	-	-	1.80	2.80	6.00	45.00	4.00
-	-	-	ZE3021808	-	-	-	-	1.80	2.80	8.00	45.00	4.00
-	-	-	ZE3021810	-	-	-	-	1.80	2.80	10.00	45.00	4.00
-	-	-	ZE3021812	-	-	-	-	1.80	2.80	12.00	45.00	4.00
-	-	-	ZE3021814	-	-	-	-	1.80	2.80	14.00	50.00	4.00
-	-	-	ZE3021816	-	-	-	-	1.80	2.80	16.00	50.00	4.00
-	-	-	ZE3021818	-	-	-	-	1.80	2.80	18.00	55.00	4.00
-	-	-	ZE3021820	-	-	-	-	1.80	2.80	20.00	55.00	4.00
-	-	-	ZE3022006	-	-	-	-	2.00	3.00	6.00	45.00	4.00
-	-	-	ZE3022008	-	-	-	-	2.00	3.00	8.00	45.00	4.00
-	-	-	ZE3022010	-	-	-	-	2.00	3.00	10.00	45.00	4.00
-	-	-	ZE3022012	-	-	-	-	2.00	3.00	12.00	45.00	4.00
-	-	-	ZE3022014	-	-	-	-	2.00	3.00	14.00	50.00	4.00
-	-	-	ZE3022016	-	-	-	-	2.00	3.00	16.00	50.00	4.00
-	-	-	ZE3022018	-	-	-	-	2.00	3.00	18.00	55.00	4.00
-	-	-	ZE3022020	-	-	-	-	2.00	3.00	20.00	55.00	4.00

ZAMUS THUNDER

TX2xx, ZE3xx Series

>>Continue

EDP NO.								Cutting Diameter (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute				4 Flute								
TiAlN				TiAlN								
Helix 30°				Helix 30°								
TX202	TX222 ZE322	TX302 -	ZE302 -	TX204 -	TX224 ZE324	TX304 -	ZE304 -	D1	L1	L2	L3	D2
-	-	-	ZE3022025	-	-	-	-	2.00	3.00	25.00	60.00	4.00
-	-	-	ZE3022030	-	-	-	-	2.00	3.00	30.00	70.00	4.00
-	-	-	ZE302020	-	-	-	ZE304020	2.00	6.00	-	40.00	6.00
-	-	TX302020	-	-	-	TX304020	-	2.00	6.00	-	50.00	4.00
TX202020	-	-	-	TX204020	-	-	-	2.00	7.00	-	39.00	3.00
-	-	-	ZE3022508	-	-	-	-	2.50	3.70	8.00	45.00	4.00
-	-	-	ZE3022510	-	-	-	-	2.50	3.70	10.00	45.00	4.00
-	-	-	ZE3022512	-	-	-	-	2.50	3.70	12.00	45.00	4.00
-	-	-	ZE3022514	-	-	-	-	2.50	3.70	14.00	50.00	4.00
-	-	-	ZE3022516	-	-	-	-	2.50	3.70	16.00	50.00	4.00
-	-	-	ZE3022518	-	-	-	-	2.50	3.70	18.00	55.00	4.00
-	-	-	ZE3022520	-	-	-	-	2.50	3.70	20.00	55.00	4.00
-	-	-	ZE3022525	-	-	-	-	2.50	3.70	25.00	60.00	4.00
-	-	-	ZE3022530	-	-	-	-	2.50	3.70	30.00	70.00	4.00
TX202025	-	-	-	TX204025	-	-	-	2.50	8.00	-	39.00	3.00
-	-	-	ZE302025	-	-	-	ZE304025	2.50	8.00	-	40.00	6.00
-	-	TX302025	-	-	-	TX304025	-	2.50	8.00	-	50.00	4.00
-	-	-	ZE3023008	-	-	-	-	3.00	4.50	8.00	45.00	6.00
-	-	-	ZE3023010	-	-	-	-	3.00	4.50	10.00	45.00	6.00
-	-	-	ZE3023012	-	-	-	-	3.00	4.50	12.00	45.00	6.00
-	-	-	ZE3023014	-	-	-	-	3.00	4.50	14.00	50.00	6.00
-	-	-	ZE3023016	-	-	-	-	3.00	4.50	16.00	50.00	6.00
-	-	-	ZE3023018	-	-	-	-	3.00	4.50	18.00	55.00	6.00
-	-	-	ZE3023020	-	-	-	-	3.00	4.50	20.00	55.00	6.00
-	-	-	ZE3023025	-	-	-	-	3.00	4.50	25.00	60.00	6.00
-	-	-	ZE3023030	-	-	-	-	3.00	4.50	30.00	70.00	6.00
-	-	-	ZE3023035	-	-	-	-	3.00	4.50	35.00	80.00	6.00
-	-	-	ZE3023040	-	-	-	-	3.00	4.50	40.00	90.00	6.00
-	-	-	ZE302030	-	-	-	ZE304030	3.00	8.00	-	45.00	6.00
-	-	TX302030	-	-	-	TX304030	-	3.00	9.00	-	50.00	4.00
TX202030	-	-	-	TX204030	-	-	-	3.00	10.00	-	39.00	3.00
-	ZE322030	-	-	-	ZE324030	-	-	3.00	15.00	-	60.00	6.00
-	TX222030	-	-	-	TX224030	-	-	3.00	20.00	-	60.00	3.00
-	ZE322031	-	-	-	ZE324031	-	-	3.00	20.00	-	70.00	6.00
-	ZE322030S	-	-	-	ZE324030S	-	-	3.00	20.00	-	100.00	3.00
-	-	-	ZE302035	-	-	-	ZE304035	3.50	10.00	-	45.00	6.00
-	-	-	ZE3024012	-	-	-	-	4.00	6.00	12.00	50.00	6.00
-	-	-	ZE3024016	-	-	-	-	4.00	6.00	16.00	60.00	6.00
-	-	-	ZE3024020	-	-	-	-	4.00	6.00	20.00	60.00	6.00
-	-	-	ZE3024025	-	-	-	-	4.00	6.00	25.00	70.00	6.00
-	-	-	ZE3024030	-	-	-	-	4.00	6.00	30.00	70.00	6.00
-	-	-	ZE3024035	-	-	-	-	4.00	6.00	35.00	80.00	6.00
-	-	-	ZE3024040	-	-	-	-	4.00	6.00	40.00	80.00	6.00
-	-	-	ZE3024045	-	-	-	-	4.00	6.00	45.00	90.00	6.00
-	-	-	ZE3024050	-	-	-	-	4.00	6.00	50.00	100.00	6.00

ZAMUS THUNDER

TX2xx, ZE3xx Series

>>Continue

EDP NO.								Cutting Diameter (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute				4 Flute								
TiAlN				TiAlN								
Helix 30°				Helix 30°								
TX202	TX222 ZE322	TX302 -	ZE302 -	TX204 -	TX224 ZE324	TX304 -	ZE304 -	D1	L1	L2	L3	D2
-	-	-	ZE302040	-	-	-	ZE304040	4.00	11.00	-	45.00	6.00
-	-	TX302040	-	-	-	TX304040	-	4.00	11.00	-	50.00	4.00
TX202040	-	-	-	TX204040	-	-	-	4.00	14.00	-	51.00	4.00
-	ZE322040	-	-	-	ZE324040	-	-	4.00	15.00	-	60.00	6.00
-	TX222040	-	-	-	TX224040	-	-	4.00	20.00	-	60.00	4.00
-	ZE322041	-	-	-	ZE324041	-	-	4.00	20.00	-	70.00	6.00
-	ZE322040S	-	-	-	ZE324040S	-	-	4.00	20.00	-	100.00	4.00
-	-	-	ZE302045	-	-	-	ZE304045	4.50	11.00	-	45.00	6.00
-	-	-	ZE3025016	-	-	-	-	5.00	7.50	16.00	60.00	6.00
-	-	-	ZE3025020	-	-	-	-	5.00	7.50	20.00	60.00	6.00
-	-	-	ZE3025025	-	-	-	-	5.00	7.50	25.00	70.00	6.00
-	-	-	ZE3025030	-	-	-	-	5.00	7.50	30.00	70.00	6.00
-	-	-	ZE3025035	-	-	-	-	5.00	7.50	35.00	80.00	6.00
-	-	-	ZE3025040	-	-	-	-	5.00	7.50	40.00	90.00	6.00
-	-	-	ZE3025050	-	-	-	-	5.00	7.50	50.00	100.00	6.00
-	-	TX302050	ZE302050	-	-	TX304050	ZE304050	5.00	13.00	-	50.00	6.00
TX202050	-	-	-	TX204050	-	-	-	5.00	16.00	-	51.00	5.00
-	ZE322050	-	-	-	ZE324050	-	-	5.00	20.00	-	60.00	6.00
-	ZE322051	-	-	-	ZE324051	-	-	5.00	20.00	-	80.00	6.00
-	TX222050	-	-	-	TX224050	-	-	5.00	25.00	-	75.00	5.00
-	ZE322052	-	-	-	ZE324052	-	-	5.00	25.00	-	100.00	6.00
-	-	-	ZE302055	-	-	-	ZE304055	5.50	13.00	-	50.00	6.00
-	-	-	ZE302060	-	-	-	ZE304060	6.00	13.00	-	50.00	6.00
-	-	TX302060	-	-	-	TX304060	-	6.00	16.00	-	50.00	6.00
TX202060	-	-	-	TX204060	-	-	-	6.00	19.00	-	64.00	6.00
-	ZE322060	-	-	-	ZE324060	-	-	6.00	20.00	-	80.00	6.00
-	TX222060	-	-	-	TX224060	-	-	6.00	30.00	-	75.00	6.00
-	ZE322061	-	-	-	ZE324061	-	-	6.00	30.00	-	100.00	6.00
-	ZE322062	-	-	-	ZE324062	-	-	6.00	40.00	-	150.00	6.00
-	-	-	ZE302065	-	-	-	ZE304065	6.50	16.00	-	60.00	8.00
-	-	TX302070	ZE302070	-	-	TX304070	ZE304070	7.00	16.00	-	60.00	8.00
-	-	-	ZE302075	-	-	-	ZE304075	7.50	16.00	-	60.00	8.00
-	-	TX302080	ZE302080	-	-	TX304080	ZE304080	8.00	19.00	-	60.00	8.00
TX202080	-	-	-	TX204080	-	-	-	8.00	21.00	-	64.00	8.00
-	TX222080	-	-	-	TX224080	-	-	8.00	30.00	-	75.00	8.00
-	ZE322080	-	-	-	ZE324080	-	-	8.00	30.00	-	90.00	8.00
-	ZE322081	-	-	-	ZE324081	-	-	8.00	35.00	-	100.00	8.00
-	ZE322082	-	-	-	ZE324082	-	-	8.00	40.00	-	150.00	8.00
-	-	-	ZE302085	-	-	-	ZE304085	8.50	19.00	-	70.00	10.00
-	-	TX302090	-	-	-	TX304090	-	9.00	19.00	-	60.00	10.00
-	-	-	ZE302090	-	-	-	ZE304090	9.00	19.00	-	70.00	10.00
-	-	-	ZE302095	-	-	-	ZE304095	9.50	19.00	-	70.00	10.00
-	-	-	ZE302100	-	-	-	ZE304100	10.00	22.00	-	70.00	10.00
TX202100	-	-	-	TX204100	-	-	-	10.00	25.00	-	70.00	10.00
-	-	TX302100	-	-	-	TX304100	-	10.00	25.00	-	75.00	10.00

ZAMUS THUNDER

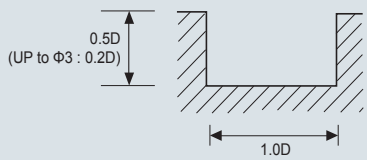
TX2xx, ZE3xx Series

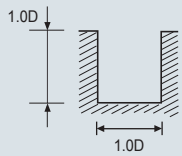
EDP NO.								Cutting Diameter (metric)	Cutting Length (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute				4 Flute								
TiAlN				TiAlN								
Helix 30°				Helix 30°								
TX202	TX222 ZE322	TX302 -	ZE302 -	TX204 -	TX224 ZE324	TX304 -	ZE304 -	D1	L1	L2	L3	D2
-	ZE322100	-	-	-	ZE324100	-	-	10.00	30.00	-	90.00	10.00
-	ZE322101	-	-	-	ZE324101	-	-	10.00	35.00	-	100.00	10.00
-	TX222100	-	-	-	TX224100	-	-	10.00	40.00	-	100.00	10.00
-	ZE322102	-	-	-	ZE324102	-	-	10.00	45.00	-	150.00	10.00
-	ZE322103	-	-	-	ZE324103	-	-	10.00	55.00	-	180.00	10.00
-	-	-	ZE302105	-	-	-	ZE304105	10.50	22.00	-	75.00	12.00
-	-	-	ZE302110	-	-	-	ZE304110	11.00	22.00	-	75.00	12.00
-	-	-	ZE302115	-	-	-	ZE304115	11.50	22.00	-	75.00	12.00
TX202120	-	-	-	TX204120	-	-	-	12.00	25.00	-	76.00	12.00
-	-	-	ZE302120	-	-	-	ZE304120	12.00	26.00	-	75.00	12.00
-	-	TX302120	-	-	-	TX304120	-	12.00	30.00	-	75.00	12.00
-	ZE322120	-	-	-	ZE324120	-	-	12.00	30.00	-	90.00	12.00
-	ZE322121	-	-	-	ZE324121	-	-	12.00	40.00	-	110.00	12.00
-	TX222120	-	-	-	TX224120	-	-	12.00	45.00	-	100.00	12.00
-	ZE322122	-	-	-	ZE324122	-	-	12.00	50.00	-	150.00	12.00
-	ZE322123	-	-	-	ZE324123	-	-	12.00	60.00	-	200.00	12.00
-	-	-	ZE302130	-	-	-	ZE304130	13.00	26.00	-	80.00	12.00
-	-	-	ZE302140	-	-	-	ZE304140	14.00	26.00	-	80.00	14.00
-	-	TX302140	-	-	-	TX304140	-	14.00	32.00	-	75.00	14.00
-	ZE322140	-	-	-	ZE324140	-	-	14.00	40.00	-	120.00	14.00
-	TX222140	-	-	-	TX224140	-	-	14.00	45.00	-	100.00	14.00
-	ZE322141	-	-	-	ZE324141	-	-	14.00	60.00	-	150.00	14.00
-	-	-	ZE302150	-	-	-	ZE304150	15.00	32.00	-	90.00	16.00
TX202160	-	-	-	TX204160	-	-	-	16.00	32.00	-	89.00	16.00
-	-	-	ZE302160	-	-	-	ZE304160	16.00	32.00	-	90.00	16.00
-	-	TX302160	-	-	-	TX304160	-	16.00	32.00	-	100.00	16.00
-	TX222160	-	-	-	TX224160	-	-	16.00	45.00	-	100.00	16.00
-	ZE322160	-	-	-	ZE324160	-	-	16.00	50.00	-	140.00	16.00
-	ZE322161	-	-	-	ZE324161	-	-	16.00	70.00	-	160.00	16.00
-	ZE322162	-	-	-	ZE324162	-	-	16.00	80.00	-	200.00	16.00
-	-	TX302180	ZE302180	-	-	TX304180	ZE304180	18.00	32.00	-	100.00	18.00
-	TX222180	-	-	-	TX224180	-	-	18.00	45.00	-	100.00	18.00
-	ZE322180	-	-	-	ZE324180	-	-	18.00	50.00	-	140.00	18.00
-	-	TX302200	ZE302200	-	-	TX304200	ZE304200	20.00	38.00	-	100.00	20.00
TX202200	-	-	-	TX204200	-	-	-	20.00	38.00	-	102.00	20.00
-	TX222200	-	-	-	TX224200	-	-	20.00	45.00	-	100.00	20.00
-	ZE322200	-	-	-	ZE324200	-	-	20.00	60.00	-	150.00	20.00
-	ZE322201	-	-	-	ZE324201	-	-	20.00	100.00	-	200.00	20.00
-	ZE322202	-	-	-	ZE324202	-	-	20.00	130.00	-	250.00	20.00

TX202, TX222 & TX302 Series

Work Material	Non-Alloyed Steels Alloy Steels, Cast Iron		Alloy Steels, Heat Resistant Steels		Stainless Series		Cast Iron		Aluminum Alloy		Copper, Brass Nonferrous Metals	
Hardness	≤ 30 HRc		30 ~ 45 HRc		-		-		-		-	
Strength	~ 1000N / mm²		1000 ~ 1500N / mm²		-		-		-		-	
Cutting Diameter(metric)	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.

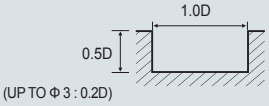


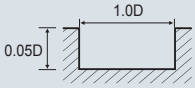


ZE302, ZE322 Series

Feed Rate	General Speed Cutting					
Work Material	Alloy Steels, Heat Resistant Steels		Hardened Steels		Stainless Series	
Hardness	30 ~ 40 HRc		40 ~ 50 HRc		-	
Strength	1000 ~ 1250N / mm²		1250 ~ 1750N / mm²		-	
Cutting Diameter(metric)	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

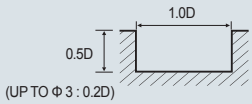
RPM = rev. / min.
FEED = mm / min.

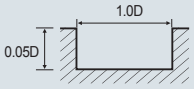




Feed Rate	High Speed Cutting							
Work Material	Alloy Steels, Heat Resistant Steels		Hardened Steels				Stainless Series	
Hardness	30 ~ 40 HRc		40 ~ 50 HRc		50 ~ 55 HRc		-	
Strength	1000 ~ 1250N / mm²		1250 ~ 1750N / mm²		1750 ~ 2000N / mm²		-	
Cutting Diameter(metric)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2	18,000	665	11,800	415	8,700	175	9,800	345
3	11,000	655	6,800	435	5,600	185	6,200	370
4	10,300	725	6,300	430	4,300	185	5,300	370
5	9,350	715	5,570	420	3,700	185	4,620	355
6	8,200	750	4,930	470	3,250	185	4,100	390
8	6,300	770	3,780	410	2,470	185	3,120	355
10	4,830	750	2,940	360	2,000	160	2,470	310
12	4,100	750	2,520	345	1,680	160	2,100	300
16	3,260	715	2,000	355	1,890	150	1,940	290
20	2,520	665	1,580	310	1,680	150	1,630	275
25	2,000	635	1,260	340	1,570	150	1,420	290

RPM = rev. / min.
FEED = mm / min.

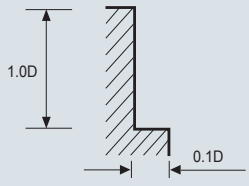


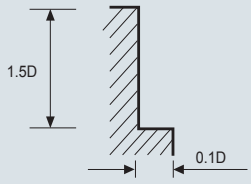


TX204, TX224 & TX304 Series

Work Material	Non-Alloyed Steels Alloy Steels, Cast Iron		Alloy Steels, Heat Resistant Steels		Stainless Series		Cast Iron		Aluminum Alloy		Copper, Brass Nonferrous Metals	
Hardness	≤ 30 HRc		30 ~ 45 HRc		-		-		-		-	
Strength	~ 1000N / mm²		1000 ~ 1500N / mm²		-		-		-		-	
Cutting Diameter(metric)	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.

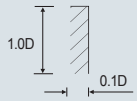


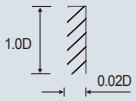


ZE304, ZE324 Series

Feed Rate	General Speed Cutting							
Work Material	Alloy Steels, Heat Resistant Steels		Hardened Steels				Stainless Series	
Hardness	≤ 30 HRc		30 ~ 45 HRc		45 ~ 55 HRc		-	
Strength	~ 1000N / mm²		1000 ~ 1500N / mm²		1500 ~ 2000N / mm²		-	
Cutting Diameter(metric)	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	4,320	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

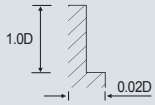
RPM = rev. / min.
FEED = mm / min.





Feed Rate	High Speed Cutting							
Work Material	Alloy Steels, Heat Resistant Steels		Hardened Steels				Stainless Series	
Hardness	≤ 30 HRc		30 ~ 45 HRc		45 ~ 55 HRc		-	
Strength	~ 1000N / mm²		1000 ~ 1500N / mm²		1500 ~ 2000N / mm²		-	
Cutting Diameter(metric)	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	990
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.

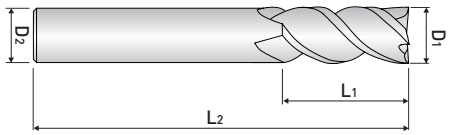


ZAMUS THUNDER

TX304H Series

SQUARE / 4 FLUTES / REGULAR / TiAlN COATING

MG FINE GRAIN | Slotting | Side milling



TOLERANCE (metric)

D_1 = -0.014 / -0.028 (D1≤3)
D_1 = -0.020 / -0.038 (D1= 4 to 6)
D_1 = -0.025 / -0.047 (D1= 8 to 10)
D_1 = -0.032 / -0.059 (D1=12 To 16)
D_1 = -0.040 / -0.073 (D1≥20)
D_2 = h6

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO. 4 Flute TiAlN Helix 45°	Cutting Diameter (metric)	Cutting Length (metric)	Overall Length (metric)	Shank Diameter (metric)
TX304H	D1	L1	L2	D2
TX304H030	3.00	8.00	50.00	6.00
TX304H040	4.00	11.00	50.00	6.00
TX304H050	5.00	13.00	50.00	6.00
TX304H060	6.00	13.00	50.00	6.00
TX304H080	8.00	19.00	60.00	8.00
TX304H100	10.00	22.00	70.00	10.00
TX304H120	12.00	26.00	75.00	12.00
TX304H130	13.00	26.00	80.00	12.00
TX304H140	14.00	26.00	80.00	14.00
TX304H160	16.00	32.00	90.00	16.00
TX304H180	18.00	32.00	100.00	18.00
TX304H200	20.00	38.00	100.00	20.00

Applicable Working Material

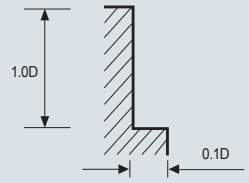
○ : GOOD ◎ : BEST

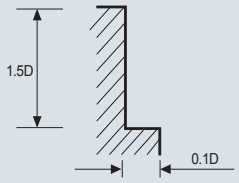
SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
TX304H	◎	◎	◎	◎	◎	○								◎	○						

TX304H Series

Work Material	Non-Alloyed Steels Alloy Steels, Cast Iron		Alloy Steels, Heat Resistant Steels		Stainless Series		Cast Iron		Aluminum Alloy		Copper, Brass Nonferrous Metals	
Hardness	≤ 30 HRc		30 ~ 45 HRc		-		-		-		-	
Strength	~ 1000N / mm²		1000 ~ 1500N / mm²		-		-		-		-	
Cutting Diameter(metric)	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.



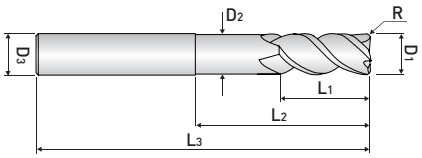


ZAMUS THUNDER

ZR304H, ZR324H Series

MG FINE GRAIN | Slotting | Side milling

CORNER RADIUS / 2 & 4 FLUTES / REGULAR WITH EXTENDED NECK / TiAlN COATING



TOLERANCE (metric)

D_1 = +0 / -0.030
D_2 = h6
R = ±0.02

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO.		Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Neck Diameter (metric)	Neck Length (metric)	Overall Length (metric)	Shank Diameter (metric)
4 Flute								
TiAlN								
Helix 45°								
ZR304H	ZR324H	D1	R	L1	D2	L2	L3	D3
ZR304H0303	-	3.00	0.30	4.00	2.80	12.00	55.00	6.00
ZR304H0305	-	3.00	0.50	4.00	2.80	12.00	55.00	6.00
ZR304H0403	-	4.00	0.30	5.00	3.80	16.00	55.00	6.00
ZR304H0405	-	4.00	0.50	5.00	3.80	16.00	55.00	6.00
ZR304H0605	-	6.00	0.50	7.00	5.80	20.00	60.00	6.00
ZR304H0610	-	6.00	1.00	7.00	5.80	20.00	60.00	6.00
-	ZR324H0605	6.00	0.50	9.00	5.80	20.00	90.00	6.00
-	ZR324H0610	6.00	1.00	9.00	5.80	20.00	90.00	6.00
ZR304H0805	-	8.00	0.50	10.00	7.80	25.00	65.00	8.00
ZR304H0810	-	8.00	1.00	10.00	7.80	25.00	65.00	8.00
-	ZR324H0805	8.00	0.50	12.00	7.80	25.00	100.00	8.00
-	ZR324H0810	8.00	1.00	12.00	7.80	25.00	100.00	8.00
ZR304H1005	-	10.00	0.50	12.00	9.80	30.00	70.00	10.00
ZR304H1010	-	10.00	1.00	12.00	9.80	30.00	70.00	10.00
ZR304H1015	-	10.00	1.50	12.00	9.80	30.00	70.00	10.00
ZR304H1020	-	10.00	2.00	12.00	9.80	30.00	70.00	10.00
-	ZR324H1005	10.00	0.50	15.00	9.80	32.00	100.00	10.00
-	ZR324H1010	10.00	1.00	15.00	9.80	32.00	100.00	10.00
-	ZR324H1015	10.00	1.50	15.00	9.80	32.00	100.00	10.00
-	ZR324H1020	10.00	2.00	15.00	9.80	32.00	100.00	10.00
ZR304H1205	-	12.00	0.50	15.00	11.80	30.00	80.00	12.00
ZR304H1210	-	12.00	1.00	15.00	11.80	30.00	80.00	12.00
ZR304H1215	-	12.00	1.50	15.00	11.80	30.00	80.00	12.00
ZR304H1220	-	12.00	2.00	15.00	11.80	30.00	80.00	12.00
-	ZR324H1205	12.00	0.50	18.00	11.80	38.00	110.00	12.00
-	ZR324H1210	12.00	1.00	18.00	11.80	38.00	110.00	12.00
-	ZR324H1215	12.00	1.50	18.00	11.80	38.00	110.00	12.00
-	ZR324H1220	12.00	2.00	18.00	11.80	38.00	110.00	12.00

Applicable Working Material

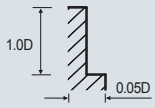
○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
All	◎	◎	◎	◎	◎	○								◎	○						

ZR304H, ZR324H Series

Work Material	Non-Alloyed Steels, Alloy Steels, Cast Iron		Alloy Steels, Heat Resistant Steels		Hardened Steels	
Hardness	≤ 30 HRc		30 ~ 45 HRc		45 ~ 55 HRc	
Strength	~ 1000N / mm²		1000 ~ 1500N / mm²		1500 ~ 2000N / mm²	
Cutting Diameter(metric)	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.

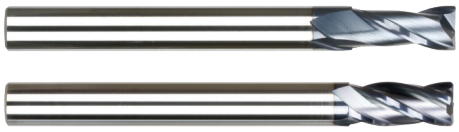


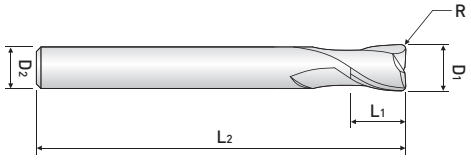
ZAMUS THUNDER

ZR322, ZR324 Series

FINE GRAIN | Slotting | Side milling

CORNER RADIUS / 2 & 4 FLUTES /
REGULAR WITH EXTENDED NECK / TiAlN COATING





TOLERANCE (metric)

D_1 = +0 / -0.030
D_2 = h6
R = ±0.02

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO.		Cutting Diameter (metric)	Corner Radius (metric)	Cutting Length (metric)	Overall Length (metric)	Shank Diameter (metric)
2 Flute	4 Flute					
TiAlN	TiAlN					
Helix 30°	Helix 30°					
ZR322	ZR324	D1	R	L1	L2	D2
ZR3220302	ZR3240302	3.00	0.20	8.00	60.00	6.00
ZR3220303	ZR3240303	3.00	0.30	8.00	60.00	6.00
ZR3220305	ZR3240305	3.00	0.50	8.00	60.00	6.00
ZR3220402	ZR3240402	4.00	0.20	11.00	70.00	6.00
ZR3220403	ZR3240403	4.00	0.30	11.00	70.00	6.00
ZR3220405	ZR3240405	4.00	0.50	11.00	70.00	6.00
ZR3220410	ZR3240410	4.00	1.00	11.00	70.00	6.00
ZR3220502	ZR3240502	5.00	0.20	13.00	80.00	6.00
ZR3220503	ZR3240503	5.00	0.30	13.00	80.00	6.00
ZR3220505	ZR3240505	5.00	0.50	13.00	80.00	6.00
ZR3220510	ZR3240510	5.00	1.00	13.00	80.00	6.00
ZR3220602	ZR3240602	6.00	0.20	13.00	90.00	6.00
ZR3220603	ZR3240603	6.00	0.30	13.00	90.00	6.00
ZR3220605	ZR3240605	6.00	0.50	13.00	90.00	6.00
ZR3220610	ZR3240610	6.00	1.00	13.00	90.00	6.00
ZR3220803	ZR3240803	8.00	0.30	19.00	100.00	8.00
ZR3220805	ZR3240805	8.00	0.50	19.00	100.00	8.00
ZR3220810	ZR3240810	8.00	1.00	19.00	100.00	8.00
ZR3220815	ZR3240815	8.00	1.50	19.00	100.00	8.00
ZR3220820	ZR3240820	8.00	2.00	19.00	100.00	8.00
ZR3221003	ZR3241003	10.00	0.30	22.00	100.00	10.00
ZR3221005	ZR3241005	10.00	0.50	22.00	100.00	10.00
ZR3221010	ZR3241010	10.00	1.00	22.00	100.00	10.00
ZR3221015	ZR3241015	10.00	1.50	22.00	100.00	10.00
ZR3221020	ZR3241020	10.00	2.00	22.00	100.00	10.00
ZR3221025	ZR3241025	10.00	2.50	22.00	100.00	10.00
ZR3221205	ZR3241205	12.00	0.50	26.00	110.00	12.00
ZR3221210	ZR3241210	12.00	1.00	26.00	110.00	12.00
ZR3221215	ZR3241215	12.00	1.50	26.00	110.00	12.00
ZR3221220	ZR3241220	12.00	2.00	26.00	110.00	12.00
ZR3221225	ZR3241225	12.00	2.50	26.00	110.00	12.00
ZR3221230	ZR3241230	12.00	3.00	26.00	110.00	12.00

Applicable Working Material

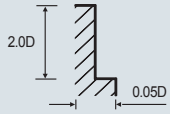
○ : GOOD ◎ : BEST

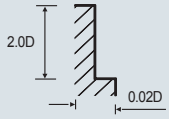
SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
All	◎	◎	◎	◎	◎	○								◎	○						

ZR322, ZR324 Series

End Cutting	Side Milling					
Work Material	Non-Alloyed Steels, Alloy Steels, Cast Iron		Alloy Steels, Heat Resistant Steels		Hardened Steels	
Hardness	≤ 30 HRc		30 ~ 45 HRc		45 ~ 55 HRc	
Strength	~ 1000N / mm²		1000 ~ 1500N / mm²		1500 ~ 2000N / mm²	
Cutting Diameter(metric)	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.

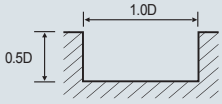




ZR322 Series

End Cutting	Slotting					
Work Material	Non-Alloyed Steels, Alloy Steels, Cast Iron		Alloy Steels, Heat Resistant Steels		Hardened Steels	
Hardness	≤ 30 HRc		30 ~ 45 HRc		45 ~ 55 HRc	
Strength	~ 1000N / mm²		1000 ~ 1500N / mm²		1500 ~ 2000N / mm²	
Cutting Diameter(metric)	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.

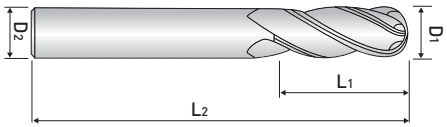


NEO CLASSIC X-STAR

XXB504 Series

FINE GRAIN | Plunge | Profile | Variable index

BALL / 4 FLUTES / REGULAR / VARIABLE HELIX / TiAlN-SH COATING



TOLERANCE (metric)

D_1 = +0 / -0.02
D_2 = h6

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO. 4 Flute TiAlN-SH Variable Helix	Cutting Diameter (metric)	Cutting Length (metric)	Overall Length (metric)	Shank Diameter (metric)
XXB504	D1	L1	L2	D2
XXB504040	4.00	8.00	70.00	4.00
XXB504060	6.00	12.00	90.00	6.00
XXB504080	8.00	15.00	100.00	8.00
XXB504100	10.00	20.00	100.00	10.00
XXB504120	12.00	26.00	110.00	12.00

Applicable Working Material

○ : GOOD ◎ : BEST

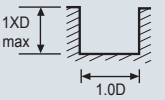
SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
XXB504	◎	◎	◎	◎	○	◎	◎	◎				○	○	○	○				○		

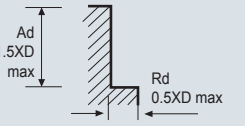
XXB504 Series

Work Material	Low Carbon Steels				Medical Alloy Steels		Mold & Die Steels		Cast Iron Gray		Cast Iron Ductile	
Hardness	≤ 175 HB		≤ 275 HB		≤ 275 HB		≤ 275 HB		≤ 200 HB		≤ 300 HB	
Cutting Diameter(metric)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
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

Work Material	Cast IronMalleable		Stainless 300 Series		Stainless 400 Series		Stainless PH Series		Titanium Alloys		High Temp Alloys	
Hardness	≤ 300 HB		≤ 275 HB		≤ 185 HB		≤ 232 HB		≤ 295 HB		≤ 300 HB	
Cutting Diameter(metric)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
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.

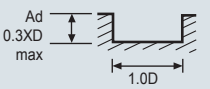


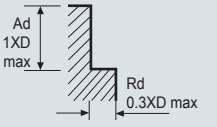


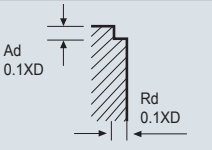
※Use a rigid and precise machines and holders.
※Use a suitable cutting oil.

End Cutting / Feed Speed	Slotting		Side Milling		High Speed Cutting	
Work Material	Hardened Steels		Hardened Steels		Hardened Steels	
Hardness	30 ~ 45 HRc		30 ~ 45 HRc		30 ~ 45 HRc	
Cutting Diameter(metric)	RPM	FEED	RPM	FEED	RPM	FEED
6	3,450	414	4,246	849	9,023	2,166
8	2,588	414	3,185	764	6,768	1,895
10	2,070	414	2,548	713	5,414	1,732
12	1,725	414	2,123	764	4,512	1,985
14	1,479	414	1,820	728	3,867	1,856
16	1,294	414	1,592	701	3,384	1,895
18	1,150	368	1,415	679	3,008	1,805
20	1,035	414	1,274	662	2,707	1,841
25	828	397	1,019	611	2,166	1,646

RPM = rev. / min.
FEED = mm / min.







※Use a rigid and precise machines and holders.
※Use a suitable cutting oil.

MEMO

02

DRILLING

INCH&METRIC

ALU-WAVE 400
Aluminum / Non-Ferrous Material / Graphite / Plastic

POWER MAX DRILL 404
High Speed & General Speed Cutting

METRIC

POWER DRILL 441
General Speed Cutting

SOLID SPIRAL DRILL 458
General Purpose

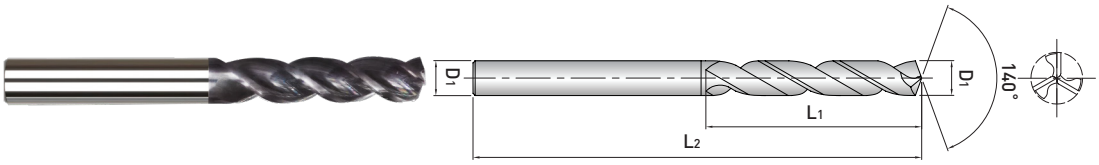
ALU-WAVE

APF505 Series

DRILLS / 3 FLUTES / 5xD / DLC COATING

MG FINE GRAIN

140° POINT ANGLE



TOLERANCE (metric)

D_1 = +0 / -0.012
D_2 = +0 / -0.008 (D2<6)
D_2 = +0 / -0.009 (D2≥6)

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO. 3 Flute DLC Helix 30°	Cutting Diameter			Cutting Length	Overall Length	Shank Diameter
5xD	D1			L1	L2	D2
APF505	Decimal	Fraction	Metric			
APF505030	0.1181	-	3.000	20.00	60.00	3.00
APF50503175	0.1250	1/8 "	3.175	27/32"	2 3/8 "	4.00
APF50503263	0.1285	#30	3.263	27/32"	2 3/8 "	4.00
APF505035	0.1378	-	3.500	22.00	63.00	4.00
APF50503572	0.1406	9/64"	3.571	15/16"	2 1/2 "	4.00
APF50503967	0.1562	5/32"	3.967	15/16"	2 1/2 "	4.00
APF505040	0.1575	-	4.000	24.00	65.00	4.00
APF505045	0.1772	-	4.500	24.00	65.00	5.00
APF50504762	0.1875	3/16"	4.762	1 1/4 "	2 3/4 "	5.00
APF50504800	0.1890	#12	4.800	1 1/4 "	2 3/4 "	5.00
APF50504851	0.1910	#11	4.851	1 1/4 "	2 3/4 "	5.00
APF50504914	0.1935	#10	4.914	1 1/4 "	2 3/4 "	5.00
APF505050	0.1969	-	5.000	32.00	75.00	5.00
APF50505054	0.1990	#8	5.054	1 5/16"	3 "	6.00
APF50505105	0.2010	#7	5.105	1 5/16"	3 "	6.00
APF50505158	0.2031	13/64"	5.158	1 5/16"	3 "	6.00
APF50505181	0.2040	#6	5.181	1 3/8 "	3 "	6.00
APF50505219	0.2055	#5	5.219	1 3/8 "	3 "	6.00
APF50505308	0.2090	#4	5.308	1 3/8 "	3 "	6.00
APF50505410	0.2130	#3	5.410	1 3/8 "	3 "	6.00
APF505055	0.2165	-	5.500	35.00	75.00	6.00
APF50505556	0.2188	7/32"	5.556	1 3/8 "	3 "	6.00
APF50505613	0.2210	#2	5.613	1 3/8 "	3 "	6.00
APF50505791	0.2280	#1	5.791	1 3/8 "	3 "	6.00
APF50505953	0.2344	15/64"	5.953	1 1/2 "	3 1/4 "	6.00
APF505060	0.2362	-	6.000	38.00	82.00	6.00
APF50506045	0.2380	B	6.045	1 5/8 "	3 1/4 "	7.00
APF50506146	0.2420	C	6.146	1 5/8 "	3 1/4 "	7.00
APF50506248	0.2460	D	6.248	1 5/8 "	3 1/4 "	7.00
APF50506350	0.2500	1/4" / E	6.350	1 5/8 "	3 1/4 "	7.00
APF505065	0.2559	-	6.500	41.00	82.00	7.00
APF50506527	0.2570	F	6.527	1 11/16"	3 1/4 "	7.00
APF50506629	0.2610	G	6.629	1 11/16"	3 1/2 "	7.00
APF50506746	0.2656	17/64"	6.746	1 11/16"	3 1/2 "	7.00

Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
APF505										◎	◎								○		

APF505 Series

>>Continue

EDP NO. 3 Flute DLC Helix 30°	Cutting Diameter			Cutting Length	Overall Length	Shank Diameter
5xD	D1			L1	L2	D2
APF505	Decimal	Fraction	Metric			
APF50506756	0.2660	H	6.756	1 11/16"	3 1/2 "	7.00
APF50506908	0.2720	I	6.908	1 11/16"	3 1/2 "	7.00
APF505070	0.2756	-	7.000	43.00	88.00	7.00
APF50507035	0.2770	J	7.035	1 11/16"	3 1/2 "	8.00
APF50507142	0.2812	9/32"	7.142	1 3/4 "	3 1/2 "	8.00
APF50507366	0.2900	L	7.366	1 3/4 "	3 1/2 "	8.00
APF505075	0.2953	-	7.500	44.00	95.00	8.00
APF50507541	0.2969	19/64"	7.541	1 7/8 "	3 3/4 "	8.00
APF50507670	0.3020	N	7.670	1 7/8 "	3 3/4 "	8.00
APF50507937	0.3125	5/16"	7.937	1 7/8 "	3 3/4 "	8.00
APF505080	0.3150	-	8.000	48.00	95.00	8.00
APF50508026	0.3160	O	8.026	1 7/8 "	3 3/4 "	9.00
APF50508204	0.3230	P	8.204	2 3/32"	3 3/4 "	9.00
APF50508333	0.3281	21/64"	8.333	2 3/32"	4 "	9.00
APF50508432	0.3320	Q	8.432	2 3/32"	4 "	9.00
APF505085	0.3346	-	8.500	53.00	100.00	9.00
APF50508610	0.3390	R	8.610	2 3/32"	4 "	9.00
APF50508732	0.3438	11/32"	8.732	2 3/16"	4 "	9.00
APF50508839	0.3480	S	8.839	2 3/16"	4 "	9.00
APF505090	0.3543	-	9.000	55.00	100.00	9.00
APF50509093	0.3580	T	9.093	2 9/32"	4 1/4 "	10.00
APF50509128	0.3594	23/64"	9.128	2 9/32"	4 1/4 "	10.00
APF50509347	0.3680	U	9.347	2 9/32"	4 1/4 "	10.00
APF505095	0.3740	-	9.500	58.00	108.00	10.00
APF50509525	0.3750	3/8 "	9.525	2 3/8 "	4 1/4 "	10.00
APF50509575	0.3770	V	9.575	2 3/8 "	4 1/4 "	10.00
APF50509804	0.3860	W	9.804	2 3/8 "	4 1/2 "	10.00
APF50509921	0.3906	25/64"	9.921	2 3/8 "	4 1/2 "	10.00
APF505100	0.3937	-	10.000	60.00	114.00	10.00
APF50510083	0.3970	X	10.083	2 1/2 "	4 1/2 "	11.00
APF50510261	0.4040	Y	10.261	2 9/16"	4 1/2 "	11.00
APF50510317	0.4062	13/32"	10.317	2 9/16"	4 1/2 "	11.00
APF505105	0.4134	-	10.500	67.00	114.00	11.00
APF50510716	0.4219	27/64"	10.716	2 11/16"	4 1/2 "	11.00
APF505110	0.4331	-	11.000	68.00	114.00	11.00
APF50511112	0.4375	7/16"	11.112	2 13/16"	4 3/4 "	12.00
APF505115	0.4528	-	11.500	70.00	120.00	12.00
APF50511508	0.4531	29/64"	11.508	2 7/8 "	4 3/4 "	12.00
APF50511907	0.4688	15/32"	11.907	2 7/8 "	4 3/4 "	12.00
APF505120	0.4724	-	12.000	73.00	120.00	12.00
APF50512303	0.4844	31/64"	12.303	3 "	5 5/16"	13.00
APF505125	0.4921	-	12.500	75.00	135.00	13.00
APF505127	0.5000	1/2 "	12.700	3 1/16"	5 3/8 "	13.00
APF505130	0.5118	-	13.000	78.00	136.00	13.00
APF50513096	0.5156	33/64"	13.096	3 1/8 "	5 3/8 "	14.00

ALU-WAVE

APF505 Series

EDP NO. 3 Flute DLC Helix 30°	Cutting Diameter			Cutting Length	Overall Length	Shank Diameter
5xD	D1			L1	L2	D2
APF505	Decimal	Fraction	Metric			
APF50513492	0.5312	17/32"	13.492	3 5/16"	5 11/16"	14.00
APF50513891	0.5469	35/64"	13.891	3 3/8 "	5 13/16"	14.00
APF505140	0.5512	-	14.000	86.00	148.00	14.00
APF50514287	0.5625	9/16"	14.287	3 1/2 "	5 15/16"	15.00
APF50514683	0.5781	37/64"	14.683	3 1/2 "	6 "	15.00
APF505150	0.5906	-	15.000	90.00	152.00	15.00
APF50515082	0.5938	19/32"	15.082	3 9/16"	6 "	16.00
APF50515478	0.6094	39/64"	15.478	3 11/16"	6 3/16"	16.00
APF50515875	0.6250	5/8 "	15.875	3 3/4 "	6 5/16"	16.00
APF505160	0.6299	-	16.000	95.00	160.00	16.00

APF505 Series

Unit : Inch					
Work Material	Aluminum Alloy	Cast Aluminum	Magnesium	Copper & Brass	Titanium
Type	6061	380	-	-	6AI-4V
SFM	450 ~ 650	300 ~ 500	250 ~ 500	250 ~ 400	100 ~ 300
Cutting Diameter	Chip Load per Flute (Fz)				
3/16	0.0020 ~ 0.0040	0.0015 ~ 0.0030	0.0015 ~ 0.0030	0.0010 ~ 0.0020	0.0010 ~ 0.0020
1/4	0.0025 ~ 0.0050	0.0020 ~ 0.0040	0.0020 ~ 0.0040	0.0020 ~ 0.0030	0.0020 ~ 0.0030
5/16	0.0035 ~ 0.0060	0.0030 ~ 0.0050	0.0030 ~ 0.0050	0.0020 ~ 0.0030	0.0020 ~ 0.0030
3/8	0.0045 ~ 0.0070	0.0030 ~ 0.0060	0.0030 ~ 0.0060	0.0020 ~ 0.0040	0.0020 ~ 0.0040
1/2	0.0055 ~ 0.0080	0.0035 ~ 0.0070	0.0035 ~ 0.0070	0.0030 ~ 0.0050	0.0030 ~ 0.0050
5/8	0.0065 ~ .01000	0.0040 ~ 0.0080	0.0040 ~ 0.0080	0.0030 ~ 0.0060	0.0030 ~ 0.0060

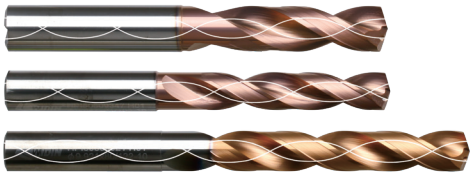
Unit : Metric					
Work Material	Aluminum Alloy	Cast Aluminum	Magnesium	Copper & Brass	Titanium
Type	6061	380	-	-	6AI-4V
V (m/min)	140 ~ 200	90 ~ 150	75 ~ 150	75 ~ 120	30 ~ 90
Cutting Diameter	Chip Load per Flute (Fz)				
4	0.050 ~ 0.100	0.038 ~ 0.078	0.038 ~ 0.075	0.025 ~ 0.060	0.025 ~ 0.050
6	0.065 ~ 0.125	0.050 ~ 0.100	0.050 ~ 0.100	0.050 ~ 0.075	0.050 ~ 0.075
8	0.090 ~ 0.150	0.075 ~ 0.125	0.075 ~ 0.125	0.050 ~ 0.075	0.050 ~ 0.075
10	0.115 ~ 0.175	0.075 ~ 0.150	0.075 ~ 0.150	0.050 ~ 0.100	0.050 ~ 0.100
12	0.150 ~ 0.200	0.090 ~ 0.175	0.090 ~ 0.175	0.075 ~ 0.125	0.075 ~ 0.125
16	0.165 ~ 0.250	0.100 ~ 0.200	0.100 ~ 0.200	0.075 ~ 0.150	0.075 ~ 0.150

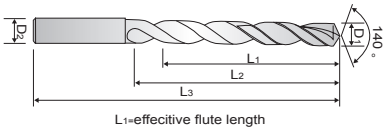
POWER MAX DRILL

HPI503, HPI505, HPI508N Series

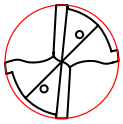
ULTRA FINE POINT ANGLE

DRILLS / 2 FLUTES / 3xD, 5xD & 8xD / INTERNAL COOLANT / DOUBLE MARGIN / TiAlN-HH COATING





L1=effective flute length



TOLERANCE (metric)

D_1 = +0.016 / 0.004 (D1≤6)
D_1 = +0.021 / 0.006 (D1 = 6.1 to 10)
D_1 = +0.025 / 0.007 (D1 = 10.1 to 18)
D_1 = +0.029 / 0.008 (D1>18)
D_2 = h6

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO.			Cutting Diameter			Effective Cutting Length	Cutting Length	Overall Length	Shank Diameter
2 Flute									
TiAlN-HH									
Helix 30°									
3xD	5xD	8xD	D1			L1	L2	L3	D2
HPI503	HPI505	HPI508N	Decimal	Fraction	Metric				
HPI503030	-	-	0.1181"	-	3.000	14.00	20.00	62.00	6.00
-	-	HPI508030N	0.1181"	-	3.000	36.55	43.00	80.00	6.00
HPI50303175	-	-	0.1250"	1/8 "	3.175	14.00	20.00	62.00	6.00
-	HPI50503175	-	0.1250"	1/8 "	3.175	24.00	30.00	66.00	6.00
-	-	HPI50803175N	0.1250"	1/8 "	3.175	36.55	43.00	80.00	6.00
HPI50303264	-	-	0.1285"	#30	3.264	14.00	20.00	62.00	6.00
-	HPI50503264	-	0.1285"	#30	3.264	24.00	30.00	66.00	6.00
-	-	HPI50803264N	0.1285"	#30	3.264	36.55	43.00	80.00	6.00
HPI50303572	-	-	0.1406"	9/64"	3.572	14.00	20.00	62.00	6.00
-	HPI50503572	-	0.1406"	9/64"	3.572	24.00	30.00	66.00	6.00
-	-	HPI50803572N	0.1406"	9/64"	3.572	36.55	43.00	80.00	6.00
HPI5030397	-	-	0.1563"	5/32"	3.970	17.00	24.00	66.00	6.00
-	HPI5050397	-	0.1563"	5/32"	3.970	29.00	36.00	74.00	6.00
-	-	HPI5080397N	0.1563"	5/32"	3.970	41.00	49.00	80.00	6.00
HPI503040	-	-	0.1575"	-	4.000	17.00	24.00	66.00	6.00
-	HPI505040	-	0.1575"	-	4.000	29.00	36.00	74.00	6.00
HPI50304039	-	-	0.1590"	#21	4.039	17.00	24.00	66.00	6.00
-	HPI50504039	-	0.1590"	#21	4.039	29.00	36.00	74.00	6.00
-	-	HPI50804039N	0.1590"	#21	4.039	41.00	49.00	87.00	6.00
-	HPI505041	-	0.1614"	-	4.100	29.00	36.00	74.00	6.00
HPI503042	-	-	0.1654"	-	4.200	17.00	24.00	66.00	6.00
-	HPI505042	-	0.1654"	-	4.200	29.00	36.00	74.00	6.00
HPI503043	-	-	0.1693"	-	4.300	17.00	24.00	66.00	6.00
-	HPI505043	-	0.1693"	-	4.300	29.00	36.00	74.00	6.00
-	HPI50504366	-	0.1719"	11/64"	4.366	29.00	36.00	74.00	6.00
-	HPI505044	-	0.1732"	-	4.400	29.00	36.00	74.00	6.00
HPI503045	-	-	0.1772"	-	4.500	17.00	24.00	66.00	6.00
-	HPI505045	-	0.1772"	-	4.500	29.00	36.00	74.00	6.00
-	HPI5050458	-	0.1803"	-	4.580	29.00	36.00	74.00	6.00
HPI503046	-	-	0.1811"	-	4.600	17.00	24.00	66.00	6.00
-	HPI505046	-	0.1811"	-	4.600	29.00	36.00	74.00	6.00
-	HPI50504623	-	0.1820"	-	4.623	29.00	36.00	74.00	6.00
-	HPI505047	-	0.1850"	-	4.700	29.00	36.00	74.00	6.00
HPI50304763	-	-	0.1875"	3/16"	4.763	20.00	28.00	66.00	6.00

Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
All	○	○	○	◎	◎	◎	◎	◎	◎					◎	◎	◎	○				

POWER MAX DRILL

HPI503, HPI505, HPI508N Series

>>Continue

EDP NO.			Cutting Diameter			Effective Cutting Length	Cutting Length	Overall Length	Shank Diameter
2 Flute									
TiAlN-HH									
Helix 30°									
3xD	5xD	8xD	D1			L1	L2	L3	D2
HPI503	HPI505	HPI508N	Decimal	Fraction	Metric				
-	HPI50504763	-	0.1875"	3/16"	4.763	35.00	44.00	82.00	6.00
-	-	HPI50804763N	0.1875"	3/16"	4.763	47.60	56.00	87.00	6.00
HPI503048	-	-	0.1890"	-	4.800	20.00	28.00	66.00	6.00
-	HPI505048	-	0.1890"	-	4.800	35.00	44.00	82.00	6.00
HPI503049	-	-	0.1929"	-	4.900	20.00	28.00	66.00	6.00
-	HPI505049	-	0.1929"	-	4.900	35.00	44.00	82.00	6.00
HPI503050	-	-	0.1969"	-	5.000	20.00	28.00	66.00	6.00
-	HPI505050	-	0.1969"	-	5.000	35.00	44.00	82.00	6.00
-	-	HPI508050N	0.1969"	-	5.000	47.60	56.00	94.00	6.00
HPI503051	-	-	0.2008"	-	5.100	20.00	28.00	66.00	6.00
-	HPI505051	-	0.2008"	-	5.100	35.00	44.00	82.00	6.00
-	-	HPI508051N	0.2008"	-	5.100	47.60	56.00	94.00	6.00
HPI50305159	-	-	0.2031"	13/64"	5.159	20.00	28.00	66.00	6.00
-	HPI50505159	-	0.2031"	13/64"	5.159	35.00	44.00	82.00	6.00
-	-	HPI50805159N	0.2031"	13/64"	5.159	47.60	56.00	94.00	6.00
HPI503052	-	-	0.2047"	-	5.200	20.00	28.00	66.00	6.00
-	HPI505052	-	0.2047"	-	5.200	35.00	44.00	82.00	6.00
-	-	HPI508052N	0.2047"	-	5.200	47.60	56.00	94.00	6.00
HPI503053	-	-	0.2087"	-	5.300	20.00	28.00	66.00	6.00
-	HPI505053	-	0.2087"	-	5.300	35.00	44.00	82.00	6.00
-	-	HPI508053N	0.2087"	-	5.300	47.60	56.00	94.00	6.00
HPI503054	-	-	0.2126"	-	5.400	20.00	28.00	66.00	6.00
-	HPI505054	-	0.2126"	-	5.400	35.00	44.00	82.00	6.00
-	HPI5050541	-	0.2130"	-	5.410	35.00	44.00	82.00	6.00
HPI503055	-	-	0.2165"	-	5.500	20.00	28.00	66.00	6.00
-	HPI505055	-	0.2165"	-	5.500	35.00	44.00	82.00	6.00
-	-	HPI508055N	0.2165"	-	5.500	47.60	56.00	94.00	6.00
HPI50305558	-	-	0.2188"	7/32"	5.558	20.00	28.00	66.00	6.00
-	HPI50505558	-	0.2188"	7/32"	5.558	35.00	44.00	82.00	6.00
-	-	HPI50805558N	0.2188"	7/32"	5.558	47.60	56.00	94.00	6.00
HPI503056	-	-	0.2205"	-	5.600	20.00	28.00	66.00	6.00
-	HPI505056	-	0.2205"	-	5.600	35.00	44.00	82.00	6.00
HPI503057	-	-	0.2244"	-	5.700	20.00	28.00	66.00	6.00
-	HPI505057	-	0.2244"	-	5.700	35.00	44.00	82.00	6.00
-	-	HPI508057N	0.2244"	-	5.700	47.60	56.00	94.00	6.00
HPI503058	-	-	0.2283"	-	5.800	20.00	28.00	66.00	6.00
-	HPI505058	-	0.2283"	-	5.800	35.00	44.00	82.00	6.00
-	HPI505059	-	0.2323"	-	5.900	35.00	44.00	82.00	6.00
HPI50305953	-	-	0.2344"	15/64"	5.953	20.00	28.00	66.00	6.00
-	HPI50505953	-	0.2344"	15/64"	5.953	35.00	44.00	82.00	6.00
-	-	HPI50805953N	0.2344"	15/64"	5.953	47.60	56.00	94.00	6.00
HPI503060	-	-	0.2362"	-	6.000	20.00	28.00	66.00	6.00
-	HPI505060	-	0.2362"	-	6.000	35.00	44.00	82.00	6.00
-	-	HPI508060N	0.2362"	-	6.000	47.60	56.00	94.00	6.00
HPI503061	-	-	0.2402"	-	6.100	24.00	34.00	79.00	8.00

POWER MAX DRILL

HPI503, HPI505, HPI508N Series

>>Continue

EDP NO. / 2 Flute / TiAlN-HH / Helix 30°			Cutting Diameter			Effective Cutting Length	Cutting Length	Overall Length	Shank Diameter
3xD	5xD	8xD	D1			L1	L2	L3	D2
HPI503	HPI505	HPI508N	Decimal	Fraction	Metric				
-	HPI505061	-	0.2402"	-	6.100	43.00	53.00	91.00	8.00
-	-	HPI508061N	0.2402"	-	6.100	56.95	67.00	105.00	8.00
HPI503062	-	-	0.2441"	-	6.200	24.00	34.00	79.00	8.00
-	HPI505062	-	0.2441"	-	6.200	43.00	53.00	91.00	8.00
-	-	HPI508062N	0.2441"	-	6.200	56.95	67.00	105.00	8.00
-	HPI505063	-	0.2480"	-	6.300	43.00	53.00	91.00	8.00
-	-	HPI508063N	0.2480"	-	6.300	56.95	67.00	105.00	8.00
HPI5030635	-	-	0.2500"	1/4 "	6.350	24.00	34.00	79.00	8.00
-	HPI5050635	-	0.2500"	1/4 "	6.350	43.00	53.00	91.00	8.00
-	-	HPI5080635N	0.2500"	1/4 "	6.350	56.95	67.00	105.00	8.00
-	HPI505064	-	0.2520"	-	6.400	43.00	53.00	91.00	8.00
-	-	HPI508064N	0.2520"	-	6.400	56.95	67.00	105.00	8.00
HPI503065	-	-	0.2559"	-	6.500	24.00	34.00	79.00	8.00
-	HPI505065	-	0.2559"	-	6.500	43.00	53.00	91.00	8.00
-	-	HPI508065N	0.2559"	-	6.500	56.95	67.00	105.00	8.00
-	HPI50506528	-	0.2570"	-	6.528	43.00	53.00	91.00	8.00
HPI503066	-	-	0.2598"	-	6.600	24.00	34.00	79.00	8.00
-	HPI505066	-	0.2598"	-	6.600	43.00	53.00	91.00	8.00
-	-	HPI508066N	0.2598"	-	6.600	56.95	67.00	105.00	8.00
-	HPI505067	-	0.2638"	-	6.700	43.00	53.00	91.00	8.00
-	-	HPI508067N	0.2638"	-	6.700	56.95	67.00	105.00	8.00
HPI50306747	-	-	0.2656"	17/64"	6.747	24.00	34.00	79.00	8.00
-	HPI50506747	-	0.2656"	17/64"	6.747	43.00	53.00	91.00	8.00
-	-	HPI50806747N	0.2656"	17/64"	6.747	56.95	67.00	105.00	8.00
HPI503068	-	-	0.2677"	-	6.800	24.00	34.00	79.00	8.00
-	HPI505068	-	0.2677"	-	6.800	43.00	53.00	91.00	8.00
-	-	HPI508068N	0.2677"	-	6.800	56.95	67.00	105.00	8.00
-	HPI505069	-	0.2717"	-	6.900	43.00	53.00	91.00	8.00
-	HPI50506909	-	0.2720"	-	6.909	43.00	53.00	91.00	8.00
HPI503070	-	-	0.2756"	-	7.000	24.00	34.00	79.00	8.00
-	HPI505070	-	0.2756"	-	7.000	43.00	53.00	91.00	8.00
-	-	HPI508070N	0.2756"	-	7.000	64.60	76.00	116.00	8.00
-	HPI505071	-	0.2795"	-	7.100	43.00	53.00	91.00	8.00
HPI50307145	-	-	0.2813"	9/32"	7.145	29.00	41.00	79.00	8.00
-	HPI50507145	-	0.2813"	9/32"	7.145	43.00	53.00	91.00	8.00
-	-	HPI50807145N	0.2813"	9/32"	7.145	64.60	76.00	116.00	8.00
HPI503072	-	-	0.2835"	-	7.200	29.00	41.00	79.00	8.00
-	HPI505072	-	0.2835"	-	7.200	43.00	53.00	91.00	8.00
-	HPI505073	-	0.2874"	-	7.300	43.00	53.00	91.00	8.00
HPI503074	-	-	0.2913"	-	7.400	29.00	41.00	79.00	8.00
-	HPI505074	-	0.2913"	-	7.400	43.00	53.00	91.00	8.00
HPI503075	-	-	0.2953"	-	7.500	29.00	41.00	79.00	8.00
-	HPI505075	-	0.2953"	-	7.500	43.00	53.00	91.00	8.00
-	-	HPI508075N	0.2953"	-	7.500	64.60	76.00	116.00	8.00
HPI50307541	-	-	0.2969"	19/64"	7.541	29.00	41.00	79.00	8.00

POWER MAX DRILL

HPI503, HPI505, HPI508N Series

>>Continue

EDP NO.			Cutting Diameter			Effective Cutting Length	Cutting Length	Overall Length	Shank Diameter
2 Flute									
TiAlN-HH									
Helix 30°									
3xD	5xD	8xD	D1			L1	L2	L3	D2
HPI503	HPI505	HPI508N	Decimal	Fraction	Metric				
-	HPI50507541	-	0.2969"	19/64"	7.541	43.00	53.00	91.00	8.00
-	-	HPI50807541N	0.2969"	19/64"	7.541	64.60	76.00	116.00	8.00
-	HPI505076	-	0.2992"	-	7.600	43.00	53.00	91.00	8.00
-	HPI505077	-	0.3031"	-	7.700	43.00	53.00	91.00	8.00
-	-	HPI508077N	0.3031"	-	7.700	64.60	76.00	116.00	8.00
HPI503078	-	-	0.3071"	-	7.800	29.00	41.00	79.00	8.00
-	HPI505078	-	0.3071"	-	7.800	43.00	53.00	91.00	8.00
-	-	HPI508078N	0.3071"	-	7.800	64.60	76.00	116.00	8.00
HPI503079	-	-	0.3110"	-	7.900	29.00	41.00	79.00	8.00
-	HPI505079	-	0.3110"	-	7.900	43.00	53.00	91.00	8.00
HPI50307938	-	-	0.3125"	5/16"	7.938	29.00	41.00	79.00	8.00
-	HPI50507938	-	0.3125"	5/16"	7.938	43.00	53.00	91.00	8.00
-	-	HPI50807938N	0.3125"	5/16"	7.938	64.60	76.00	116.00	8.00
HPI503080	-	-	0.3150"	-	8.000	29.00	41.00	79.00	8.00
-	HPI505080	-	0.3150"	-	8.000	43.00	53.00	91.00	8.00
-	-	HPI508080N	0.3150"	-	8.000	64.60	76.00	116.00	8.00
HPI503081	-	-	0.3189"	-	8.100	35.00	47.00	89.00	10.00
-	HPI505081	-	0.3189"	-	8.100	49.00	61.00	103.00	10.00
-	-	HPI508081N	0.3189"	-	8.100	73.95	87.00	131.00	10.00
HPI503082	-	-	0.3228"	-	8.200	35.00	47.00	89.00	10.00
-	HPI505082	-	0.3228"	-	8.200	49.00	61.00	103.00	10.00
HPI503083	-	-	0.3268"	-	8.300	35.00	47.00	89.00	10.00
-	HPI505083	-	0.3268"	-	8.300	49.00	61.00	103.00	10.00
HPI50308334	-	-	0.3281"	21/64"	8.334	35.00	47.00	89.00	10.00
-	HPI50508334	-	0.3281"	21/64"	8.334	49.00	61.00	103.00	10.00
-	-	HPI50808334N	0.3281"	21/64"	8.334	73.95	87.00	131.00	10.00
-	HPI505084	-	0.3307"	-	8.400	49.00	61.00	103.00	10.00
-	HPI50508433	-	0.3320"	-	8.433	49.00	61.00	103.00	10.00
HPI503085	-	-	0.3346"	-	8.500	35.00	47.00	89.00	10.00
-	HPI505085	-	0.3346"	-	8.500	49.00	61.00	103.00	10.00
-	-	HPI508085N	0.3346"	-	8.500	73.95	87.00	131.00	10.00
HPI503086	-	-	0.3386"	-	8.600	35.00	47.00	89.00	10.00
-	HPI505086	-	0.3386"	-	8.600	49.00	61.00	103.00	10.00
-	-	HPI508086N	0.3386"	-	8.600	73.95	87.00	131.00	10.00
HPI503087	-	-	0.3425"	-	8.700	35.00	47.00	89.00	10.00
-	HPI505087	-	0.3425"	-	8.700	49.00	61.00	103.00	10.00
-	-	HPI508087N	0.3425"	-	8.700	73.95	87.00	131.00	10.00
HPI50308733	-	-	0.3438"	11/32"	8.733	35.00	47.00	89.00	10.00
-	HPI50508733	-	0.3438"	11/32"	8.733	49.00	61.00	103.00	10.00
-	-	HPI50808733N	0.3438"	11/32"	8.733	73.95	87.00	131.00	10.00
HPI503088	-	-	0.3465"	-	8.800	35.00	47.00	89.00	10.00
-	HPI505088	-	0.3465"	-	8.800	49.00	61.00	103.00	10.00
-	-	HPI508088N	0.3465"	-	8.800	73.95	87.00	131.00	10.00
-	HPI505089	-	0.3504"	-	8.900	49.00	61.00	103.00	10.00
HPI503090	-	-	0.3543"	-	9.000	35.00	47.00	89.00	10.00

POWER MAX DRILL

HPI503, HPI505, HPI508N Series

>>Continue

EDP NO.			Cutting Diameter			Effective Cutting Length	Cutting Length	Overall Length	Shank Diameter
2 Flute									
TiAlN-HH									
Helix 30°									
3xD	5xD	8xD	D1			L1	L2	L3	D2
HPI503	HPI505	HPI508N	Decimal	Fraction	Metric				
-	HPI505090	-	0.3543"	-	9.000	49.00	61.00	103.00	10.00
-	-	HPI508090N	0.3543"	-	9.000	73.95	87.00	131.00	10.00
HPI503091	-	-	0.3583"	-	9.100	35.00	47.00	89.00	10.00
-	HPI505091	-	0.3583"	-	9.100	49.00	61.00	103.00	10.00
-	-	HPI508091N	0.3583"	-	9.100	80.75	95.00	139.00	10.00
HPI50309129	-	-	0.3594"	23/64"	9.129	35.00	47.00	89.00	10.00
-	HPI50509129	-	0.3594"	23/64"	9.129	49.00	61.00	103.00	10.00
-	-	HPI50809129N	0.3594"	23/64"	9.129	80.75	95.00	139.00	10.00
HPI503092	-	-	0.3622"	-	9.200	35.00	47.00	89.00	10.00
-	HPI505092	-	0.3622"	-	9.200	49.00	61.00	103.00	10.00
HPI503093	-	-	0.3661"	-	9.300	35.00	47.00	89.00	10.00
-	HPI505093	-	0.3661"	-	9.300	49.00	61.00	103.00	10.00
-	HPI50509347	-	0.3680"	-	9.347	49.00	61.00	103.00	10.00
-	HPI505094	-	0.3701"	-	9.400	49.00	61.00	103.00	10.00
HPI503095	-	-	0.3740"	-	9.500	35.00	47.00	89.00	10.00
-	HPI505095	-	0.3740"	-	9.500	49.00	61.00	103.00	10.00
-	-	HPI508095N	0.3740"	-	9.500	80.75	95.00	139.00	10.00
HPI50309525	-	-	0.3750"	3/8 "	9.525	35.00	47.00	89.00	10.00
-	HPI50509525	-	0.3750"	3/8 "	9.525	49.00	61.00	103.00	10.00
-	-	HPI50809525N	0.3750"	3/8 "	9.525	80.75	95.00	139.00	10.00
HPI503096	-	-	0.3780"	-	9.600	35.00	47.00	89.00	10.00
-	HPI505096	-	0.3780"	-	9.600	49.00	61.00	103.00	10.00
HPI503097	-	-	0.3819"	-	9.700	35.00	47.00	89.00	10.00
-	HPI505097	-	0.3819"	-	9.700	49.00	61.00	103.00	10.00
-	-	HPI508097N	0.3819"	-	9.700	80.75	95.00	139.00	10.00
-	HPI50509703	-	0.3820"	-	9.703	49.00	61.00	103.00	10.00
-	HPI50509746	-	0.3837"	-	9.746	49.00	61.00	103.00	10.00
HPI503098	-	-	0.3858"	-	9.800	35.00	47.00	89.00	10.00
-	HPI505098	-	0.3858"	-	9.800	49.00	61.00	103.00	10.00
-	-	HPI508098N	0.3858"	-	9.800	80.75	95.00	139.00	10.00
-	HPI505099	-	0.3898"	-	9.900	49.00	61.00	103.00	10.00
-	-	HPI508099N	0.3898"	-	9.900	80.75	95.00	139.00	10.00
HPI50309921	-	-	0.3906"	25/64"	9.921	35.00	47.00	89.00	10.00
-	HPI50509921	-	0.3906"	25/64"	9.921	49.00	61.00	103.00	10.00
-	-	HPI50809921N	0.3906"	25/64"	9.921	80.75	95.00	139.00	10.00
HPI503100	-	-	0.3937"	-	10.000	35.00	47.00	89.00	10.00
-	HPI505100	-	0.3937"	-	10.000	49.00	61.00	103.00	10.00
-	-	HPI508100N	0.3937"	-	10.000	80.75	95.00	139.00	10.00
-	HPI505101	-	0.3976"	-	10.100	56.00	71.00	118.00	12.00
-	-	HPI508101N	0.3976"	-	10.100	90.10	106.00	155.00	12.00
HPI503102	-	-	0.4016"	-	10.200	40.00	55.00	105.00	12.00
-	HPI505102	-	0.4016"	-	10.200	56.00	71.00	118.00	12.00
-	-	HPI508102N	0.4016"	-	10.200	90.10	106.00	155.00	12.00
-	HPI505103	-	0.4055"	-	10.300	56.00	71.00	118.00	12.00
-	-	HPI508103N	0.4055"	-	10.300	90.10	106.00	155.00	12.00

POWER MAX DRILL

HPI503, HPI505, HPI508N Series

>>Continue

EDP NO.			Cutting Diameter			Effective Cutting Length	Cutting Length	Overall Length	Shank Diameter
2 Flute									
TiAlN-HH									
Helix 30°									
3xD	5xD	8xD	D1			L1	L2	L3	D2
HPI503	HPI505	HPI508N	Decimal	Fraction	Metric				
HPI5031032	-	-	0.4063"	13/32"	10.320	40.00	55.00	105.00	12.00
-	HPI5051032	-	0.4063"	13/32"	10.320	56.00	71.00	118.00	12.00
-	-	HPI5081032N	0.4063"	13/32"	10.320	90.10	106.00	155.00	12.00
-	HPI505104	-	0.4094"	-	10.400	56.00	71.00	118.00	12.00
HPI503105	-	-	0.4134"	-	10.500	40.00	55.00	105.00	12.00
-	HPI505105	-	0.4134"	-	10.500	56.00	71.00	118.00	12.00
-	-	HPI508105N	0.4134"	-	10.500	90.10	106.00	155.00	12.00
-	HPI505106	-	0.4173"	-	10.600	56.00	71.00	118.00	12.00
HPI503107	-	-	0.4213"	-	10.700	40.00	55.00	105.00	12.00
-	HPI505107	-	0.4213"	-	10.700	56.00	71.00	118.00	12.00
HPI50310716	-	-	0.4219"	27/64"	10.716	40.00	55.00	105.00	12.00
-	HPI50510716	-	0.4219"	27/64"	10.716	56.00	71.00	118.00	12.00
-	-	HPI50810716N	0.4219"	27/64"	10.716	90.10	106.00	155.00	12.00
HPI503108	-	-	0.4252"	-	10.800	40.00	55.00	105.00	12.00
-	HPI505108	-	0.4252"	-	10.800	56.00	71.00	118.00	12.00
-	-	HPI508108N	0.4252"	-	10.800	90.10	106.00	155.00	12.00
-	HPI505109	-	0.4291"	-	10.900	56.00	71.00	118.00	12.00
HPI503110	-	-	0.4331"	-	11.000	40.00	55.00	105.00	12.00
-	HPI505110	-	0.4331"	-	11.000	56.00	71.00	118.00	12.00
-	-	HPI508110N	0.4331"	-	11.000	90.10	106.00	155.00	12.00
-	HPI505111	-	0.4370"	-	11.100	56.00	71.00	118.00	12.00
HPI50311113	-	-	0.4375"	7/16"	11.113	40.00	55.00	105.00	12.00
-	HPI50511113	-	0.4375"	7/16"	11.113	56.00	71.00	118.00	12.00
-	-	HPI50811113N	0.4375"	7/16"	11.113	96.90	114.00	163.00	12.00
HPI503112	-	-	0.4409"	-	11.200	40.00	55.00	105.00	12.00
-	HPI505112	-	0.4409"	-	11.200	56.00	71.00	118.00	12.00
-	-	HPI508112N	0.4409"	-	11.200	96.90	114.00	163.00	12.00
-	HPI505113	-	0.4449"	-	11.300	56.00	71.00	118.00	12.00
-	-	HPI508113N	0.4449"	-	11.300	96.90	114.00	163.00	12.00
-	HPI505114	-	0.4488"	-	11.400	56.00	71.00	118.00	12.00
-	-	HPI508114N	0.4488"	-	11.400	96.90	114.00	163.00	12.00
HPI503115	-	-	0.4528"	-	11.500	40.00	55.00	105.00	12.00
-	HPI505115	-	0.4528"	-	11.500	56.00	71.00	118.00	12.00
-	-	HPI508115N	0.4528"	-	11.500	96.90	114.00	163.00	12.00
HPI50311509	-	-	0.4531"	29/64"	11.509	40.00	55.00	105.00	12.00
-	HPI50511509	-	0.4531"	29/64"	11.509	56.00	71.00	118.00	12.00
-	-	HPI50811509N	0.4531"	29/64"	11.509	96.90	114.00	163.00	12.00
-	HPI505116	-	0.4567"	-	11.600	56.00	71.00	118.00	12.00
HPI503117	-	-	0.4606"	-	11.700	40.00	55.00	105.00	12.00
-	HPI505117	-	0.4606"	-	11.700	56.00	71.00	118.00	12.00
-	-	HPI508117N	0.4606"	-	11.700	96.90	114.00	163.00	12.00
-	HPI505118	-	0.4646"	-	11.800	56.00	71.00	118.00	12.00
-	-	HPI508118N	0.4646"	-	11.800	96.90	114.00	163.00	12.00
-	HPI505119	-	0.4685"	-	11.900	56.00	71.00	118.00	12.00
HPI50311908	-	-	0.4688"	15/32"	11.908	40.00	55.00	105.00	12.00

POWER MAX DRILL

HPI503, HPI505, HPI508N Series

>>Continue

EDP NO. / 2 Flute / TiAlN-HH / Helix 30°			Cutting Diameter			Effective Cutting Length	Cutting Length	Overall Length	Shank Diameter
3xD	5xD	8xD	D1			L1	L2	L3	D2
HPI503	HPI505	HPI508N	Decimal	Fraction	Metric				
-	HPI50511908	-	0.4688"	15/32"	11.908	56.00	71.00	118.00	12.00
-	-	HPI50811908N	0.4688"	15/32"	11.908	96.90	114.00	163.00	12.00
HPI503120	-	-	0.4724"	-	12.000	40.00	55.00	105.00	12.00
-	HPI505120	-	0.4724"	-	12.000	56.00	71.00	118.00	12.00
-	-	HPI508120N	0.4724"	-	12.000	96.90	114.00	163.00	12.00
-	HPI505121	-	0.4764"	-	12.100	60.00	77.00	124.00	14.00
-	HPI505122	-	0.4803"	-	12.200	60.00	77.00	124.00	14.00
HPI503123	-	-	0.4843"	-	12.300	43.00	60.00	107.00	14.00
-	HPI505123	-	0.4843"	-	12.300	60.00	77.00	124.00	14.00
HPI50312304	-	-	0.4844"	31/64"	12.304	43.00	60.00	107.00	14.00
-	-	HPI50812304N	0.4844"	31/64"	12.304	113.05	133.00	182.00	14.00
-	HPI505124	-	0.4882"	-	12.400	60.00	77.00	124.00	14.00
HPI503125	-	-	0.4921"	-	12.500	43.00	60.00	107.00	14.00
-	HPI505125	-	0.4921"	-	12.500	60.00	77.00	124.00	14.00
-	-	HPI508125N	0.4921"	-	12.500	113.05	133.00	182.00	14.00
-	HPI505126	-	0.4961"	-	12.600	60.00	77.00	124.00	14.00
HPI503127	-	-	0.5000"	1/2 "	12.700	43.00	60.00	107.00	14.00
-	HPI505127	-	0.5000"	1/2 "	12.700	60.00	77.00	124.00	14.00
-	-	HPI508127N	0.5000"	1/2 "	12.700	113.05	133.00	182.00	14.00
HPI503128	-	-	0.5039"	-	12.800	43.00	60.00	107.00	14.00
-	HPI505128	-	0.5039"	-	12.800	60.00	77.00	124.00	14.00
-	-	HPI508128N	0.5039"	-	12.800	113.05	133.00	182.00	14.00
-	HPI505129	-	0.5079"	-	12.900	60.00	77.00	124.00	14.00
-	HPI50512903	-	0.5080"	-	12.903	60.00	77.00	124.00	14.00
HPI503130	-	-	0.5118"	-	13.000	43.00	60.00	107.00	14.00
-	HPI505130	-	0.5118"	-	13.000	60.00	77.00	124.00	14.00
-	-	HPI508130N	0.5118"	-	13.000	113.05	133.00	182.00	14.00
-	HPI50513096	-	0.5156"	33/64"	13.096	60.00	77.00	124.00	14.00
-	HPI505131	-	0.5157"	-	13.100	60.00	77.00	124.00	14.00
HPI503133	-	-	0.5236"	-	13.300	43.00	60.00	107.00	14.00
-	HPI505133	-	0.5236"	-	13.300	60.00	77.00	124.00	14.00
-	HPI50512304	-	0.5238"	31/64"	13.304	60.00	77.00	124.00	14.00
HPI50313494	-	-	0.5313"	17/32"	13.494	43.00	60.00	107.00	14.00
-	HPI50513494	-	0.5313"	17/32"	13.494	60.00	77.00	124.00	14.00
HPI503135	-	-	0.5315"	-	13.500	43.00	60.00	107.00	14.00
-	HPI505135	-	0.5315"	-	13.500	60.00	77.00	124.00	14.00
-	-	HPI508135N	0.5315"	-	13.500	113.05	133.00	182.00	14.00
HPI503137	-	-	0.5394"	-	13.700	43.00	60.00	107.00	14.00
-	HPI505137	-	0.5394"	-	13.700	60.00	77.00	124.00	14.00
-	HPI505138	-	0.5433"	-	13.800	60.00	77.00	124.00	14.00
HPI50313891	-	-	0.5469"	35/64"	13.891	43.00	60.00	107.00	14.00
-	HPI50513891	-	0.5469"	35/64"	13.891	60.00	77.00	124.00	14.00
HPI503140	-	-	0.5512"	-	14.000	43.00	60.00	107.00	14.00
-	HPI505140	-	0.5512"	-	14.000	60.00	77.00	124.00	14.00
-	-	HPI508140N	0.5512"	-	14.000	113.05	133.00	182.00	14.00

POWER MAX DRILL

HPI503, HPI505, HPI508N Series

>>Continue

EDP NO.			Cutting Diameter			Effective Cutting Length	Cutting Length	Overall Length	Shank Diameter
2 Flute									
TiAlN-HH									
Helix 30°									
3xD	5xD	8xD	D1			L1	L2	L3	D2
HPI503	HPI505	HPI508N	Decimal	Fraction	Metric				
HPI503141	-	-	0.5551"	-	14.100	43.00	65.00	115.00	16.00
HPI503142	-	-	0.5591"	-	14.200	45.00	65.00	115.00	16.00
-	HPI505142	-	0.5591"	-	14.200	63.00	83.00	133.00	16.00
HPI50314288	-	-	0.5625"	9/16"	14.288	45.00	65.00	115.00	16.00
-	HPI50514288	-	0.5625"	9/16"	14.288	63.00	83.00	133.00	16.00
-	-	HPI50814288N	0.5625"	9/16"	14.288	129.20	152.00	204.00	16.00
HPI503145	-	-	0.5709"	-	14.500	45.00	65.00	115.00	16.00
-	HPI505145	-	0.5709"	-	14.500	63.00	83.00	133.00	16.00
-	-	HPI508145N	0.5709"	-	14.500	129.20	152.00	204.00	16.00
-	HPI505146	-	0.5748"	-	14.600	63.00	83.00	133.00	16.00
HPI503147	-	-	0.5787"	-	14.700	45.00	65.00	115.00	16.00
-	HPI505147	-	0.5787"	-	14.700	63.00	83.00	133.00	16.00
-	HPI505149	-	0.5866"	-	14.900	63.00	83.00	133.00	16.00
HPI503150	-	-	0.5906"	-	15.000	45.00	65.00	115.00	16.00
-	HPI505150	-	0.5906"	-	15.000	63.00	83.00	133.00	16.00
-	-	HPI508150N	0.5906"	-	15.000	129.20	152.00	204.00	16.00
HPI50315081	-	-	0.5937"	19/32"	15.081	45.00	65.00	115.00	16.00
-	HPI50515081	-	0.5937"	19/32"	15.081	63.00	83.00	133.00	16.00
-	HPI505151	-	0.5945"	-	15.100	63.00	83.00	133.00	16.00
-	-	HPI508151N	0.5945"	-	15.100	129.20	152.00	204.00	16.00
-	-	HPI508152N	0.5984"	-	15.200	129.20	152.00	204.00	16.00
-	-	HPI508153N	0.6024"	-	15.300	129.20	152.00	204.00	16.00
HPI503155	-	-	0.6102"	-	15.500	45.00	65.00	115.00	16.00
-	HPI505155	-	0.6102"	-	15.500	63.00	83.00	133.00	16.00
-	-	HPI508155N	0.6102"	-	15.500	129.20	152.00	204.00	16.00
-	HPI505157	-	0.6181"	-	15.700	63.00	83.00	133.00	16.00
-	HPI505158	-	0.6220"	-	15.800	63.00	83.00	133.00	16.00
-	-	HPI508158N	0.6220"	-	15.800	129.20	152.00	204.00	16.00
HPI50315875	-	-	0.6250"	5/8 "	15.875	45.00	65.00	115.00	16.00
-	HPI50515875	-	0.6250"	5/8 "	15.875	63.00	83.00	133.00	16.00
-	-	HPI50815875N	0.6250"	5/8 "	15.875	129.20	152.00	204.00	16.00
-	HPI505159	-	0.6260"	-	15.900	63.00	83.00	133.00	16.00
HPI503160	-	-	0.6299"	-	16.000	45.00	65.00	115.00	16.00
-	HPI505160	-	0.6299"	-	16.000	63.00	83.00	133.00	16.00
-	-	HPI508160N	0.6299"	-	16.000	129.20	152.00	204.00	16.00
-	HPI50516078	-	0.6330"	-	16.078	71.00	93.00	143.00	18.00
-	-	HPI50816078N	0.6330"	-	16.078	145.35	171.00	223.00	18.00
-	HPI505162	-	0.6378"	-	16.200	71.00	93.00	143.00	18.00
-	-	HPI508162N	0.6378"	-	16.200	145.35	171.00	223.00	18.00
-	HPI505164	-	0.6457"	-	16.400	71.00	93.00	143.00	18.00
HPI503165	-	-	0.6496"	-	16.500	51.00	73.00	123.00	18.00
-	HPI505165	-	0.6496"	-	16.500	71.00	93.00	143.00	18.00
-	-	HPI508165N	0.6496"	-	16.500	145.35	171.00	223.00	18.00
-	HPI505166	-	0.6535"	-	16.600	71.00	93.00	143.00	18.00
-	HPI50516667	-	0.6562"	21/32"	16.667	71.00	93.00	143.00	18.00

POWER MAX DRILL

HPI503, HPI505, HPI508N Series

EDP NO.			Cutting Diameter			Effective Cutting Length	Cutting Length	Overall Length	Shank Diameter
2 Flute									
TiAlN-HH									
Helix 30°									
3xD	5xD	8xD	D1			L1	L2	L3	D2
HPI503	HPI505	HPI508N	Decimal	Fraction	Metric				
-	HPI505167	-	0.6575"	-	16.700	71.00	93.00	143.00	18.00
HPI503168	-	-	0.6614"	-	16.800	51.00	73.00	123.00	18.00
HPI503170	-	-	0.6693"	-	17.000	51.00	73.00	123.00	18.00
-	HPI505170	-	0.6693"	-	17.000	71.00	93.00	143.00	18.00
-	-	HPI508170N	0.6693"	-	17.000	145.35	171.00	223.00	18.00
HPI503171	-	-	0.6732"	-	17.100	51.00	73.00	123.00	18.00
HPI50317463	-	-	0.6875"	11/16"	17.463	51.00	73.00	123.00	18.00
-	HPI50517463	-	0.6875"	11/16"	17.463	71.00	93.00	143.00	18.00
-	-	HPI50817463N	0.6875"	11/16"	17.463	145.35	171.00	223.00	18.00
HPI503175	-	-	0.6890"	-	17.500	51.00	73.00	123.00	18.00
-	HPI505175	-	0.6890"	-	17.500	71.00	93.00	143.00	18.00
-	-	HPI508175N	0.6890"	-	17.500	145.35	171.00	223.00	18.00
-	HPI505177	-	0.6969"	-	17.700	71.00	93.00	143.00	18.00
HPI503180	-	-	0.7087"	-	18.000	51.00	73.00	123.00	18.00
-	HPI505180	-	0.7087"	-	18.000	71.00	93.00	143.00	18.00
-	-	HPI508180N	0.7087"	-	18.000	145.35	171.00	223.00	18.00
-	HPI505184	-	0.7244"	-	18.400	77.00	101.00	153.00	20.00
-	HPI505185	-	0.7283"	-	18.500	77.00	101.00	153.00	20.00
-	-	HPI508185N	0.7283"	-	18.500	162.35	191.00	244.00	20.00
-	HPI505186	-	0.7323"	-	18.600	77.00	101.00	153.00	20.00
-	HPI505188	-	0.7402"	-	18.800	77.00	101.00	153.00	20.00
HPI503190	-	-	0.7480"	-	19.000	55.00	79.00	131.00	20.00
-	HPI505190	-	0.7480"	-	19.000	77.00	101.00	153.00	20.00
-	-	HPI508190N	0.7480"	-	19.000	162.35	191.00	244.00	20.00
HPI5031905	-	-	0.7500"	3/4 "	19.050	55.00	79.00	131.00	20.00
-	HPI5051905	-	0.7500"	3/4 "	19.050	77.00	101.00	153.00	20.00
-	-	HPI5081905N	0.7500"	3/4 "	19.050	162.35	191.00	244.00	20.00
-	HPI505192	-	0.7559"	-	19.200	77.00	101.00	153.00	20.00
-	HPI50519253	-	0.7580"	-	19.253	77.00	101.00	153.00	20.00
-	-	HPI50819253N	0.7580"	-	19.253	162.35	191.00	244.00	20.00
-	HPI50519446	-	0.7656"	49/64"	19.446	77.00	101.00	153.00	20.00
-	HPI505195	-	0.7677"	-	19.500	77.00	101.00	153.00	20.00
HPI503197	-	-	0.7756"	-	19.700	55.00	79.00	131.00	20.00
-	HPI505197	-	0.7756"	-	19.700	77.00	101.00	153.00	20.00
-	-	HPI508198N	0.7795"	-	19.800	162.35	191.00	244.00	20.00
-	HPI50519844	-	0.7813"	-	19.844	77.00	101.00	153.00	20.00
HPI503200	-	-	0.7874"	-	20.000	55.00	79.00	131.00	20.00
-	HPI505200	-	0.7874"	-	20.000	77.00	101.00	153.00	20.00
-	-	HPI508200N	0.7874"	-	20.000	162.35	191.00	244.00	20.00

HPI503, HPI505 & HPI508N Series

Work Material	Non-Alloyed Steels		Alloy Steels		Soft Cast Iron		Strong Cast Iron	
Strength	< 700N/mm²		< 1000N/mm²		< HB240, GG25		< HB300, GG40	
Cutting Diameter (metric)	RPM	FEED (mm/rev)	RPM	FEED (mm/rev)	RPM	FEED (mm/rev)	RPM	FEED (mm/rev)
3	16,000	0.16	14,500	0.16	26,000	0.16	17,000	0.16
4	12,000	0.17	11,000	0.17	20,000	0.17	13,000	0.17
5	9,550	0.18	8,600	0.18	16,000	0.18	10,000	0.18
6	8,000	0.20	7,200	0.20	13,000	0.20	8,500	0.20
7	6,800	0.22	6,100	0.22	11,500	0.22	7,300	0.22
8	6,000	0.24	5,400	0.24	9,900	0.24	6,400	0.24
9	5,300	0.27	4,800	0.27	8,800	0.27	5,700	0.27
10	4,800	0.30	4,300	0.30	8,000	0.30	5,100	0.30
12	4,000	0.33	3,600	0.33	6,600	0.33	4,250	0.33
14	3,400	0.36	3,050	0.36	5,700	0.36	3,650	0.36
16	3,000	0.39	2,700	0.39	5,000	0.39	3,200	0.39
18	2,650	0.42	2,400	0.42	4,400	0.42	2,850	0.42
20	2,400	0.45	2,150	0.45	4,000	0.45	2,550	0.45

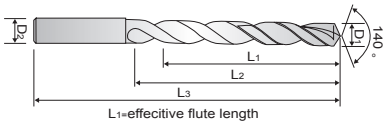
POWER MAX DRILL

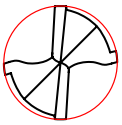
HP503 Series

MG FINE GRAIN

140° POINT ANGLE

DRILLS / 2 FLUTES / 3xD / SOLID CARBIDE / DOUBLE MARGIN / TiAlN-HH COATING





TOLERANCE (metric)

D_1 = +0.012 / 0.002 ((D1≤3)
D_1 = +0.016 / 0.004 (D1 = 3.1 to 6)
D_1 = +0.021 / 0.006 (D1 = 6.1 to 10)
D_1 = +0.025 / 0.007 (D1≥10.1)
D_2 = h6

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO. 2 Flute TiAlN-HH Helix 30°	Cutting Diameter		Effective Cutting Length	Cutting Length	Overall Length	Shank Diameter
3xD	D1		L1	L2	L3	D2
HP503	Decimal	Metric				
HP503030	0.1181"	3.00	14.00	20.00	62.00	6.00
HP503031	0.1220"	3.10	14.00	20.00	62.00	6.00
HP503032	0.1260"	3.20	14.00	20.00	62.00	6.00
HP503033	0.1299"	3.30	14.00	20.00	62.00	6.00
HP503034	0.1339"	3.40	14.00	20.00	62.00	6.00
HP503035	0.1378"	3.50	14.00	20.00	62.00	6.00
HP503036	0.1417"	3.60	14.00	20.00	62.00	6.00
HP503037	0.1457"	3.70	14.00	20.00	62.00	6.00
HP503038	0.1496"	3.80	17.00	24.00	66.00	6.00
HP503039	0.1535"	3.90	17.00	24.00	66.00	6.00
HP503040	0.1575"	4.00	17.00	24.00	66.00	6.00
HP503041	0.1614"	4.10	17.00	24.00	66.00	6.00
HP503042	0.1654"	4.20	17.00	24.00	66.00	6.00
HP503043	0.1693"	4.30	17.00	24.00	66.00	6.00
HP503044	0.1732"	4.40	17.00	24.00	66.00	6.00
HP503045	0.1772"	4.50	17.00	24.00	66.00	6.00
HP503046	0.1811"	4.60	17.00	24.00	66.00	6.00
HP503047	0.1850"	4.70	17.00	24.00	66.00	6.00
HP503048	0.1890"	4.80	20.00	28.00	66.00	6.00
HP503049	0.1929"	4.90	20.00	28.00	66.00	6.00
HP503050	0.1969"	5.00	20.00	28.00	66.00	6.00
HP503051	0.2008"	5.10	20.00	28.00	66.00	6.00
HP503052	0.2047"	5.20	20.00	28.00	66.00	6.00
HP503053	0.2087"	5.30	20.00	28.00	66.00	6.00
HP503054	0.2126"	5.40	20.00	28.00	66.00	6.00
HP503055	0.2165"	5.50	20.00	28.00	66.00	6.00
HP503056	0.2205"	5.60	20.00	28.00	66.00	6.00
HP503057	0.2244"	5.70	20.00	28.00	66.00	6.00
HP503058	0.2283"	5.80	20.00	28.00	66.00	6.00
HP503059	0.2323"	5.90	20.00	28.00	66.00	6.00
HP503060	0.2362"	6.00	20.00	28.00	66.00	6.00
HP503061	0.2402"	6.10	24.00	34.00	79.00	8.00

Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
HP503	○	○	○	◎	◎	◎	◎	◎	◎					◎	◎	◎	○				

POWER MAX DRILL

HP503 Series

>>Continue

EDP NO. 2 Flute TiAlN-HH Helix 30°	Cutting Diameter		Effective Cutting Length	Cutting Length	Overall Length	Shank Diameter
3xD	D1		L1	L2	L3	D2
HP503	Decimal	Metric				
HP503062	0.2441"	6.20	24.00	34.00	79.00	8.00
HP503063	0.2480"	6.30	24.00	34.00	79.00	8.00
HP503064	0.2520"	6.40	24.00	34.00	79.00	8.00
HP503065	0.2559"	6.50	24.00	34.00	79.00	8.00
HP503066	0.2598"	6.60	24.00	34.00	79.00	8.00
HP503067	0.2638"	6.70	24.00	34.00	79.00	8.00
HP503068	0.2677"	6.80	24.00	34.00	79.00	8.00
HP503069	0.2717"	6.90	24.00	34.00	79.00	8.00
HP503070	0.2756"	7.00	24.00	34.00	79.00	8.00
HP503071	0.2795"	7.10	29.00	41.00	79.00	8.00
HP503072	0.2835"	7.20	29.00	41.00	79.00	8.00
HP503073	0.2874"	7.30	29.00	41.00	79.00	8.00
HP503074	0.2913"	7.40	29.00	41.00	79.00	8.00
HP503075	0.2953"	7.50	29.00	41.00	79.00	8.00
HP503076	0.2992"	7.60	29.00	41.00	79.00	8.00
HP503077	0.3031"	7.70	29.00	41.00	79.00	8.00
HP503078	0.3071"	7.80	29.00	41.00	79.00	8.00
HP503079	0.3110"	7.90	29.00	41.00	79.00	8.00
HP503080	0.3150"	8.00	29.00	41.00	79.00	8.00
HP503081	0.3189"	8.10	35.00	47.00	89.00	10.00
HP503082	0.3228"	8.20	35.00	47.00	89.00	10.00
HP503083	0.3268"	8.30	35.00	47.00	89.00	10.00
HP503084	0.3307"	8.40	35.00	47.00	89.00	10.00
HP503085	0.3346"	8.50	35.00	47.00	89.00	10.00
HP503086	0.3386"	8.60	35.00	47.00	89.00	10.00
HP503087	0.3425"	8.70	35.00	47.00	89.00	10.00
HP503088	0.3465"	8.80	35.00	47.00	89.00	10.00
HP503089	0.3504"	8.90	35.00	47.00	89.00	10.00
HP503090	0.3543"	9.00	35.00	47.00	89.00	10.00
HP503091	0.3583"	9.10	35.00	47.00	89.00	10.00
HP503092	0.3622"	9.20	35.00	47.00	89.00	10.00
HP503093	0.3661"	9.30	35.00	47.00	89.00	10.00
HP503094	0.3701"	9.40	35.00	47.00	89.00	10.00
HP503095	0.3740"	9.50	35.00	47.00	89.00	10.00
HP503096	0.3780"	9.60	35.00	47.00	89.00	10.00
HP503097	0.3819"	9.70	35.00	47.00	89.00	10.00
HP503098	0.3858"	9.80	35.00	47.00	89.00	10.00
HP503099	0.3898"	9.90	35.00	47.00	89.00	10.00
HP503100	0.3937"	10.00	35.00	47.00	89.00	10.00
HP503101	0.3976"	10.10	40.00	55.00	102.00	12.00
HP503102	0.4016"	10.20	40.00	55.00	102.00	12.00
HP503103	0.4055"	10.30	40.00	55.00	102.00	12.00
HP503104	0.4094"	10.40	40.00	55.00	102.00	12.00

POWER MAX DRILL

HP503 Series

EDP NO. 2 Flute TiAlN-HH Helix 30°	Cutting Diameter		Effective Cutting Length	Cutting Length	Overall Length	Shank Diameter
3xD	D1		L1	L2	L3	D2
HP503	Decimal	Metric				
HP503105	0.4134"	10.50	40.00	55.00	102.00	12.00
HP503106	0.4173"	10.60	40.00	55.00	102.00	12.00
HP503107	0.4213"	10.70	40.00	55.00	102.00	12.00
HP503108	0.4252"	10.80	40.00	55.00	102.00	12.00
HP503109	0.4291"	10.90	40.00	55.00	102.00	12.00
HP503110	0.4331"	11.00	40.00	55.00	102.00	12.00
HP503111	0.4370"	11.10	40.00	55.00	102.00	12.00
HP503112	0.4409"	11.20	40.00	55.00	102.00	12.00
HP503113	0.4449"	11.30	40.00	55.00	102.00	12.00
HP503114	0.4488"	11.40	40.00	55.00	102.00	12.00
HP503115	0.4528"	11.50	40.00	55.00	102.00	12.00
HP503116	0.4567"	11.60	40.00	55.00	102.00	12.00
HP503117	0.4606"	11.70	40.00	55.00	102.00	12.00
HP503118	0.4646"	11.80	40.00	55.00	102.00	12.00
HP503119	0.4685"	11.90	40.00	55.00	102.00	12.00
HP503120	0.4724"	12.00	40.00	55.00	102.00	12.00
HP503121	0.4764"	12.10	43.00	60.00	107.00	14.00
HP503122	0.4803"	12.20	43.00	60.00	107.00	14.00
HP503123	0.4843"	12.30	43.00	60.00	107.00	14.00
HP503124	0.4882"	12.40	43.00	60.00	107.00	14.00
HP503125	0.4921"	12.50	43.00	60.00	107.00	14.00
HP503126	0.4961"	12.60	43.00	60.00	107.00	14.00
HP503127	0.5000"	12.70	43.00	60.00	107.00	14.00
HP503128	0.5039"	12.80	43.00	60.00	107.00	14.00
HP503129	0.5079"	12.90	43.00	60.00	107.00	14.00
HP503130	0.5118"	13.00	43.00	60.00	107.00	14.00
HP503131	0.5157"	13.10	43.00	60.00	107.00	14.00
HP503132	0.5197"	13.20	43.00	60.00	107.00	14.00
HP503133	0.5236"	13.30	43.00	60.00	107.00	14.00
HP503135	0.5315"	13.50	43.00	60.00	107.00	14.00
HP503137	0.5394"	13.70	43.00	60.00	107.00	14.00
HP503140	0.5512"	14.00	43.00	60.00	107.00	14.00
HP503142	0.5591"	14.20	45.00	65.00	115.00	16.00
HP503143	0.5630"	14.30	45.00	65.00	115.00	16.00
HP503145	0.5709"	14.50	45.00	65.00	115.00	16.00
HP503146	0.5748"	14.60	45.00	65.00	115.00	16.00
HP503148	0.5827"	14.80	45.00	65.00	115.00	16.00
HP503150	0.5906"	15.00	45.00	65.00	115.00	16.00
HP503155	0.6102"	15.50	45.00	65.00	115.00	16.00
HP503157	0.6181"	15.70	45.00	65.00	115.00	16.00
HP503160	0.6299"	16.00	45.00	65.00	115.00	16.00

HP503 Series

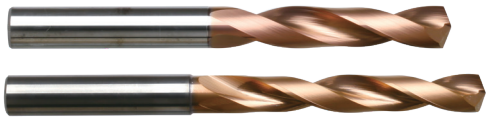
Work Material	Carbon Steels (C<0.3%) Alloy Steels / SS400 SCM~710N/mm²		Carbon Steels (C≥0.3%) Alloy Steels / S50C SCM~1,060N/mm²		SUJ2 · SUS440		SKD61 34 ~ 43 HRc		43 ~ 48 HRc		SKD11 48 ~ 53 HRc		Cast Iron FC250~350		Cast Iron-Ductile FC400~500	
Drilling Speed(V)	80~125m/min		80~125m/min		63~80m/min		40~63m/min		32~45m/min		25~36m/min		80~125m/min		63~90m/min	
Cutting Diameter (metric)	RPM (mm^{-1})	FEED (mm/rev)	RPM (mm^{-1})	FEED (mm/rev)	RPM (mm^{-1})	FEED (mm/rev)	RPM (mm^{-1})	FEED (mm/rev)	RPM (mm^{-1})	FEED (mm/rev)	RPM (mm^{-1})	FEED (mm/rev)	RPM (mm^{-1})	FEED (mm/rev)	RPM (mm^{-1})	FEED (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

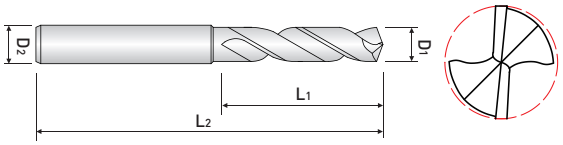
UWC ULTRA FINE 140° POINT ANGLE

POWER MAX DRILL

PF503, PF505 Series

DRILLS / 2 FLUTES / 3xD & 5xD / SOLID CARBIDE / SINGLE MARGIN / TiAlN-HH COATING





TOLERANCE (metric)

- D_1 = +0 / -0.014 ((D1≤3)
- D_1 = +0 / -0.018 (D1 = 3.1 to 6)
- D_1 = +0 / -0.022 (D1 = 6.1 to 10)
- D_1 = +0 / -0.027 (D1 = 10.1 to 18)
- D_1 = +0 / -0.033 (D1>18)
- D_2 = h6

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO.		Cutting Diameter			Cutting Length	Overall Length	Shank Diameter
2 Flute							
TiAlN-HH							
Helix 30°							
3xD	5xD	D1			L1	L2	D2
PF503	PF505	Decimal	Fraction	Metric			
PF503020	-	0.0787"	-	2.000	14.00	50.00	3.00
PF503021	-	0.0827"	-	2.100	14.00	50.00	3.00
PF503022	-	0.0866"	-	2.200	14.00	50.00	3.00
PF503023	-	0.0906"	-	2.300	14.00	50.00	3.00
PF503024	-	0.0945"	-	2.400	14.00	50.00	3.00
PF503025	-	0.0984"	-	2.500	14.00	50.00	3.00
PF503026	-	0.1024"	-	2.600	14.00	50.00	3.00
PF503027	-	0.1063"	-	2.700	14.00	50.00	3.00
PF503028	-	0.1102"	-	2.800	14.00	50.00	3.00
PF503029	-	0.1142"	-	2.900	14.00	50.00	3.00
PF503030	-	0.1181"	-	3.000	18.00	60.00	3.00
-	PF505030	0.1181"	-	3.000	25.00	60.00	3.00
PF503031	-	0.1220"	-	3.100	20.00	60.00	4.00
-	PF505031	0.1220"	-	3.100	27.00	60.00	4.00
PF50303175	-	0.1250"	1/8 "	3.175	20.00	60.00	4.00
-	PF50503175	0.1250"	1/8 "	3.175	27.00	60.00	4.00
PF503032	-	0.1260"	-	3.200	20.00	60.00	4.00
-	PF505032	0.1260"	-	3.200	27.00	60.00	4.00
PF50303264	-	0.1285"	#30	3.264	20.00	60.00	4.00
-	PF50503264	0.1285"	#30	3.264	27.00	60.00	4.00
PF503033	-	0.1299"	-	3.300	20.00	60.00	4.00
-	PF505033	0.1299"	-	3.300	27.00	60.00	4.00
PF503034	-	0.1339"	-	3.400	22.00	60.00	4.00
-	PF505034	0.1339"	-	3.400	30.00	65.00	4.00
PF503035	-	0.1378"	-	3.500	22.00	60.00	4.00
-	PF505035	0.1378"	-	3.500	30.00	65.00	4.00
PF50303572	-	0.1406"	9/64"	3.572	22.00	60.00	4.00
-	PF50503572	0.1406"	9/64"	3.572	30.00	65.00	4.00
PF503036	-	0.1417"	-	3.600	22.00	60.00	4.00
-	PF505036	0.1417"	-	3.600	30.00	65.00	4.00
PF503037	-	0.1457"	-	3.700	22.00	60.00	4.00
-	PF505037	0.1457"	-	3.700	30.00	65.00	4.00
PF503038	-	0.1496"	-	3.800	24.00	60.00	4.00
-	PF505038	0.1496"	-	3.800	33.00	71.00	4.00

Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
All	○	○	○	◎	◎	◎	◎	◎	◎					◎	◎	◎	○				

POWER MAX DRILL

PF503, PF505 Series

>>Continue

EDP NO. 2 Flute TiAlN-HH Helix 30°		Cutting Diameter			Cutting Length	Overall Length	Shank Diameter
3xD	5xD	D1			L1	L2	D2
PF503	PF505	Decimal	Fraction	Metric			
PF503039	-	0.1535"	-	3.900	24.00	60.00	4.00
-	PF505039	0.1535"	-	3.900	33.00	71.00	4.00
PF503040	-	0.1575"	-	4.000	24.00	60.00	4.00
-	PF505040	0.1575"	-	4.000	33.00	71.00	4.00
PF50304039	-	0.1590"	#21	4.039	24.00	60.00	4.00
-	PF50504039	0.1590"	#21	4.039	33.00	71.00	4.00
PF503041	-	0.1614"	-	4.100	24.00	60.00	4.00
-	PF505041	0.1614"	-	4.100	33.00	71.00	5.00
PF503042	-	0.1654"	-	4.200	26.00	62.00	5.00
-	PF505042	0.1654"	-	4.200	33.00	71.00	5.00
PF503043	-	0.1693"	-	4.300	26.00	62.00	5.00
-	PF505043	0.1693"	-	4.300	36.00	71.00	5.00
PF503044	-	0.1732"	-	4.400	26.00	62.00	5.00
-	PF505044	0.1732"	-	4.400	36.00	71.00	5.00
PF503045	-	0.1772"	-	4.500	26.00	62.00	5.00
-	PF505045	0.1772"	-	4.500	36.00	71.00	5.00
PF503046	-	0.1811"	-	4.600	26.00	62.00	5.00
-	PF505046	0.1811"	-	4.600	36.00	71.00	5.00
PF503047	-	0.1850"	-	4.700	26.00	62.00	5.00
PF50304763	-	0.1850"	3/16"	4.700	26.00	62.00	5.00
-	PF505047	0.1850"	-	4.700	36.00	71.00	5.00
-	PF50504763	0.1875"	3/16"	4.763	36.00	71.00	5.00
PF503048	-	0.1890"	-	4.800	26.00	62.00	5.00
-	PF505048	0.1890"	-	4.800	39.00	71.00	5.00
PF503049	-	0.1929"	-	4.900	26.00	62.00	5.00
-	PF505049	0.1929"	-	4.900	39.00	71.00	5.00
PF503050	-	0.1969"	-	5.000	26.00	62.00	5.00
-	PF505050	0.1969"	-	5.000	39.00	71.00	5.00
PF503051	-	0.2008"	-	5.100	26.00	62.00	5.00
-	PF505051	0.2008"	-	5.100	39.00	83.00	6.00
-	PF50505159	0.2031"	13/64"	5.159	39.00	83.00	6.00
PF50305159	-	0.2047"	13/64"	5.200	28.00	66.00	6.00
PF503052	-	0.2047"	-	5.200	28.00	66.00	6.00
-	PF505052	0.2047"	-	5.200	39.00	83.00	6.00
PF503053	-	0.2087"	-	5.300	28.00	66.00	6.00
-	PF505053	0.2087"	-	5.300	39.00	83.00	6.00
PF503054	-	0.2126"	-	5.400	28.00	66.00	6.00
-	PF505054	0.2126"	-	5.400	43.00	83.00	6.00
PF503055	-	0.2165"	-	5.500	28.00	66.00	6.00
-	PF505055	0.2165"	-	5.500	43.00	83.00	6.00
PF50305558	-	0.2188"	7/32"	5.558	30.00	66.00	6.00
-	PF50505558	0.2188"	7/32"	5.558	43.00	83.00	6.00
PF503056	-	0.2205"	-	5.600	30.00	66.00	6.00
-	PF505056	0.2205"	-	5.600	43.00	83.00	6.00
PF503057	-	0.2244"	-	5.700	30.00	66.00	6.00

POWER MAX DRILL

PF503, PF505 Series

>>Continue

EDP NO. 2 Flute TiAlN-HH Helix 30°		Cutting Diameter			Cutting Length	Overall Length	Shank Diameter
3xD	5xD	D1			L1	L2	D2
PF503	PF505	Decimal	Fraction	Metric			
-	PF505057	0.2244"	-	5.700	43.00	83.00	6.00
PF503058	-	0.2283"	-	5.800	30.00	66.00	6.00
-	PF505058	0.2283"	-	5.800	43.00	83.00	6.00
PF503059	-	0.2323"	-	5.900	30.00	66.00	6.00
-	PF505059	0.2323"	-	5.900	43.00	83.00	6.00
PF50305953	-	0.2344"	15/64"	5.953	30.00	66.00	6.00
-	PF50505953	0.2344"	15/64"	5.953	43.00	83.00	6.00
PF503060	-	0.2362"	-	6.000	30.00	66.00	6.00
-	PF505060	0.2362"	-	6.000	43.00	83.00	6.00
PF503061	-	0.2402"	-	6.100	30.00	66.00	6.00
-	PF505061	0.2402"	-	6.100	47.00	87.00	7.00
PF503062	-	0.2441"	-	6.200	34.00	74.00	7.00
-	PF505062	0.2441"	-	6.200	47.00	87.00	7.00
PF503063	-	0.2480"	-	6.300	34.00	74.00	7.00
-	PF505063	0.2480"	-	6.300	47.00	87.00	7.00
PF5030635	-	0.2500"	1/4 "	6.350	34.00	74.00	7.00
-	PF5050635	0.2500"	-	6.350	47.00	87.00	7.00
PF503064	-	0.2520"	-	6.400	34.00	74.00	7.00
-	PF505064	0.2520"	-	6.400	47.00	87.00	7.00
PF503065	-	0.2559"	-	6.500	34.00	74.00	7.00
-	PF505065	0.2559"	-	6.500	47.00	87.00	7.00
PF503066	-	0.2598"	-	6.600	34.00	74.00	7.00
-	PF505066	0.2598"	-	6.600	47.00	87.00	7.00
PF503067	-	0.2638"	-	6.700	34.00	74.00	7.00
-	PF505067	0.2638"	-	6.700	47.00	87.00	7.00
PF50306747	-	0.2656"	17/64"	6.747	37.00	74.00	7.00
-	PF50506747	0.2656"	17/64"	6.747	47.00	87.00	7.00
PF503068	-	0.2677"	-	6.800	37.00	74.00	7.00
-	PF505068	0.2677"	-	6.800	47.00	87.00	7.00
PF503069	-	0.2717"	-	6.900	37.00	74.00	7.00
-	PF505069	0.2717"	-	6.900	47.00	87.00	7.00
PF503070	-	0.2756"	-	7.000	37.00	74.00	7.00
-	PF505070	0.2756"	-	7.000	47.00	87.00	7.00
PF503071	-	0.2795"	-	7.100	37.00	74.00	7.00
-	PF505071	0.2795"	-	7.100	52.00	92.00	8.00
PF50307145	-	0.2813"	9/32"	7.145	40.00	79.00	8.00
-	PF50507145	0.2813"	9/32"	7.145	52.00	92.00	8.00
PF503072	-	0.2835"	-	7.200	40.00	79.00	8.00
-	PF505072	0.2835"	-	7.200	52.00	92.00	8.00
PF503073	-	0.2874"	-	7.300	40.00	79.00	8.00
-	PF505073	0.2874"	-	7.300	52.00	92.00	8.00
PF503074	-	0.2913"	-	7.400	40.00	79.00	8.00
-	PF505074	0.2913"	-	7.400	52.00	92.00	8.00
PF503075	-	0.2953"	-	7.500	40.00	79.00	8.00
-	PF505075	0.2953"	-	7.500	52.00	92.00	8.00

POWER MAX DRILL

PF503, PF505 Series

>>Continue

EDP NO. 2 Flute TiAlN-HH Helix 30°		Cutting Diameter			Cutting Length	Overall Length	Shank Diameter
3xD	5xD	D1			L1	L2	D2
PF503	PF505	Decimal	Fraction	Metric			
PF50307541	-	0.2969"	19/64"	7.541	40.00	79.00	8.00
-	PF50507541	0.2969"	19/64"	7.541	52.00	92.00	8.00
PF503076	-	0.2992"	-	7.600	40.00	79.00	8.00
-	PF505076	0.2992"	-	7.600	52.00	92.00	8.00
PF503077	-	0.3031"	-	7.700	40.00	79.00	8.00
-	PF505077	0.3031"	-	7.700	52.00	92.00	8.00
PF503078	-	0.3071"	-	7.800	40.00	79.00	8.00
-	PF505078	0.3071"	-	7.800	52.00	92.00	8.00
PF503079	-	0.3110"	-	7.900	40.00	79.00	8.00
-	PF505079	0.3110"	-	7.900	52.00	92.00	8.00
-	PF50507938	0.3110"	5/16"	7.900	52.00	92.00	8.00
PF50307938	-	0.3125"	5/16"	7.938	40.00	79.00	8.00
PF503080	-	0.3150"	-	8.000	40.00	79.00	8.00
-	PF505080	0.3150"	-	8.000	52.00	92.00	8.00
PF503081	-	0.3189"	-	8.100	40.00	79.00	8.00
-	PF505081	0.3189"	-	8.100	56.00	96.00	9.00
PF503082	-	0.3228"	-	8.200	43.00	84.00	9.00
-	PF505082	0.3228"	-	8.200	56.00	96.00	9.00
PF503083	-	0.3268"	-	8.300	43.00	84.00	9.00
-	PF505083	0.3268"	-	8.300	56.00	96.00	9.00
PF50308334	-	0.3281"	21/64"	8.334	43.00	84.00	9.00
-	PF50508334	0.3281"	21/64"	8.334	56.00	96.00	9.00
PF503084	-	0.3307"	-	8.400	43.00	84.00	9.00
-	PF505084	0.3307"	-	8.400	56.00	96.00	9.00
PF503085	-	0.3346"	-	8.500	43.00	84.00	9.00
-	PF505085	0.3346"	-	8.500	56.00	96.00	9.00
PF503086	-	0.3386"	-	8.600	43.00	84.00	9.00
-	PF505086	0.3386"	-	8.600	56.00	96.00	9.00
PF503087	-	0.3425"	-	8.700	43.00	84.00	9.00
-	PF505087	0.3425"	-	8.700	56.00	96.00	9.00
PF50308733	-	0.3438"	11/32"	8.733	43.00	84.00	9.00
-	PF50508733	0.3438"	11/32"	8.733	56.00	96.00	9.00
PF503088	-	0.3465"	-	8.800	43.00	84.00	9.00
-	PF505088	0.3465"	-	8.800	56.00	96.00	9.00
PF503089	-	0.3504"	-	8.900	43.00	84.00	9.00
-	PF505089	0.3504"	-	8.900	56.00	96.00	9.00
PF503090	-	0.3543"	-	9.000	43.00	84.00	9.00
-	PF505090	0.3543"	-	9.000	56.00	96.00	9.00
PF503091	-	0.3583"	-	9.100	43.00	84.00	9.00
-	PF505091	0.3583"	-	9.100	62.00	105.00	10.00
PF50309129	-	0.3594"	23/64"	9.129	47.00	89.00	10.00
-	PF50509129	0.3594"	23/64"	9.129	62.00	105.00	10.00
PF503092	-	0.3622"	-	9.200	47.00	89.00	10.00
-	PF505092	0.3622"	-	9.200	62.00	105.00	10.00
PF503093	-	0.3661"	-	9.300	47.00	89.00	10.00

POWER MAX DRILL

PF503, PF505 Series

>>Continue

EDP NO. 2 Flute TiAlN-HH Helix 30°		Cutting Diameter			Cutting Length	Overall Length	Shank Diameter
3xD	5xD	D1			L1	L2	D2
PF503	PF505	Decimal	Fraction	Metric			
-	PF505093	0.3661"	-	9.300	62.00	105.00	10.00
PF50309347	-	0.3680"	-	9.347	47.00	89.00	10.00
PF503094	-	0.3701"	-	9.400	47.00	89.00	10.00
-	PF505094	0.3701"	-	9.400	62.00	105.00	10.00
PF503095	-	0.3740"	-	9.500	47.00	89.00	10.00
-	PF505095	0.3740"	-	9.500	62.00	105.00	10.00
PF50309525	-	0.3750"	3/8 "	9.525	47.00	89.00	10.00
-	PF50509525	0.3750"	3/8 "	9.525	62.00	105.00	10.00
PF503096	-	0.3780"	-	9.600	47.00	89.00	10.00
-	PF505096	0.3780"	-	9.600	62.00	105.00	10.00
PF503097	-	0.3819"	-	9.700	47.00	89.00	10.00
-	PF505097	0.3819"	-	9.700	62.00	105.00	10.00
PF503098	-	0.3858"	-	9.800	47.00	89.00	10.00
-	PF505098	0.3858"	-	9.800	62.00	105.00	10.00
PF503099	-	0.3898"	-	9.900	47.00	89.00	10.00
-	PF505099	0.3898"	-	9.900	62.00	105.00	10.00
-	PF50509921	0.3906"	25/64"	9.921	62.00	105.00	10.00
PF50309921	-	0.3934"	25/64"	9.992	47.00	89.00	10.00
PF503100	-	0.3937"	-	10.000	47.00	89.00	10.00
-	PF505100	0.3937"	-	10.000	62.00	105.00	10.00
PF503101	-	0.3976"	-	10.100	47.00	89.00	10.00
-	PF505101	0.3976"	-	10.100	68.00	115.00	11.00
PF503102	-	0.4016"	-	10.200	51.00	95.00	11.00
-	PF505102	0.4016"	-	10.200	68.00	115.00	11.00
PF503103	-	0.4055"	-	10.300	51.00	95.00	11.00
-	PF505103	0.4055"	-	10.300	68.00	115.00	11.00
PF5031032	-	0.4063"	13/32"	10.320	51.00	95.00	11.00
-	PF5051032	0.4063"	13/32"	10.320	68.00	115.00	11.00
PF503104	-	0.4094"	-	10.400	51.00	95.00	11.00
-	PF505104	0.4094"	-	10.400	68.00	115.00	11.00
PF503105	-	0.4134"	-	10.500	51.00	95.00	11.00
-	PF505105	0.4134"	-	10.500	68.00	115.00	11.00
PF503106	-	0.4173"	-	10.600	51.00	95.00	11.00
-	PF505106	0.4173"	-	10.600	68.00	115.00	11.00
PF503107	-	0.4213"	-	10.700	51.00	95.00	11.00
-	PF505107	0.4213"	-	10.700	68.00	115.00	11.00
PF50310716	-	0.4219"	27/64"	10.716	51.00	95.00	11.00
-	PF50510716	0.4219"	27/64"	10.716	68.00	115.00	11.00
PF503108	-	0.4252"	-	10.800	51.00	95.00	11.00
-	PF505108	0.4252"	-	10.800	68.00	115.00	11.00
PF503109	-	0.4291"	-	10.900	51.00	95.00	11.00
-	PF505109	0.4291"	-	10.900	68.00	115.00	11.00
PF503110	-	0.4331"	-	11.000	51.00	95.00	11.00
-	PF505110	0.4331"	-	11.000	68.00	115.00	11.00
PF503111	-	0.4370"	-	11.100	51.00	95.00	11.00

POWER MAX DRILL

PF503, PF505 Series

>>Continue

EDP NO. 2 Flute TiAlN-HH Helix 30°		Cutting Diameter			Cutting Length	Overall Length	Shank Diameter
3xD	5xD	D1			L1	L2	D2
PF503	PF505	Decimal	Fraction	Metric			
-	PF505111	0.4370"	-	11.100	71.00	121.00	12.00
PF50311113	-	0.4375"	7/16"	11.113	54.00	102.00	12.00
-	PF50511113	0.4375"	7/16"	11.113	71.00	121.00	12.00
PF503112	-	0.4409"	-	11.200	54.00	102.00	12.00
-	PF505112	0.4409"	-	11.200	71.00	121.00	12.00
PF503113	-	0.4449"	-	11.300	54.00	102.00	12.00
-	PF505113	0.4449"	-	11.300	71.00	121.00	12.00
PF503114	-	0.4488"	-	11.400	54.00	102.00	12.00
-	PF505114	0.4488"	-	11.400	71.00	121.00	12.00
PF503115	-	0.4528"	-	11.500	54.00	102.00	12.00
-	PF505115	0.4528"	-	11.500	71.00	121.00	12.00
PF503116	-	0.4567"	-	11.600	54.00	102.00	12.00
-	PF505116	0.4567"	-	11.600	71.00	121.00	12.00
PF503117	-	0.4606"	-	11.700	54.00	102.00	12.00
-	PF505117	0.4606"	-	11.700	71.00	121.00	12.00
PF503118	-	0.4646"	-	11.800	54.00	102.00	12.00
-	PF505118	0.4646"	-	11.800	71.00	121.00	12.00
PF503119	-	0.4685"	-	11.900	54.00	102.00	12.00
-	PF505119	0.4685"	-	11.900	71.00	121.00	12.00
PF50311908	-	0.4688"	15/32"	11.908	54.00	102.00	12.00
-	PF50511908	0.4688"	15/32"	11.908	71.00	121.00	12.00
PF503120	-	0.4724"	-	12.000	54.00	102.00	12.00
-	PF505120	0.4724"	-	12.000	71.00	121.00	12.00
PF503121	-	0.4764"	-	12.100	54.00	102.00	12.00
-	PF505121	0.4764"	-	12.100	75.00	125.00	13.00
PF503122	-	0.4803"	-	12.200	57.00	102.00	13.00
-	PF505122	0.4803"	-	12.200	75.00	125.00	13.00
PF503123	-	0.4843"	-	12.300	57.00	102.00	13.00
-	PF505123	0.4843"	-	12.300	75.00	125.00	13.00
PF50312304	-	0.4844"	31/64"	12.304	57.00	102.00	13.00
-	PF50512304	0.4844"	31/64"	12.304	75.00	125.00	13.00
PF503124	-	0.4882"	-	12.400	57.00	102.00	13.00
-	PF505124	0.4882"	-	12.400	75.00	125.00	13.00
PF503125	-	0.4921"	-	12.500	57.00	102.00	13.00
-	PF505125	0.4921"	-	12.500	75.00	125.00	13.00
PF503126	-	0.4961"	-	12.600	57.00	102.00	13.00
-	PF505126	0.4961"	-	12.600	75.00	125.00	13.00
PF503127	-	0.5000"	1/2 "	12.700	57.00	102.00	13.00
-	PF505127	0.5000"	1/2 "	12.700	75.00	125.00	13.00
PF503128	-	0.5039"	-	12.800	57.00	102.00	13.00
-	PF505128	0.5039"	-	12.800	75.00	125.00	13.00
PF503129	-	0.5079"	-	12.900	57.00	102.00	13.00
-	PF505129	0.5079"	-	12.900	75.00	125.00	13.00
PF503130	-	0.5118"	-	13.000	57.00	102.00	13.00
-	PF505130	0.5118"	-	13.000	75.00	125.00	13.00

POWER MAX DRILL

PF503, PF505 Series

>>Continue

EDP NO. / 2 Flute / TiAlN-HH / Helix 30°		Cutting Diameter			Cutting Length	Overall Length	Shank Diameter
3xD	5xD	D1			L1	L2	D2
PF503	PF505	Decimal	Fraction	Metric			
PF50313096	-	0.5156"	33/64"	13.096	57.00	102.00	13.00
-	PF50513096	0.5156"	33/64"	13.096	80.00	134.00	14.00
PF503131	-	0.5157"	-	13.100	57.00	102.00	13.00
-	PF505131	0.5157"	-	13.100	80.00	134.00	14.00
PF503132	-	0.5197"	-	13.200	60.00	107.00	14.00
-	PF505132	0.5197"	-	13.200	80.00	134.00	14.00
PF503133	-	0.5236"	-	13.300	60.00	107.00	14.00
-	PF505133	0.5236"	-	13.300	80.00	134.00	14.00
PF503134	-	0.5276"	-	13.400	60.00	107.00	14.00
-	PF505134	0.5276"	-	13.400	80.00	134.00	14.00
PF50313494	-	0.5313"	17/32"	13.494	60.00	107.00	14.00
-	PF50513494	0.5313"	17/32"	13.494	80.00	134.00	14.00
PF503135	-	0.5315"	-	13.500	60.00	107.00	14.00
-	PF505135	0.5315"	-	13.500	80.00	134.00	14.00
PF503136	-	0.5354"	-	13.600	60.00	107.00	14.00
-	PF505136	0.5354"	-	13.600	80.00	134.00	14.00
PF503137	-	0.5394"	-	13.700	60.00	107.00	14.00
-	PF505137	0.5394"	-	13.700	80.00	134.00	14.00
PF503138	-	0.5433"	-	13.800	60.00	107.00	14.00
-	PF505138	0.5433"	-	13.800	80.00	134.00	14.00
PF50313891	-	0.5469"	35/64"	13.891	60.00	107.00	14.00
-	PF50513891	0.5469"	35/64"	13.891	80.00	134.00	14.00
PF503139	-	0.5472"	-	13.900	60.00	107.00	14.00
-	PF505139	0.5472"	-	13.900	80.00	134.00	14.00
PF503140	-	0.5512"	-	14.000	60.00	107.00	14.00
-	PF505140	0.5512"	-	14.000	80.00	134.00	14.00
PF503141	-	0.5551"	-	14.100	60.00	107.00	14.00
-	PF505141	0.5551"	-	14.100	83.00	143.00	15.00
PF503142	-	0.5591"	-	14.200	62.00	111.00	15.00
-	PF505142	0.5591"	-	14.200	83.00	143.00	15.00
PF50314288	-	0.5625"	9/16"	14.288	62.00	111.00	15.00
-	PF50514288	0.5625"	9/16"	14.288	83.00	143.00	15.00
PF503143	-	0.5630"	-	14.300	62.00	111.00	15.00
-	PF505143	0.5630"	-	14.300	83.00	143.00	15.00
PF503144	-	0.5669"	-	14.400	62.00	111.00	15.00
-	PF505144	0.5669"	-	14.400	83.00	143.00	15.00
PF503145	-	0.5709"	-	14.500	62.00	111.00	15.00
-	PF505145	0.5709"	-	14.500	83.00	143.00	15.00
PF503146	-	0.5748"	-	14.600	62.00	111.00	15.00
-	PF505146	0.5748"	-	14.600	83.00	143.00	15.00
PF503147	-	0.5787"	-	14.700	62.00	111.00	15.00
-	PF505147	0.5787"	-	14.700	83.00	143.00	15.00
PF503148	-	0.5827"	-	14.800	62.00	111.00	15.00
-	PF505148	0.5827"	-	14.800	83.00	143.00	15.00
PF503149	-	0.5866"	-	14.900	62.00	111.00	15.00

POWER MAX DRILL

PF503, PF505 Series

>>Continue

EDP NO. 2 Flute TiAlN-HH Helix 30°		Cutting Diameter			Cutting Length	Overall Length	Shank Diameter
3xD	5xD	D1			L1	L2	D2
PF503	PF505	Decimal	Fraction	Metric			
-	PF505149	0.5866"	-	14.900	83.00	143.00	15.00
PF503150	-	0.5906"	-	15.000	62.00	111.00	15.00
-	PF505150	0.5906"	-	15.000	83.00	143.00	15.00
PF50315081	-	0.5937"	19/32"	15.081	62.00	111.00	15.00
-	PF50515081	0.5937"	19/32"	15.081	90.00	152.00	16.00
PF503151	-	0.5945"	-	15.100	62.00	111.00	15.00
-	PF505151	0.5945"	-	15.100	90.00	152.00	16.00
PF503152	-	0.5984"	-	15.200	62.00	115.00	16.00
-	PF505152	0.5984"	-	15.200	90.00	152.00	16.00
PF503153	-	0.6024"	-	15.300	62.00	115.00	16.00
PF503154	-	0.6063"	-	15.400	62.00	115.00	16.00
-	PF505154	0.6063"	-	15.400	90.00	152.00	16.00
PF503155	-	0.6102"	-	15.500	62.00	115.00	16.00
-	PF505155	0.6102"	-	15.500	90.00	152.00	16.00
PF503156	-	0.6142"	-	15.600	62.00	115.00	16.00
-	PF505156	0.6142"	-	15.600	90.00	152.00	16.00
PF503157	-	0.6181"	-	15.700	62.00	115.00	16.00
-	PF505157	0.6181"	-	15.700	90.00	152.00	16.00
PF503158	-	0.6220"	-	15.800	62.00	115.00	16.00
-	PF505158	0.6220"	-	15.800	90.00	152.00	16.00
PF50315875	-	0.6250"	5/8 "	15.875	62.00	115.00	16.00
-	PF50515875	0.6250"	5/8 "	15.875	90.00	152.00	16.00
PF503160	-	0.6299"	-	16.000	62.00	115.00	16.00
-	PF505160	0.6299"	-	16.000	90.00	152.00	16.00
PF503161	-	0.6339"	-	16.100	62.00	115.00	16.00
-	PF505161	0.6339"	-	16.100	95.00	155.00	17.00
PF503163	-	0.6417"	-	16.300	66.00	119.00	17.00
-	PF505163	0.6417"	-	16.300	95.00	155.00	17.00
PF503165	-	0.6496"	-	16.500	66.00	119.00	17.00
-	PF505165	0.6496"	-	16.500	95.00	155.00	17.00
PF50316667	-	0.6562"	21/32"	16.667	66.00	119.00	17.00
-	PF50516667	0.6562"	21/32"	16.667	95.00	155.00	17.00
PF503170	-	0.6693"	-	17.000	66.00	119.00	17.00
-	PF505170	0.6693"	-	17.000	95.00	155.00	17.00
PF503171	-	0.6732"	-	17.100	66.00	119.00	17.00
-	PF505171	0.6732"	-	17.100	100.00	157.00	18.00
PF503172	-	0.6772"	-	17.200	66.00	123.00	18.00
-	PF505172	0.6772"	-	17.200	100.00	157.00	18.00
PF50317463	-	0.6875"	11/16"	17.463	66.00	123.00	18.00
-	PF50517463	0.6875"	11/16"	17.463	100.00	157.00	18.00
PF503175	-	0.6890"	-	17.500	66.00	123.00	18.00
-	PF505175	0.6890"	-	17.500	100.00	157.00	18.00
PF503177	-	0.6969"	-	17.700	66.00	123.00	18.00
-	PF505177	0.6969"	-	17.700	100.00	157.00	18.00
PF503178	-	0.7008"	-	17.800	66.00	123.00	18.00

POWER MAX DRILL

PF503, PF505 Series

EDP NO. 2 Flute TiAlN-HH Helix 30°		Cutting Diameter			Cutting Length	Overall Length	Shank Diameter
3xD	5xD	D1			L1	L2	D2
PF503	PF505	Decimal	Fraction	Metric			
-	PF505178	0.7008"	-	17.800	100.00	157.00	18.00
PF503180	-	0.7087"	-	18.000	66.00	123.00	18.00
-	PF505180	0.7087"	-	18.000	100.00	157.00	18.00
PF503181	-	0.7126"	-	18.100	66.00	123.00	18.00
-	PF505181	0.7126"	-	18.100	105.00	160.00	19.00
PF503182	-	0.7165"	-	18.200	70.00	127.00	19.00
-	PF505182	0.7165"	-	18.200	105.00	160.00	19.00
PF503185	-	0.7283"	-	18.500	70.00	127.00	19.00
-	PF505185	0.7283"	-	18.500	105.00	160.00	19.00
PF503190	-	0.7480"	-	19.000	70.00	127.00	19.00
-	PF505190	0.7480"	-	19.000	105.00	160.00	19.00
PF503191	-	0.7520"	-	19.100	70.00	127.00	19.00
-	PF505191	0.7520"	-	19.100	110.00	163.00	20.00
PF503195	-	0.7677"	-	19.500	70.00	131.00	20.00
-	PF505195	0.7677"	-	19.500	110.00	163.00	20.00
PF503197	-	0.7756"	-	19.700	70.00	131.00	20.00
-	PF505197	0.7756"	-	19.700	110.00	163.00	20.00
PF503200	-	0.7874"	-	20.000	70.00	131.00	20.00
-	PF505200	0.7874"	-	20.000	110.00	163.00	20.00

PF Series

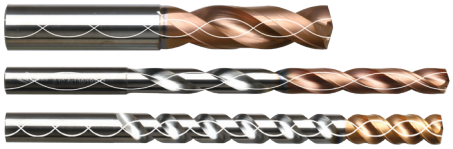
Work Material	Carbon Steels (C<0.3%) Alloy Steels /SS400 SCM~710N/mm²		Carbon Steels (C≥0.3%) Alloy Steels /S50C SCM~1,060N/mm²		SUJ2 · SUS440		SKD61 34 ~ 43 HRc		43 ~ 48 HRc		SKD11 48 ~ 53 HRc		Cast Iron FC250~350		Cast Iron-Ductile FC400~500	
Drilling Speed(V)	80~125m/min		80~125m/min		63~80m/min		40~63m/min		32~45m/min		25~36m/min		80~125m/min		63~90m/min	
Cutting Diameter (metric)	RPM (mm^{-1})	FEED (mm/rev)	RPM (mm^{-1})	FEED (mm/rev)	RPM (mm^{-1})	FEED (mm/rev)	RPM (mm^{-1})	FEED (mm/rev)	RPM (mm^{-1})	FEED (mm/rev)	RPM (mm^{-1})	FEED (mm/rev)	RPM (mm^{-1})	FEED (mm/rev)	RPM (mm^{-1})	FEED (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

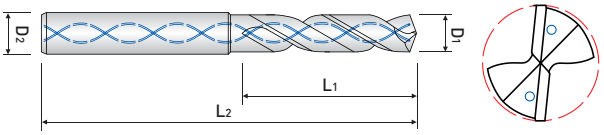
POWER MAX DRILL

SF503, SF505, SF510 & SF520 Series

ULTRA FINE POINT ANGLE 140°

DRILLS / 2 FLUTES / 3xD, 5xD, 10xD & 20xD / INTERNAL COOLANT / SINGLE MARGIN / TiAlN-HH COATING





TOLERANCE (metric)

- D_1 = +0 / -0.014 ((D1≤3)
- D_1 = +0 / -0.018 (D1 = 3.1 to 6)
- D_1 = +0 / -0.022 (D1 = 6.1 to 10)
- D_1 = +0 / -0.027 (D1 = 10.1 to 18)
- D_1 = +0 / -0.033 (D1>18)
- D_2 = h6

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO.				Cutting Diameter			Cutting Length	Overall Length	Shank Diameter
2 Flute									
TiAlN-HH									
Helix 30°									
3xD	5xD	10xD	20xD	D1			L1	L2	D2
SF503	SF505	SF510	SF520	Decimal	Fraction	Metric			
SF503030	-	-	-	0.1181"	-	3.000	18.00	60.00	3.00
-	-	SF510030	-	0.1181"	-	3.000	39.00	87.00	3.00
SF503031	-	-	-	0.1220"	-	3.100	20.00	60.00	4.00
-	SF505031	-	-	0.1220"	-	3.100	27.00	74.00	4.00
-	-	SF510031	-	0.1220"	-	3.100	46.00	94.00	4.00
SF50303175	-	-	-	0.1250"	1/8 "	3.175	20.00	60.00	4.00
-	SF50503175	-	-	0.1250"	1/8 "	3.175	27.00	74.00	4.00
SF503032	-	-	-	0.1260"	-	3.200	20.00	60.00	4.00
-	SF505032	-	-	0.1260"	-	3.200	27.00	74.00	4.00
-	-	SF510032	-	0.1260"	-	3.200	46.00	94.00	4.00
SF50303264	-	-	-	0.1285"	#30	3.264	20.00	60.00	4.00
-	SF50503264	-	-	0.1285"	#30	3.264	27.00	74.00	4.00
SF503033	-	-	-	0.1299"	-	3.300	20.00	60.00	4.00
-	SF505033	-	-	0.1299"	-	3.300	27.00	74.00	4.00
-	-	SF510033	-	0.1299"	-	3.300	46.00	94.00	4.00
SF503034	-	-	-	0.1339"	-	3.400	22.00	60.00	4.00
-	SF505034	-	-	0.1339"	-	3.400	30.00	74.00	4.00
-	-	SF510034	-	0.1339"	-	3.400	46.00	94.00	4.00
SF503035	-	-	-	0.1378"	-	3.500	22.00	60.00	4.00
-	SF505035	-	-	0.1378"	-	3.500	30.00	74.00	4.00
-	-	SF510035	-	0.1378"	-	3.500	46.00	94.00	4.00
SF50303572	-	-	-	0.1406"	9/64"	3.572	22.00	60.00	4.00
-	SF50503572	-	-	0.1406"	9/64"	3.572	30.00	74.00	4.00
SF503036	-	-	-	0.1417"	-	3.600	22.00	60.00	4.00
-	SF505036	-	-	0.1417"	-	3.600	30.00	74.00	4.00
-	-	SF510036	-	0.1417"	-	3.600	52.00	101.00	4.00
SF503037	-	-	-	0.1457"	-	3.700	22.00	60.00	4.00
-	SF505037	-	-	0.1457"	-	3.700	30.00	74.00	4.00
-	-	SF510037	-	0.1457"	-	3.700	52.00	101.00	4.00
SF503038	-	-	-	0.1496"	-	3.800	24.00	60.00	4.00
-	SF505038	-	-	0.1496"	-	3.800	33.00	74.00	4.00
-	-	SF510038	-	0.1496"	-	3.800	52.00	101.00	4.00
SF503039	-	-	-	0.1535"	-	3.900	24.00	60.00	4.00
-	SF505039	-	-	0.1535"	-	3.900	33.00	74.00	4.00

Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
All	○	○	○	◎	◎	◎	◎	◎	◎					◎	◎	◎	○				

POWER MAX DRILL

SF503, SF505, SF510 & SF520 Series

>>Continue

EDP NO.				Cutting Diameter			Cutting Length	Overall Length	Shank Diameter
2 Flute									
TiAlN-HH									
Helix 30°									
3xD	5xD	10xD	20xD	D1			L1	L2	D2
SF503	SF505	SF510	SF520	Decimal	Fraction	Metric			
-	-	SF510039	-	0.1535"	-	3.900	52.00	101.00	4.00
-	-	-	SF5200397	0.1563"	-	3.970	0.00	134.00	5.00
SF503040	-	-	-	0.1575"	-	4.000	24.00	60.00	4.00
-	SF505040	-	-	0.1575"	-	4.000	33.00	74.00	4.00
-	-	SF510040	-	0.1575"	-	4.000	52.00	101.00	4.00
SF50304039	-	-	-	0.1590"	#21	4.039	24.00	62.00	5.00
-	SF50504039	-	-	0.1590"	#21	4.039	33.00	80.00	5.00
SF503041	-	-	-	0.1614"	-	4.100	24.00	62.00	5.00
-	SF505041	-	-	0.1614"	-	4.100	33.00	80.00	5.00
-	-	SF510041	-	0.1614"	-	4.100	59.00	108.00	5.00
-	-	-	SF520041	0.1614"	-	4.100	104.00	155.00	5.00
SF503042	-	-	-	0.1654"	-	4.200	26.00	62.00	5.00
-	SF505042	-	-	0.1654"	-	4.200	33.00	80.00	5.00
-	-	SF510042	-	0.1654"	-	4.200	59.00	108.00	5.00
-	-	-	SF520042	0.1654"	-	4.200	104.00	155.00	5.00
SF503043	-	-	-	0.1693"	-	4.300	26.00	62.00	5.00
-	SF505043	-	-	0.1693"	-	4.300	36.00	80.00	5.00
-	-	SF510043	-	0.1693"	-	4.300	59.00	108.00	5.00
-	-	-	SF520043	0.1693"	-	4.300	104.00	155.00	5.00
SF503044	-	-	-	0.1732"	-	4.400	26.00	62.00	5.00
-	SF505044	-	-	0.1732"	-	4.400	36.00	80.00	5.00
-	-	SF510044	-	0.1732"	-	4.400	59.00	108.00	5.00
-	-	-	SF520044	0.1732"	-	4.400	104.00	155.00	5.00
SF503045	-	-	-	0.1772"	-	4.500	26.00	62.00	5.00
-	SF505045	-	-	0.1772"	-	4.500	36.00	80.00	5.00
-	-	SF510045	-	0.1772"	-	4.500	59.00	108.00	5.00
-	-	-	SF520045	0.1772"	-	4.500	104.00	155.00	5.00
SF503046	-	-	-	0.1811"	-	4.600	26.00	62.00	5.00
-	SF505046	-	-	0.1811"	-	4.600	36.00	80.00	5.00
-	-	SF510046	-	0.1811"	-	4.600	66.00	117.00	5.00
-	-	-	SF520046	0.1811"	-	4.600	116.00	167.00	5.00
SF503047	-	-	-	0.1850"	-	4.700	26.00	62.00	5.00
-	SF505047	-	-	0.1850"	-	4.700	36.00	80.00	5.00
-	-	SF510047	-	0.1850"	-	4.700	66.00	117.00	5.00
-	-	-	SF520047	0.1850"	-	4.700	116.00	167.00	5.00
SF50304763	-	-	-	0.1875"	3/16"	4.763	26.00	62.00	5.00
-	SF50504763	-	-	0.1875"	3/16"	4.763	36.00	80.00	5.00
SF503048	-	-	-	0.1890"	-	4.800	26.00	62.00	5.00
-	SF505048	-	-	0.1890"	-	4.800	39.00	80.00	5.00
-	-	SF510048	-	0.1890"	-	4.800	66.00	117.00	5.00
-	-	-	SF520048	0.1890"	-	4.800	116.00	167.00	5.00
SF503049	-	-	-	0.1929"	-	4.900	26.00	62.00	5.00
-	SF505049	-	-	0.1929"	-	4.900	39.00	80.00	5.00
-	-	SF510049	-	0.1929"	-	4.900	66.00	117.00	5.00
-	-	-	SF520049	0.1929"	-	4.900	116.00	167.00	5.00

POWER MAX DRILL

SF503, SF505, SF510 & SF520 Series

>>Continue

EDP NO.				Cutting Diameter			Cutting Length	Overall Length	Shank Diameter
2 Flute									
TiAlN-HH									
Helix 30°									
3xD	5xD	10xD	20xD	D1			L1	L2	D2
SF503	SF505	SF510	SF520	Decimal	Fraction	Metric			
SF503050	-	-	-	0.1969"	-	5.000	26.00	62.00	5.00
-	SF505050	-	-	0.1969"	-	5.000	39.00	80.00	5.00
-	-	SF510050	-	0.1969"	-	5.000	66.00	117.00	5.00
-	-	-	SF520050	0.1969"	-	5.000	116.00	167.00	5.00
SF503051	-	-	-	0.2008"	-	5.100	28.00	66.00	6.00
-	SF505051	-	-	0.2008"	-	5.100	39.00	87.00	6.00
-	-	SF510051	-	0.2008"	-	5.100	72.00	123.00	6.00
-	-	-	SF520051	0.2008"	-	5.100	127.00	178.00	6.00
SF50305159	-	-	-	0.2031"	13/64"	5.159	28.00	66.00	6.00
-	SF50505159	-	-	0.2031"	13/64"	5.159	39.00	87.00	6.00
SF503052	-	-	-	0.2047"	-	5.200	28.00	66.00	6.00
-	SF505052	-	-	0.2047"	-	5.200	39.00	87.00	6.00
-	-	SF510052	-	0.2047"	-	5.200	72.00	123.00	6.00
-	-	-	SF520052	0.2047"	-	5.200	127.00	178.00	6.00
SF503053	-	-	-	0.2087"	-	5.300	28.00	66.00	6.00
-	SF505053	-	-	0.2087"	-	5.300	39.00	87.00	6.00
-	-	SF510053	-	0.2087"	-	5.300	72.00	123.00	6.00
-	-	-	SF520053	0.2087"	-	5.300	127.00	178.00	6.00
SF503054	-	-	-	0.2126"	-	5.400	28.00	66.00	6.00
-	SF505054	-	-	0.2126"	-	5.400	43.00	87.00	6.00
-	-	SF510054	-	0.2126"	-	5.400	72.00	123.00	6.00
-	-	-	SF520054	0.2126"	-	5.400	127.00	178.00	6.00
SF503055	-	-	-	0.2165"	-	5.500	28.00	66.00	6.00
-	SF505055	-	-	0.2165"	-	5.500	43.00	87.00	6.00
-	-	SF510055	-	0.2165"	-	5.500	72.00	123.00	6.00
-	-	-	SF520055	0.2165"	-	5.500	127.00	178.00	6.00
SF50305558	-	-	-	0.2188"	7/32"	5.558	28.00	66.00	6.00
-	SF50505558	-	-	0.2188"	7/32"	5.558	43.00	87.00	6.00
SF503056	-	-	-	0.2205"	-	5.600	30.00	66.00	6.00
-	SF505056	-	-	0.2205"	-	5.600	43.00	87.00	6.00
-	-	SF510056	-	0.2205"	-	5.600	79.00	130.00	6.00
-	-	-	SF520056	0.2205"	-	5.600	139.00	190.00	6.00
SF503057	-	-	-	0.2244"	-	5.700	30.00	66.00	6.00
-	SF505057	-	-	0.2244"	-	5.700	43.00	87.00	6.00
-	-	SF510057	-	0.2244"	-	5.700	79.00	130.00	6.00
-	-	-	SF520057	0.2244"	-	5.700	139.00	190.00	6.00
SF503058	-	-	-	0.2283"	-	5.800	30.00	66.00	6.00
-	SF505058	-	-	0.2283"	-	5.800	43.00	87.00	6.00
-	-	SF510058	-	0.2283"	-	5.800	79.00	130.00	6.00
-	-	-	SF520058	0.2283"	-	5.800	139.00	190.00	6.00
SF503059	-	-	-	0.2323"	-	5.900	30.00	66.00	6.00
-	SF505059	-	-	0.2323"	-	5.900	43.00	87.00	6.00
-	-	SF510059	-	0.2323"	-	5.900	79.00	130.00	6.00
-	-	-	SF520059	0.2323"	-	5.900	139.00	190.00	6.00
SF50305953	-	-	-	0.2344"	15/64"	5.953	30.00	66.00	6.00

POWER MAX DRILL

SF503, SF505, SF510 & SF520 Series

>>Continue

EDP NO.				Cutting Diameter			Cutting Length	Overall Length	Shank Diameter
2 Flute									
TiAlN-HH									
Helix 30°									
3xD	5xD	10xD	20xD	D1			L1	L2	D2
SF503	SF505	SF510	SF520	Decimal	Fraction	Metric			
-	SF50505953	-	-	0.2344"	15/64"	5.953	43.00	87.00	6.00
SF503060	-	-	-	0.2362"	-	6.000	30.00	66.00	6.00
-	SF505060	-	-	0.2362"	-	6.000	43.00	87.00	6.00
-	-	SF510060	-	0.2362"	-	6.000	79.00	130.00	6.00
-	-	-	SF520060	0.2362"	-	6.000	139.00	190.00	6.00
SF503061	-	-	-	0.2402"	-	6.100	34.00	74.00	7.00
-	SF505061	-	-	0.2402"	-	6.100	47.00	95.00	7.00
-	-	SF510061	-	0.2402"	-	6.100	85.00	138.00	7.00
-	-	-	SF520061	0.2402"	-	6.100	150.00	203.00	7.00
SF503062	-	-	-	0.2441"	-	6.200	34.00	74.00	7.00
-	SF505062	-	-	0.2441"	-	6.200	47.00	95.00	7.00
-	-	SF510062	-	0.2441"	-	6.200	85.00	138.00	7.00
-	-	-	SF520062	0.2441"	-	6.200	150.00	203.00	7.00
SF503063	-	-	-	0.2480"	-	6.300	34.00	74.00	7.00
-	SF505063	-	-	0.2480"	-	6.300	47.00	95.00	7.00
-	-	SF510063	-	0.2480"	-	6.300	85.00	138.00	7.00
-	-	-	SF520063	0.2480"	-	6.300	150.00	203.00	7.00
SF5030635	-	-	-	0.2500"	1/4 "	6.350	34.00	74.00	7.00
-	SF5050635	-	-	0.2500"	1/4 "	6.350	47.00	95.00	7.00
SF503064	-	-	-	0.2520"	-	6.400	34.00	74.00	7.00
-	SF505064	-	-	0.2520"	-	6.400	47.00	95.00	7.00
-	-	SF510064	-	0.2520"	-	6.400	85.00	138.00	7.00
-	-	-	SF520064	0.2520"	-	6.400	150.00	203.00	7.00
SF503065	-	-	-	0.2559"	-	6.500	34.00	74.00	7.00
-	SF505065	-	-	0.2559"	-	6.500	47.00	95.00	7.00
-	-	SF510065	-	0.2559"	-	6.500	85.00	138.00	7.00
-	-	-	SF520065	0.2559"	-	6.500	150.00	203.00	7.00
SF503066	-	-	-	0.2598"	-	6.600	34.00	74.00	7.00
-	SF505066	-	-	0.2598"	-	6.600	47.00	95.00	7.00
-	-	SF510066	-	0.2598"	-	6.600	92.00	145.00	7.00
-	-	-	SF520066	0.2598"	-	6.600	162.00	215.00	7.00
SF503067	-	-	-	0.2638"	-	6.700	37.00	74.00	7.00
-	SF505067	-	-	0.2638"	-	6.700	47.00	95.00	7.00
-	-	SF510067	-	0.2638"	-	6.700	92.00	145.00	7.00
-	-	-	SF520067	0.2638"	-	6.700	162.00	215.00	7.00
SF50306747	-	-	-	0.2656"	17/64"	6.747	37.00	74.00	7.00
-	SF50506747	-	-	0.2656"	17/64"	6.747	47.00	95.00	7.00
SF503068	-	-	-	0.2677"	-	6.800	37.00	74.00	7.00
-	SF505068	-	-	0.2677"	-	6.800	47.00	95.00	7.00
-	-	SF510068	-	0.2677"	-	6.800	92.00	145.00	7.00
-	-	-	SF520068	0.2677"	-	6.800	162.00	215.00	7.00
SF503069	-	-	-	0.2717"	-	6.900	37.00	74.00	7.00
-	SF505069	-	-	0.2717"	-	6.900	47.00	95.00	7.00
-	-	SF510069	-	0.2717"	-	6.900	92.00	145.00	7.00
-	-	-	SF520069	0.2717"	-	6.900	162.00	215.00	7.00

POWER MAX DRILL

SF503, SF505, SF510 & SF520 Series

>>Continue

EDP NO.				Cutting Diameter			Cutting Length	Overall Length	Shank Diameter
2 Flute									
TiAlN-HH									
Helix 30°									
3xD	5xD	10xD	20xD	D1			L1	L2	D2
SF503	SF505	SF510	SF520	Decimal	Fraction	Metric			
SF503070	-	-	-	0.2756"	-	7.000	37.00	74.00	7.00
-	SF505070	-	-	0.2756"	-	7.000	47.00	95.00	7.00
-	-	SF510070	-	0.2756"	-	7.000	92.00	145.00	7.00
-	-	-	SF520070	0.2756"	-	7.000	162.00	215.00	7.00
SF503071	-	-	-	0.2795"	-	7.100	40.00	79.00	8.00
-	SF505071	-	-	0.2795"	-	7.100	52.00	103.00	8.00
-	-	SF510071	-	0.2795"	-	7.100	98.00	153.00	8.00
-	-	-	SF520071	0.2795"	-	7.100	173.00	228.00	8.00
SF50307145	-	-	-	0.2813"	9/32"	7.145	40.00	79.00	8.00
-	SF50507145	-	-	0.2813"	9/32"	7.145	52.00	103.00	8.00
SF503072	-	-	-	0.2835"	-	7.200	40.00	79.00	8.00
-	SF505072	-	-	0.2835"	-	7.200	52.00	103.00	8.00
-	-	SF510072	-	0.2835"	-	7.200	98.00	153.00	8.00
-	-	-	SF520072	0.2835"	-	7.200	173.00	228.00	8.00
SF503073	-	-	-	0.2874"	-	7.300	40.00	79.00	8.00
-	SF505073	-	-	0.2874"	-	7.300	52.00	103.00	8.00
-	-	SF510073	-	0.2874"	-	7.300	98.00	153.00	8.00
-	-	-	SF520073	0.2874"	-	7.300	173.00	228.00	8.00
SF503074	-	-	-	0.2913"	-	7.400	40.00	79.00	8.00
-	SF505074	-	-	0.2913"	-	7.400	52.00	103.00	8.00
-	-	SF510074	-	0.2913"	-	7.400	98.00	153.00	8.00
-	-	-	SF520074	0.2913"	-	7.400	173.00	228.00	8.00
SF503075	-	-	-	0.2953"	-	7.500	40.00	79.00	8.00
-	SF505075	-	-	0.2953"	-	7.500	52.00	103.00	8.00
-	-	SF510075	-	0.2953"	-	7.500	98.00	153.00	8.00
-	-	-	SF520075	0.2953"	-	7.500	173.00	228.00	8.00
SF50307541	-	-	-	0.2969"	19/64"	7.541	40.00	79.00	8.00
-	SF50507541	-	-	0.2969"	19/64"	7.541	52.00	103.00	8.00
SF503076	-	-	-	0.2992"	-	7.600	40.00	79.00	8.00
-	SF505076	-	-	0.2992"	-	7.600	52.00	103.00	8.00
-	-	SF510076	-	0.2992"	-	7.600	105.00	160.00	8.00
-	-	-	SF520076	0.2992"	-	7.600	185.00	240.00	8.00
SF503077	-	-	-	0.3031"	-	7.700	40.00	79.00	8.00
-	SF505077	-	-	0.3031"	-	7.700	52.00	103.00	8.00
-	-	SF510077	-	0.3031"	-	7.700	105.00	160.00	8.00
-	-	-	SF520077	0.3031"	-	7.700	185.00	240.00	8.00
SF503078	-	-	-	0.3071"	-	7.800	40.00	79.00	8.00
-	SF505078	-	-	0.3071"	-	7.800	52.00	103.00	8.00
-	-	SF510078	-	0.3071"	-	7.800	105.00	160.00	8.00
-	-	-	SF520078	0.3071"	-	7.800	185.00	240.00	8.00
SF503079	-	-	-	0.3110"	-	7.900	40.00	79.00	8.00
-	SF505079	-	-	0.3110"	-	7.900	52.00	103.00	8.00
-	-	SF510079	-	0.3110"	-	7.900	105.00	160.00	8.00
-	-	-	SF520079	0.3110"	-	7.900	185.00	240.00	8.00
SF50307938	-	-	-	0.3125"	5/16"	7.938	40.00	79.00	8.00

POWER MAX DRILL

SF503, SF505, SF510 & SF520 Series

>>Continue

EDP NO.				Cutting Diameter			Cutting Length	Overall Length	Shank Diameter
2 Flute									
TiAlN-HH									
Helix 30°									
3xD	5xD	10xD	20xD	D1			L1	L2	D2
SF503	SF505	SF510	SF520	Decimal	Fraction	Metric			
-	SF50507938	-	-	0.3125"	5/16"	7.938	52.00	103.00	8.00
SF503080	-	-	-	0.3150"	-	8.000	40.00	79.00	8.00
-	SF505080	-	-	0.3150"	-	8.000	52.00	103.00	8.00
-	-	SF510080	-	0.3150"	-	8.000	105.00	160.00	8.00
-	-	-	SF520080	0.3150"	-	8.000	185.00	240.00	8.00
SF503081	-	-	-	0.3189"	-	8.100	43.00	84.00	9.00
-	SF505081	-	-	0.3189"	-	8.100	56.00	105.00	9.00
-	-	SF510081	-	0.3189"	-	8.100	111.00	166.00	9.00
-	-	-	SF520081	0.3189"	-	8.100	196.00	251.00	9.00
SF503082	-	-	-	0.3228"	-	8.200	43.00	84.00	9.00
-	SF505082	-	-	0.3228"	-	8.200	56.00	105.00	9.00
-	-	SF510082	-	0.3228"	-	8.200	111.00	166.00	9.00
-	-	-	SF520082	0.3228"	-	8.200	196.00	251.00	9.00
SF503083	-	-	-	0.3268"	-	8.300	43.00	84.00	9.00
-	SF505083	-	-	0.3268"	-	8.300	56.00	105.00	9.00
-	-	SF510083	-	0.3268"	-	8.300	111.00	166.00	9.00
-	-	-	SF520083	0.3268"	-	8.300	196.00	251.00	9.00
SF50308334	-	-	-	0.3281"	21/64"	8.334	43.00	84.00	9.00
-	SF50508334	-	-	0.3281"	21/64"	8.334	56.00	105.00	9.00
SF503084	-	-	-	0.3307"	-	8.400	43.00	84.00	9.00
-	SF505084	-	-	0.3307"	-	8.400	56.00	105.00	9.00
-	-	SF510084	-	0.3307"	-	8.400	111.00	166.00	9.00
-	-	-	SF520084	0.3307"	-	8.400	196.00	251.00	9.00
SF503085	-	-	-	0.3346"	-	8.500	43.00	84.00	9.00
-	SF505085	-	-	0.3346"	-	8.500	56.00	105.00	9.00
-	-	SF510085	-	0.3346"	-	8.500	111.00	166.00	9.00
-	-	-	SF520085	0.3346"	-	8.500	196.00	251.00	9.00
SF503086	-	-	-	0.3386"	-	8.600	43.00	84.00	9.00
-	SF505086	-	-	0.3386"	-	8.600	56.00	105.00	9.00
-	-	SF510086	-	0.3386"	-	8.600	118.00	173.00	9.00
-	-	-	SF520086	0.3386"	-	8.600	208.00	263.00	9.00
SF503087	-	-	-	0.3425"	-	8.700	43.00	84.00	9.00
-	SF505087	-	-	0.3425"	-	8.700	56.00	105.00	9.00
-	-	SF510087	-	0.3425"	-	8.700	118.00	173.00	9.00
-	-	-	SF520087	0.3425"	-	8.700	208.00	263.00	9.00
SF50308733	-	-	-	0.3438"	11/32"	8.733	43.00	84.00	9.00
-	SF50508733	-	-	0.3438"	11/32"	8.733	56.00	105.00	9.00
SF503088	-	-	-	0.3465"	-	8.800	43.00	84.00	9.00
-	SF505088	-	-	0.3465"	-	8.800	56.00	105.00	9.00
-	-	SF510088	-	0.3465"	-	8.800	118.00	173.00	9.00
-	-	-	SF520088	0.3465"	-	8.800	208.00	263.00	9.00
SF503089	-	-	-	0.3504"	-	8.900	43.00	84.00	9.00
-	SF505089	-	-	0.3504"	-	8.900	56.00	105.00	9.00
-	-	SF510089	-	0.3504"	-	8.900	118.00	173.00	9.00
-	-	-	SF520089	0.3504"	-	8.900	208.00	263.00	9.00

POWER MAX DRILL

SF503, SF505, SF510 & SF520 Series

>>Continue

EDP NO.				Cutting Diameter			Cutting Length	Overall Length	Shank Diameter
2 Flute									
TiAlN-HH									
Helix 30°									
3xD	5xD	10xD	20xD	D1			L1	L2	D2
SF503	SF505	SF510	SF520	Decimal	Fraction	Metric			
SF503090	-	-	-	0.3543"	-	9.000	43.00	84.00	9.00
-	SF505090	-	-	0.3543"	-	9.000	56.00	105.00	9.00
-	-	SF510090	-	0.3543"	-	9.000	118.00	173.00	9.00
-	-	-	SF520090	0.3543"	-	9.000	208.00	263.00	9.00
SF503091	-	-	-	0.3583"	-	9.100	47.00	89.00	10.00
-	SF505091	-	-	0.3583"	-	9.100	62.00	108.00	10.00
-	-	SF510091	-	0.3583"	-	9.100	124.00	179.00	10.00
-	-	-	SF520091	0.3583"	-	9.100	219.00	274.00	10.00
SF50309129	-	-	-	0.3594"	23/64"	9.129	47.00	89.00	10.00
-	SF50509129	-	-	0.3594"	23/64"	9.129	62.00	108.00	10.00
SF503092	-	-	-	0.3622"	-	9.200	47.00	89.00	10.00
-	SF505092	-	-	0.3622"	-	9.200	62.00	108.00	10.00
-	-	SF510092	-	0.3622"	-	9.200	124.00	179.00	10.00
-	-	-	SF520092	0.3622"	-	9.200	219.00	274.00	10.00
SF503093	-	-	-	0.3661"	-	9.300	47.00	89.00	10.00
-	SF505093	-	-	0.3661"	-	9.300	62.00	108.00	10.00
-	-	SF510093	-	0.3661"	-	9.300	124.00	179.00	10.00
-	-	-	SF520093	0.3661"	-	9.300	219.00	274.00	10.00
SF503094	-	-	-	0.3701"	-	9.400	47.00	89.00	10.00
-	SF505094	-	-	0.3701"	-	9.400	62.00	108.00	10.00
-	-	SF510094	-	0.3701"	-	9.400	124.00	179.00	10.00
-	-	-	SF520094	0.3701"	-	9.400	219.00	274.00	10.00
SF503095	-	-	-	0.3740"	-	9.500	47.00	89.00	10.00
-	SF505095	-	-	0.3740"	-	9.500	62.00	108.00	10.00
-	-	SF510095	-	0.3740"	-	9.500	124.00	179.00	10.00
-	-	-	SF520095	0.3740"	-	9.500	219.00	274.00	10.00
SF50309525	-	-	-	0.3750"	3/8 "	9.525	47.00	89.00	10.00
-	SF50509525	-	-	0.3750"	3/8 "	9.525	62.00	108.00	10.00
SF503096	-	-	-	0.3780"	-	9.600	47.00	89.00	10.00
-	SF505096	-	-	0.3780"	-	9.600	62.00	108.00	10.00
-	-	SF510096	-	0.3780"	-	9.600	131.00	186.00	10.00
-	-	-	SF520096	0.3780"	-	9.600	231.00	286.00	10.00
SF503097	-	-	-	0.3819"	-	9.700	47.00	89.00	10.00
-	SF505097	-	-	0.3819"	-	9.700	62.00	108.00	10.00
-	-	SF510097	-	0.3819"	-	9.700	131.00	186.00	10.00
-	-	-	SF520097	0.3819"	-	9.700	231.00	286.00	10.00
SF503098	-	-	-	0.3858"	-	9.800	47.00	89.00	10.00
-	SF505098	-	-	0.3858"	-	9.800	62.00	108.00	10.00
-	-	SF510098	-	0.3858"	-	9.800	131.00	186.00	10.00
-	-	-	SF520098	0.3858"	-	9.800	231.00	286.00	10.00
SF503099	-	-	-	0.3898"	-	9.900	47.00	89.00	10.00
-	SF505099	-	-	0.3898"	-	9.900	62.00	108.00	10.00
-	-	SF510099	-	0.3898"	-	9.900	131.00	186.00	10.00
-	-	-	SF520099	0.3898"	-	9.900	231.00	286.00	10.00
SF50309921	-	-	-	0.3906"	25/64"	9.921	47.00	89.00	10.00

POWER MAX DRILL

SF503, SF505, SF510 & SF520 Series

>>Continue

EDP NO.				Cutting Diameter			Cutting Length	Overall Length	Shank Diameter
2 Flute									
TiAlN-HH									
Helix 30°									
3xD	5xD	10xD	20xD	D1			L1	L2	D2
SF503	SF505	SF510	SF520	Decimal	Fraction	Metric			
-	SF50509921	-	-	0.3906"	25/64"	9.921	62.00	108.00	10.00
SF503100	-	-	-	0.3937"	-	10.000	47.00	89.00	10.00
-	SF505100	-	-	0.3937"	-	10.000	62.00	108.00	10.00
-	-	SF510100	-	0.3937"	-	10.000	131.00	186.00	10.00
-	-	-	SF520100	0.3937"	-	10.000	231.00	286.00	10.00
SF503101	-	-	-	0.3976"	-	10.100	51.00	95.00	11.00
-	SF505101	-	-	0.3976"	-	10.100	68.00	125.00	11.00
-	-	SF510101	-	0.3976"	-	10.100	138.00	193.00	11.00
SF503102	-	-	-	0.4016"	-	10.200	51.00	95.00	11.00
-	SF505102	-	-	0.4016"	-	10.200	68.00	125.00	11.00
-	-	SF510102	-	0.4016"	-	10.200	138.00	193.00	11.00
SF503103	-	-	-	0.4055"	-	10.300	51.00	95.00	11.00
-	SF505103	-	-	0.4055"	-	10.300	68.00	125.00	11.00
-	-	SF510103	-	0.4055"	-	10.300	138.00	193.00	11.00
SF5031032	-	-	-	0.4063"	13/32"	10.320	51.00	95.00	11.00
-	SF5051032	-	-	0.4063"	13/32"	10.320	68.00	125.00	11.00
SF503104	-	-	-	0.4094"	-	10.400	51.00	95.00	11.00
-	SF505104	-	-	0.4094"	-	10.400	68.00	125.00	11.00
-	-	SF510104	-	0.4094"	-	10.400	138.00	193.00	11.00
SF503105	-	-	-	0.4134"	-	10.500	51.00	95.00	11.00
-	SF505105	-	-	0.4134"	-	10.500	68.00	125.00	11.00
-	-	SF510105	-	0.4134"	-	10.500	138.00	193.00	11.00
SF503106	-	-	-	0.4173"	-	10.600	51.00	95.00	11.00
-	SF505106	-	-	0.4173"	-	10.600	68.00	125.00	11.00
-	-	SF510106	-	0.4173"	-	10.600	144.00	205.00	11.00
SF503107	-	-	-	0.4213"	-	10.700	51.00	95.00	11.00
-	SF505107	-	-	0.4213"	-	10.700	68.00	125.00	11.00
-	-	SF510107	-	0.4213"	-	10.700	144.00	205.00	11.00
SF50310716	-	-	-	0.4219"	27/64"	10.716	51.00	95.00	11.00
-	SF50510716	-	-	0.4219"	27/64"	10.716	68.00	125.00	11.00
SF503108	-	-	-	0.4252"	-	10.800	51.00	95.00	11.00
-	SF505108	-	-	0.4252"	-	10.800	68.00	125.00	11.00
-	-	SF510108	-	0.4252"	-	10.800	144.00	205.00	11.00
SF503109	-	-	-	0.4291"	-	10.900	51.00	95.00	11.00
-	SF505109	-	-	0.4291"	-	10.900	68.00	125.00	11.00
-	-	SF510109	-	0.4291"	-	10.900	144.00	205.00	11.00
SF503110	-	-	-	0.4331"	-	11.000	51.00	95.00	11.00
-	SF505110	-	-	0.4331"	-	11.000	68.00	125.00	11.00
-	-	SF510110	-	0.4331"	-	11.000	144.00	205.00	11.00
SF503111	-	-	-	0.4370"	-	11.100	54.00	102.00	12.00
-	SF505111	-	-	0.4370"	-	11.100	71.00	133.00	12.00
-	-	SF510111	-	0.4370"	-	11.100	151.00	212.00	12.00
SF50311113	-	-	-	0.4375"	7/16"	11.113	54.00	102.00	12.00
-	SF50511113	-	-	0.4375"	7/16"	11.113	71.00	133.00	12.00
SF503112	-	-	-	0.4409"	-	11.200	54.00	102.00	12.00

POWER MAX DRILL

SF503, SF505, SF510 & SF520 Series

>>Continue

EDP NO.				Cutting Diameter			Cutting Length	Overall Length	Shank Diameter
2 Flute									
TiAlN-HH									
Helix 30°									
3xD	5xD	10xD	20xD	D1			L1	L2	D2
SF503	SF505	SF510	SF520	Decimal	Fraction	Metric			
-	SF505112	-	-	0.4409"	-	11.200	71.00	133.00	12.00
-	-	SF510112	-	0.4409"	-	11.200	151.00	212.00	12.00
SF503113	-	-	-	0.4449"	-	11.300	54.00	102.00	12.00
-	SF505113	-	-	0.4449"	-	11.300	71.00	133.00	12.00
-	-	SF510113	-	0.4449"	-	11.300	151.00	212.00	12.00
SF503114	-	-	-	0.4488"	-	11.400	54.00	102.00	12.00
-	SF505114	-	-	0.4488"	-	11.400	71.00	133.00	12.00
-	-	SF510114	-	0.4488"	-	11.400	151.00	212.00	12.00
SF503115	-	-	-	0.4528"	-	11.500	54.00	102.00	12.00
-	SF505115	-	-	0.4528"	-	11.500	71.00	133.00	12.00
-	-	SF510115	-	0.4528"	-	11.500	151.00	212.00	12.00
SF503116	-	-	-	0.4567"	-	11.600	54.00	102.00	12.00
-	SF505116	-	-	0.4567"	-	11.600	71.00	133.00	12.00
-	-	SF510116	-	0.4567"	-	11.600	157.00	218.00	12.00
SF503117	-	-	-	0.4606"	-	11.700	54.00	102.00	12.00
-	SF505117	-	-	0.4606"	-	11.700	71.00	133.00	12.00
-	-	SF510117	-	0.4606"	-	11.700	157.00	218.00	12.00
SF503118	-	-	-	0.4646"	-	11.800	54.00	102.00	12.00
-	SF505118	-	-	0.4646"	-	11.800	71.00	133.00	12.00
-	-	SF510118	-	0.4646"	-	11.800	157.00	218.00	12.00
SF503119	-	-	-	0.4685"	-	11.900	54.00	102.00	12.00
-	SF505119	-	-	0.4685"	-	11.900	71.00	133.00	12.00
-	-	SF510119	-	0.4685"	-	11.900	157.00	218.00	12.00
SF50311908	-	-	-	0.4688"	15/32"	11.908	54.00	102.00	12.00
-	SF50511908	-	-	0.4688"	15/32"	11.908	71.00	133.00	12.00
SF503120	-	-	-	0.4724"	-	12.000	54.00	102.00	12.00
-	SF505120	-	-	0.4724"	-	12.000	71.00	133.00	12.00
-	-	SF510120	-	0.4724"	-	12.000	157.00	218.00	12.00
SF503121	-	-	-	0.4764"	-	12.100	57.00	102.00	13.00
-	SF505121	-	-	0.4764"	-	12.100	75.00	137.00	13.00
-	-	SF510121	-	0.4764"	-	12.100	164.00	225.00	13.00
SF503122	-	-	-	0.4803"	-	12.200	57.00	102.00	13.00
-	SF505122	-	-	0.4803"	-	12.200	75.00	137.00	13.00
-	-	SF510122	-	0.4803"	-	12.200	164.00	225.00	13.00
SF503123	-	-	-	0.4843"	-	12.300	57.00	102.00	13.00
-	SF505123	-	-	0.4843"	-	12.300	75.00	137.00	13.00
-	-	SF510123	-	0.4843"	-	12.300	164.00	225.00	13.00
SF50312304	-	-	-	0.4844"	31/64"	12.304	57.00	102.00	13.00
-	SF50512304	-	-	0.4844"	31/64"	12.304	75.00	137.00	13.00
SF503124	-	-	-	0.4882"	-	12.400	57.00	102.00	13.00
-	SF505124	-	-	0.4882"	-	12.400	75.00	137.00	13.00
-	-	SF510124	-	0.4882"	-	12.400	164.00	225.00	13.00
SF503125	-	-	-	0.4921"	-	12.500	57.00	102.00	13.00
-	SF505125	-	-	0.4921"	-	12.500	75.00	137.00	13.00
-	-	SF510125	-	0.4921"	-	12.500	164.00	225.00	13.00

POWER MAX DRILL

SF503, SF505, SF510 & SF520 Series

>>Continue

EDP NO.				Cutting Diameter			Cutting Length	Overall Length	Shank Diameter
2 Flute									
TiAlN-HH									
Helix 30°									
3xD	5xD	10xD	20xD	D1			L1	L2	D2
SF503	SF505	SF510	SF520	Decimal	Fraction	Metric			
SF503126	-	-	-	0.4961"	-	12.600	57.00	102.00	13.00
-	SF505126	-	-	0.4961"	-	12.600	75.00	137.00	13.00
-	-	SF510126	-	0.4961"	-	12.600	170.00	236.00	13.00
SF503127	-	-	-	0.5000"	1/2 "	12.700	57.00	102.00	13.00
-	SF505127	-	-	0.5000"	1/2 "	12.700	75.00	137.00	13.00
-	-	SF510127	-	0.5000"	-	12.700	170.00	236.00	13.00
SF503128	-	-	-	0.5039"	-	12.800	57.00	102.00	13.00
-	SF505128	-	-	0.5039"	-	12.800	75.00	137.00	13.00
-	-	SF510128	-	0.5039"	-	12.800	170.00	236.00	13.00
SF503129	-	-	-	0.5079"	-	12.900	57.00	102.00	13.00
-	SF505129	-	-	0.5079"	-	12.900	75.00	137.00	13.00
-	-	SF510129	-	0.5079"	-	12.900	170.00	236.00	13.00
SF503130	-	-	-	0.5118"	-	13.000	57.00	102.00	13.00
-	SF505130	-	-	0.5118"	-	13.000	75.00	137.00	13.00
-	-	SF510130	-	0.5118"	-	13.000	170.00	236.00	13.00
SF50313096	-	-	-	0.5156"	33/64"	13.096	60.00	107.00	14.00
-	SF50513096	-	-	0.5156"	33/64"	13.096	80.00	142.00	14.00
SF503131	-	-	-	0.5157"	-	13.100	60.00	107.00	14.00
-	SF505131	-	-	0.5157"	-	13.100	80.00	142.00	14.00
SF503132	-	-	-	0.5197"	-	13.200	60.00	107.00	14.00
-	SF505132	-	-	0.5197"	-	13.200	80.00	142.00	14.00
SF503133	-	-	-	0.5236"	-	13.300	60.00	107.00	14.00
-	SF505133	-	-	0.5236"	-	13.300	80.00	142.00	14.00
SF503134	-	-	-	0.5276"	-	13.400	60.00	107.00	14.00
-	SF505134	-	-	0.5276"	-	13.400	80.00	142.00	14.00
SF50313494	-	-	-	0.5313"	17/32"	13.494	60.00	107.00	14.00
-	SF50513494	-	-	0.5313"	17/32"	13.494	80.00	142.00	14.00
SF503135	-	-	-	0.5315"	-	13.500	60.00	107.00	14.00
-	SF505135	-	-	0.5315"	-	13.500	80.00	142.00	14.00
SF503136	-	-	-	0.5354"	-	13.600	60.00	107.00	14.00
-	SF505136	-	-	0.5354"	-	13.600	80.00	142.00	14.00
SF503137	-	-	-	0.5394"	-	13.700	60.00	107.00	14.00
-	SF505137	-	-	0.5394"	-	13.700	80.00	142.00	14.00
SF503138	-	-	-	0.5433"	-	13.800	60.00	107.00	14.00
-	SF505138	-	-	0.5433"	-	13.800	80.00	142.00	14.00
SF50313891	-	-	-	0.5469"	35/64"	13.891	60.00	107.00	14.00
-	SF50513891	-	-	0.5469"	35/64"	13.891	80.00	142.00	14.00
SF503139	-	-	-	0.5472"	-	13.900	60.00	107.00	14.00
-	SF505139	-	-	0.5472"	-	13.900	80.00	142.00	14.00
SF503140	-	-	-	0.5512"	-	14.000	60.00	107.00	14.00
-	SF505140	-	-	0.5512"	-	14.000	80.00	142.00	14.00
SF503141	-	-	-	0.5551"	-	14.100	62.00	111.00	15.00
-	SF505141	-	-	0.5551"	-	14.100	83.00	148.00	15.00
SF503142	-	-	-	0.5591"	-	14.200	62.00	111.00	15.00
-	SF505142	-	-	0.5591"	-	14.200	83.00	148.00	15.00

POWER MAX DRILL

SF503, SF505, SF510 & SF520 Series

>>Continue

EDP NO.				Cutting Diameter			Cutting Length	Overall Length	Shank Diameter
2 Flute									
TiAlN-HH									
Helix 30°									
3xD	5xD	10xD	20xD	D1			L1	L2	D2
SF503	SF505	SF510	SF520	Decimal	Fraction	Metric			
SF50314288	-	-	-	0.5625"	9/16"	14.288	62.00	111.00	15.00
-	SF50514288	-	-	0.5625"	9/16"	14.288	83.00	148.00	15.00
SF503143	-	-	-	0.5630"	-	14.300	62.00	111.00	15.00
-	SF505143	-	-	0.5630"	-	14.300	83.00	148.00	15.00
SF503144	-	-	-	0.5669"	-	14.400	62.00	111.00	15.00
-	SF505144	-	-	0.5669"	-	14.400	83.00	148.00	15.00
SF503145	-	-	-	0.5709"	-	14.500	62.00	111.00	15.00
-	SF505145	-	-	0.5709"	-	14.500	83.00	148.00	15.00
SF503146	-	-	-	0.5748"	-	14.600	62.00	111.00	15.00
-	SF505146	-	-	0.5748"	-	14.600	83.00	148.00	15.00
SF503147	-	-	-	0.5787"	-	14.700	62.00	111.00	15.00
-	SF505147	-	-	0.5787"	-	14.700	83.00	148.00	15.00
SF503148	-	-	-	0.5827"	-	14.800	62.00	111.00	15.00
-	SF505148	-	-	0.5827"	-	14.800	83.00	148.00	15.00
SF503149	-	-	-	0.5866"	-	14.900	62.00	111.00	15.00
-	SF505149	-	-	0.5866"	-	14.900	83.00	148.00	15.00
SF503150	-	-	-	0.5906"	-	15.000	62.00	111.00	15.00
-	SF505150	-	-	0.5906"	-	15.000	83.00	148.00	15.00
SF50315081	-	-	-	0.5937"	19/32"	15.081	64.00	115.00	16.00
-	SF50515081	-	-	0.5937"	19/32"	15.081	90.00	152.00	16.00
SF503151	-	-	-	0.5945"	-	15.100	64.00	115.00	16.00
-	SF505151	-	-	0.5945"	-	15.100	90.00	152.00	16.00
SF503152	-	-	-	0.5984"	-	15.200	64.00	115.00	16.00
-	SF505152	-	-	0.5984"	-	15.200	90.00	152.00	16.00
SF503154	-	-	-	0.6063"	-	15.400	64.00	115.00	16.00
-	SF505154	-	-	0.6063"	-	15.400	90.00	152.00	16.00
SF503155	-	-	-	0.6102"	-	15.500	64.00	115.00	16.00
-	SF505155	-	-	0.6102"	-	15.500	90.00	152.00	16.00
SF503156	-	-	-	0.6142"	-	15.600	64.00	115.00	16.00
-	SF505156	-	-	0.6142"	-	15.600	90.00	152.00	16.00
SF503157	-	-	-	0.6181"	-	15.700	64.00	115.00	16.00
-	SF505157	-	-	0.6181"	-	15.700	90.00	152.00	16.00
SF503158	-	-	-	0.6220"	-	15.800	64.00	115.00	16.00
-	SF505158	-	-	0.6220"	-	15.800	90.00	152.00	16.00
SF50315875	-	-	-	0.6250"	5/8 "	15.875	64.00	115.00	16.00
-	SF50515875	-	-	0.6250"	5/8 "	15.875	90.00	152.00	16.00
SF503160	-	-	-	0.6299"	-	16.000	64.00	115.00	16.00
-	SF505160	-	-	0.6299"	-	16.000	90.00	152.00	16.00
SF503161	-	-	-	0.6339"	-	16.100	66.00	119.00	17.00
-	SF505161	-	-	0.6339"	-	16.100	95.00	155.00	17.00
SF503163	-	-	-	0.6417"	-	16.300	66.00	119.00	17.00
-	SF505163	-	-	0.6417"	-	16.300	95.00	155.00	17.00
SF503165	-	-	-	0.6496"	-	16.500	66.00	119.00	17.00
-	SF505165	-	-	0.6496"	-	16.500	95.00	155.00	17.00
SF50316667	-	-	-	0.6562"	21/32"	16.667	66.00	119.00	17.00

POWER MAX DRILL

SF503, SF505, SF510 & SF520 Series

EDP NO.				Cutting Diameter			Cutting Length	Overall Length	Shank Diameter
2 Flute									
TiAlN-HH									
Helix 30°									
3xD	5xD	10xD	20xD	D1			L1	L2	D2
SF503	SF505	SF510	SF520	Decimal	Fraction	Metric			
-	SF50516667	-	-	0.6562"	21/32"	16.667	95.00	155.00	17.00
SF503170	-	-	-	0.6693"	-	17.000	66.00	119.00	17.00
-	SF505170	-	-	0.6693"	-	17.000	95.00	155.00	17.00
SF503171	-	-	-	0.6732"	-	17.100	66.00	123.00	18.00
-	SF505171	-	-	0.6732"	-	17.100	100.00	157.00	18.00
SF503172	-	-	-	0.6772"	-	17.200	66.00	123.00	18.00
-	SF505172	-	-	0.6772"	-	17.200	100.00	157.00	18.00
SF50317463	-	-	-	0.6875"	11/16"	17.463	66.00	123.00	18.00
-	SF50517463	-	-	0.6875"	11/16"	17.463	100.00	157.00	18.00
SF503175	-	-	-	0.6890"	-	17.500	66.00	123.00	18.00
-	SF505175	-	-	0.6890"	-	17.500	100.00	157.00	18.00
SF503177	-	-	-	0.6969"	-	17.700	66.00	123.00	18.00
-	SF505177	-	-	0.6969"	-	17.700	100.00	157.00	18.00
SF503178	-	-	-	0.7008"	-	17.800	66.00	123.00	18.00
-	SF505178	-	-	0.7008"	-	17.800	100.00	157.00	18.00
SF503180	-	-	-	0.7087"	-	18.000	66.00	123.00	18.00
-	SF505180	-	-	0.7087"	-	18.000	100.00	157.00	18.00
SF503181	-	-	-	0.7126"	-	18.100	70.00	127.00	19.00
-	SF505181	-	-	0.7126"	-	18.100	105.00	160.00	19.00
SF503182	-	-	-	0.7165"	-	18.200	70.00	127.00	19.00
-	SF505182	-	-	0.7165"	-	18.200	105.00	160.00	19.00
SF503185	-	-	-	0.7283"	-	18.500	70.00	127.00	19.00
-	SF505185	-	-	0.7283"	-	18.500	105.00	160.00	19.00
SF503190	-	-	-	0.7480"	-	19.000	70.00	127.00	19.00
-	SF505190	-	-	0.7480"	-	19.000	105.00	160.00	19.00
SF503191	-	-	-	0.7520"	-	19.100	70.00	131.00	20.00
-	SF505191	-	-	0.7520"	-	19.100	110.00	163.00	20.00
SF503195	-	-	-	0.7677"	-	19.500	70.00	131.00	20.00
-	SF505195	-	-	0.7677"	-	19.500	110.00	163.00	20.00
SF503197	-	-	-	0.7756"	-	19.700	70.00	131.00	20.00
-	SF505197	-	-	0.7756"	-	19.700	110.00	163.00	20.00
SF503200	-	-	-	0.7874"	-	20.000	70.00	131.00	20.00
-	SF505200	-	-	0.7874"	-	20.000	110.00	163.00	20.00

SF503, SF505 Serie

Work Material	Carbon Steels (C<0.3%) Alloy Steels /SS400 SCM~710N/mm²		Carbon Steels (C≥0.3%) Alloy Steels /S50C SCM~1,060N/mm²		SUJ2 · SUS440		SKD61 34 ~ 43 HRc		43 ~ 48 HRc		SKD11 48 ~ 53 HRc		Cast Iron FC250~350		Cast Iron-Ductile FC400~500	
Drilling Speed(V)	80~125m/min		80~125m/min		63~80m/min		40~63m/min		32~45m/min		25~36m/min		80~125m/min		63~90m/min	
Cutting Diameter (metric)	RPM (mm^{-1})	FEED (mm/rev)	RPM (mm^{-1})	FEED (mm/rev)	RPM (mm^{-1})	FEED (mm/rev)	RPM (mm^{-1})	FEED (mm/rev)	RPM (mm^{-1})	FEED (mm/rev)	RPM (mm^{-1})	FEED (mm/rev)	RPM (mm^{-1})	FEED (mm/rev)	RPM (mm^{-1})	FEED (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	0.10~0.15	10,000	0.10~0.15	5,700	0.10~0.15	4,800	0.10~0.15	4,000	0.08~0.13	2,950	0.06~0.10	9,000	0.10~0.15	6,350	0.10~0.15
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	0.10~0.15	2,300	0.8~0.12	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	0.12~0.20	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	0.18~0.30	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	0.20~0.32	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	0.20~0.30	1,900	0.30~0.40	1,250	0.30~0.40

SF510, SF520 Series

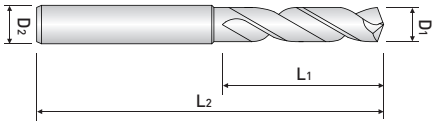
Work Material	CARBON STEELS ALLOY STEEL ~1060N/mm²		CAST IRON 250~350N/mm²		DUCTILE CAST IRON 400~500N/mm²	
Drilling Speed(V)	63~125m/min		63~125m/min		60~80m/min	
Cutting Diameter(metric)	RPM(mm^{-1})	FEED(mm/rev)	RPM(mm^{-1})	FEED(mm/rev)	RPM(mm^{-1})	FEED(mm/rev)
3	7,500	0.06 ~ 0.12	7,500	0.06 ~ 0.12	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

POWER DRILL

PDS, PDM Series

ULTRA FINE POINT ANGLE

DRILLS / 2 FLUTES / 3xD & 5xD / SOLID CARBIDE / TiAlN COATING



TOLERANCE (metric)

D_1 = +0 / -0.014 ((D1≤3)
D_1 = +0 / -0.018 (D1 = 3.1 to 6)
D_1 = +0 / -0.022 (D1 = 6.1 to 10)
D_1 = +0 / -0.027 (D1 = 10.1 to 18)
D_1 = +0 / -0.033 (D1>18)
D_2 = h6

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO.		Cutting Diameter	Cutting Length	Overall Length	Shank Diameter
2 Flute					
TiAlN					
Helix 30°					
3xD	5xD	D1	L1	L2	D2
PDS	PDM				
PDS010	-	1.00	8.00	38.00	3.00
PDS011	-	1.10	10.00	42.00	3.00
PDS012	-	1.20	10.00	42.00	3.00
PDS013	-	1.30	10.00	42.00	3.00
PDS014	-	1.40	11.00	42.00	3.00
PDS015	-	1.50	11.00	42.00	3.00
PDS016	-	1.60	12.00	42.00	3.00
PDS017	-	1.70	12.00	42.00	3.00
PDS018	-	1.80	13.00	42.00	3.00
PDS019	-	1.90	13.00	42.00	3.00
PDS020	-	2.00	14.00	50.00	3.00
PDS021	-	2.10	14.00	50.00	3.00
PDS022	-	2.20	14.00	50.00	3.00
PDS023	-	2.30	14.00	50.00	3.00
PDS024	-	2.40	14.00	50.00	3.00
PDS025	-	2.50	14.00	50.00	3.00
PDS026	-	2.60	14.00	50.00	3.00
PDS027	-	2.70	14.00	50.00	3.00
PDS028	-	2.80	14.00	50.00	3.00
PDS029	-	2.90	14.00	50.00	3.00
PDS030	-	3.00	18.00	60.00	3.00
-	PDM030	3.00	25.00	60.00	3.00
PDS031	-	3.10	20.00	60.00	4.00
-	PDM031	3.10	27.00	60.00	4.00
PDS032	-	3.20	20.00	60.00	4.00
-	PDM032	3.20	27.00	60.00	4.00
PDS033	-	3.30	20.00	60.00	4.00
-	PDM033	3.30	27.00	60.00	4.00
PDS034	-	3.40	22.00	60.00	4.00
-	PDM034	3.40	30.00	65.00	4.00
PDS035	-	3.50	22.00	60.00	4.00
-	PDM035	3.50	30.00	65.00	4.00
PDS036	-	3.60	22.00	60.00	4.00
-	PDM036	3.60	30.00	65.00	4.00

Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
All	◎	◎	◎	◎	○				○					○	○	○					

PDS, PDM Series

>>Continue

EDP NO. / 2 Flute / TiAlN / Helix 30°		Cutting Diameter	Cutting Length	Overall Length	Shank Diameter
3xD	5xD	D1	L1	L2	D2
PDS	PDM				
PDS037	-	3.70	22.00	60.00	4.00
-	PDM037	3.70	30.00	65.00	4.00
PDS038	-	3.80	24.00	60.00	4.00
-	PDM038	3.80	33.00	71.00	4.00
PDS039	-	3.90	24.00	60.00	4.00
-	PDM039	3.90	33.00	71.00	4.00
PDS040	-	4.00	24.00	60.00	4.00
-	PDM040	4.00	33.00	71.00	4.00
PDS041	-	4.10	24.00	62.00	5.00
-	PDM041	4.10	33.00	71.00	5.00
PDS042	-	4.20	26.00	62.00	5.00
-	PDM042	4.20	33.00	71.00	5.00
PDS043	-	4.30	26.00	62.00	5.00
-	PDM043	4.30	36.00	71.00	5.00
PDS044	-	4.40	26.00	62.00	5.00
-	PDM044	4.40	36.00	71.00	5.00
PDS045	-	4.50	26.00	62.00	5.00
-	PDM045	4.50	36.00	71.00	5.00
PDS046	-	4.60	26.00	62.00	5.00
-	PDM046	4.60	36.00	71.00	5.00
PDS047	-	4.70	26.00	62.00	5.00
-	PDM047	4.70	36.00	71.00	5.00
PDS048	-	4.80	26.00	62.00	5.00
-	PDM048	4.80	39.00	71.00	5.00
PDS049	-	4.90	26.00	62.00	5.00
-	PDM049	4.90	39.00	71.00	5.00
PDS050	-	5.00	26.00	62.00	5.00
-	PDM050	5.00	39.00	71.00	5.00
PDS051	-	5.10	28.00	66.00	6.00
-	PDM051	5.10	39.00	83.00	6.00
PDS052	-	5.20	28.00	66.00	6.00
-	PDM052	5.20	39.00	83.00	6.00
PDS053	-	5.30	28.00	66.00	6.00
-	PDM053	5.30	39.00	83.00	6.00
PDS054	-	5.40	28.00	66.00	6.00
-	PDM054	5.40	43.00	83.00	6.00
PDS055	-	5.50	28.00	66.00	6.00
-	PDM055	5.50	43.00	83.00	6.00
PDS056	-	5.60	30.00	66.00	6.00
-	PDM056	5.60	43.00	83.00	6.00
PDS057	-	5.70	30.00	66.00	6.00
-	PDM057	5.70	43.00	83.00	6.00
PDS058	-	5.80	30.00	66.00	6.00
-	PDM058	5.80	43.00	83.00	6.00
PDS059	-	5.90	30.00	66.00	6.00

PDS, PDM Series

>>Continue

EDP NO. / 2 Flute / TiAlN / Helix 30°		Cutting Diameter	Cutting Length	Overall Length	Shank Diameter
3xD	5xD	D1	L1	L2	D2
PDS	PDM				
-	PDM059	5.90	43.00	83.00	6.00
PDS060	-	6.00	30.00	66.00	6.00
-	PDM060	6.00	43.00	83.00	6.00
PDS061	-	6.10	34.00	74.00	7.00
-	PDM061	6.10	47.00	87.00	7.00
PDS062	-	6.20	34.00	74.00	7.00
-	PDM062	6.20	47.00	87.00	7.00
PDS063	-	6.30	34.00	74.00	7.00
-	PDM063	6.30	47.00	87.00	7.00
PDS064	-	6.40	34.00	74.00	7.00
-	PDM064	6.40	47.00	87.00	7.00
PDS065	-	6.50	34.00	74.00	7.00
-	PDM065	6.50	47.00	87.00	7.00
PDS066	-	6.60	34.00	74.00	7.00
-	PDM066	6.60	47.00	87.00	7.00
PDS067	-	6.70	37.00	74.00	7.00
-	PDM067	6.70	47.00	87.00	7.00
PDS068	-	6.80	37.00	74.00	7.00
-	PDM068	6.80	47.00	87.00	7.00
PDS069	-	6.90	37.00	74.00	7.00
-	PDM069	6.90	47.00	87.00	7.00
PDS070	-	7.00	37.00	74.00	7.00
-	PDM070	7.00	47.00	87.00	7.00
PDS071	-	7.10	40.00	79.00	8.00
-	PDM071	7.10	52.00	92.00	8.00
PDS072	-	7.20	40.00	79.00	8.00
-	PDM072	7.20	52.00	92.00	8.00
PDS073	-	7.30	40.00	79.00	8.00
-	PDM073	7.30	52.00	92.00	8.00
PDS074	-	7.40	40.00	79.00	8.00
-	PDM074	7.40	52.00	92.00	8.00
PDS075	-	7.50	40.00	79.00	8.00
-	PDM075	7.50	52.00	92.00	8.00
PDS076	-	7.60	40.00	79.00	8.00
-	PDM076	7.60	52.00	92.00	8.00
PDS077	-	7.70	40.00	79.00	8.00
-	PDM077	7.70	52.00	92.00	8.00
PDS078	-	7.80	40.00	79.00	8.00
-	PDM078	7.80	52.00	92.00	8.00
PDS079	-	7.90	40.00	79.00	8.00
-	PDM079	7.90	52.00	92.00	8.00
PDS080	-	8.00	40.00	79.00	8.00
-	PDM080	8.00	52.00	92.00	8.00
PDS081	-	8.10	43.00	84.00	9.00
-	PDM081	8.10	56.00	96.00	9.00

PDS, PDM Series

>>Continue

EDP NO. / 2 Flute / TiAlN / Helix 30°		Cutting Diameter	Cutting Length	Overall Length	Shank Diameter
3xD	5xD	D1	L1	L2	D2
PDS	PDM				
PDS082	-	8.20	43.00	84.00	9.00
-	PDM082	8.20	56.00	96.00	9.00
PDS083	-	8.30	43.00	84.00	9.00
-	PDM083	8.30	56.00	96.00	9.00
PDS084	-	8.40	43.00	84.00	9.00
-	PDM084	8.40	56.00	96.00	9.00
PDS085	-	8.50	43.00	84.00	9.00
-	PDM085	8.50	56.00	96.00	9.00
PDS086	-	8.60	43.00	84.00	9.00
-	PDM086	8.60	56.00	96.00	9.00
PDS087	-	8.70	43.00	84.00	9.00
-	PDM087	8.70	56.00	96.00	9.00
PDS088	-	8.80	43.00	84.00	9.00
-	PDM088	8.80	56.00	96.00	9.00
PDS089	-	8.90	43.00	84.00	9.00
-	PDM089	8.90	56.00	96.00	9.00
PDS090	-	9.00	43.00	84.00	9.00
-	PDM090	9.00	56.00	96.00	9.00
PDS091	-	9.10	47.00	89.00	10.00
-	PDM091	9.10	62.00	105.00	10.00
PDS092	-	9.20	47.00	89.00	10.00
-	PDM092	9.20	62.00	105.00	10.00
PDS093	-	9.30	47.00	89.00	10.00
-	PDM093	9.30	62.00	105.00	10.00
PDS094	-	9.40	47.00	89.00	10.00
-	PDM094	9.40	62.00	105.00	10.00
PDS095	-	9.50	47.00	89.00	10.00
-	PDM095	9.50	62.00	105.00	10.00
PDS096	-	9.60	47.00	89.00	10.00
-	PDM096	9.60	62.00	105.00	10.00
PDS097	-	9.70	47.00	89.00	10.00
-	PDM097	9.70	62.00	105.00	10.00
PDS098	-	9.80	47.00	89.00	10.00
-	PDM098	9.80	62.00	105.00	10.00
PDS099	-	9.90	47.00	89.00	10.00
-	PDM099	9.90	62.00	105.00	10.00
PDS100	-	10.00	47.00	89.00	10.00
-	PDM100	10.00	62.00	105.00	10.00
PDS101	-	10.10	51.00	95.00	11.00
-	PDM101	10.10	68.00	115.00	11.00
PDS102	-	10.20	51.00	95.00	11.00
-	PDM102	10.20	68.00	115.00	11.00
PDS103	-	10.30	51.00	95.00	11.00
-	PDM103	10.30	68.00	115.00	11.00
PDS104	-	10.40	51.00	95.00	11.00

PDS, PDM Series

>>Continue

EDP NO. 2 Flute TiAlN Helix 30°		Cutting Diameter	Cutting Length	Overall Length	Shank Diameter
3xD	5xD	D1	L1	L2	D2
PDS	PDM				
-	PDM104	10.40	68.00	115.00	11.00
PDS105	-	10.50	51.00	95.00	11.00
-	PDM105	10.50	68.00	115.00	11.00
PDS106	-	10.60	51.00	95.00	11.00
-	PDM106	10.60	68.00	115.00	11.00
PDS107	-	10.70	51.00	95.00	11.00
-	PDM107	10.70	68.00	115.00	11.00
PDS108	-	10.80	51.00	95.00	11.00
-	PDM108	10.80	68.00	115.00	11.00
PDS109	-	10.90	51.00	95.00	11.00
-	PDM109	10.90	68.00	115.00	11.00
PDS110	-	11.00	51.00	95.00	11.00
-	PDM110	11.00	68.00	115.00	11.00
PDS111	-	11.10	54.00	102.00	12.00
-	PDM111	11.10	71.00	121.00	12.00
PDS112	-	11.20	54.00	102.00	12.00
-	PDM112	11.20	71.00	121.00	12.00
PDS113	-	11.30	54.00	102.00	12.00
-	PDM113	11.30	71.00	121.00	12.00
PDS114	-	11.40	54.00	102.00	12.00
-	PDM114	11.40	71.00	121.00	12.00
PDS115	-	11.50	54.00	102.00	12.00
-	PDM115	11.50	71.00	121.00	12.00
PDS116	-	11.60	54.00	102.00	12.00
-	PDM116	11.60	71.00	121.00	12.00
PDS117	-	11.70	54.00	102.00	12.00
-	PDM117	11.70	71.00	121.00	12.00
PDS118	-	11.80	54.00	102.00	12.00
-	PDM118	11.80	71.00	121.00	12.00
PDS119	-	11.90	54.00	102.00	12.00
-	PDM119	11.90	71.00	121.00	12.00
PDS120	-	12.00	54.00	102.00	12.00
-	PDM120	12.00	71.00	121.00	12.00
PDS121	-	12.10	57.00	102.00	13.00
-	PDM121	12.10	75.00	125.00	13.00
PDS122	-	12.20	57.00	102.00	13.00
-	PDM122	12.20	75.00	125.00	13.00
PDS123	-	12.30	57.00	102.00	13.00
-	PDM123	12.30	75.00	125.00	13.00
PDS124	-	12.40	57.00	102.00	13.00
-	PDM124	12.40	75.00	125.00	13.00
PDS125	-	12.50	57.00	102.00	13.00
-	PDM125	12.50	75.00	125.00	13.00
PDS126	-	12.60	57.00	102.00	13.00
-	PDM126	12.60	75.00	125.00	13.00

PDS, PDM Series

>>Continue

EDP NO. / 2 Flute / TiAlN / Helix 30°		Cutting Diameter	Cutting Length	Overall Length	Shank Diameter
3xD	5xD	D1	L1	L2	D2
PDS	PDM				
PDS127	-	12.70	57.00	102.00	13.00
-	PDM127	12.70	75.00	125.00	13.00
PDS128	-	12.80	57.00	102.00	13.00
-	PDM128	12.80	75.00	125.00	13.00
PDS129	-	12.90	57.00	102.00	13.00
-	PDM129	12.90	75.00	125.00	13.00
PDS130	-	13.00	57.00	102.00	13.00
-	PDM130	13.00	75.00	125.00	13.00
PDS131	-	13.10	60.00	107.00	14.00
-	PDM131	13.10	80.00	134.00	14.00
PDS132	-	13.20	60.00	107.00	14.00
-	PDM132	13.20	80.00	134.00	14.00
PDS133	-	13.30	60.00	107.00	14.00
-	PDM133	13.30	80.00	134.00	14.00
PDS134	-	13.40	60.00	107.00	14.00
-	PDM134	13.40	80.00	134.00	14.00
PDS135	-	13.50	60.00	107.00	14.00
-	PDM135	13.50	80.00	134.00	14.00
PDS136	-	13.60	60.00	107.00	14.00
-	PDM136	13.60	80.00	134.00	14.00
PDS137	-	13.70	60.00	107.00	14.00
-	PDM137	13.70	80.00	134.00	14.00
PDS138	-	13.80	60.00	107.00	14.00
-	PDM138	13.80	80.00	134.00	14.00
PDS139	-	13.90	60.00	107.00	14.00
-	PDM139	13.90	80.00	134.00	14.00
PDS140	-	14.00	60.00	107.00	14.00
-	PDM140	14.00	80.00	134.00	14.00
PDS141	-	14.10	62.00	111.00	15.00
-	PDM141	14.10	83.00	143.00	15.00
PDS142	-	14.20	62.00	111.00	15.00
-	PDM142	14.20	83.00	143.00	15.00
PDS143	-	14.30	62.00	111.00	15.00
-	PDM143	14.30	83.00	143.00	15.00
PDS144	-	14.40	62.00	111.00	15.00
-	PDM144	14.40	83.00	143.00	15.00
PDS145	-	14.50	62.00	111.00	15.00
-	PDM145	14.50	83.00	143.00	15.00
PDS146	-	14.60	62.00	111.00	15.00
-	PDM146	14.60	83.00	143.00	15.00
PDS147	-	14.70	62.00	111.00	15.00
-	PDM147	14.70	83.00	143.00	15.00
PDS148	-	14.80	62.00	111.00	15.00
-	PDM148	14.80	83.00	143.00	15.00
PDS149	-	14.90	62.00	111.00	15.00

PDS, PDM Series

>>Continue

EDP NO. 2 Flute TiAlN Helix 30°		Cutting Diameter	Cutting Length	Overall Length	Shank Diameter
3xD	5xD	D1	L1	L2	D2
PDS	PDM				
-	PDM149	14.90	83.00	143.00	15.00
PDS150	-	15.00	62.00	111.00	15.00
-	PDM150	15.00	83.00	143.00	15.00
PDS151	-	15.10	64.00	115.00	16.00
-	PDM151	15.10	90.00	152.00	16.00
PDS152	-	15.20	64.00	115.00	16.00
-	PDM152	15.20	90.00	152.00	16.00
PDS154	-	15.40	64.00	115.00	16.00
-	PDM154	15.40	90.00	152.00	16.00
PDS155	-	15.50	64.00	115.00	16.00
-	PDM155	15.50	90.00	152.00	16.00
PDS156	-	15.60	64.00	115.00	16.00
-	PDM156	15.60	90.00	152.00	16.00
PDS157	-	15.70	64.00	115.00	16.00
-	PDM157	15.70	90.00	152.00	16.00
PDS158	-	15.80	64.00	115.00	16.00
-	PDM158	15.80	90.00	152.00	16.00
PDS159	-	15.90	64.00	115.00	16.00
PDS160	-	16.00	64.00	115.00	16.00
-	PDM160	16.00	90.00	152.00	16.00
PDS161	-	16.10	66.00	119.00	17.00
-	PDM161	16.10	95.00	155.00	17.00
PDS163	-	16.30	66.00	119.00	17.00
-	PDM163	16.30	95.00	155.00	17.00
PDS164	-	16.40	66.00	119.00	17.00
PDS165	-	16.50	66.00	119.00	17.00
-	PDM165	16.50	95.00	155.00	17.00
PDS170	-	17.00	66.00	119.00	17.00
-	PDM170	17.00	95.00	155.00	17.00
PDS171	-	17.10	66.00	123.00	18.00
-	PDM171	17.10	100.00	157.00	18.00
PDS172	-	17.20	66.00	123.00	18.00
-	PDM172	17.20	100.00	157.00	18.00
PDS173	-	17.30	66.00	123.00	18.00
PDS175	-	17.50	66.00	123.00	18.00
-	PDM175	17.50	100.00	157.00	18.00
PDS177	-	17.70	66.00	123.00	18.00
-	PDM177	17.70	100.00	157.00	18.00
PDS178	-	17.80	66.00	123.00	18.00
-	PDM178	17.80	100.00	157.00	18.00
PDS180	-	18.00	66.00	123.00	18.00
-	PDM180	18.00	100.00	157.00	18.00
PDS181	-	18.10	70.00	127.00	19.00
-	PDM181	18.10	105.00	160.00	19.00
PDS182	-	18.20	70.00	127.00	19.00

POWER DRILL

PDS, PDM Series

EDP NO. 2 Flute TiAlN Helix 30°		Cutting Diameter	Cutting Length	Overall Length	Shank Diameter
3xD	5xD	D1	L1	L2	D2
PDS	PDM				
-	PDM182	18.20	105.00	160.00	19.00
PDS185	-	18.50	70.00	127.00	19.00
-	PDM185	18.50	105.00	160.00	19.00
PDS186	-	18.60	70.00	127.00	19.00
PDS190	-	19.00	70.00	127.00	19.00
-	PDM190	19.00	105.00	160.00	19.00
PDS191	-	19.10	70.00	131.00	20.00
-	PDM191	19.10	110.00	163.00	20.00
PDS192	-	19.20	70.00	131.00	20.00
PDS193	-	19.30	70.00	131.00	20.00
PDS195	-	19.50	70.00	131.00	20.00
-	PDM195	19.50	110.00	163.00	20.00
PDS197	-	19.70	70.00	131.00	20.00
-	PDM197	19.70	110.00	163.00	20.00
PDS200	-	20.00	70.00	131.00	20.00
-	PDM200	20.00	110.00	163.00	20.00
PDS220	-	22.00	75.00	131.00	22.00
PDS225	-	22.50	80.00	131.00	23.00
PDS230	-	23.00	86.00	140.00	23.00
PDS235	-	23.50	86.00	140.00	24.00
PDS240	-	24.00	86.00	140.00	24.00

PDS Series

Work Material			Mild Steels Alloy Steels, Carbon Steels		Alloy Steels Forged Steels		High Hardened Steels		Stainless Steels		Cast Iron-Ductile		Cast Iron	
Strength			≤ 25 HRc		25 ~ 35 HRc		35 ~ 45 HRc		-		-		-	
Type	Cutting Diameter	Code	V (m/min)	f (mm/rev)	V (m/min)	f (mm/rev)	V (m/min)	f (mm/rev)	V (m/min)	f (mm/rev)	V (m/min)	f (mm/rev)	V (m/min)	f (mm/rev)
Solid Type	Ø3~5	PDS030~050	40~70	0.15~0.25	35~55	0.10~0.20	15~25	0.05~0.15	15~25	0.05~0.15	35~70	0.15~0.25	45~75	0.15~0.30
Solid Type	Ø5~8	PDS051~080	50~75	0.20~0.30	45~60	0.15~0.25	15~30	0.10~0.20	15~30	0.10~0.20	45~75	0.20~0.35	55~85	0.20~0.40
Solid Type	Ø8~10	PDS081~100	50~75	0.25~0.35	45~60	0.15~0.30	20~35	0.10~0.20	15~30	0.10~0.20	45~75	0.25~0.40	55~85	0.20~0.40
Solid Type	Ø10~12	PDS101~120	50~75	0.25~0.35	45~60	0.15~0.30	20~35	0.10~0.25	15~30	0.10~0.25	45~75	0.25~0.40	55~85	0.20~0.45
Solid Type	Ø12~14	PDS121~140	55~80	0.25~0.40	50~70	0.20~0.35	20~35	0.10~0.25	15~30	0.10~0.25	50~80	0.25~0.45	60~90	0.25~0.50
Solid Type	Ø14~20	PDS141~200	55~80	0.30~0.45	50~70	0.20~0.35	20~35	0.10~0.30	15~30	0.10~0.25	50~80	0.25~0.50	60~100	0.25~0.55

PDM Series

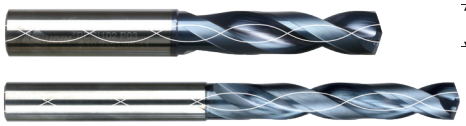
Work Material			Mild Steels Alloy Steels, Carbon Steels		Alloy Steels Forged Steels		High Hardened Steels		Stainless Steels		Cast Iron-Ductile		Cast Iron	
Strength			≤ 25 HRc		25 ~ 35 HRc		35 ~ 45 HRc		-		-		-	
Type	Cutting Diameter	Code	V (m/min)	f (mm/rev)	V (m/min)	f (mm/rev)	V (m/min)	f (mm/rev)	V (m/min)	f (mm/rev)	V (m/min)	f (mm/rev)	V (m/min)	f (mm/rev)
Solid Type	Ø3~5	PDM030~050	40~70	0.15~0.25	35~55	0.10~0.20	15~25	0.05~0.15	15~25	0.05~0.15	35~70	0.15~0.25	45~75	0.15~0.30
Solid Type	Ø5~8	PDM051~080	50~75	0.20~0.30	45~60	0.15~0.25	15~30	0.10~0.20	15~30	0.10~0.20	45~75	0.20~0.35	55~85	0.20~0.40
Solid Type	Ø8~10	PDM081~100	50~75	0.25~0.35	45~60	0.15~0.30	20~35	0.10~0.20	15~30	0.10~0.20	45~75	0.25~0.40	55~85	0.20~0.40
Solid Type	Ø10~12	PDM101~120	50~75	0.25~0.35	45~60	0.15~0.30	20~35	0.10~0.25	15~30	0.10~0.25	45~75	0.25~0.40	55~85	0.20~0.45
Solid Type	Ø12~14	PDM121~140	55~80	0.25~0.40	50~70	0.20~0.35	20~35	0.10~0.25	15~30	0.10~0.25	50~80	0.25~0.45	60~90	0.25~0.50
Solid Type	Ø14~20	PDM141~200	55~80	0.30~0.45	50~70	0.20~0.35	20~35	0.10~0.30	15~30	0.10~0.25	50~80	0.25~0.50	60~100	0.25~0.55

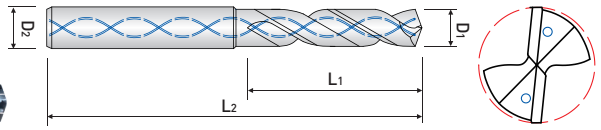
POWER DRILL

PDSI, PDMI Series

UWC ULTRA FINE 140° POINT ANGLE

DRILLS / 2 FLUTES / 3xD & 5xD / INTERNAL COOLANT / TiAlN COATING





TOLERANCE (metric)

D_1 = +0 / -0.014 ((D1≤3)
D_1 = +0 / -0.018 (D1 = 3.1 to 6)
D_1 = +0 / -0.022 (D1 = 6.1 to 10)
D_1 = +0 / -0.027 (D1 = 10.1 to 18)
D_1 = +0 / -0.033 (D1>18)
D_2 = h6

HARDNESS (HRc)

EDP NO.		Cutting Diameter	Cutting Length	Overall Length	Shank Diameter
2 Flute					
TiAlN					
Helix 30°					
3xD	5xD	D1	L1	L2	D2
PDSI	PDMI				
PDSI030	-	3.0	18.0	60.0	3.0
PDSI031	-	3.1	20.0	60.0	4.0
-	PDMI031	3.1	27.0	74.0	4.0
PDSI032	-	3.2	20.0	60.0	4.0
-	PDMI032	3.2	27.0	74.0	4.0
PDSI033	-	3.3	20.0	60.0	4.0
-	PDMI033	3.3	27.0	74.0	4.0
PDSI034	-	3.4	22.0	60.0	4.0
-	PDMI034	3.4	30.0	74.0	4.0
PDSI035	-	3.5	22.0	60.0	4.0
-	PDMI035	3.5	30.0	74.0	4.0
PDSI036	-	3.6	22.0	60.0	4.0
-	PDMI036	3.6	30.0	74.0	4.0
PDSI037	-	3.7	22.0	60.0	4.0
-	PDMI037	3.7	30.0	74.0	4.0
PDSI038	-	3.8	24.0	60.0	4.0
-	PDMI038	3.8	33.0	74.0	4.0
PDSI039	-	3.9	24.0	60.0	4.0
-	PDMI039	3.9	33.0	74.0	4.0
PDSI040	-	4.0	24.0	60.0	4.0
-	PDMI040	4.0	33.0	74.0	4.0
PDSI041	-	4.1	24.0	62.0	5.0
-	PDMI041	4.1	33.0	80.0	5.0
PDSI042	-	4.2	26.0	62.0	5.0
-	PDMI042	4.2	33.0	80.0	5.0
PDSI043	-	4.3	26.0	62.0	5.0
-	PDMI043	4.3	36.0	80.0	5.0
PDSI044	-	4.4	26.0	62.0	5.0
-	PDMI044	4.4	36.0	80.0	5.0
PDSI045	-	4.5	26.0	62.0	5.0
-	PDMI045	4.5	36.0	80.0	5.0
PDSI046	-	4.6	26.0	62.0	5.0
-	PDMI046	4.6	36.0	80.0	5.0
PDSI047	-	4.7	26.0	62.0	5.0

Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
All	◎	◎	◎	◎	○				○					○	○	○					

>>Continue

EDP NO. 2 Flute TiAlN Helix 30°		Cutting Diameter	Cutting Length	Overall Length	Shank Diameter
3xD	5xD	D1	L1	L2	D2
PDSI	PDMI				
-	PDMI047	4.7	36.0	80.0	5.0
PDSI048	-	4.8	26.0	62.0	5.0
-	PDMI048	4.8	39.0	80.0	5.0
PDSI049	-	4.9	26.0	62.0	5.0
-	PDMI049	4.9	39.0	80.0	5.0
PDSI050	-	5.0	26.0	62.0	5.0
-	PDMI050	5.0	39.0	80.0	5.0
PDSI051	-	5.1	28.0	66.0	6.0
-	PDMI051	5.1	39.0	87.0	6.0
PDSI052	-	5.2	28.0	66.0	6.0
-	PDMI052	5.2	39.0	87.0	6.0
PDSI053	-	5.3	28.0	66.0	6.0
-	PDMI053	5.3	39.0	87.0	6.0
PDSI054	-	5.4	28.0	66.0	6.0
-	PDMI054	5.4	43.0	87.0	6.0
PDSI055	-	5.5	28.0	66.0	6.0
-	PDMI055	5.5	43.0	87.0	6.0
PDSI056	-	5.6	30.0	66.0	6.0
-	PDMI056	5.6	43.0	87.0	6.0
PDSI057	-	5.7	30.0	66.0	6.0
-	PDMI057	5.7	43.0	87.0	6.0
PDSI058	-	5.8	30.0	66.0	6.0
-	PDMI058	5.8	43.0	87.0	6.0
PDSI059	-	5.9	30.0	66.0	6.0
-	PDMI059	5.9	43.0	87.0	6.0
PDSI060	-	6.0	30.0	66.0	6.0
-	PDMI060	6.0	43.0	87.0	6.0
PDSI061	-	6.1	34.0	74.0	7.0
-	PDMI061	6.1	47.0	95.0	7.0
PDSI062	-	6.2	34.0	74.0	7.0
-	PDMI062	6.2	47.0	95.0	7.0
PDSI063	-	6.3	34.0	74.0	7.0
-	PDMI063	6.3	47.0	95.0	7.0
PDSI064	-	6.4	34.0	74.0	7.0
-	PDMI064	6.4	47.0	95.0	7.0
PDSI065	-	6.5	34.0	74.0	7.0
-	PDMI065	6.5	47.0	95.0	7.0
PDSI066	-	6.6	34.0	74.0	7.0
-	PDMI066	6.6	47.0	95.0	7.0
PDSI067	-	6.7	37.0	74.0	7.0
-	PDMI067	6.7	47.0	95.0	7.0
PDSI068	-	6.8	37.0	74.0	7.0
-	PDMI068	6.8	47.0	95.0	7.0
PDSI069	-	6.9	37.0	74.0	7.0
-	PDMI069	6.9	47.0	95.0	7.0

PDSI, PDMI Series

>>Continue

EDP NO.		Cutting Diameter	Cutting Length	Overall Length	Shank Diameter
2 Flute					
TiAlN					
Helix 30°					
3xD	5xD	D1	L1	L2	D2
PDSI	PDMI				
PDSI070	-	7.0	37.0	74.0	7.0
-	PDMI070	7.0	47.0	95.0	7.0
PDSI071	-	7.1	40.0	79.0	8.0
-	PDMI071	7.1	52.0	103.0	8.0
PDSI072	-	7.2	40.0	79.0	8.0
-	PDMI072	7.2	52.0	103.0	8.0
PDSI073	-	7.3	40.0	79.0	8.0
-	PDMI073	7.3	52.0	103.0	8.0
PDSI074	-	7.4	40.0	79.0	8.0
-	PDMI074	7.4	52.0	103.0	8.0
PDSI075	-	7.5	40.0	79.0	8.0
-	PDMI075	7.5	52.0	103.0	8.0
PDSI076	-	7.6	40.0	79.0	8.0
-	PDMI076	7.6	52.0	103.0	8.0
PDSI077	-	7.7	40.0	79.0	8.0
-	PDMI077	7.7	52.0	103.0	8.0
PDSI078	-	7.8	40.0	79.0	8.0
-	PDMI078	7.8	52.0	103.0	8.0
PDSI079	-	7.9	40.0	79.0	8.0
-	PDMI079	7.9	52.0	103.0	8.0
PDSI080	-	8.0	40.0	79.0	8.0
-	PDMI080	8.0	52.0	103.0	8.0
PDSI081	-	8.1	43.0	84.0	9.0
-	PDMI081	8.1	56.0	105.0	9.0
PDSI082	-	8.2	43.0	84.0	9.0
-	PDMI082	8.2	56.0	105.0	9.0
PDSI083	-	8.3	43.0	84.0	9.0
-	PDMI083	8.3	56.0	105.0	9.0
PDSI084	-	8.4	43.0	84.0	9.0
-	PDMI084	8.4	56.0	105.0	9.0
PDSI085	-	8.5	43.0	84.0	9.0
-	PDMI085	8.5	56.0	105.0	9.0
PDSI086	-	8.6	43.0	84.0	9.0
-	PDMI086	8.6	56.0	105.0	9.0
PDSI087	-	8.7	43.0	84.0	9.0
-	PDMI087	8.7	56.0	105.0	9.0
PDSI088	-	8.8	43.0	84.0	9.0
-	PDMI088	8.8	56.0	105.0	9.0
PDSI089	-	8.9	43.0	84.0	9.0
-	PDMI089	8.9	56.0	105.0	9.0
PDSI090	-	9.0	43.0	84.0	9.0
-	PDMI090	9.0	56.0	105.0	9.0
PDSI091	-	9.1	47.0	89.0	10.0
-	PDMI091	9.1	62.0	108.0	10.0
PDSI092	-	9.2	47.0	89.0	10.0

>>Continue

EDP NO. 2 Flute TiAlN Helix 30°		Cutting Diameter	Cutting Length	Overall Length	Shank Diameter
3xD	5xD	D1	L1	L2	D2
PDSI	PDMI				
-	PDMI092	9.2	62.0	108.0	10.0
PDSI093	-	9.3	47.0	89.0	10.0
-	PDMI093	9.3	62.0	108.0	10.0
PDSI094	-	9.4	47.0	89.0	10.0
-	PDMI094	9.4	62.0	108.0	10.0
PDSI095	-	9.5	47.0	89.0	10.0
-	PDMI095	9.5	62.0	108.0	10.0
PDSI096	-	9.6	47.0	89.0	10.0
-	PDMI096	9.6	62.0	108.0	10.0
PDSI097	-	9.7	47.0	89.0	10.0
-	PDMI097	9.7	62.0	108.0	10.0
PDSI098	-	9.8	47.0	89.0	10.0
-	PDMI098	9.8	62.0	108.0	10.0
PDSI099	-	9.9	47.0	89.0	10.0
-	PDMI099	9.9	62.0	108.0	10.0
PDSI100	-	10.0	47.0	89.0	10.0
-	PDMI100	10.0	62.0	108.0	10.0
PDSI101	-	10.1	51.0	95.0	11.0
-	PDMI101	10.1	68.0	125.0	11.0
PDSI102	-	10.2	51.0	95.0	11.0
-	PDMI102	10.2	68.0	125.0	11.0
PDSI103	-	10.3	51.0	95.0	11.0
-	PDMI103	10.3	68.0	125.0	11.0
PDSI104	-	10.4	51.0	95.0	11.0
-	PDMI104	10.4	68.0	125.0	11.0
PDSI105	-	10.5	51.0	95.0	11.0
-	PDMI105	10.5	68.0	125.0	11.0
PDSI106	-	10.6	51.0	95.0	11.0
-	PDMI106	10.6	68.0	125.0	11.0
PDSI107	-	10.7	51.0	95.0	11.0
-	PDMI107	10.7	68.0	125.0	11.0
PDSI108	-	10.8	51.0	95.0	11.0
-	PDMI108	10.8	68.0	125.0	11.0
PDSI109	-	10.9	51.0	95.0	11.0
-	PDMI109	10.9	68.0	125.0	11.0
PDSI110	-	11.0	51.0	95.0	11.0
-	PDMI110	11.0	68.0	125.0	11.0
PDSI111	-	11.1	54.0	102.0	12.0
-	PDMI111	11.1	71.0	133.0	12.0
PDSI112	-	11.2	54.0	102.0	12.0
-	PDMI112	11.2	71.0	133.0	12.0
PDSI113	-	11.3	54.0	102.0	12.0
-	PDMI113	11.3	71.0	133.0	12.0
PDSI114	-	11.4	54.0	102.0	12.0
-	PDMI114	11.4	71.0	133.0	12.0

PDSI, PDMI Series

>>Continue

EDP NO. 2 Flute TiAlN Helix 30°		Cutting Diameter	Cutting Length	Overall Length	Shank Diameter
3xD	5xD	D1	L1	L2	D2
PDSI	PDMI				
PDSI115	-	11.5	54.0	102.0	12.0
-	PDMI115	11.5	71.0	133.0	12.0
PDSI116	-	11.6	54.0	102.0	12.0
-	PDMI116	11.6	71.0	133.0	12.0
PDSI117	-	11.7	54.0	102.0	12.0
-	PDMI117	11.7	71.0	133.0	12.0
PDSI118	-	11.8	54.0	102.0	12.0
-	PDMI118	11.8	71.0	133.0	12.0
PDSI119	-	11.9	54.0	102.0	12.0
-	PDMI119	11.9	71.0	133.0	12.0
PDSI120	-	12.0	54.0	102.0	12.0
-	PDMI120	12.0	71.0	133.0	12.0
PDSI121	-	12.1	57.0	102.0	13.0
-	PDMI121	12.1	75.0	137.0	13.0
PDSI122	-	12.2	57.0	102.0	13.0
-	PDMI122	12.2	75.0	137.0	13.0
PDSI123	-	12.3	57.0	102.0	13.0
-	PDMI123	12.3	75.0	137.0	13.0
PDSI124	-	12.4	57.0	102.0	13.0
-	PDMI124	12.4	75.0	137.0	13.0
PDSI125	-	12.5	57.0	102.0	13.0
-	PDMI125	12.5	75.0	137.0	13.0
PDSI126	-	12.6	57.0	102.0	13.0
-	PDMI126	12.6	75.0	137.0	13.0
PDSI127	-	12.7	57.0	102.0	13.0
-	PDMI127	12.7	75.0	137.0	13.0
PDSI128	-	12.8	57.0	102.0	13.0
-	PDMI128	12.8	75.0	137.0	13.0
PDSI129	-	12.9	57.0	102.0	13.0
-	PDMI129	12.9	75.0	137.0	13.0
PDSI130	-	13.0	57.0	102.0	13.0
-	PDMI130	13.0	75.0	137.0	13.0
PDSI131	-	13.1	60.0	107.0	14.0
-	PDMI131	13.1	80.0	142.0	14.0
PDSI132	-	13.2	60.0	107.0	14.0
-	PDMI132	13.2	80.0	142.0	14.0
PDSI133	-	13.3	60.0	107.0	14.0
-	PDMI133	13.3	80.0	142.0	14.0
PDSI134	-	13.4	60.0	107.0	14.0
-	PDMI134	13.4	80.0	142.0	14.0
PDSI135	-	13.5	60.0	107.0	14.0
-	PDMI135	13.5	80.0	142.0	14.0
PDSI136	-	13.6	60.0	107.0	14.0
-	PDMI136	13.6	80.0	142.0	14.0
PDSI137	-	13.7	60.0	107.0	14.0

PDSI, PDMI Series

>>Continue

EDP NO. 2 Flute TiAlN Helix 30°		Cutting Diameter	Cutting Length	Overall Length	Shank Diameter
3xD	5xD	D1	L1	L2	D2
PDSI	PDMI				
-	PDMI137	13.7	80.0	142.0	14.0
PDSI138	-	13.8	60.0	107.0	14.0
-	PDMI138	13.8	80.0	142.0	14.0
PDSI139	-	13.9	60.0	107.0	14.0
-	PDMI139	13.9	80.0	142.0	14.0
PDSI140	-	14.0	60.0	107.0	14.0
-	PDMI140	14.0	80.0	142.0	14.0
PDSI141	-	14.1	62.0	111.0	15.0
-	PDMI141	14.1	83.0	148.0	15.0
PDSI142	-	14.2	62.0	111.0	15.0
-	PDMI142	14.2	83.0	148.0	15.0
PDSI143	-	14.3	62.0	111.0	15.0
-	PDMI143	14.3	83.0	148.0	15.0
PDSI144	-	14.4	62.0	111.0	15.0
-	PDMI144	14.4	83.0	148.0	15.0
PDSI145	-	14.5	62.0	111.0	15.0
-	PDMI145	14.5	83.0	148.0	15.0
PDSI146	-	14.6	62.0	111.0	15.0
-	PDMI146	14.6	83.0	148.0	15.0
PDSI147	-	14.7	62.0	111.0	15.0
-	PDMI147	14.7	83.0	148.0	15.0
PDSI148	-	14.8	62.0	111.0	15.0
-	PDMI148	14.8	83.0	148.0	15.0
PDSI149	-	14.9	62.0	111.0	15.0
-	PDMI149	14.9	83.0	148.0	15.0
PDSI150	-	15.0	62.0	111.0	15.0
-	PDMI150	15.0	83.0	148.0	15.0
PDSI151	-	15.1	64.0	115.0	16.0
-	PDMI151	15.1	90.0	152.0	16.0
PDSI152	-	15.2	64.0	115.0	16.0
-	PDMI152	15.2	90.0	152.0	16.0
PDSI154	-	15.4	64.0	115.0	16.0
-	PDMI154	15.4	90.0	152.0	16.0
PDSI155	-	15.5	64.0	115.0	16.0
-	PDMI155	15.5	90.0	152.0	16.0
PDSI156	-	15.6	64.0	115.0	16.0
-	PDMI156	15.6	90.0	152.0	16.0
PDSI157	-	15.7	64.0	115.0	16.0
-	PDMI157	15.7	90.0	152.0	16.0
PDSI158	-	15.8	64.0	115.0	16.0
-	PDMI158	15.8	90.0	152.0	16.0
PDSI160	-	16.0	64.0	115.0	16.0
-	PDMI160	16.0	90.0	152.0	16.0
PDSI161	-	16.1	66.0	119.0	17.0
-	PDMI161	16.1	95.0	155.0	17.0

POWER DRILL

PDSI, PDMI Series

EDP NO. 2 Flute TiAlN Helix 30°		Cutting Diameter	Cutting Length	Overall Length	Shank Diameter
3xD	5xD	D1	L1	L2	D2
PDSI	PDMI				
PDSI163	-	16.3	66.0	119.0	17.0
-	PDMI163	16.3	95.0	155.0	17.0
PDSI165	-	16.5	66.0	119.0	17.0
-	PDMI165	16.5	95.0	155.0	17.0
PDSI170	-	17.0	66.0	119.0	17.0
-	PDMI170	17.0	95.0	155.0	17.0
PDSI171	-	17.1	66.0	123.0	18.0
-	PDMI171	17.1	100.0	157.0	18.0
PDSI172	-	17.2	66.0	123.0	18.0
-	PDMI172	17.2	100.0	157.0	18.0
PDSI175	-	17.5	66.0	123.0	18.0
-	PDMI175	17.5	100.0	157.0	18.0
PDSI177	-	17.7	66.0	123.0	18.0
-	PDMI177	17.7	100.0	157.0	18.0
PDSI178	-	17.8	66.0	123.0	18.0
-	PDMI178	17.8	100.0	157.0	18.0
PDSI180	-	18.0	66.0	123.0	18.0
-	PDMI180	18.0	100.0	157.0	18.0
PDSI181	-	18.1	70.0	127.0	19.0
-	PDMI181	18.1	105.0	160.0	19.0
PDSI182	-	18.2	70.0	127.0	19.0
-	PDMI182	18.2	105.0	160.0	19.0
PDSI185	-	18.5	70.0	127.0	19.0
-	PDMI185	18.5	105.0	160.0	19.0
PDSI190	-	19.0	70.0	127.0	19.0
-	PDMI190	19.0	105.0	160.0	19.0
PDSI191	-	19.1	70.0	131.0	20.0
-	PDMI191	19.1	110.0	163.0	20.0
PDSI195	-	19.5	70.0	131.0	20.0
-	PDMI195	19.5	110.0	163.0	20.0
PDSI197	-	19.7	70.0	131.0	20.0
-	PDMI197	19.7	110.0	163.0	20.0
PDSI200	-	20.0	70.0	131.0	20.0
-	PDMI200	20.0	110.0	163.0	20.0

PDSI, PDMI Series

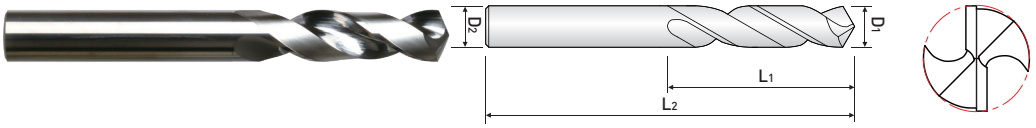
Work Material	Mild Steels Alloy Steels, Carbon Steels		Alloy Steels Forged Steels		High Hardened Steels		Stainless Steels		Cast Iron-Ductile		Cast Iron	
Strength	≤ 25 HRc		25 ~ 35 HRc		35 ~ 45 HRc		-		-		-	
Cutting Diameter	V (m/min)	f (mm/rev)	V (m/min)	f (mm/rev)	V (m/min)	f (mm/rev)	V (m/min)	f (mm/rev)	V (m/min)	f (mm/rev)	V (m/min)	f (mm/rev)
7~8	80~110	0.15~0.25	70~100	0.15~0.25	50~80	0.10~0.20	30~60	0.10~0.20	50~80	0.15~0.25	80~120	0.15~0.30
8~10	90~120	0.20~0.30	80~110	0.15~0.30	60~90	0.15~0.25	30~70	0.10~0.20	60~90	0.20~0.30	100~130	0.25~0.35
10~12	100~130	0.25~0.35	90~120	0.20~0.30	70~100	0.20~0.30	30~70	0.10~0.20	70~100	0.25~0.35	110~140	0.25~0.35
12~16	110~140	0.25~0.35	100~130	0.25~0.35	80~100	0.20~0.30	40~70	0.15~0.25	80~110	0.30~0.40	120~150	0.30~0.40
16~20	120~150	0.25~0.40	110~140	0.25~0.35	90~110	0.20~0.30	40~70	0.15~0.30	90~120	0.30~0.40	130~160	0.30~0.40

SOLID SPIRAL DRILL

SSD Series

UWC ULTRA FINE 118° POINT ANGLE

DRILL / 2 FLUTES / JOBBER LENGTH / BRIGHT



TOLERANCE (metric)

D_1 = +0 / -0.014 ((D1≤3)
D_1 = +0 / -0.018 (D1 = 3.1 to 6)
D_1 = +0 / -0.022 (D1 = 6.1 to 10)
D_1 = +0 / -0.027 (D1>10)
D_2 = h7

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO. 2 Flute Bright Helix 30°	Cutting Diameter (metric)	Cutting Length (metric)	Overall Length (metric)	Shank Diameter (metric)
SSD	D1	L1	L2	D2
SSD010	1.00	10.00	38.00	1.00
SSD011	1.10	10.00	38.00	1.10
SSD012	1.20	10.00	38.00	1.20
SSD013	1.30	10.00	38.00	1.30
SSD014	1.40	10.00	38.00	1.40
SSD015	1.50	13.00	38.00	1.50
SSD016	1.60	13.00	38.00	1.60
SSD017	1.70	13.00	38.00	1.70
SSD018	1.80	13.00	38.00	1.80
SSD019	1.90	13.00	38.00	1.90
SSD020	2.00	16.00	45.00	2.00
SSD021	2.10	16.00	45.00	2.10
SSD022	2.20	16.00	45.00	2.20
SSD023	2.30	16.00	45.00	2.30
SSD024	2.40	18.00	50.00	2.40
SSD025	2.50	20.00	50.00	2.50
SSD026	2.60	20.00	50.00	2.60
SSD027	2.70	22.00	50.00	2.70
SSD028	2.80	22.00	50.00	2.80
SSD029	2.90	22.00	50.00	2.90
SSD030	3.00	22.00	50.00	3.00
SSD031	3.10	25.00	50.00	3.10
SSD032	3.20	25.00	50.00	3.20
SSD033	3.30	25.00	50.00	3.30
SSD034	3.40	25.00	50.00	3.40
SSD035	3.50	25.00	50.00	3.50
SSD036	3.60	28.00	55.00	3.60
SSD037	3.70	28.00	55.00	3.70
SSD038	3.80	28.00	55.00	3.80
SSD039	3.90	28.00	55.00	3.90
SSD040	4.00	28.00	55.00	4.00
SSD041	4.10	30.00	60.00	4.10
SSD042	4.20	30.00	60.00	4.20
SSD043	4.30	30.00	60.00	4.30
SSD044	4.40	30.00	60.00	4.40

EDP NO. 2 Flute Bright Helix 30°	Cutting Diameter (metric)	Cutting Length (metric)	Overall Length (metric)	Shank Diameter (metric)
SSD	D1	L1	L2	D2
SSD045	4.50	30.00	60.00	4.50
SSD046	4.60	33.00	65.00	4.60
SSD047	4.70	33.00	65.00	4.70
SSD048	4.80	35.00	65.00	4.80
SSD049	4.90	35.00	65.00	4.90
SSD050	5.00	35.00	65.00	5.00
SSD051	5.10	35.00	65.00	5.10
SSD052	5.20	35.00	65.00	5.20
SSD053	5.30	35.00	65.00	5.30
SSD054	5.40	35.00	65.00	5.40
SSD055	5.50	35.00	65.00	5.50
SSD056	5.60	38.00	75.00	5.60
SSD057	5.70	38.00	75.00	5.70
SSD058	5.80	38.00	75.00	5.80
SSD059	5.90	38.00	75.00	5.90
SSD060	6.00	38.00	75.00	6.00
SSD061	6.10	38.00	75.00	6.10
SSD062	6.20	38.00	75.00	6.20
SSD063	6.30	38.00	75.00	6.30
SSD064	6.40	38.00	75.00	6.40
SSD065	6.50	38.00	75.00	6.50
SSD066	6.60	45.00	80.00	6.60
SSD067	6.70	45.00	80.00	6.70
SSD068	6.80	45.00	80.00	6.80
SSD069	6.90	45.00	80.00	6.90
SSD070	7.00	45.00	80.00	7.00
SSD071	7.10	45.00	80.00	7.10
SSD072	7.20	45.00	80.00	7.20
SSD073	7.30	45.00	80.00	7.30
SSD074	7.40	45.00	80.00	7.40
SSD075	7.50	45.00	80.00	7.50
SSD076	7.60	50.00	85.00	7.60
SSD077	7.70	50.00	85.00	7.70
SSD078	7.80	50.00	85.00	7.80
SSD079	7.90	50.00	85.00	7.90

Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
SSD	○									○	○								○		

SOLID SPIRAL DRILL

SSD Series

EDP NO. 2 Flute Bright Helix 30°	Cutting Diameter (metric)	Cutting Length (metric)	Overall Length (metric)	Shank Diameter (metric)
SSD	D1	L1	L2	D2
SSD080	8.00	50.00	85.00	8.00
SSD081	8.10	50.00	85.00	8.10
SSD082	8.20	50.00	85.00	8.20
SSD083	8.30	50.00	85.00	8.30
SSD084	8.40	50.00	85.00	8.40
SSD085	8.50	50.00	85.00	8.50
SSD086	8.60	50.00	95.00	8.60
SSD087	8.70	50.00	95.00	8.70
SSD088	8.80	50.00	95.00	8.80
SSD089	8.90	50.00	95.00	8.90
SSD090	9.00	50.00	95.00	9.00
SSD091	9.10	50.00	95.00	9.10
SSD092	9.20	50.00	95.00	9.20
SSD093	9.30	50.00	95.00	9.30
SSD094	9.40	50.00	95.00	9.40
SSD095	9.50	50.00	95.00	9.50
SSD096	9.60	50.00	95.00	9.60
SSD097	9.70	50.00	95.00	9.70
SSD098	9.80	50.00	95.00	9.80
SSD099	9.90	55.00	100.00	9.90
SSD100	10.00	55.00	100.00	10.00
SSD101	10.10	55.00	115.00	10.10
SSD102	10.20	55.00	115.00	10.20
SSD103	10.30	55.00	115.00	10.30
SSD104	10.40	55.00	115.00	10.40
SSD105	10.50	55.00	115.00	10.50
SSD106	10.60	60.00	115.00	10.60
SSD107	10.70	60.00	115.00	10.70
SSD108	10.80	60.00	115.00	10.80
SSD109	10.90	60.00	115.00	10.90
SSD110	11.00	60.00	115.00	11.00
SSD111	11.10	65.00	120.00	11.10
SSD112	11.20	65.00	120.00	11.20
SSD113	11.30	65.00	120.00	11.30
SSD115	11.50	65.00	120.00	11.50
SSD118	11.80	65.00	120.00	11.80
SSD119	11.90	65.00	120.00	11.90
SSD120	12.00	65.00	120.00	12.00
SSD124	12.40	70.00	125.00	12.40
SSD125	12.50	70.00	125.00	12.50
SSD130	13.00	75.00	130.00	13.00

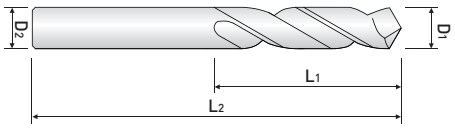
SOLID SPIRAL DRILL

SSDL Series

DRILL / 2 FLUTES / JOBBER LENGTH / BRIGHT

UWC ULTRA FINE

118° POINT ANGLE



TOLERANCE (metric)

D_1 = +0 / -0.014 ((D1≤3)
D_1 = +0 / -0.018 (D1 = 3.1 to 6)
D_1 = +0 / -0.022 (D1 = 6.1 to 10)
D_1 = +0 / -0.027 (D1>10)
D_2 = h7

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO. 2 Flute Bright Helix 30°	Cutting Diameter (metric)	Cutting Length (metric)	Overall Length (metric)	Shank Diameter (metric)
SSDL	D1	L1	L2	D2
SSDL030	3.00	42.00	73.00	3.00
SSDL031	3.10	42.00	73.00	3.10
SSDL032	3.20	42.00	73.00	3.20
SSDL033	3.30	42.00	73.00	3.30
SSDL034	3.40	42.00	73.00	3.40
SSDL035	3.50	42.00	73.00	3.50
SSDL036	3.60	45.00	80.00	3.60
SSDL037	3.70	45.00	80.00	3.70
SSDL038	3.80	48.00	80.00	3.80
SSDL039	3.90	50.00	80.00	3.90
SSDL040	4.00	54.00	85.00	4.00
SSDL041	4.10	54.00	85.00	4.10
SSDL042	4.20	54.00	85.00	4.20
SSDL043	4.30	54.00	85.00	4.30
SSDL044	4.40	54.00	85.00	4.40
SSDL045	4.50	54.00	85.00	4.50
SSDL046	4.60	59.00	90.00	4.60
SSDL047	4.70	59.00	90.00	4.70
SSDL048	4.80	59.00	90.00	4.80
SSDL049	4.90	59.00	90.00	4.90
SSDL050	5.00	59.00	90.00	5.00
SSDL051	5.10	63.00	95.00	5.10
SSDL052	5.20	63.00	95.00	5.20
SSDL053	5.30	63.00	95.00	5.30
SSDL054	5.40	63.00	95.00	5.40
SSDL055	5.50	63.00	95.00	5.50
SSDL056	5.60	66.00	100.00	5.60
SSDL057	5.70	66.00	100.00	5.70
SSDL058	5.80	66.00	100.00	5.80
SSDL059	5.90	66.00	100.00	5.90
SSDL060	6.00	66.00	100.00	6.00
SSDL061	6.10	70.00	105.00	6.10
SSDL062	6.20	70.00	105.00	6.20
SSDL063	6.30	70.00	105.00	6.30
SSDL064	6.40	70.00	105.00	6.40
SSDL065	6.50	70.00	105.00	6.50

EDP NO. 2 Flute Bright Helix 30°	Cutting Diameter (metric)	Cutting Length (metric)	Overall Length (metric)	Shank Diameter (metric)
SSDL	D1	L1	L2	D2
SSDL066	6.60	73.00	105.00	6.60
SSDL067	6.70	73.00	105.00	6.70
SSDL068	6.80	73.00	105.00	6.80
SSDL069	6.90	73.00	105.00	6.90
SSDL070	7.00	73.00	105.00	7.00
SSDL071	7.10	76.00	110.00	7.10
SSDL072	7.20	76.00	110.00	7.20
SSDL073	7.30	76.00	110.00	7.30
SSDL074	7.40	76.00	110.00	7.40
SSDL075	7.50	76.00	110.00	7.50
SSDL076	7.60	80.00	115.00	7.60
SSDL077	7.70	80.00	115.00	7.70
SSDL078	7.80	80.00	115.00	7.80
SSDL079	7.90	80.00	115.00	7.90
SSDL080	8.00	80.00	115.00	8.00
SSDL081	8.10	85.00	125.00	8.10
SSDL082	8.20	85.00	125.00	8.20
SSDL083	8.30	85.00	125.00	8.30
SSDL084	8.40	85.00	125.00	8.40
SSDL085	8.50	85.00	125.00	8.50
SSDL086	8.60	85.00	125.00	8.60
SSDL087	8.70	85.00	125.00	8.70
SSDL088	8.80	85.00	125.00	8.80
SSDL089	8.90	85.00	125.00	8.90
SSDL090	9.00	85.00	125.00	9.00
SSDL091	9.10	88.00	130.00	9.10
SSDL092	9.20	88.00	130.00	9.20
SSDL093	9.30	88.00	130.00	9.30
SSDL094	9.40	88.00	130.00	9.40
SSDL095	9.50	88.00	130.00	9.50
SSDL096	9.60	90.00	130.00	9.60
SSDL097	9.70	90.00	130.00	9.70
SSDL098	9.80	90.00	130.00	9.80
SSDL099	9.90	90.00	130.00	9.90
SSDL100	10.00	90.00	130.00	10.00

Applicable Working Material

○ : GOOD ◎ : BEST

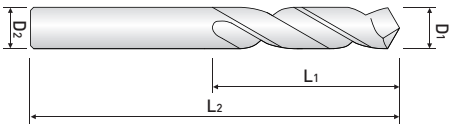
SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
SSDL	○									○	○								○		

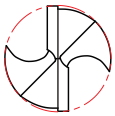
ULTRA FINE HELIX

SOLID SPIRAL DRILL

SSTD Series

DRILL / 2 FLUTES / X-LONG JOBBER LENGTH / BRIGHT

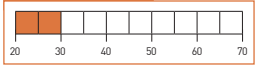




TOLERANCE (metric)

D_1 = +0 / -0.014 ((D1≤3)
D_1 = +0 / -0.018 (D1 = 3.1 to 6)
D_1 = +0 / -0.022 (D1 = 6.1 to 10)
D_1 = +0 / -0.027 (D1>10)
D_2 = h7

HARDNESS (HRc)



EDP NO. 2 Flute Bright Helix 30°	Cutting Diameter (metric)	Cutting Length (metric)	Overall Length (metric)	Shank Diameter (metric)
SSTD	D1	L1	L2	D2
SSTD005	0.50	6.00	50.00	0.50
SSTD0055	0.55	7.00	24.00	0.55
SSTD006	0.60	7.00	24.00	0.60
SSTD0065	0.65	8.00	26.00	0.65
SSTD007	0.70	9.00	28.00	0.70
SSTD0075	0.75	9.00	28.00	0.75
SSTD008	0.80	10.00	30.00	0.80
SSTD0085	0.85	10.00	30.00	0.85
SSTD009	0.90	11.00	32.00	0.90
SSTD0095	0.95	11.00	32.00	0.95
SSTD010	1.00	10.00	38.00	1.00
SSTD011	1.10	10.00	38.00	1.10
SSTD012	1.20	10.00	38.00	1.20
SSTD013	1.30	10.00	38.00	1.30
SSTD014	1.40	10.00	38.00	1.40
SSTD015	1.50	13.00	38.00	1.50
SSTD016	1.60	13.00	38.00	1.60
SSTD017	1.70	13.00	38.00	1.70
SSTD018	1.80	13.00	38.00	1.80
SSTD019	1.90	13.00	38.00	1.90
SSTD020	2.00	16.00	45.00	2.00
SSTD021	2.10	16.00	45.00	2.10
SSTD022	2.20	16.00	45.00	2.20
SSTD023	2.30	16.00	45.00	2.30
SSTD024	2.40	18.00	50.00	2.40
SSTD025	2.50	20.00	50.00	2.50
SSTD026	2.60	20.00	50.00	2.60
SSTD027	2.70	22.00	50.00	2.70
SSTD028	2.80	22.00	50.00	2.80
SSTD029	2.90	22.00	50.00	2.90
SSTD030	3.00	22.00	50.00	3.00
SSTD031	3.10	25.00	50.00	3.10
SSTD032	3.20	25.00	50.00	3.20
SSTD033	3.30	25.00	50.00	3.30
SSTD034	3.40	25.00	50.00	3.40

EDP NO. 2 Flute Bright Helix 30°	Cutting Diameter (metric)	Cutting Length (metric)	Overall Length (metric)	Shank Diameter (metric)
SSTD	D1	L1	L2	D2
SSTD035	3.50	25.00	50.00	3.50
SSTD036	3.60	28.00	55.00	3.60
SSTD037	3.70	28.00	55.00	3.70
SSTD038	3.80	28.00	55.00	3.80
SSTD039	3.90	28.00	55.00	3.90
SSTD040	4.00	28.00	55.00	4.00
SSTD041	4.10	30.00	60.00	4.10
SSTD042	4.20	30.00	60.00	4.20
SSTD043	4.30	30.00	60.00	4.30
SSTD044	4.40	30.00	60.00	4.40
SSTD045	4.50	30.00	60.00	4.50
SSTD046	4.60	33.00	65.00	4.60
SSTD047	4.70	33.00	65.00	4.70
SSTD048	4.80	35.00	65.00	4.80
SSTD049	4.90	35.00	65.00	4.90
SSTD050	5.00	35.00	65.00	5.00
SSTD051	5.10	35.00	65.00	5.10
SSTD052	5.20	35.00	65.00	5.20
SSTD053	5.30	35.00	65.00	5.30
SSTD054	5.40	35.00	65.00	5.40
SSTD055	5.50	35.00	65.00	5.50
SSTD056	5.60	38.00	75.00	5.60
SSTD057	5.70	38.00	75.00	5.70
SSTD058	5.80	38.00	75.00	5.80
SSTD059	5.90	38.00	75.00	5.90
SSTD060	6.00	38.00	75.00	6.00
SSTD061	6.10	38.00	75.00	6.10
SSTD062	6.20	38.00	75.00	6.20
SSTD063	6.30	38.00	75.00	6.30
SSTD064	6.40	38.00	75.00	6.40
SSTD065	6.50	38.00	75.00	6.50
SSTD066	6.60	45.00	80.00	6.60
SSTD067	6.70	45.00	80.00	6.70
SSTD068	6.80	45.00	80.00	6.80
SSTD069	6.90	45.00	80.00	6.90

Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
SSTD	○									○	○								○		

SOLID SPIRAL DRILL

SSTD Series

EDP NO. 2 Flute Bright Helix 30°	Cutting Diameter (metric)	Cutting Length (metric)	Overall Length (metric)	Shank Diameter (metric)
SSDL	D1	L1	L2	D2
SSTD070	7.00	45.00	80.00	7.00
SSTD071	7.10	45.00	80.00	7.10
SSTD072	7.20	45.00	80.00	7.20
SSTD073	7.30	45.00	80.00	7.30
SSTD074	7.40	45.00	80.00	7.40
SSTD075	7.50	45.00	80.00	7.50
SSTD076	7.60	50.00	85.00	7.60
SSTD077	7.70	50.00	85.00	7.70
SSTD078	7.80	50.00	85.00	7.80
SSTD079	7.90	50.00	85.00	7.90
SSTD080	8.00	50.00	85.00	8.00
SSTD081	8.10	50.00	85.00	8.10
SSTD082	8.20	50.00	85.00	8.20
SSTD083	8.30	50.00	85.00	8.30
SSTD084	8.40	50.00	85.00	8.40
SSTD085	8.50	50.00	85.00	8.50
SSTD086	8.60	50.00	95.00	8.60
SSTD087	8.70	50.00	95.00	8.70
SSTD088	8.80	50.00	95.00	8.80
SSTD089	8.90	50.00	95.00	8.90
SSTD090	9.00	50.00	95.00	9.00
SSTD091	9.10	50.00	95.00	9.10
SSTD092	9.20	50.00	95.00	9.20
SSTD093	9.30	50.00	95.00	9.30
SSTD094	9.40	50.00	95.00	9.40
SSTD095	9.50	50.00	95.00	9.50
SSTD096	9.60	50.00	95.00	9.60
SSTD097	9.70	50.00	95.00	9.70
SSTD098	9.80	50.00	95.00	9.80
SSTD099	9.90	55.00	100.00	9.90
SSTD100	10.00	55.00	100.00	10.00
SSTD101	10.10	55.00	115.00	10.10
SSTD102	10.20	55.00	115.00	10.20
SSTD103	10.30	55.00	115.00	10.30
SSTD104	10.40	55.00	115.00	10.40
SSTD105	10.50	55.00	115.00	10.50
SSTD106	10.60	60.00	115.00	10.60
SSTD107	10.70	60.00	115.00	10.70
SSTD108	10.80	60.00	115.00	10.80
SSTD109	10.90	60.00	115.00	10.90
SSTD110	11.00	60.00	115.00	11.00
SSTD111	11.10	65.00	120.00	11.10
SSTD112	11.20	65.00	120.00	11.20
SSTD113	11.30	65.00	120.00	11.30
SSTD115	11.50	65.00	120.00	11.50
SSTD118	11.80	65.00	120.00	11.80

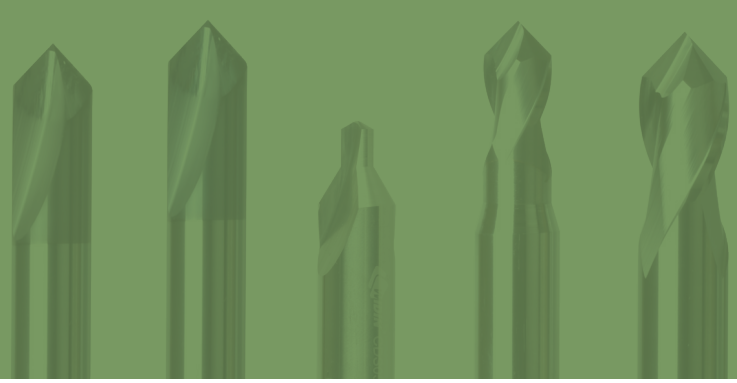
EDP NO. 2 Flute Bright Helix 30°	Cutting Diameter (metric)	Cutting Length (metric)	Overall Length (metric)	Shank Diameter (metric)
SSDL	D1	L1	L2	D2
SSTD119	11.90	65.00	120.00	11.90
SSTD120	12.00	65.00	120.00	12.00
SSTD124	12.40	70.00	125.00	12.40
SSTD125	12.50	70.00	125.00	12.50
SSTD130	13.00	75.00	130.00	13.00

SSD, SSDL, SSTD Series

Work Material	Tool Steels, Alloy Steels (SKD, SCM)		Aluminum Rolled Aluminum Alloys (AL, AC)		Brass Bronze (Bs, PB)		Epoxy Resin	
Cutting Diameter (metric)	RPM (mm^{-1})	FEED (mm/rev)	RPM (mm^{-1})	FEED (mm/rev)	RPM (mm^{-1})	FEED (mm/rev)	RPM (mm^{-1})	FEED (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

03

CENTERING TOOL



INCH

NC SPOT DRILLS
Multi-Purpose 466

METRIC

NC SPOT DRILLS
Multi-Purpose 468

SOLID CENTER DRILLS
Multi-Purpose 470

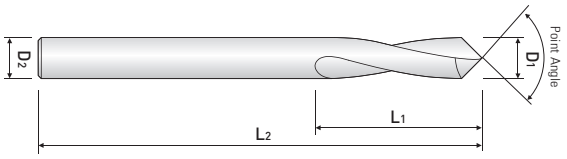
CENTERING END MILLS
Multi-Purpose 472

NC SPOT DRILLS

LDA Series

MG FINE GRAIN

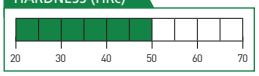
NC SPOT DRILLS / 2 FLUTES / SINGLE ENDED / 90°, 120° & 142° / TiAlN COATING



TOLERANCE (metric)

D_1 = +0.0004 / -0.0004
D_2 = h6

HARDNESS (HRc)



EDP NO. TiAlN Helix 12°	Cutting Diameter (inch)	Cutting Length (inch)	Overall Length (inch)	Shank Diameter (inch)	Point Angle
LDA	D1	L1	L2	D2	Degree
LDA006A	3/32	3/8	2	3/32	90°
LDA006B	3/32	3/8	2	3/32	120°
LDA006C	3/32	3/8	2	3/32	142°
LDA008A	1/8	3/8	2	1/8	90°
LDA008B	1/8	3/8	2	1/8	120°
LDA008C	1/8	3/8	2	1/8	142°
LDA012A	3/16	3/4	3	3/16	90°
LDA012B	3/16	3/4	3	3/16	120°
LDA012C	3/16	3/4	3	3/16	142°
LDA016A	1/4	3/4	3	1/4	90°
LDA016B	1/4	3/4	3	1/4	120°
LDA016C	1/4	3/4	3	1/4	142°
LDA020A	5/16	1	3	5/16	90°
LDA020B	5/16	1	3	5/16	120°
LDA020C	5/16	1	3	5/16	142°
LDA024A	3/8	1	3	3/8	90°
LDA024B	3/8	1	3	3/8	120°
LDA024C	3/8	1	3	3/8	142°
LDA028A	7/16	1	4	7/16	90°
LDA028B	7/16	1	4	7/16	120°
LDA028C	7/16	1	4	7/16	142°
LDA032A	1/2	1	4	1/2	90°
LDA032B	1/2	1	4	1/2	120°
LDA032C	1/2	1	4	1/2	142°

Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
LDA	○	○	○	○	○	○	○	○	○	○	○			○	○	○			○		

LDA Series

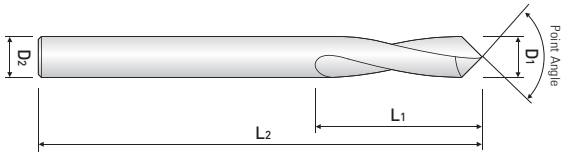
Work Material	S15C · SS400 ~72,519lbf/inch2		S45C		SCM440		SKD61 28 HRc		SKD61 34 HRc		FC250		AC4D	
Drilling Speed (V)	2480~3150 inch/min		1575~2362 inch/min		1,260~1969 inch/min		787~1102 inch/min		630~866 inch/min		2480~3937 inch/min		3149~6299 inch/min	
Cutting Diameter (inch)	RPM	FEED (inch/rev)	RPM	FEED (inch/rev)	RPM	FEED (inch/rev)	RPM	FEED (inch/rev)	RPM	FEED (inch/rev)	RPM	FEED (inch/rev)	RPM	FEED (inch/rev)
3/32	7,500	0.0016~0.0032	5,500	0.0016~0.0032	4,500	0.0016~0.0032	2,500	0.0016~0.0032	1,500	0.0016~0.0032	8,000	0.0020~0.0035	12,000	0.0039~0.0087
1/8	7,500	0.0016~0.0032	5,500	0.0016~0.0032	4,500	0.0016~0.0032	2,500	0.0016~0.0032	1,500	0.0016~0.0032	8,000	0.0020~0.0035	12,000	0.0039~0.0087
3/16	5,700	0.0020~0.0040	4,100	0.0020~0.0040	3,300	0.0020~0.0040	1,900	0.0020~0.0040	1,100	0.0020~0.0040	6,500	0.0028~0.0047	9,500	0.0047~0.0098
1/4	3,800	0.0024~0.0048	2,700	0.0024~0.0048	2,300	0.0024~0.0048	1,250	0.0024~0.0048	750	0.0024~0.0048	4,300	0.0047~0.0070	6,400	0.0055~0.0110
5/16	2,800	0.0031~0.0059	2,000	0.0031~0.0059	1,700	0.0031~0.0059	950	0.0031~0.0059	550	0.0031~0.0059	3,200	0.0051~0.0079	4,800	0.0070~0.0126
3/8	2,300	0.0040~0.0070	1,700	0.0040~0.0070	1,400	0.0040~0.0070	750	0.0040~0.0070	450	0.0040~0.0070	2,600	0.0067~0.0098	3,800	0.0087~0.0142
4/95	1,900	0.0047~0.0083	1,400	0.0047~0.0083	1,200	0.0047~0.0083	650	0.0047~0.0083	370	0.0047~0.0083	2,200	0.0083~0.0118	3,200	0.0098~0.0157
1/2	1,900	0.0047~0.0083	1,400	0.0047~0.0083	1,200	0.0047~0.0083	650	0.0047~0.0083	370	0.0047~0.0083	2,200	0.0083~0.0118	3,200	0.0098~0.0157

MG
FINE GRAIN

NC SPOT DRILLS

LDS Series

NC SPOT DRILLS / 2 FLUTES / SINGLE ENDED / 90° , 120° /
TiAlN COATING



TOLERANCE (metric)

D_1 = +0.01 / -0.01
D_2 = h6

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO. TiAlN Helix 12°	Cutting Diameter (metric)	Cutting Length (metric)	Overall Length (metric)	Shank Diameter (metric)	Point Angle
LDS	D1	L1	L2	D2	Degree
LDS030	3.00	9.00	50.00	3.00	90°
LDS030L	3.00	10.00	100.00	3.00	90°
LDS030A	3.00	9.00	50.00	3.00	120°
LDS040	4.00	10.00	50.00	4.00	90°
LDS040L	4.00	12.00	100.00	4.00	90°
LDS040A	4.00	10.00	50.00	4.00	120°
LDS050	5.00	12.00	50.00	5.00	90°
LDS050A	5.00	12.00	50.00	5.00	120°
LDS060	6.00	13.00	60.00	6.00	90°
LDS060L	6.00	18.00	110.00	6.00	90°
LDS060A	6.00	13.00	60.00	6.00	120°
LDS080	8.00	23.00	70.00	8.00	90°
LDS080L	8.00	23.00	150.00	8.00	90°
LDS080A	8.00	23.00	70.00	8.00	120°
LDS100	10.00	24.00	80.00	10.00	90°
LDS100L	10.00	24.00	150.00	10.00	90°
LDS100A	10.00	24.00	80.00	10.00	120°
LDS120	12.00	28.00	80.00	12.00	90°
LDS120L	12.00	24.00	150.00	12.00	90°
LDS120A	12.00	28.00	80.00	12.00	120°
LDS160	16.00	32.00	90.00	16.00	90°
LDS160A	16.00	32.00	90.00	16.00	120°
LDS200	20.00	35.00	100.00	20.00	90°
LDS200A	20.00	35.00	100.00	20.00	120°

Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
LDS	○	○	○	○	○	○	○	○	○	○	○			○	○	○			○		

LDS Series

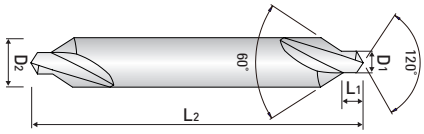
Work Material	S15C · SS400 ~500N/mm²		S45C		SCM440		SKD61 28HRc		SKD61 34HRc		FC250		AC4D	
Drilling Speed (V)	63~80 m/min		43~60 m/min		32~50 m/min		20~28 m/min		16~22 m/min		63~100 m/min		80~160 m/min	
Cutting Diameter (metric)	RPM	FEED (mm/rev)	RPM	FEED (mm/rev)	RPM	FEED (mm/rev)	RPM	FEED (mm/rev)	RPM	FEED (mm/rev)	RPM	FEED (mm/rev)	RPM	FEED (mm/rev)
3	7,500	0.04~0.08	5,500	0.04~0.08	4,500	0.04~0.08	2,500	0.04~0.08	1,500	0.04~0.08	8,000	0.05~0.09	12,000	0.10~0.22
4	5,700	0.05~0.10	4,100	0.05~0.10	3,300	0.05~0.10	1,900	0.05~0.10	1,100	0.05~0.10	6,500	0.07~0.12	9,500	0.12~0.25
6	3,800	0.06~0.12	2,700	0.06~0.12	2,300	0.06~0.12	1,250	0.06~0.12	750	0.06~0.12	4,300	0.12~0.18	6,400	0.14~0.28
8	2,800	0.08~0.15	2,000	0.08~0.15	1,700	0.08~0.15	950	0.08~0.15	550	0.08~0.15	3,200	0.13~0.20	4,800	0.18~0.32
10	2,300	0.10~0.18	1,700	0.10~0.18	1,400	0.10~0.18	750	0.10~0.18	450	0.10~0.18	2,600	0.17~0.25	3,800	0.22~0.36
12	1,900	0.12~0.21	1,400	0.12~0.21	1,200	0.12~0.21	650	0.12~0.21	370	0.12~0.21	2,200	0.21~0.30	3,200	0.25~0.40
16	1,400	0.16~0.28	1,000	0.16~0.28	900	0.16~0.28	500	0.16~0.28	280	0.16~0.28	1,600	0.24~0.32	2,400	0.32~0.48
20	1,150	0.20~0.34	820	0.20~0.34	700	0.20~0.34	400	0.20~0.34	220	0.20~0.34	1,300	0.26~0.40	1,900	0.40~0.60
25	900	0.25~0.45	650	0.25~0.45	560	0.25~0.45	300	0.25~0.45	180	0.25~0.45	1,000	0.30~0.50	1,500	0.50~0.75

MG
FINE GRAIN

SOLID CENTER DRILLS

CDS Series

60°°COUNTERSINK / 2 FLUTES / DOUBLE ENDED / SOLID CARBIDE / BRIGHT



TOLERANCE (metric)

D_1 = +0.1 / 0
D_2 = h6

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO. Bright Helix 15°	Cutting Diameter (metric)	Cutting Length (metric)	Overall Length (metric)	Shank Diameter (metric)
CDS	D1	L1	L2	D2
CDS010	1.00	1.50	40.00	3.00
CDS015	1.50	1.50	40.00	4.00
CDS020	2.00	2.00	45.00	5.00
CDS025	2.50	3.80	45.00	6.00
CDS030	3.00	4.80	55.00	8.00
CDS040	4.00	6.00	60.00	10.00
CDS050	5.00	7.50	65.00	12.00

Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
CDS	○	○	○	○		○	○	○		○	○										

CDS Series

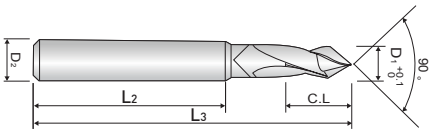
Work Material	Die Steels	Alloy Steels		Stainless Steels
Strength	<700N/mm²	≤ 23 HRc	≤ 32 HRc	-
Drilling Speed(V)	30~50m/min	30~50m/min	20~40m/min	15~25m/min
Cutting Diameter(metric)	FEED(mm/rev)	FEED(mm/rev)	FEED(mm/rev)	FEED(mm/rev)
1	0.010~0.030	0.010~0.030	0.010~0.030	0.010~0.030
2	0.010~0.035	0.010~0.035	0.010~0.035	0.010~0.035
3	0.015~0.050	0.015~0.050	0.015~0.050	0.015~0.050
4	0.020~0.060	0.020~0.060	0.020~0.060	0.020~0.060
5	0.030~0.070	0.030~0.070	0.030~0.070	0.030~0.070
6	0.040~0.070	0.040~0.070	0.040~0.070	0.040~0.070

MG FINE GRAIN 90° HELIX

CENTERING END MILLS

CEM Series

DRILL MILL / 2 FLUTES / SINGLE ENDED / BRAZED / 90° / BRIGHT



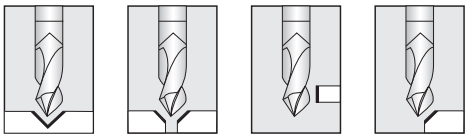
TOLERANCE (metric)

D_1 = +0.1
D_2 = h6

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO. 2 Flute Bright Helix 30°	Cutting Diameter (metric)	Cutting Length (metric)	Shank Length (metric)	Overall Length (metric)	Shank Diameter (metric)
CEM	D1	L1	L2	L3	D2
CEM1016	10.00	15.00	80.00	115.00	16.00
CEM1216	12.00	20.00	100.00	145.00	16.00
CEM1620	16.00	23.00	100.00	150.00	20.00
CEM2025	20.00	25.00	100.00	155.00	25.00



Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
CEM	○	○	○	○		○	○	○		○	○										

CEM Series

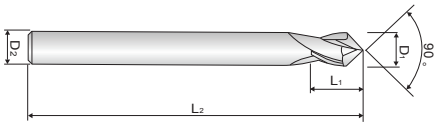
Work Material	Carbon Steels, Alloy Steels						Stainless Steels Titanium Alloys		Aluminum	
Strength	≤ 20 HRc		20 ~ 30 HRc		30 ~ 40 HRc		-		-	
	500~800N/mm²		800~1000N/mm²		1000~1300N/mm²		-		-	
Cutting Diameter (metric)	RPM	FEED (mm/rev)	RPM	FEED (mm/rev)	RPM	FEED (mm/rev)	RPM	FEED (mm/rev)	RPM	FEED (mm/rev)
3	5,900	95	3,900	65	3,300	50	2,400	40	14,000	230
4	4,800	95	3,200	65	2,800	50	2,000	40	12,000	240
5	3,800	100	2,500	65	2,200	55	1,760	45	9,500	250
6	3,000	110	2,000	70	1,800	60	1,400	50	7,700	300
8	2,300	115	1,540	75	1,300	65	1,100	55	5,800	350
10	2,000	120	1,300	80	1,200	65	1,000	55	5,100	380
12	1,760	130	1,100	90	1,000	70	840	60	4,400	400
16	1,400	140	900	90	770	70	660	60	3,000	330
20	1,100	140	700	90	600	70	440	60	2,640	340

MG
FINE GRAIN

CENTERING END MILLS

CES Series

DRILL MILL / 2 FLUTES / SINGLE ENDED / SOLID CARBIDE / 90° / BRIGHT



TOLERANCE (metric)

D_1 = +0 / -0.05
D_2 = h6

HARDNESS (HRc)

20 30 40 50 60 70

EDP NO. 2 Flute Bright Helix 30°	Cutting Diameter (metric)	Cutting Length (metric)	Overall Length (metric)	Shank Diameter (metric)
CES	D1	L1	L2	D2
CES302030	3.00	6.00	50.00	6.00
CES302040	4.00	8.00	50.00	6.00
CES302050	5.00	10.00	50.00	6.00
CES302060	6.00	12.00	60.00	6.00
CES302080	8.00	16.00	70.00	8.00
CES302100	10.00	18.00	70.00	10.00
CES302120	12.00	20.00	75.00	12.00
CES302140	14.00	24.00	80.00	14.00
CES302160	16.00	26.00	80.00	16.00
CES302200	20.00	32.00	100.00	20.00

Applicable Working Material

○ : GOOD ◎ : BEST

SERIES	CARBON STEELS LOW (1010, 1018)	CARBON STEELS MED (1035, 1045)	CARBON STEELS HIGH (1065)	ALLOY STEELS (4140, 4340)	DIE STEELS	STAINLESS STEELS 300	STAINLESS STEELS 400	STAINLESS STEELS 17-4 PH	CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS 35 HRC	HARDENED STEELS 35-45 HRC	HARDENED STEELS 45-50 HRC	HARDENED STEELS 50-70 HRC	MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
CES	○	○	○	○	○	○	○	○		○	○			○	○	○					

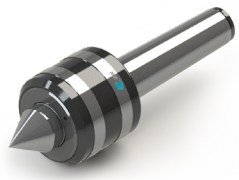
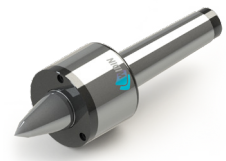
CES Series

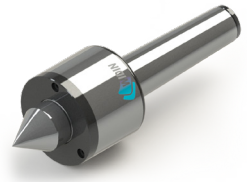
Work Material	Carbon Steels, Alloy Steels						Stainless Steels Titanium Alloys		Aluminum	
Strength	≤ 20 HRc		20 ~ 30 HRc		30 ~ 40 HRc		-		-	
	500~800N/mm²		800~1000N/mm²		1000~1300N/mm²		-		-	
Cutting Diameter (metric)	RPM	FEED (mm/rev)	RPM	FEED (mm/rev)	RPM	FEED (mm/rev)	RPM	FEED (mm/rev)	RPM	FEED (mm/rev)
3	5,900	95	3,900	65	3,300	50	2,400	40	14,000	230
4	4,800	95	3,200	65	2,800	50	2,000	40	12,000	240
5	3,800	100	2,500	65	2,200	55	1,760	45	9,500	250
6	3,000	110	2,000	70	1,800	60	1,400	50	7,700	300
8	2,300	115	1,540	75	1,300	65	1,100	55	5,800	350
10	2,000	120	1,300	80	1,200	65	1,000	55	5,100	380
12	1,760	130	1,100	90	1,000	70	840	60	4,400	400
16	1,400	140	900	90	770	70	660	60	3,000	330
20	1,100	140	700	90	600	70	440	60	2,640	340

04

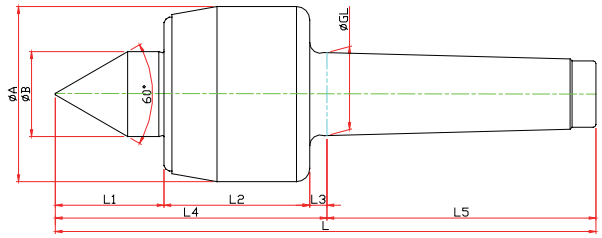
LIVE CENTER

LIVE CENTER SERIES

Appearance	Type	Page
	NC TYPE	514
	NCB TYPE	514
	NCC TYPE	514
	NCBC TYPE	515
	NCN TYPE	515
	NCBN TYPE	515
	NCCN TYPE	516
	NCBCN TYPE	516
	NCP TYPE	517
	NCPB TYPE	517
	NCPC TYPE	517
	NCPBC TYPE	518
	NCPN TYPE	518
	NCPBN TYPE	518
	NCPCN TYPE	519
	NCPBCN TYPE	519
	NK TYPE	520
	NKB TYPE	520
	NKC TYPE	520
	NKBC TYPE	521
	NKN TYPE	521
	NKBN TYPE	521
	NKCN TYPE	522
	NKBCN TYPE	522
	NKD TYPE	522
	GR TYPE	523
	SM TYPE	523
	SMB TYPE	524
	SMC TYPE	524
	SMBC TYPE	525
	SMN TYPE	525
	SMBN TYPE	525
	SMCN TYPE	526
	SMBCN TYPE	526

Appearance	Type	Page
	SMP TYPE	527
	SMPB TYPE	527
	SMPC TYPE	527
	SMPBC TYPE	528
	SMPN TYPE	528
	SMPBN TYPE	528
	SMPCN TYPE	529
	SMPBCN TYPE	529
	D50 TYPE	530
	D50B TYPE	530
	D50C TYPE	530
	D50BC TYPE	531
	HD TYPE	532
	HDC TYPE	532
	HDS TYPE	532
	HDSC TYPE	533
	HDSTH TYPE	533
	PT-60 TYPE	534
	PT-80 TYPE	534
	LM-A TYPE	535
	LM-C TYPE	535
	LM-AN TYPE	536
	LM-CN TYPE	536
	LM-H TYPE	537
	LM-HC TYPE	537
	LM-HN TYPE	538
	LM-HCN TYPE	538
	LM-FN TYPE	539
	LM-#80 TYPE	539

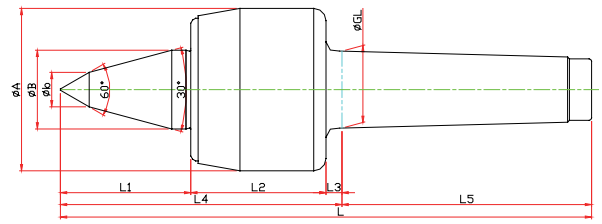
NC-TYPE



Model	Order Number	Morse Taper	Dimension									Weight MAX.	R.P.M MAX.	Run Out
			GL	A	B	L1	L2	L3	L4	L5	L			
LC-3NC	010003	NO.3	23.825	50	22	27	45	5	77	81	158	630	4800	0.003
LC-4NC	010004	NO.4	31.267	66	32	41	55	6.5	102.5	101.5	204	1100	3800	0.003
LC-5NC	010005	NO.5	44.399	82	40	50	65	6.5	121.5	129.5	251	1600	3400	0.005
LC-6NC	010006	NO.6	63.384	105	45	54	80	8	142	182	324	2100	3000	0.005

NCB-TYPE

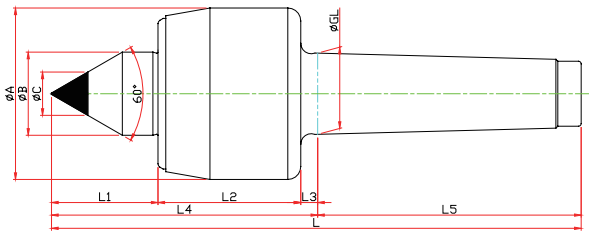
※ SHAFT EXTENTION(Minimize the bite-interference)



Model	Order Number	Morse Taper	Dimension									Weight MAX.	R.P.M MAX.	Run Out
			GL	A	B	b	L1	L2	L3	L4	L5	L			
LC-3NCB	011003	NO.3	23.825	50	22	10	47	45	5	97	81	178	630	4800	0.003
LC-4NCB	011004	NO.4	31.267	66	32	14	53	55	6.5	114.5	101.5	216	1100	3800	0.003
LC-5NCB	011005	NO.5	44.399	82	40	16	65	65	6.5	129.5	129.5	266	1600	3400	0.005
LC-6NCB	011006	NO.6	63.384	105	45	18	78	80	8	182	182	348	2100	3000	0.005

NCC-TYPE

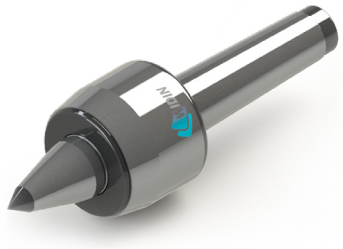
※ Carbide Type

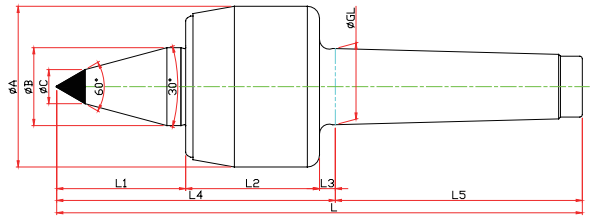


Model	Order Number	Morse Taper	Dimension										Weight MAX.	R.P.M MAX.	Run Out
			GL	A	B	L1	L2	L3	L4	L5	C	L			
LC-3NCC	010103	NO.3	23.825	50	22	27	45	5	77	81	10	158	630	4800	0.003
LC-4NCC	010104	NO.4	31.267	66	32	41	55	6.5	102.5	101.5	14	204	1100	3800	0.003
LC-5NCC	010105	NO.5	44.399	82	40	50	65	6.5	121.5	129.5	18	251	1600	3400	0.005
LC-6NCC	010106	NO.6	63.384	105	45	54	80	8	142	182	25	324	2100	3000	0.005

NCBC-TYPE

※ SHAFT EXTENTION(Minimize the bite-interference)
※ Carbide Type

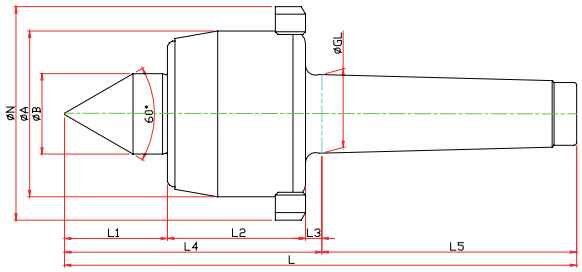




Model	Order Number	Morse Taper	Dimension										Weight MAX.	R.P.M MAX.	Run Out
			GL	A	B	L1	L2	L3	L4	L5	C	L			
LC-3NCBC	011102	NO.3	23.825	50	22	47	45	5	97	81	10	178	630	4800	0.003
LC-4NCBC	011103	NO.4	31.267	66	32	53	55	6.5	114.5	101.5	14	216	1100	3800	0.003
LC-5NCBC	011104	NO.5	44.399	82	40	65	65	6.5	136.5	129.5	16	266	1600	3400	0.005
LC-6NCBC	011105	NO.6	63.384	105	45	78	80	8	166	182	18	348	2100	3000	0.005

NCN-TYPE

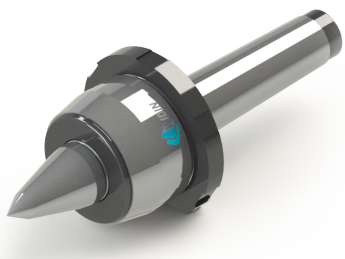
※ Nut Type

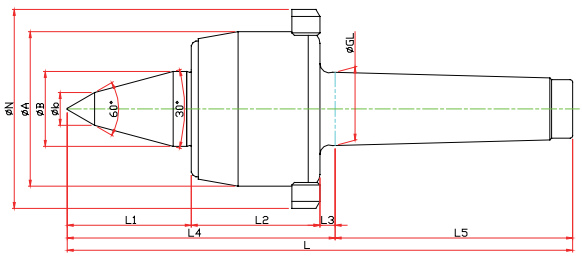


Model	Order Number	Morse Taper	Dimension										Weight MAX.	R.P.M MAX.	Run Out
			GL	A	B	L1	L2	L3	L4	L5	N	L			
LC-3NCN	010013	NO.3	23.825	50	22	27	45	5	77	81	70	158	630	4800	0.003
LC-4NCN	010014	NO.4	31.267	66	32	41	55	6.5	102.5	101.5	85	204	1100	3800	0.003
LC-5NCN	010015	NO.5	44.399	82	40	50	65	6.5	121.5	129.5	105	251	1600	3400	0.005
LC-6NCN	010016	NO.6	63.384	105	45	54	80	8	142	182	130	324	2100	3000	0.005

NCBN-TYPE

※ SHAFT EXTENTION(Minimize the bite-interference)
※ Nut Type

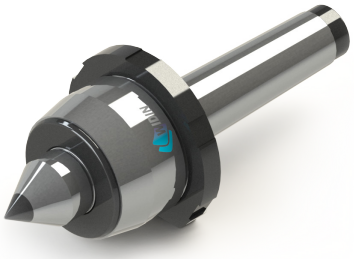


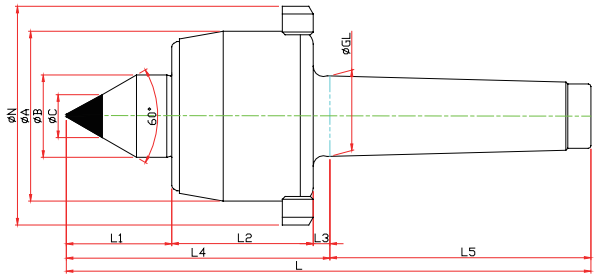


Model	Order Number	Morse Taper	Dimension											Weight MAX.	R.P.M MAX.	Run Out
			GL	A	B	b	L1	L2	L3	L4	L5	N	L			
LC-3NCBN	011013	NO.3	23.825	50	22	10	47	45	5	97	81	70	178	630	4800	0.003
LC-4NCBN	011014	NO.4	31.267	66	32	14	53	55	6.5	114.5	101.5	85	216	1100	3800	0.003
LC-5NCBN	011015	NO.5	44.399	82	40	16	65	65	6.5	136.5	129.5	105	266	1600	3400	0.005
LC-6NCBN	011016	NO.6	63.384	105	45	18	78	80	8	166	182	130	348	2100	3000	0.005

NCCN-TYPE

※ Nut, Carbide Type Type

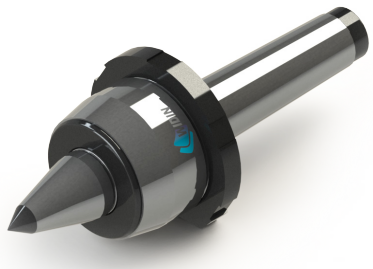


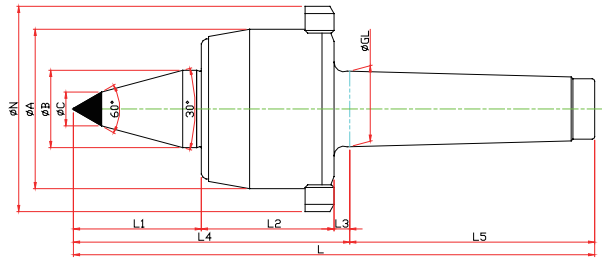


Model	Order Number	Morse Taper	Dimension											Weight MAX.	R.P.M MAX.	Run Out
			GL	A	B	L1	L2	L3	L4	L5	C	N	L			
LC-3NCCN	010113	NO.3	23.825	50	22	27	45	5	77	81	10	70	158	630	4800	0.003
LC-4NCCN	010114	NO.4	31.267	66	32	41	55	6.5	102.5	101.5	14	85	204	1100	3800	0.003
LC-5NCCN	010115	NO.5	44.399	82	40	50	65	6.5	121.5	129.5	18	105	251	1600	3400	0.005
LC-6NCCN	010116	NO.6	63.384	105	45	54	80	8	142	182	25	130	324	2100	3000	0.005

NCBCN-TYPE

※ SHAFT EXTENTION(Minimize the bite-interference)
※ Nut, Carbide Type Type

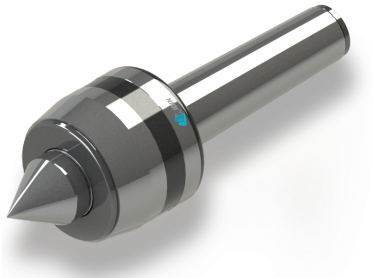


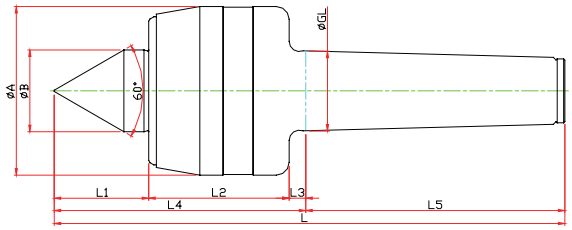


Model	Order Number	Morse Taper	Dimension											Weight MAX.	R.P.M MAX.	Run Out
			GL	A	B	L1	L2	L3	L4	L5	C	N	L			
LC-3NCBCN	011113	NO.3	23.825	50	22	47	45	5	97	81	10	70	178	630	4800	0.003
LC-4NCBCN	011114	NO.4	31.267	66	32	53	55	6.5	114.5	101.5	14	85	216	1100	3800	0.003
LC-5NCBCN	011115	NO.5	44.399	82	40	65	65	6.5	136.5	129.5	16	105	266	1600	3400	0.005
LC-6NCBCN	011116	NO.6	63.384	105	45	78	80	8	166	182	18	130	348	2100	3000	0.005

NC-SPECIAL

NCP-TYPE

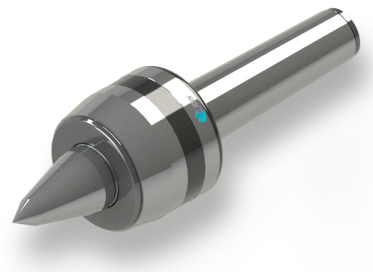


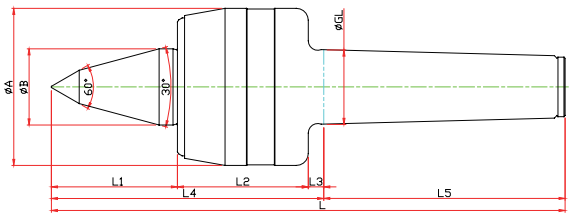


Model	Order Number	Morse Taper	Dimension									Weight MAX.	R.P.M MAX.	Run Out
			GL	A	B	L1	L2	L3	L4	L5	L			
LC-3NCP	030003	NO.3	23.825	50	22	27	45	5	77	81	158	800	4800	0.003
LC-4NCP	030004	NO.4	31.267	66	32	37	55	6.5	98.5	101.5	200	1300	3800	0.003
LC-5NCP	030005	NO.5	44.399	82	40	45	65	6.5	116.5	129.5	246	1900	3400	0.005
LC-6NCP	030006	NO.6	63.384	100	45	65	80	8	153	182	335	2500	3000	0.005

NCPB-TYPE

※ SHAFT EXTENTION(Minimize the bite-interference)

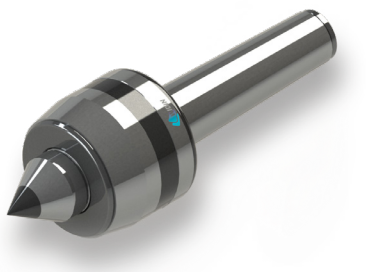


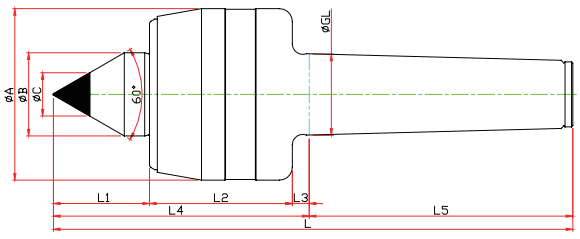


Model	Order Number	Morse Taper	Dimension										Weight MAX.	R.P.M MAX.	Run Out
			GL	A	B	b	L1	L2	L3	L4	L5	L			
LC-3NCPB	031003	NO.3	23.825	50	22	10	27	45	5	97	81	178	800	4800	0.003
LC-4NCPB	031004	NO.4	31.267	66	32	14	37	55	6.5	114.5	101.5	216	1300	3800	0.003
LC-5NCPB	031005	NO.5	44.399	82	40	16	45	65	6.5	136.5	129.5	266	1900	3400	0.005
LC-6NCPB	031006	NO.6	63.384	100	45	18	65	80	8	166	182	348	2500	3000	0.005

NCPC-TYPE

※ Carbide Type

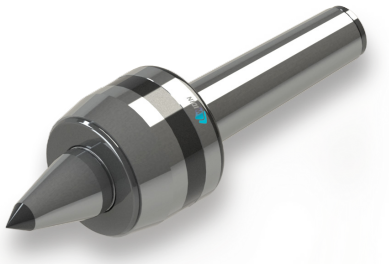


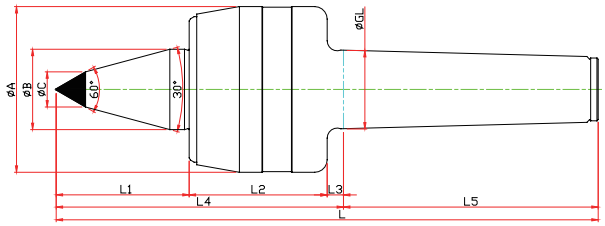


Model	Order Number	Morse Taper	Dimension										Weight MAX.	R.P.M MAX.	Run Out
			GL	A	B	L1	L2	L3	L4	L5	C	L			
LC-3NCPC	030103	NO.3	23.825	50	22	27	45	5	77	81	10	158	800	4800	0.003
LC-4NCPC	030104	NO.4	31.267	66	32	37	55	6.5	98.5	101.5	14	200	1300	3800	0.003
LC-5NCPC	030105	NO.5	44.399	82	40	45	65	6.5	116.5	129.5	18	246	1900	3400	0.005
LC-6NCPC	030106	NO.6	63.384	100	45	65	80	8	153	182	25	335	2500	3000	0.005

NCPBC-TYPE

※ SHAFT EXTENTION(Minimize the bite-interference)
※ Carbide Type

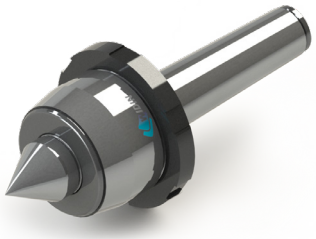


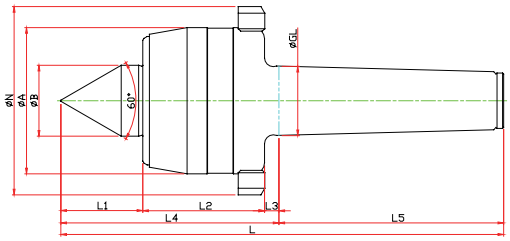


Model	Order Number	Morse Taper	Dimension										Weight MAX.	R.P.M MAX.	Run Out
			GL	A	B	L1	L2	L3	L4	L5	C	L			
LC-3NCPBC	031103	NO.3	23.825	50	22	27	45	5	97	81	10	178	800	4800	0.003
LC-4NCPBC	031104	NO.4	31.267	66	32	37	55	6.5	114.5	101.5	14	216	1300	3800	0.003
LC-5NCPBC	031105	NO.5	44.399	82	40	45	65	6.5	136.5	129.5	16	266	1900	3400	0.005
LC-6NCPBC	031106	NO.6	63.384	100	45	65	80	8	166	182	18	348	2500	3000	0.005

NCPN-TYPE

※ Nut Type

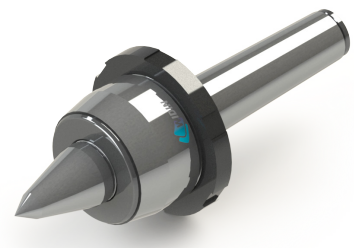


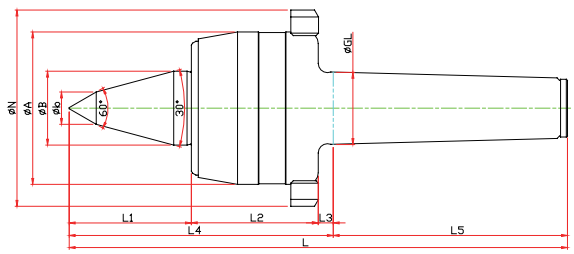


Model	Order Number	Morse Taper	Dimension										Weight MAX.	R.P.M MAX.	Run Out
			GL	A	B	L1	L2	L3	L4	L5	N	L			
LC-3NCPN	030013	NO.3	23.825	50	22	27	45	5	77	81	70	158	800	4800	0.003
LC-4NCPN	030014	NO.4	31.267	66	32	37	55	6.5	98.5	101.5	85	200	1300	3800	0.003
LC-5NCPN	030015	NO.5	44.399	82	40	45	65	6.5	116.5	129.5	105	246	1900	3400	0.005
LC-6NCPN	030016	NO.6	63.384	100	45	65	80	8	153	182	130	335	2500	3000	0.005

NCPBN-TYPE

※ SHAFT EXTENTION(Minimize the bite-interference)
※ Nut Type

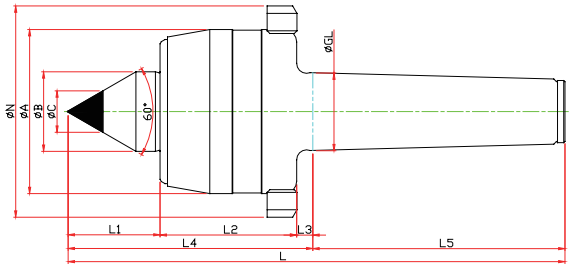




Model	Order Number	Morse Taper	Dimension											Weight MAX.	R.P.M MAX.	Run Out
			GL	A	B	b	L1	L2	L3	L4	L5	N	L			
LC-3NCPBN	031013	NO.3	23.825	50	22	10	47	45	5	97	81	70	178	800	4800	0.003
LC-4NCPBN	031014	NO.4	31.267	66	32	14	53	55	6.5	114.5	101.5	85	216	1300	3800	0.003
LC-5NCPBN	031015	NO.5	44.399	82	40	16	65	65	6.5	136.5	129.5	105	266	1900	3400	0.005
LC-6NCPBN	031016	NO.6	63.384	100	45	18	78	80	8	166	182	130	348	2500	3000	0.005

NCPCN-TYPE

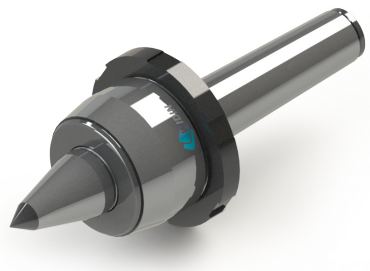
※ Nut, Carbide Type Type

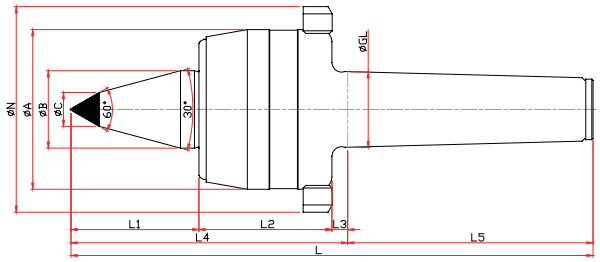


Model	Order Number	Morse Taper	Dimension											Weight MAX.	R.P.M MAX.	Run Out
			GL	A	B	L1	L2	L3	L4	L5	C	N	L			
LC-3NCPCN	030113	NO.3	23.825	50	22	27	45	5	77	81	10	70	158	800	4800	0.003
LC-4NCPCN	030114	NO.4	31.267	66	32	37	55	6.5	98.5	101.5	14	85	200	1300	3800	0.003
LC-5NCPCN	030115	NO.5	44.399	82	40	45	65	6.5	116.5	129.5	18	105	246	1900	3400	0.005
LC-6NCPCN	030116	NO.6	63.384	100	45	65	80	8	153	182	25	130	335	2500	3000	0.005

NCPBCN-TYPE

※ SHAFT EXTENTION(Minimize the bite-interference)
※ Nut, Carbide Type Type





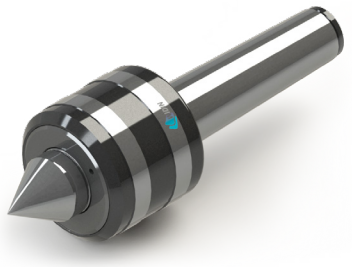
Model	Order Number	Morse Taper	Dimension											Weight MAX.	R.P.M MAX.	Run Out
			GL	A	B	L1	L2	L3	L4	L5	C	N	L			
LC-3NCPBCN	031113	NO.3	23.825	50	22	47	45	5	97	81	10	70	178	800	4800	0.003
LC-4NCPBCN	031114	NO.4	31.267	66	32	53	55	6.5	114.5	101.5	14	85	216	1300	3800	0.003
LC-5NCPBCN	031115	NO.5	44.399	82	40	65	65	6.5	136.5	129.5	16	105	266	1900	3400	0.005
LC-6NCPBCN	031116	NO.6	63.384	100	45	78	80	8	166	182	25	130	348	2500	3000	0.005

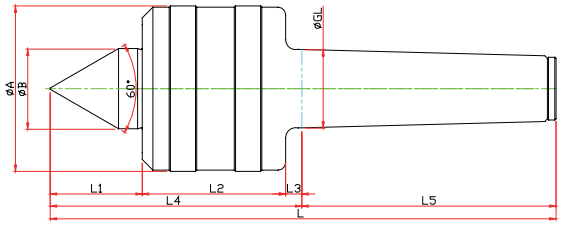
NCP SPECIAL

※ Customized-special production for user's condition

NK-TYPE

※ Center for heavy duty and Semi High Speed

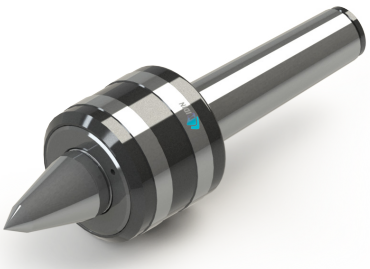


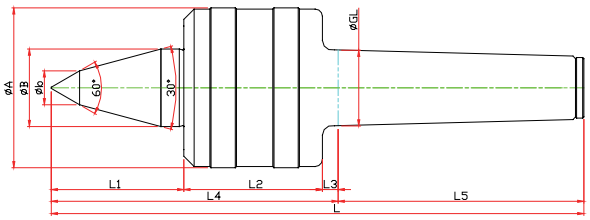


Model	Order Number	Morse Taper	Dimension									Weight MAX.	R.P.M MAX.	Run Out
			GL	A	B	L1	L2	L3	L4	L5	L			
LC-3NK	020003	NO.3	23.825	52	22	29	42	5	76	80	156	1900	5000	0.003
LC-4NK	020004	NO.4	31.267	66	32	37	57	6.5	100.5	101.5	202	2700	3800	0.003
LC-5NK	020005	NO.5	44.399	80	40	45.5	57	6.5	109	129.5	238.5	3200	3400	0.005
LC-6NK	020006	NO.6	63.348	132	65	65	100	8	173	182	355	10000	1800	0.005
LC-7NK	020007	NO.7	83.058	168	72	84	128	10	222	250	427	17200	1200	0.005

NKB-TYPE

※ SHAFT EXTENTION(Minimize the bite-interference)

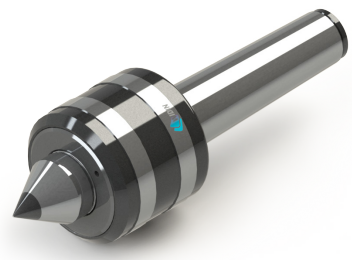


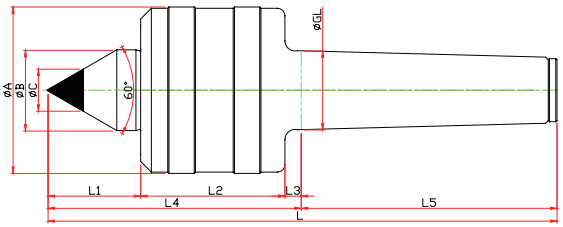


Model	Order Number	Morse Taper	Dimension										Weight MAX.	R.P.M MAX.	Run Out
			GL	A	B	b	L1	L2	L3	L4	L5	L			
LC-3NKB	021003	NO.3	23.825	52	22	10	48	42	5	95	80	175	1900	5000	0.003
LC-4NKB	021004	NO.4	31.267	66	32	14	53	57	6.5	116.5	101.5	218	2700	3800	0.003
LC-5NKB	021005	NO.5	44.399	80	40	18	65.5	57	6.5	129	129.5	258.5	3200	3400	0.005
LC-6NKB	021006	NO.6	63.348	132	65	25	78	100	8	186	182	368	10000	1800	0.005

NKC-TYPE

※ Carbide Type

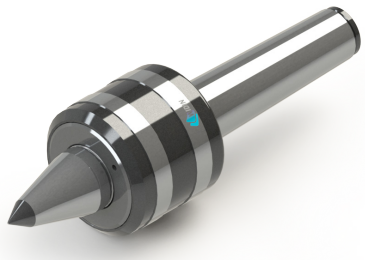


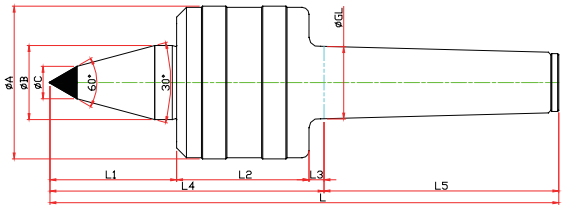


Model	Order Number	Morse Taper	Dimension										Weight MAX.	R.P.M MAX.	Run Out
			GL	A	B	L1	L2	L3	L4	L5	C	L			
LC-3NKC	020103	NO.3	23.825	52	22	29	42	5	76	80	10	156	1900	5000	0.003
LC-4NKC	020104	NO.4	31.267	66	32	37	57	6.5	100.5	101.5	14	202	2700	3800	0.003
LC-5NKC	020105	NO.5	44.399	80	40	45.5	57	6.5	109	129.5	18	238.5	3200	3400	0.005
LC-6NKC	020106	NO.6	63.348	132	65	65	100	8	173	182	25	355	10000	1800	0.005

NKBC-TYPE

※ SHAFT EXTENTION(Minimize the bite-interference)
※ Carbide Type

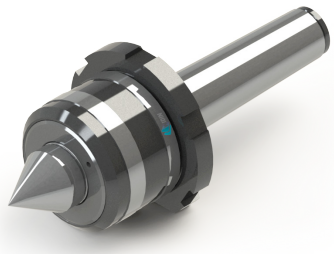


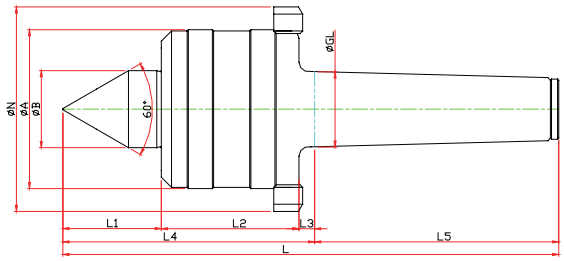


Model	Order Number	Morse Taper	Dimension										Weight MAX.	R.P.M MAX.	Run Out
			GL	A	B	L1	L2	L3	L4	L5	C	L			
LC-3NKBC	021103	NO.3	23.825	52	22	48	42	5	95	80	10	175	1900	5000	0.003
LC-4NKBC	021104	NO.4	31.267	66	32	53	57	6.5	116.5	101.5	14	218	2700	3800	0.003
LC-5NKBC	021105	NO.5	44.399	80	40	65.5	57	6.5	129	129.5	18	258.5	3200	3400	0.005
LC-6NKBC	021106	NO.6	63.348	132	65	78	100	8	186	182	25	368	10000	1800	0.005

NKN-TYPE

※ Nut Type

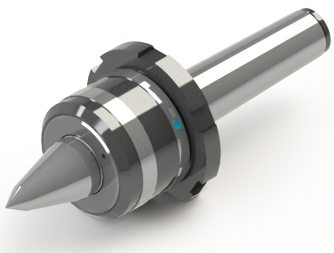


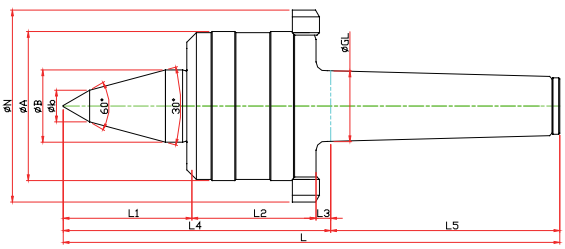


Model	Order Number	Morse Taper	Dimension										Weight MAX.	R.P.M MAX.	Run Out
			GL	A	B	L1	L2	L3	L4	L5	N	L			
LC-3NKN	020013	NO.3	23.825	52	22	29	42	5	76	80	70	156	1900	5000	0.003
LC-4NKN	020014	NO.4	31.267	66	32	37	57	6.5	100.5	101.5	85	202	2700	3800	0.003
LC-5NKN	020015	NO.5	44.399	80	40	45.5	57	6.5	109	129.5	98	238.5	3200	3400	0.005
LC-6NKN	020016	NO.6	63.348	132	65	65	100	8	173	182	165	355	10000	1800	0.005
LC-7NKN	020017	NO.7	83.058	168	72	84	128	10	222	250	210	427	17200	1200	0.005

NKBN-TYPE

※ SHAFT EXTENTION(Minimize the bite-interference)
※ Nut Type

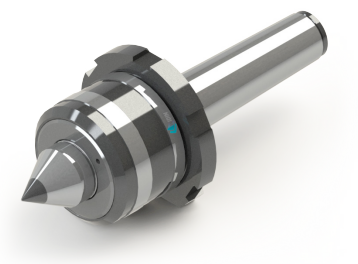


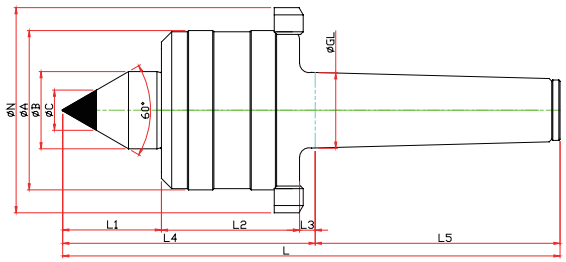


Model	Order Number	Morse Taper	Dimension											Weight MAX.	R.P.M MAX.	Run Out
			GL	A	B	b	L1	L2	L3	L4	L5	N	L			
LC-3NKBN	021013	NO.3	23.825	52	22	10	48	42	5	95	80	70	175	1900	5000	0.003
LC-4NKBN	021014	NO.4	31.267	66	32	14	53	57	6.5	116.5	101.5	85	218	2700	3800	0.003
LC-5NKBN	021015	NO.5	44.399	80	40	18	65.5	57	6.5	129	129.5	98	258.5	3200	3400	0.005
LC-6NKBN	021016	NO.6	63.348	132	65	25	78	100	8	186	182	165	368	10000	1800	0.005

NKCN-TYPE

※ Carbide, Nut Type

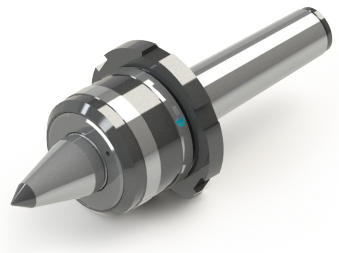


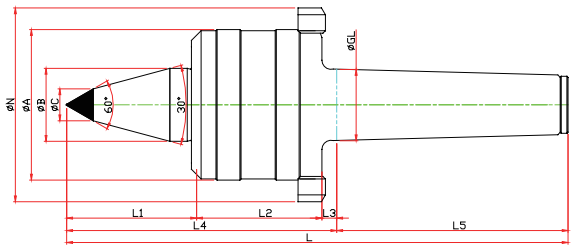


Model	Order Number	Morse Taper	Dimension											Weight MAX.	R.P.M MAX.	Run Out
			GL	A	B	L1	L2	L3	L4	L5	C	N	L			
LC-3NKCN	020113	NO.3	23.825	52	22	29	42	5	76	80	10	70	156	1900	5000	0.003
LC-4NKCN	020114	NO.4	31.267	66	32	37	57	6.5	100.5	101.5	14	85	202	2700	3800	0.003
LC-5NKCN	020115	NO.5	44.399	80	40	45.5	57	6.5	109	129.5	18	98	238.5	3200	3400	0.005
LC-6NKCN	020116	NO.6	63.348	132	65	65	100	8	173	182	25	165	355	10000	1800	0.005

NKBCN-TYPE

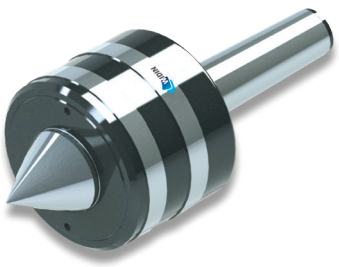
※ SHAFT EXTENTION(Minimize the bite-interference)
※ Carbide, Nut Type

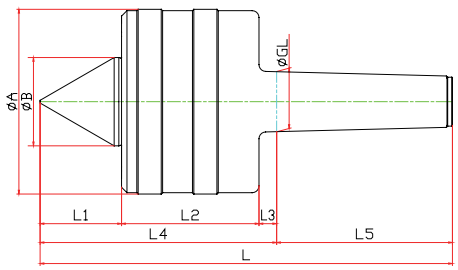




Model	Order Number	Morse Taper	Dimension											Weight MAX.	R.P.M MAX.	Run Out
			GL	A	B	L1	L2	L3	L4	L5	C	N	L			
LC-3NKBCN	021113	NO.3	23.825	52	22	48	42	5	95	80	10	70	175	1900	5000	0.003
LC-4NKBCN	021114	NO.4	31.267	66	32	53	57	6.5	116.5	101.5	14	85	218	2700	3800	0.003
LC-5NKBCN	021115	NO.5	44.399	80	40	65.5	57	6.5	129	129.5	18	98	258.5	3200	3400	0.005
LC-6NKBCN	021116	NO.6	63.348	132	65	78	100	8	186	182	25	165	368	10000	1800	0.005

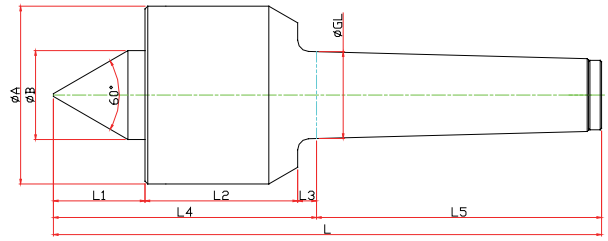
NKD-TYPE





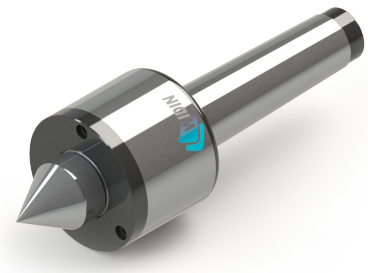
Model	Order Number	Morse Taper	Dimension									Weight MAX.	R.P.M MAX.	Run Out
			GL	A	B	L1	L2	L3	L4	L5	L			
LC-5NKD	090005	NO.5	44.399	136	65	60	101	13	174	129.5	303.5	13000	3400	0.005
LC-6NKD	090006	NO.6	63.348	148	70	80	110.5	15	205.5	181	387.5	16000	1800	0.005
LC-7NKD	090007	NO.7	83.058	200	95	90	141	20	251	250	501	22000	1200	0.005

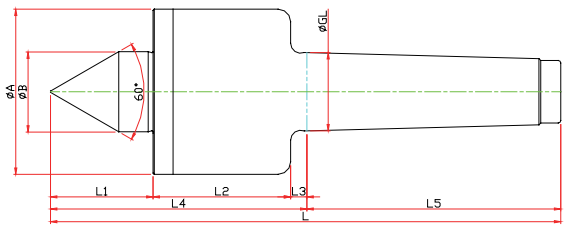
GR-TYPE



Model	Order Number	Morse Taper	Dimension									Weight MAX.	R.P.M MAX.	Run Out
			GL	A	B	L1	L2	L3	L4	L5	L			
LC-4GR	080004	NO.4	31.267	71	40	45	59.5	6.5	111	101.5	212.5	1300	7000	0.002
LC-5GR	080005	NO.5	44.399	88	50	45	66	6.5	117.5	129.5	247	3500	4500	0.002
LC-6GR	080006	NO.6	63.348	114	52	55	92	8	155	182	337	5000	3400	0.002
LC-7GR	080007	NO.7	83.058	200	98	78	132	10	200	250	470	20000	1900	0.002

SM-TYPE

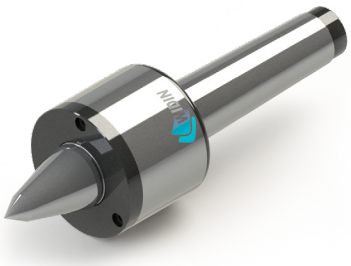


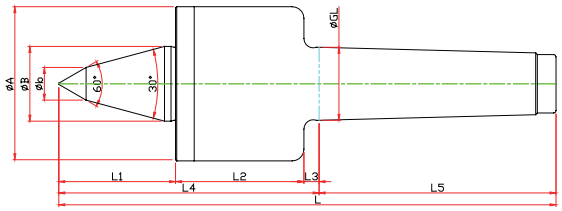


Model	Order Number	Morse Taper	Dimension									Weight MAX.	R.P.M MAX.	Run Out
			GL	A	B	L1	L2	L3	L4	L5	L			
LC-3SM	040003	NO.3	23.825	52	22	30	51	5	86	81	167	330	12000	0.003
LC-4SM	040004	NO.4	31.267	66	32	41	55	6.5	102.5	101.5	204	1100	10000	0.003
LC-5SM	040005	NO.5	44.399	82	40	51	75	6.5	132.5	129.5	262	2200	8000	0.005

SMB-TYPE

※ SHAFT EXTENTION(Minimize the bite-interference)

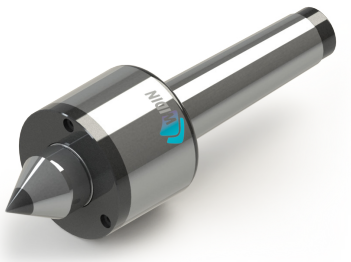


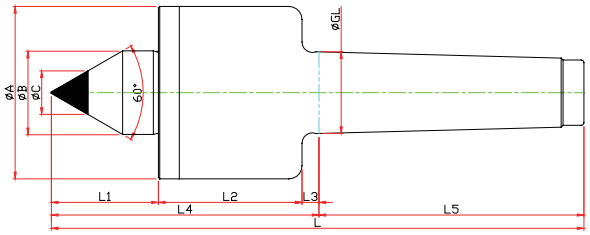


Model	Order Number	Morse Taper	Dimension										Weight MAX.	R.P.M MAX.	Run Out
			GL	A	B	b	L1	L2	L3	L4	L5	L			
LC-3SMB	041003	NO.3	23.825	52	22	10	40	51	5	96	81	177	330	12000	0.003
LC-4SMB	041004	NO.4	31.267	66	32	14	50	55	6.5	111.5	101.5	213	1100	10000	0.003
LC-5SMB	041005	NO.5	44.399	82	40	16	65	75	6.5	146.5	129.5	276	2200	8000	0.005

SMC-TYPE

※ Carbide Type

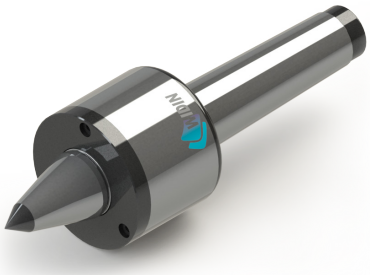


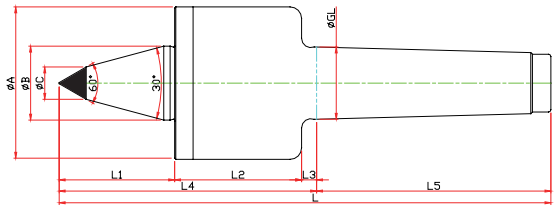


Model	Order Number	Morse Taper	Dimension										Weight MAX.	R.P.M MAX.	Run Out
			GL	A	B	L1	L2	L3	L4	L5	C	L			
LC-3SMC	040103	NO.3	23.825	52	22	30	51	5	86	81	10	167	330	12000	0.003
LC-4SMC	040104	NO.4	31.267	66	32	41	55	6.5	102.5	101.5	14	204	1100	10000	0.003
LC-5SMC	040105	NO.5	44.399	82	40	51	75	6.5	132.5	129.5	18	262	2200	8000	0.005

SMBC-TYPE

※ SHAFT EXTENTION(Minimize the bite-interference)
※ Carbide, Nut Type

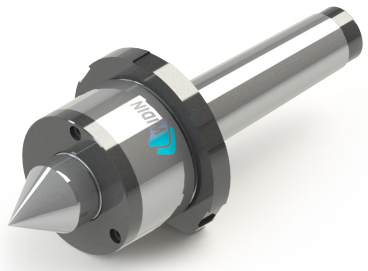


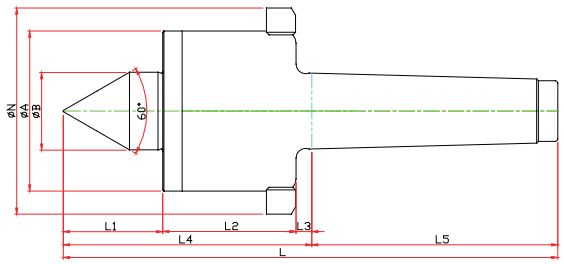


Model	Order Number	Morse Taper	Dimension											Weight MAX.	R.P.M MAX.	Run Out
			GL	A	B	b	L1	L2	L3	L4	L5	C	L			
LC-3SMBC	041103	NO.3	23.825	52	22	10	40	51	5	96	81	10	177	330	12000	0.003
LC-4SMBC	041104	NO.4	31.267	66	32	14	50	55	6.5	111.5	101.5	14	213	1100	10000	0.003
LC-5SMBC	041105	NO.5	44.399	82	40	16	65	75	6.5	146.55	129.5	16	276	2200	8000	0.005

SMN-TYPE

※ Nut Type

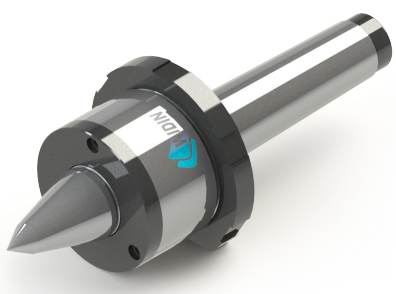


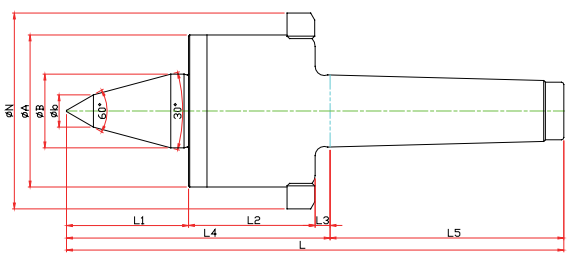


Model	Order Number	Morse Taper	Dimension										Weight MAX.	R.P.M MAX.	Run Out
			GL	A	B	L1	L2	L3	L4	L5	N	L			
LC-3SMN	040013	NO.3	23.825	52	22	30	51	5	86	81	70	167	330	12000	0.003
LC-4SMN	040014	NO.4	31.267	66	32	41	55	6.5	102.5	101.5	85	204	1100	10000	0.003
LC-5SMN	040015	NO.5	44.399	82	40	51	75	6.5	132.5	129.5	105	262	2200	8000	0.005

SMBN-TYPE

※ SHAFT EXTENTION(Minimize the bite-interference)
※ Nut Type

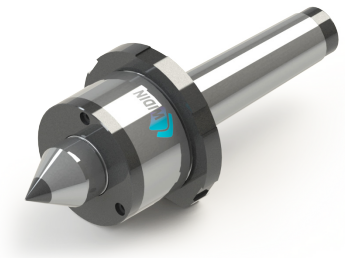


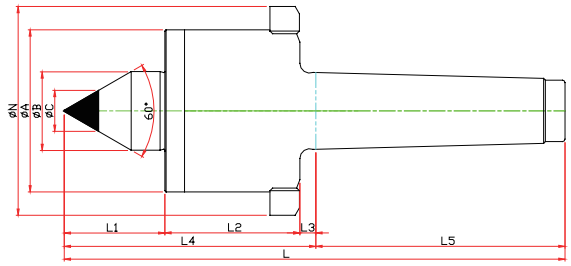


Model	Order Number	Morse Taper	Dimension											Weight MAX.	R.P.M MAX.	Run Out
			GL	A	B	b	L1	L2	L3	L4	L5	N	L			
LC-3SMBN	041013	NO.3	23.825	52	22	10	40	51	5	96	81	70	177	330	12000	0.003
LC-4SMBN	041014	NO.4	31.267	66	32	14	50	55	6.5	111.5	101.5	85	213	1100	10000	0.003
LC-5SMBN	041015	NO.5	44.399	82	40	16	65	75	6.5	146.5	129.5	105	276	2200	8000	0.005

SMCN-TYPE

※ Carbide, Nut Type

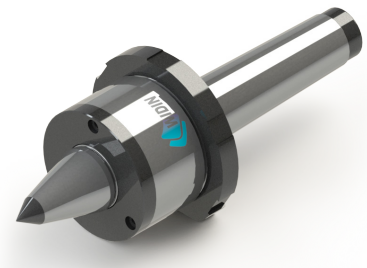


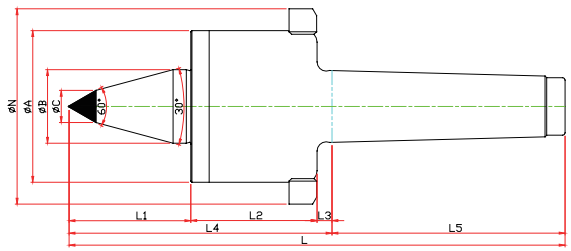


Model	Order Number	Morse Taper	Dimension											Weight MAX.	R.P.M MAX.	Run Out
			GL	A	B	C	D	E	F	G	N	T	L			
LC-3SMCN	040113	NO.3	23.825	52	22	30	51	5	86	81	70	10	167	300	12000	0.003
LC-4SMCN	040114	NO.4	31.267	66	32	41	55	6.5	102.5	101.5	85	14	204	1100	10000	0.003
LC-5SMCN	040115	NO.5	44.399	82	40	51	75	6.5	132.5	129.5	105	16	262	2200	8000	0.005

SMBCN-TYPE

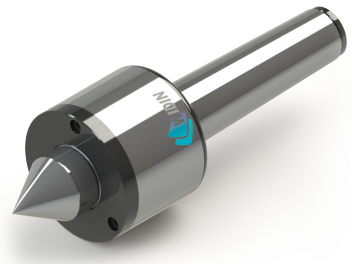
※ SHAFT EXTENTION(Minimize the bite-interference)
※ Carbide, Nut Type

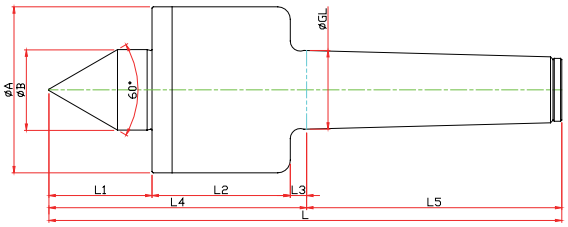




Model	Order Number	Morse Taper	Dimension												Weight MAX.	R.P.M MAX.	Run Out
			GL	A	B	b	L1	L2	L3	L4	L5	C	N	L			
LC-3SMBCN	041113	NO.3	23.825	52	22	10	40	51	5	96	81	10	70	177	330	12000	0.003
LC-4SMBCN	041114	NO.4	31.267	66	32	14	50	55	6.5	111.5	101.5	14	85	213	1100	10000	0.003
LC-5SMBCN	041115	NO.5	44.399	82	40	16	65	75	6.5	146.5	129.5	16	105	276	2200	8000	0.005

SMP-TYPE

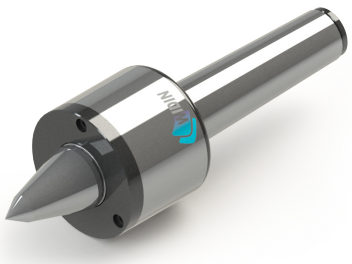


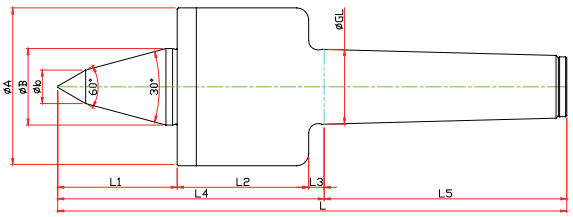


Model	Order Number	Morse Taper	Dimension									Weight MAX.	R.P.M MAX.	Run Out
			GL	A	B	L1	L2	L3	L4	L5	L			
LC-3SMP	050003	NO.3	23.825	52	22	30	51	5	86	81	167	330	12000	0.003
LC-4SMP	050004	NO.4	31.267	66	32	41	55	6.5	102.5	101.5	204	1100	10000	0.003
LC-5SMP	050005	NO.5	44.399	82	40	51	75	6.5	132.5	129.5	262	2200	8000	0.005

SMPB-TYPE

※ SHAFT EXTENTION(Minimize the bite-interference)

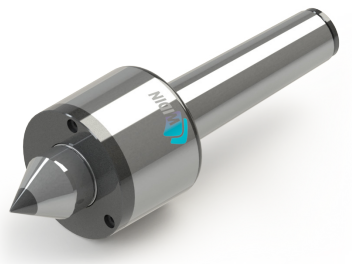


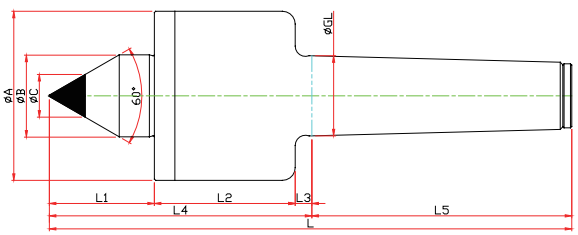


Model	Order Number	Morse Taper	Dimension										Weight MAX.	R.P.M MAX.	Run Out
			GL	A	B	b	L1	L2	L3	L4	L5	L			
LC-3SMPB	051003	NO.3	23.825	52	22	10	40	51	5	96	81	177	330	12000	0.003
LC-4SMPB	051004	NO.4	31.267	66	32	14	50	55	6.5	111.5	101.5	213	1100	10000	0.003
LC-5SMPB	051005	NO.5	44.399	82	40	16	65	75	6.5	146.5	129.5	276	2200	8000	0.005

SMPC-TYPE

※ Carbide Type

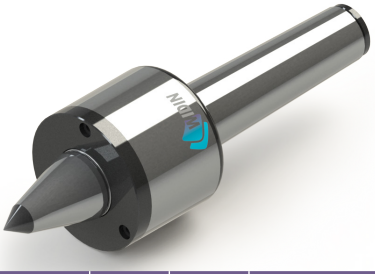


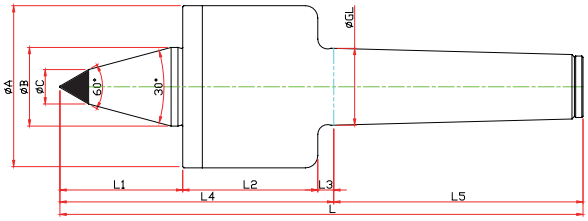


Model	Order Number	Morse Taper	Dimension									Weight MAX.	R.P.M MAX.	Run Out
			GL	A	B	L1	L2	L3	L4	L5	C	L			
LC-3SMPC	050103	NO.3	23.825	52	22	30	51	5	86	81	10	167	330	12000	0.003
LC-4SMPC	050104	NO.4	31.267	66	32	41	55	6.5	102.5	101.5	14	204	1100	10000	0.003
LC-5SMPC	050105	NO.5	44.399	82	40	51	75	6.5	132.5	129.5	18	262	2200	8000	0.005

SMPBC-TYPE

※ SHAFT EXTENTION(Minimize the bite-interference)
※ Carbide Type

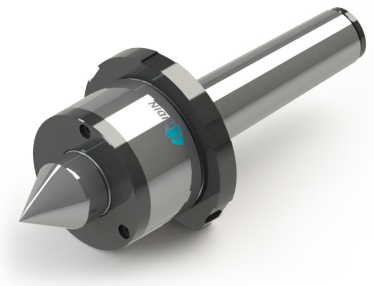


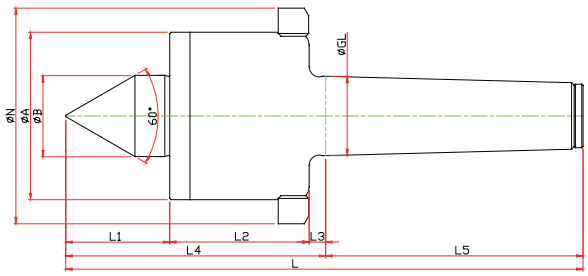


Model	Order Number	Morse Taper	Dimension											Weight MAX.	R.P.M MAX.	Run Out
			GL	A	B	b	L1	L2	L3	L4	L5	C	L			
LC-3SMPBC	051103	NO.3	23.825	52	22	10	40	51	5	96	81	10	177	330	12000	0.003
LC-4SMPBC	051104	NO.4	31.267	66	32	14	50	55	6.5	111.5	101.5	14	213	1100	10000	0.003
LC-5SMPBC	051105	NO.5	44.399	82	40	16	65	75	6.5	146.5	129.5	18	276	2200	8000	0.005

SMPN-TYPE

※ Nut Type

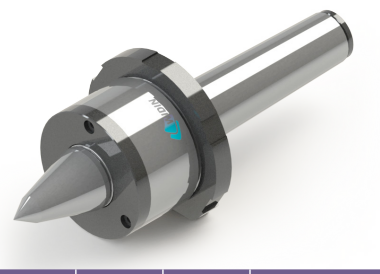


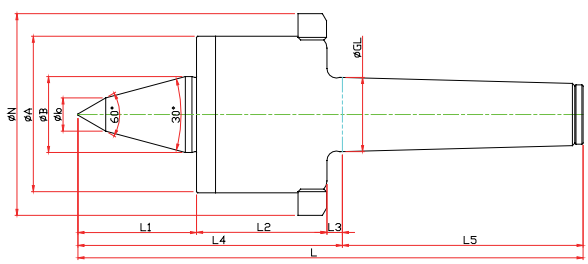


Model	Order Number	Morse Taper	Dimension										Weight MAX.	R.P.M MAX.	Run Out
			GL	A	B	L1	L2	L3	L4	L5	N	L			
LC-3SMPN	050013	NO.3	23.825	52	22	30	51	5	86	81	70	167	330	12000	0.003
LC-4SMPN	050014	NO.4	31.267	66	32	41	55	6.5	102.5	101.5	85	204	1100	10000	0.003
LC-5SMPN	050015	NO.5	44.399	82	40	51	75	6.5	132.5	129.5	105	262	2200	8000	0.005

SMPBN-TYPE

※ SHAFT EXTENTION(Minimize the bite-interference)
※ Nut Type

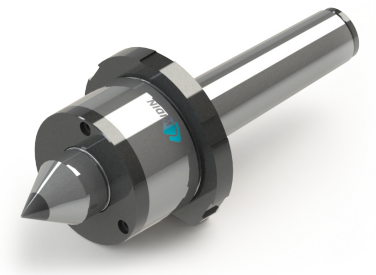


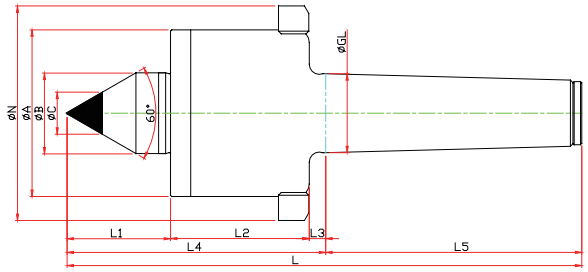


Model	Order Number	Morse Taper	Dimension											Weight MAX.	R.P.M MAX.	Run Out
			GL	A	B	b	L1	L2	L3	L4	L5	N	L			
LC-3SMPBN	051013	NO.3	23.825	52	22	10	40	51	5	96	81	70	177	330	12000	0.003
LC-4SMPBN	051014	NO.4	31.267	66	32	14	50	55	6.5	111.5	101.5	85	213	1100	10000	0.003
LC-5SMPBN	051015	NO.5	44.399	82	40	16	65	75	6.5	146.5	129.5	105	276	2200	8000	0.005

SMPCN-TYPE

※ Carbide, Nut Type

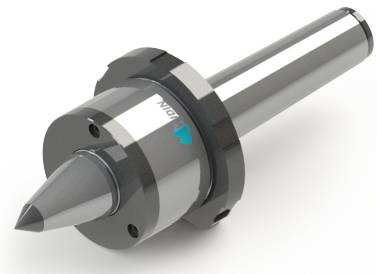


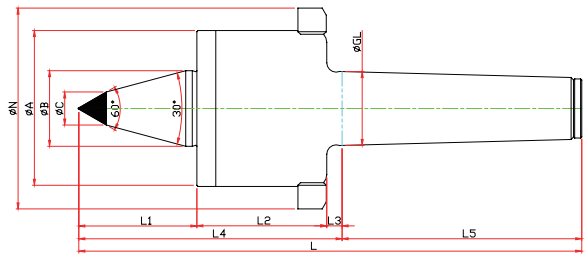


Model	Order Number	Morse Taper	Dimension											Weight MAX.	R.P.M MAX.	Run Out
			GL	A	B	L1	L2	L3	L4	L5	C	N	L			
LC-3SMPCN	050113	NO.3	23.825	52	22	30	51	5	86	81	10	70	167	330	12000	0.003
LC-4SMPCN	050114	NO.4	31.267	66	32	41	55	6.5	102.5	101.5	14	85	204	1100	10000	0.003
LC-5SMPCN	050115	NO.5	44.399	82	40	51	75	6.5	132.5	129.5	18	105	262	2200	8000	0.005

SMPBCN-TYPE

※ SHAFT EXTENTION(Minimize the bite-interference)
※ Carbide, Nut Type

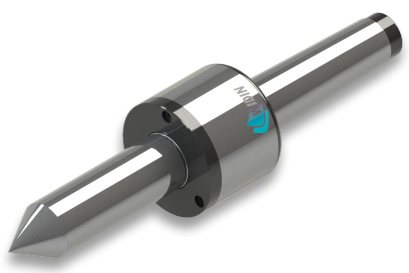




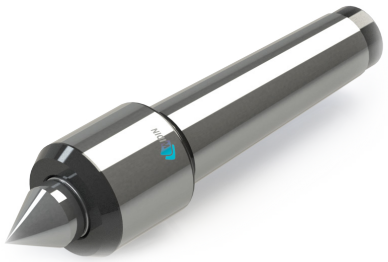
Model	Order Number	Morse Taper	Dimension												Weight MAX.	R.P.M MAX.	Run Out
			GL	A	B	b	L1	L2	L3	L4	L5	C	N	L			
LC-3SMPBCN	051113	NO.3	23.825	52	22	10	40	51	5	96	81	10	70	177	330	12000	0.003
LC-4SMPBCN	051114	NO.4	31.267	66	32	14	50	55	6.5	111.5	101.5	14	85	213	1100	10000	0.003
LC-5SMPBCN	051115	NO.5	44.399	82	40	16	65	75	6.5	146.5	129.5	16	105	276	2200	8000	0.005

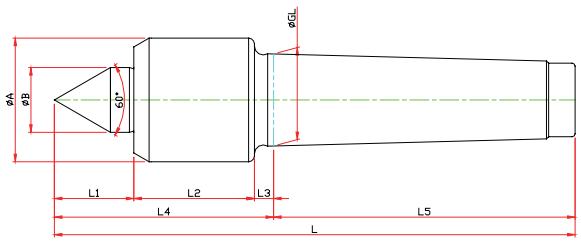
SMP SPECIAL

※ Customized-special production for user's condition



D50-TYPE

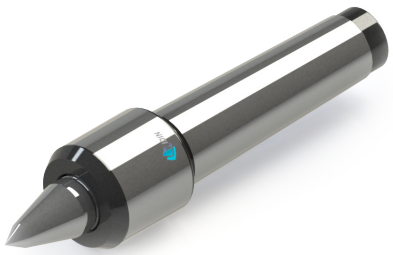


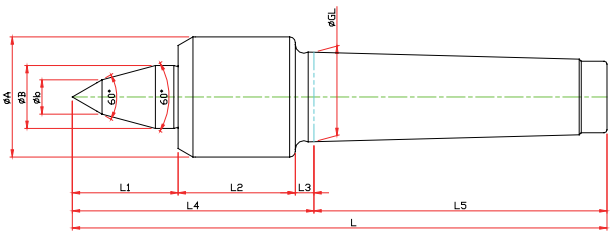


Model	Order Number	Morse Taper	Dimension									Weight MAX.	R.P.M MAX.	Run Out
			GL	A	B	L1	L2	L3	L4	L5	L			
LC-3D50	080350	NO.3	23.825	34	22	21	38	5	64	81	145	400	4800	0.003
LC-4D50	080450	NO.4	31.267	42	22	27	41	6.5	74.5	102.5	177	800	3800	0.003
LC-5D50	080550	NO.5	44.399	58	32	35	60	6.5	101.5	129.5	231	1600	3400	0.005

D50B-TYPE

※ SHAFT EXTENTION(Minimize the bite-interference)

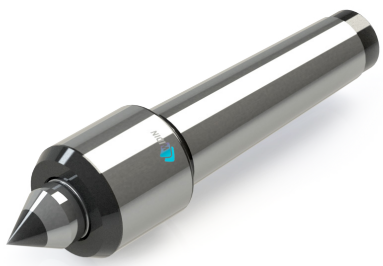


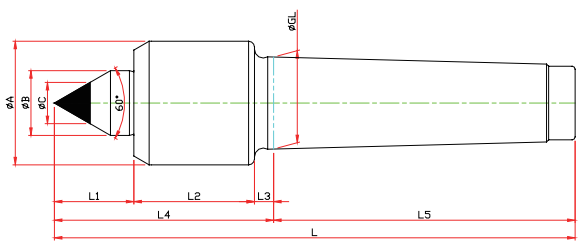


Model	Order Number	Morse Taper	Dimension										Weight MAX.	R.P.M MAX.	Run Out
			GL	A	B	b	L1	L2	L3	L4	L5	L			
LC-3D50B	082350	NO.3	23.825	34	22	10	25	38	5	72	81	153	400	4800	0.003
LC-4D50B	082450	NO.4	31.267	42	22	12	36	41	6.5	83.5	102.5	186.5	800	3800	0.003
LC-5D50B	082550	NO.5	44.399	58	32	16	53	60	6.5	119.5	129.5	249	1600	3400	0.005

D50C-TYPE

※ Carbide Type

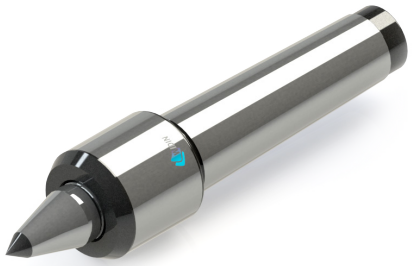


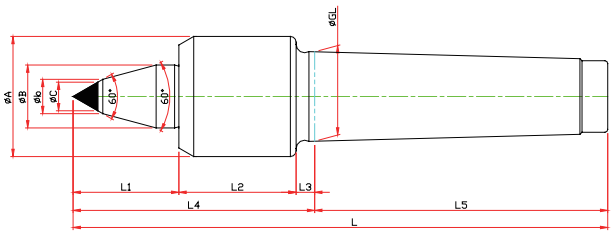


Model	Order Number	Morse Taper	Dimension										Weight MAX.	R.P.M MAX.	Run Out
			GL	A	B	L1	L2	L3	L4	L5	C	L			
LC-3D50C	081350	NO.3	23.825	34	22	21	38	5	64	81	10	145	400	4800	0.003
LC-4D50C	081450	NO.4	31.267	42	22	27	41	6.5	74.5	102.5	14	177	800	3800	0.003
LC-5D50C	081550	NO.5	44.399	58	32	60	60	6.5	101.5	129.5	18	231	1600	3400	0.005

D50BC-TYPE

※ SHAFT EXTENTION(Minimize the bite-interference)
※ Carbide Type

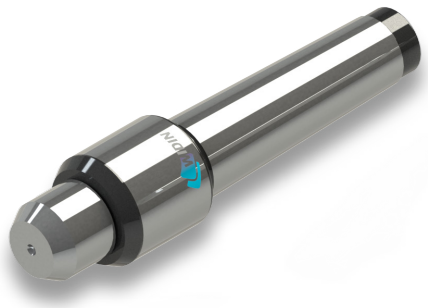


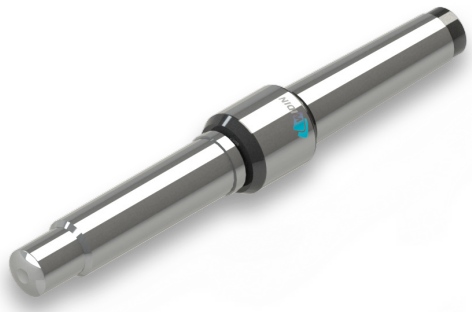


Model	Order Number	Morse Taper	Dimension											Weight MAX.	R.P.M MAX.	Run Out
			GL	A	B	b	L1	L2	L3	L4	L5	C	L			
LC-3D50BC	083350	NO.3	23.825	34	22	10	25	38	5	72	81	8	153	400	4800	0.003
LC-4D50BC	083450	NO.4	31.267	42	22	12	36	41	6.5	83.5	102.5	10	186.5	800	3800	0.003
LC-5D50BC	083550	NO.5	44.399	58	32	16	53	60	6.5	119.5	129.5	14	249	1600	3400	0.005

D50 SPECIAL

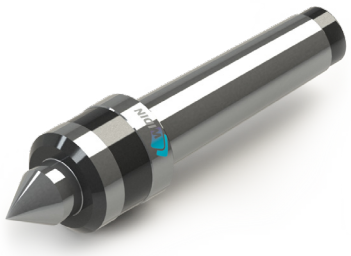
※ Customized-special production for user's condition

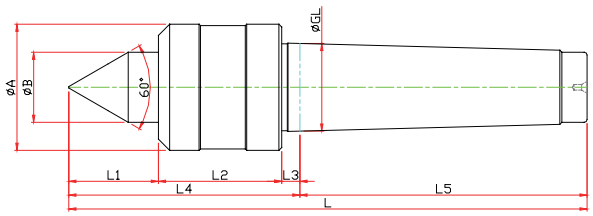




HD-TYPE

※ Economical live center

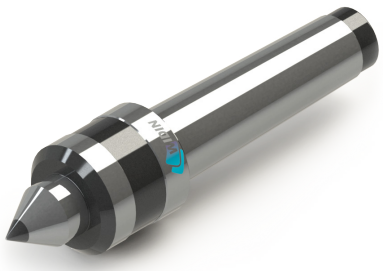


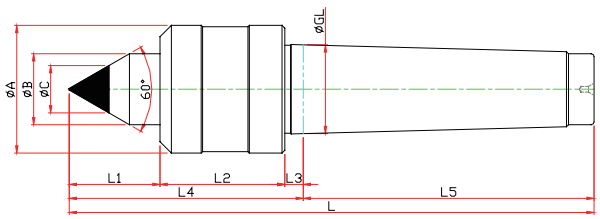


Model	Order Number	Morse Taper	Dimension									Weight MAX.	R.P.M MAX.	Run Out
			GL	A	B	L1	L2	L3	L4	L5	L			
LC-1HD	070001	NO.1	12.065	34	15	21	37	3.5	61.5	53.5	115	120	5000	0.003
LC-2HD	070002	NO.2	17.780	40	18	24	37	5	66	64	130	140	4000	0.003
LC-3HD	070003	NO.3	23.825	45	25	32	44	5	81	81	162	190	3800	0.003
LC-4HD	070004	NO.4	31.267	45	25	32	44	6.5	82.5	102.5	185	190	3800	0.003
LC-5HD	070005	NO.5	44.399	78	38	47	66	6.5	119.5	129.5	249	350	2000	0.005
LC-6HD	070006	NO.6	63.384	102	55	62	82	8	152	182	334	1200	2000	0.005

HDC-TYPE

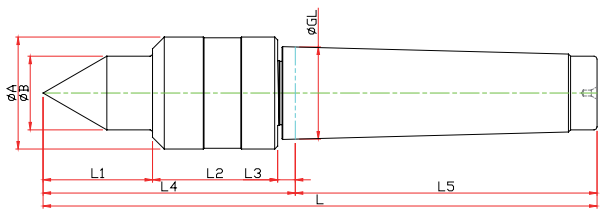
※ Carbide Type





Model	Order Number	Morse Taper	Dimension										Weight MAX.	R.P.M MAX.	Run Out
			GL	A	B	L1	L2	L3	L4	L5	C	L			
LC-3HDC	071003	NO.3	23.825	25	45	32	44	5	81	81	10	162	190	3800	0.003
LC-4HDC	071004	NO.4	31.267	25	45	32	44	6.5	82.5	102.5	14	185	190	3800	0.003
LC-5HDC	071005	NO.5	44.399	38	78	47	66	6.5	119.5	129.5	18	249	350	2000	0.005
LC-6HDC	071006	NO.6	63.384	55	102	62	82	8	152	182	25	334	1200	2000	0.005

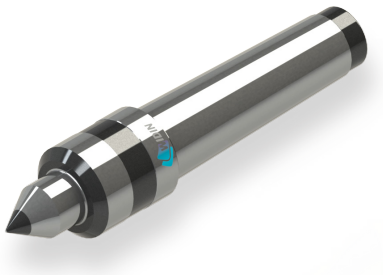
HDS-TYPE

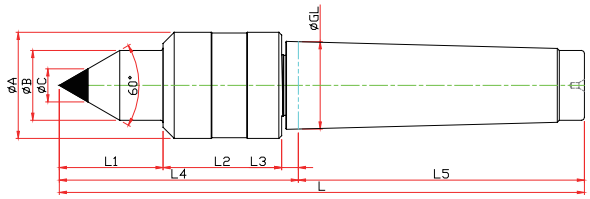


Model	Order Number	Morse Taper	Dimension									Weight MAX.	R.P.M MAX.	Run Out
			GL	A	B	L1	L2	L3	L4	L5	L			
LC-2HDS	070012	NO.2	17.780	34	15	25	40	5	70	64	134	70	4500	0.003
LC-3HDS	070013	NO.3	23.825	36	18	27.5	40.5	5	73	81	154	80	4500	0.003
LC-4HDS	070014	NO.4	31.267	38	22	32	42.5	6	80.5	102.5	183	80	4500	0.003
LC-5HDS	070015	NO.5	44.399	64	30	47	56.5	10	113.5	129.5	243	230	2000	0.005
LC-6HDS	070016	NO.6	63.384	86	42	60	66.5	10	136.5	182	318.5	600	1500	0.005

HDSC-TYPE

※ Economical live center ※ Suitable for lathe
※ Optimal RPM(below 3,800)

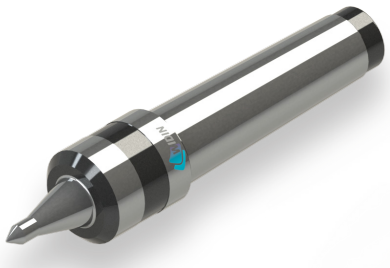


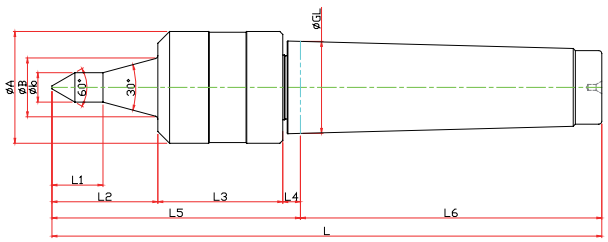


Model	Order Number	Morse Taper	Dimension										Weight MAX.	R.P.M MAX.	Run Out
			GL	A	B	L1	L2	L3	L4	L5	C	L			
LC-3HDSC	071012	NO.3	23.825	36	18	27.5	40.5	5	73	81	10	154	80	4500	0.003
LC-4HDSC	071013	NO.4	31.267	38	22	32	42.5	6	80.5	102.5	14	183	80	4500	0.003
LC-5HDSC	071014	NO.5	44.399	64	30	47	56.5	10	113.5	129.5	18	243	230	2000	0.005
LC-6HDSC	071015	NO.6	63.384	86	42	60	66.5	10	136.5	182	30	318.5	600	1500	0.005

HDSTH-TYPE

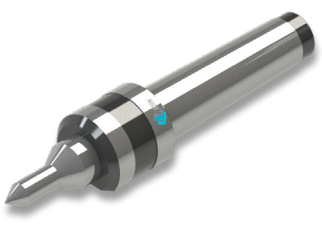
※ The type of thread milling
※ Structure resistant to coolant
※ triplexed bearing fit
※ Optimal RPM(below 3,800)

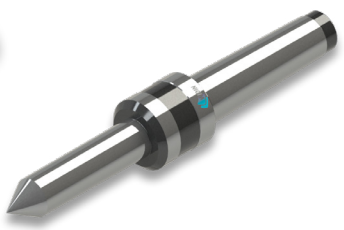




Model	Order Number	Morse Taper	Dimension											Weight MAX.	R.P.M MAX.	Run Out
			GL	A	B	b	L1	L2	L3	L4	L5	L6	L			
LC-3HDSTH-06	073011	NO.3	23.825	36	18	6	12.6	35	40.5	5	80.5	81	161.5	55	3800	0.003
LC-3HDSTH-08	073012					8	16.3									
LC-3HDSTH-10	073013					10	20.1									
LC-3HDSTH-12	073014					12	23.8									
LC-4HDSTH-06	074011	NO.4	31.267	38	20	6	10.1	36.2	40.5	6	84.5	102.5	187	65		
LC-4HDSTH-08	074012					8	13.9									
LC-4HDSTH-10	074013					10	17.6									
LC-4HDSTH-12	074014					12	21.3									
LC-5HDSTH-06	075011	NO.5	44.399	64	24	6	13.4	47	56.5	10	113.5	129.5	243	150		
LC-5HDSTH-08	075012					8	17.1									
LC-5HDSTH-10	075013					10	20.8									
LC-4HDSTH-12	075014					12	24.6									

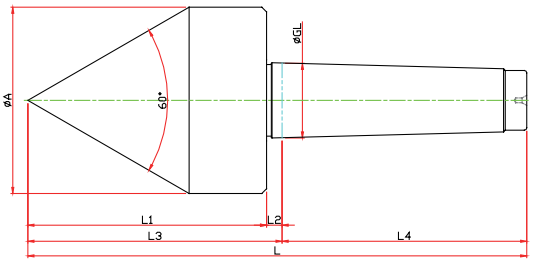
HD SPECIAL





PT-60 TYPE

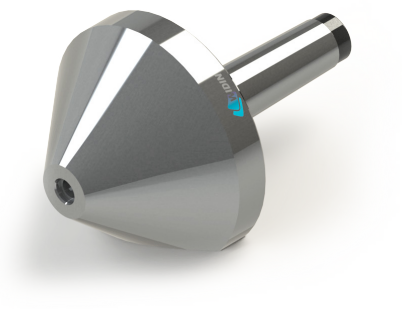
※ For PIPE machining
※ Optimal RPM(below 3,800)

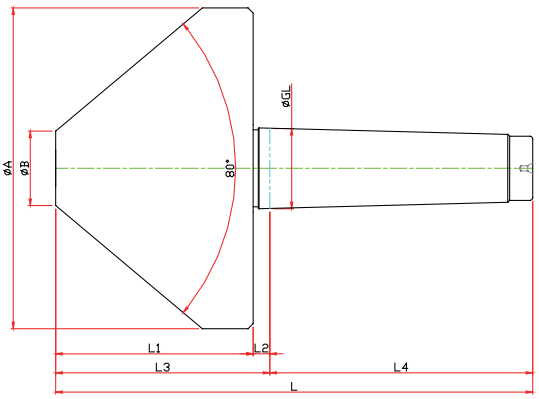


Model	Order Number	Morse Taper	Dimension							Weight MAX.	R.P.M MAX.	Run Out
			GL	A	L1	L2	L3	L4	L			
LC-2PT-60	066002	NO.2	17.780	44	66	5	71	64	135	70	4500	0.003
LC-3PT-60	066003	NO.3	23.825	56	78.5	5	83.5	81	164.5	80	4500	0.003
LC-4PT-60	066004	NO.4	31.267	78	100	6.5	106.5	101.5	208	80	4500	0.003
LC-5PT-60	066005	NO.5	44.399	98	125	6.5	131.5	129.5	261	230	2000	0.005
LC-6PT-60	066006	NO.6	63.384	118	154	8	162	182	344	600	1500	0.005

PT-80 TYPE

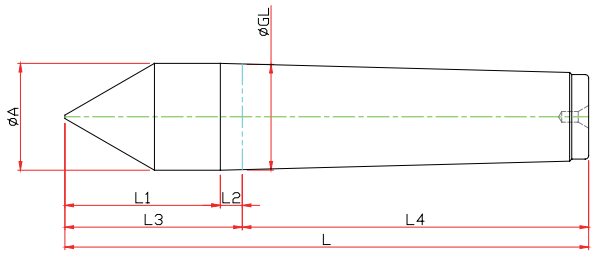
※ For PIPE machining
※ Optimal RPM(below 3,800)





Model	Order Number	Morse Taper	Dimension								Weight MAX.	R.P.M MAX.	Run Out
			GL	A	B	L1	L2	L3	L4	L			
LC-3PT-80	068003	NO.3	23.825	95	20	66	5	65	81	146	190	3800	0.003
LC-4PT-80	068004	NO.4	31.267	125	29	77	6.5	83.5	102.5	185	190	3800	0.003
LC-5PT-80	068005	NO.5	44.399	150	32	90	6.5	96.5	129.5	226	350	2000	0.005
LC-6PT-80	068006	NO.6	63.384	200	38	120	8	128	182	310	1200	1500	0.005

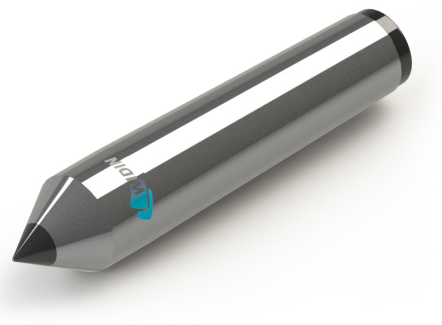
LM-A TYPE

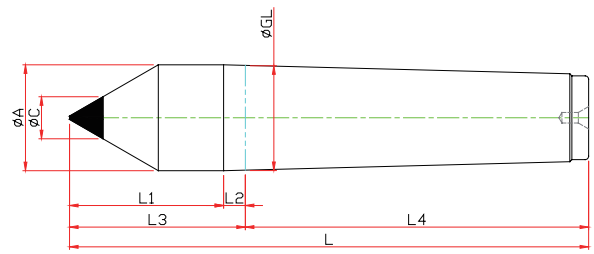


Model	Order Number	Morse Taper	Dimension							Run Out
			GL	A	L1	L2	L3	L4	L	
LM-1A	110001	NO.1	12.065	12.2	25	3.5	28.5	53.5	82	0.003
LM-2A	110002	NO.2	17.780	18	31	5	36	64	100	0.003
LM-3A	110003	NO.3	23.825	24	39	5	44	81	125	0.003
LM-4A	110004	NO.4	31.267	31.6	46	6.5	52.5	102.5	155	0.003
LM-5A	110005	NO.5	44.399	44.7	64	6.5	70.5	129.5	200	0.003
LM-6A	110006	NO.6	63.348	63.8	80	8	88	182	270	0.005
LM-7A	110007	NO.7	83.058	83.6	105	10	115	250	365	0.005

LM-C TYPE

※ Carbide Type

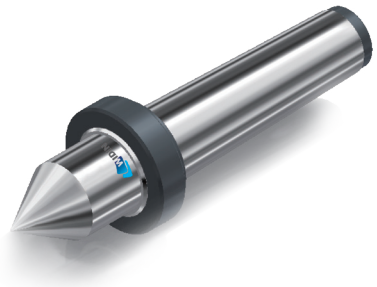


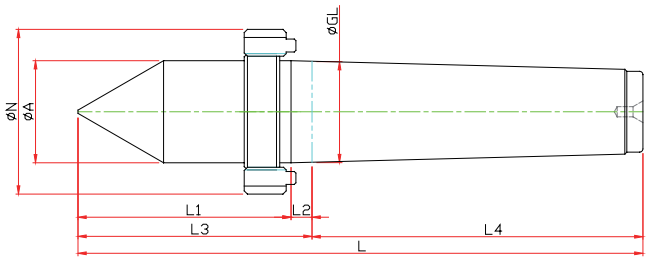


Model	Order Number	Morse Taper	Dimension								Run Out
			GL	A	L1	L2	L3	L4	C	L	
LM-1C	110101	NO.1	12.065	12.2	25	3.5	28.5	53.5	7	82	0.003
LM-2C	110102	NO.2	17.780	18	31	5	36	64	7	100	0.003
LM-3C	110103	NO.3	23.825	24	39	5	44	81	10	125	0.003
LM-4C	110104	NO.4	31.267	31.6	46	6.5	52.5	102.5	14	155	0.003
LM-5C	110105	NO.5	44.399	44.7	64	6.5	70.5	129.5	18	200	0.003
LM-6C	110106	NO.6	63.348	63.8	80	8	88	182	25	270	0.005
LM-7C	110107	NO.7	83.058	83.6	105	10	115	250	30	365	0.005

LM-AN TYPE

※ Nut Type

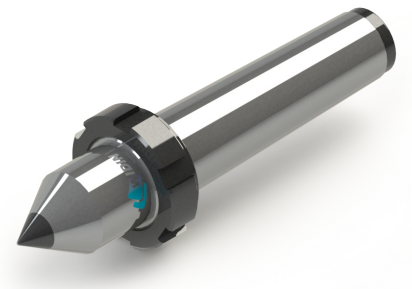


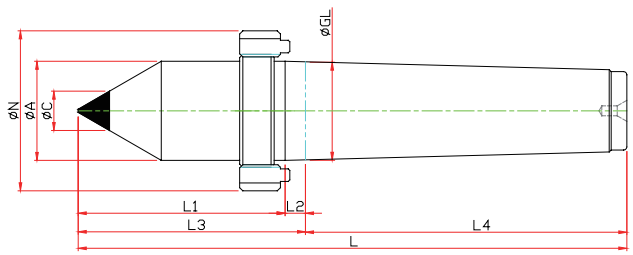


Model	Order Number	Morse Taper	Dimension								Run Out
			GL	A	L1	L2	L3	L4	N	L	
LM-1AN	110011	NO.1	12.065	12.2	31.5	5	36.5	53.5	M16	90	0.003
LM-2AN	110012	NO.2	17.780	18	41.5	6.5	48	64	M22	112	0.003
LM-3AN	110013	NO.3	23.825	24	49.5	7.5	57	81	M27	138	0.003
LM-4AN	110014	NO.4	31.267	31.6	62.5	10	72.5	102.5	M36	175	0.003
LM-5AN	110015	NO.5	44.399	44.7	77	11	88	129.6	M48	217.5	0.003
LM-6AN	110016	NO.6	63.348	63.8	96.5	11.5	108	182	M68	290	0.005
LM-7AN	110017	NO.7	83.058	83.6	108.5	11.5	120	250	M90	370	0.005

LM-CN TYPE

※ Carbide, Nut Type

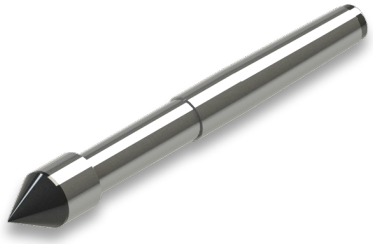




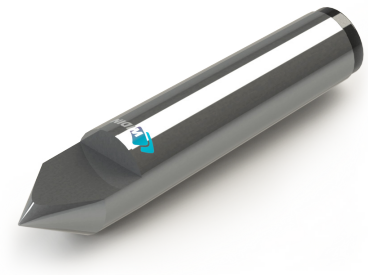
Model	Order Number	Morse Taper	Dimension									Run Out
			GL	A	L1	L2	L3	L4	C	N	L	
LM-1CN	110111	NO.1	12.065	12	31.5	5	36.5	53.5	7	M16	90	0.003
LM-2CN	110112	NO.2	17.780	18	41.5	6.5	48	64	7	M22	112	0.003
LM-3CN	110113	NO.3	23.825	24	49.5	7.5	57	81	10	M27	138	0.003
LM-4CN	110114	NO.4	31.267	32	62.5	10	72.5	102.5	14	M36	175	0.003
LM-5CN	110115	NO.5	44.399	45	77	11	88	129.5	18	M48	217.5	0.003
LM-6CN	110116	NO.6	63.348	64	96.5	11.5	108	182	18	M68	290	0.005

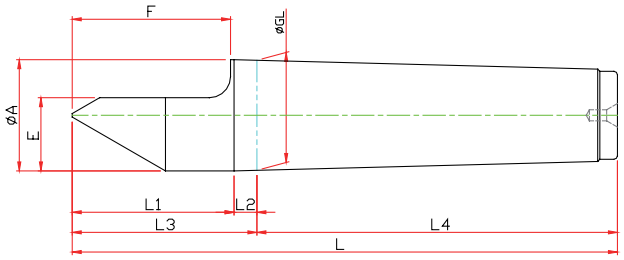
LM SPECIAL

※ Customized-special production for user's condition



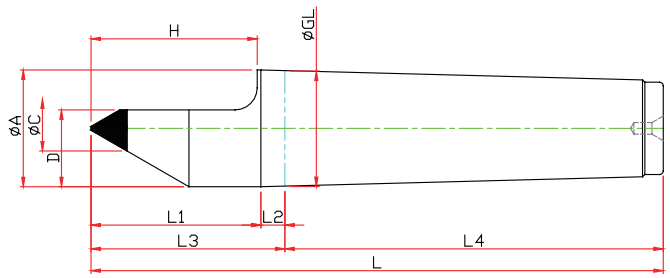
LM-H TYPE





Model	Order Number	Morse Taper	Dimension									Run Out
			GL	A	L1	L2	L3	L4	E	F	L	
LM-1H	110001	NO.1	12.065	12.2	25	3.5	28.5	53.5	7.6	22	82	0.003
LM-2H	110002	NO.2	17.780	18	31	5	36	64	11	30	100	0.003
LM-3H	110003	NO.3	23.825	24	39	5	44	81	15	38	125	0.003
LM-4H	110004	NO.4	31.267	31.6	46	6.5	52.5	102.5	21	45	155	0.003
LM-5H	110005	NO.5	44.399	44.7	64	6.5	70.5	129.5	27.4	63	200	0.003
LM-6H	110006	NO.6	63.348	63.8	80	8	88	182	38.9	79	270	0.005

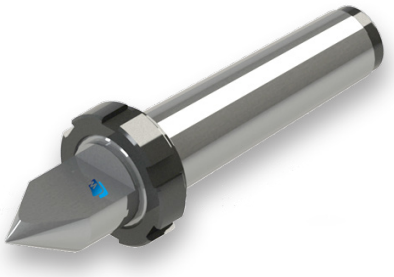
LM-HC TYPE

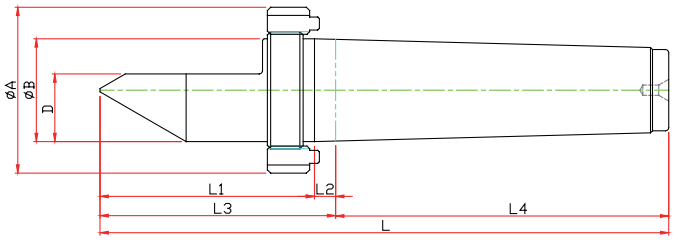


Model	Order Number	Morse Taper	Dimension										Run Out
			GL	A	L1	L2	L3	L4	C	D	H	L	
LM-1HC	210101	NO.1	12.065	12.2	25	3.5	28.5	53.5	7	7.6	22	82	0.003
LM-2HC	210102	NO.2	17.780	18	31	5	36	64	7	11	30	100	0.003
LM-3HC	210103	NO.3	23.825	24	39	5	44	81	10	15	38	125	0.003
LM-4HC	210104	NO.4	31.267	31.6	46	6.5	52.5	102.5	14	21	45	125	0.003
LM-5HC	210105	NO.5	44.399	44.7	64	6.5	70.5	129.5	18	27.4	63	200	0.003
LM-6HC	210106	NO.6	63.348	63.8	80	8	88	182	25	38.9	79	270	0.005

LM-HN TYPE

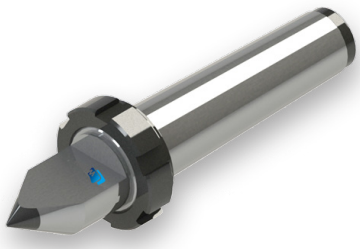
※ Nut Type

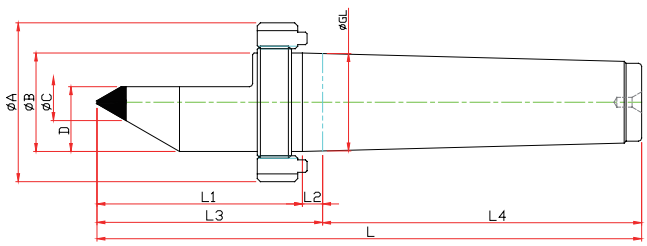




Model	Order Number	Morse Taper	Dimension										Run Out
			GL	A	L1	L2	L3	L4	D	E	N	L	
LM-1HN	210011	NO.1	12.065	12	31.5	5	36.5	53.5	7.6	22	M16	90	0.003
LM-2HN	210012	NO.2	17.780	18	41.5	6.5	48	64	11	30	M22	112	0.003
LM-3HN	210013	NO.3	23.825	24	49.5	7.5	57	81	15	38	M27	138	0.003
LM-4HN	210014	NO.4	31.267	32	62.5	10	72.5	102.5	21	50	M36	175	0.003
LM-5HN	210015	NO.5	44.399	45	77	11	88	129.5	29.4	63	M48	217.5	0.003
LM-6HN	210016	NO.6	63.348	64	96.5	11.5	108	182	42	79	M68	290	0.005

LM-HCN TYPE





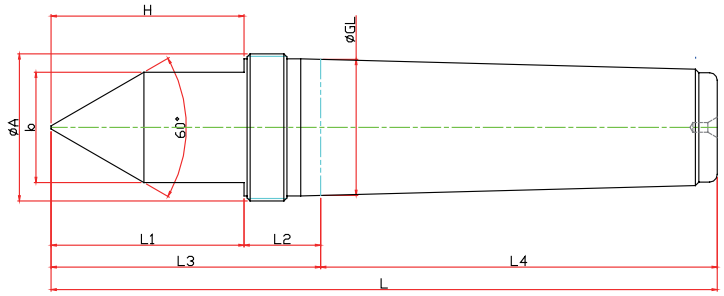
Model	Order Number	Morse Taper	Dimension											Run Out
			GL	A	L1	L2	L3	L4	C	D	E	N	L	
LM-1HCN	210111	NO.1	12.065	12	31.5	5	36.5	53.5	7	7.6	22	M16	90	0.003
LM-2HCN	210112	NO.2	17.780	18	41.5	6.5	48	64	7	11	30	M22	112	0.003
LM-3HCN	210113	NO.3	23.825	24	49.5	7.5	57	81	10	15	38	M27	138	0.003
LM-4HCN	210114	NO.4	31.267	32	62.5	10	72.5	102.5	14	21	50	M36	175	0.003
LM-5HCN	210115	NO.5	44.399	45	77	11	88	129.5	18	29.4	63	M48	217.5	0.003
LM-6HCN	210116	NO.6	63.348	64	96.5	11.5	108	182	18	42	79	M68	290	0.005

LM-H SPECIAL

※ Customized-special production for user's condition

LM-FN TYPE

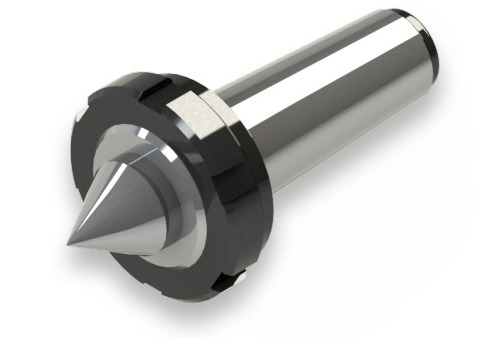
※ Spanner Type

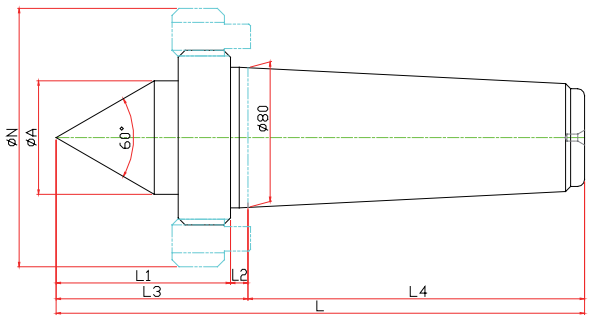


Model	Order Number	Morse Taper	Dimension									Run Out
			GL	A	b	L1	L2	L3	L4	E	L	
LM-1FN	120011	NO.1	12.065	12.2	10	25	3.5	28.5	53.5	22	82	0.003
LM-2FN	120012	NO.2	17.780	18	14	31	5	36	64	30	100	0.003
LM-3FN	120013	NO.3	23.825	24	19	39	5	44	81	38	125	0.003
LM-4FN	120014	NO.4	31.267	31.6	27	46	6.5	52.5	102.5	50	155	0.003
LM-5FN	120015	NO.5	44.399	44.7	36	64	6.5	70.5	129.5	53	200	0.003

LM-#80 TYPE

※ Spanner Type





Model	Order Number	Morse Taper	Dimension									Run Out
			GL	A	b	L1	L2	L3	L4	E	L	
#80-60	260010	1/10 TAPER	80	65	148	70	30	10	110	193	303	0.005
#80-75	275010	1/10 TAPER	80	65	148	70	30	10	110	193	303	0.005

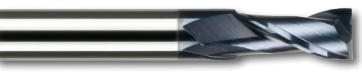
05

PRODUCT SERIES INFORMATION

COATING INFORMATION
WORK MATERIAL FOR SERIES
HARDNESS FOR SERIES
END CUTTING TYPE FOR SERIES

COATING INFORMATION

Tool Coatings for Standard Products

	Coating	Coating Detailed
	**AlTiN+HH** Aluminum, Titanium, Nitride, High Silicon	High Oxidation Resistance, Wear Resistance, High Hardness and Heat Resistance
	**AlTiN+H** Aluminum, Titanium, Nitride, Middle Silicon	Better Oxidation, Wear and Heat Resistance. Better Hardness.
	**AlTiN** Aluminum, Titanium, Nitride	Good Oxidation, Wear and Heat Resistance. Good Hardness.
	**TiAlN+HH** Titanium, Aluminum, Nitride, High Silicon	High Oxidation Resistance, Wear Resistance, High Hardness and Heat Resistance
	**TiAlN+SH** Titanium, Aluminum, Nitride, Middle Silicon	High Oxidation Resistance, High Temperature, Wear Resistance and Corrosion Resistance
	**W-coating** Titanium, Aluminum, Nitride, Middle Silicon	High Oxidation Resistance, High Temperature, Wear Resistance and Corrosion Resistance
	**TiAlN** Titanium, Aluminum, Nitride	Oxidation Resistance, Wear Resistance
	**TiN** Titanium, Nitride	General Purpose
	**TiCN** Titanium, Carbonitride	High Hardness, Wear Resistance
	**CrN** Chromium, Nitride	General Purpose (Excellent Corrosion Resistance)
	**Homo** Steam, Homo	Lubricity, Excellent Release Properties
	**DLC** Diamond Like Carbon	Lubricity, Excellent Release Properties, Low Coefficient of Friction
	**Diamond** CVD Diamond	Wear Resistance, Lubricity, Excellent Release Properties

◎ : BEST ○ : GOOD △ : OK

Description	Hardness (HV 0.05)	Thickness (μm)	Anti-Oxidation Temperature (℃ max)	Coefficient of Friction	Application		
					Up to HRc45	Over HRc45	Stainless steel, Incenell
Multi-layer coating with great thermal stability for increased speeds and feeds. For semi-dry to dry cutting of most steels & high-nickel alloys. Excellent heat resistance, good lubricity and very high hardness. For materials that are 70HRc and under	4,500	2.0 - 2.5	1200	0.45	○	◎	○
Multi-layer coating with good thermal stability for increased speeds and feeds. For semi-dry to dry cutting of most steels, high-nickel alloys, stainless steel and cast iron. Very good heat resistance, lubricity and hardness. For materials that are 45Rc and under	4,300	2.0 - 2.5	1200	0.45	◎	○	△
A multi-layer coating whose hardness, oxidation resistance and thermal stability were optimized for material hardness under 45HRc and high-speed machining of materials that are difficult to machine such as Titanium alloys & Inconel.	4,000	2.0 - 2.5	1100	0.45	◎	○	△
Multi-layer coating with great thermal stability for increased speeds and feeds. For semi-dry to dry cutting of most steels, high-nickel alloys, stainless steel and cast iron. Excellent heat resistance, good lubricity and very high hardness.. For materials that are 45Rc and under	4,500	2.0 - 2.5	1200	0.45	○	◎	○
Multi-layer coating with good thermal stability for increased speeds and feeds. For semi-dry to dry cutting of most steels & stainless steel. Good heat resistance, lubricity and hardness. For materials that are 40HRc and under	4,000	2.0 - 2.5	1100	0.40	○	○	◎
Multi-layer coating with good thermal stability for increased speeds and feeds. For semi-dry to dry cutting of most steels, high-nickel alloys, stainless steel and cast iron. Excellent heat resistance, good lubricity and very good hardness. For materials that are 50Rc and under	4,300	2.0 - 2.5	1200	0.35	○	○	◎
Multi-layer coating with good thermal stability for increased speeds and feeds. For semi-dry to dry cutting of most steels, high-nickel alloys, stainless steel and cast iron. Excellent heat resistance, good lubricity. For materials that are 40Rc and under	3,200	2.0 - 2.5	1000	0.45	◎	○	△
General purpose coating - low heat resistance. Good lubricity	2,600	2.0 - 2.5	600	0.40	○	△	△
Good abrasion resistance. Recommended for Aluminum, Brass and Bronze applications. Low heat resistance - good lubricity	3,000	2.0 - 2.5	400	0.35	○	△	△
CrN (Chromium Nitride) is an excellent coating that provides lubricity and superior wear and corrosion resistance. High hardness, low coefficient of friction and a low residual stress makes CrN especially effective when used against Copper.	1,800	2.0 - 2.5	700	0.35	Copper & Non-ferrous material		
Steam Oxide counteracts galling or loading. It is an excellent lubricant for tap surfaces. Best for Low Carbon, Leaded Steel, Stainless and gummy material.	-	2.0 - 3.0	-	-	Stainless steel, Cast steel, Carbon steel		
DLC is a nanocomposite coating with good lubricity, excellent release properties and low coeffient of friction. Excellent choice for Aluminum, Aluminum-Silicon Alloys and Powder Metal Alloys.	6,000 - 7,000	1.0 - 1.5	500	0.10	Graphite, Aluminium, Resin, Epoxy, Non-ferrous material		
CVD has great wear resistance, lubricity and release properties. Excellent choice for cutting Graphite and Fiberglass. Can be used in special milling or drilling applications such as Platinum.	7,000 - 10,000	5.0 - 10.0	600	0.1 - 0.2	Graphite, Aluminium, Non-ferrous material		

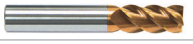
WORK MATERIAL FOR SERIES

UNIT	CATEGORY	CLASS	SERIES	APPEARANCE	PAGE	CARBON STEELS			ALLOY STEELS (4140, 4340)	DIE STEELS
						LOW (1010, 1018)	MED (1035, 1045)	HIGH (1065)		
Inch	Milling	ALU-WAVE	WAB312A		18					
Inch	Milling	ALU-WAVE	WAE302A		20					
Inch	Milling	ALU-WAVE	WAE303A		20					
Inch	Milling	ALU-WAVE	WAE312A		20					
Inch	Milling	ALU-WAVE	WAE313A		20					
Inch	Milling	ALU-WAVE	WAE322A		20					
Inch	Milling	ALU-WAVE	WAE323A		20					
Inch	Milling	ALU-WAVE	WAE502A		20					
Inch	Milling	ALU-WAVE	WAE503A		20					
Inch	Milling	ALU-WAVE	WAE512A		20					
Inch	Milling	ALU-WAVE	WAE513A		20					
Inch	Milling	ALU-WAVE	WAE522A		20					
Inch	Milling	ALU-WAVE	WAE523A		20					
Inch	Milling	ALU-WAVE	WAR302A		22					
Inch	Milling	ALU-WAVE	WAR303A		22					
Inch	Milling	ALU-WAVE	WAR312A		22					
Inch	Milling	ALU-WAVE	WAR313A		22					
Inch	Milling	ALU-WAVE	WAR322A		22					
Inch	Milling	ALU-WAVE	WAR323A		22					
Inch	Milling	ALU-WAVE	WAR502A		22					
Inch	Milling	ALU-WAVE	WAR503A		22					
Inch	Milling	ALU-WAVE	WAR512A		22					
Inch	Milling	ALU-WAVE	WAR513A		22					
Inch	Milling	ALU-WAVE	WAR522A		22					
Inch	Milling	ALU-WAVE	WAR523A		22					
Inch	Milling	ALU-WAVE	WAF303A		26					
Inch	Milling	ALU-WAVE	WAF313A		26					
Inch	Milling	ZAMUS GRA MATE	WGB502A		28					
Inch	Milling	ZAMUS GRA MATE	WGB504A		28					
Inch	Milling	ZAMUS GRA MATE	WGB512A		28					
Inch	Milling	ZAMUS GRA MATE	WGB514A		28					
Inch	Milling	ZAMUS GRA MATE	WGB524A		28					
Inch	Milling	ZAMUS GRA MATE	WGB534A		28					
Inch	Milling	ZAMUS GRA MATE	WGNB504A		28					
Inch	Milling	ZAMUS GRA MATE	WGE502A		30					
Inch	Milling	ZAMUS GRA MATE	WGE504A		30					

○ : GOOD ◎ : BEST

STAINLESS STEELS			CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS				MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
300	400	17-4 PH						35 HRc	35-45 HRc	45-50 HRc	50-70 HRc				
				◎	◎								○		
				◎	◎								○		
				◎	◎								○		
				◎	◎								○		
				◎	◎								○		
				◎	◎								○		
				◎	◎								○		
				◎	◎								○		
				◎	◎								○		
				◎	◎								○		
				◎	◎								○		
				◎	◎								○		
				◎	◎								○		
				◎	◎								○		
				◎	◎								○		
				◎	◎								○		
				◎	◎								○		
				◎	◎								○		
				◎	◎								○		
				◎	◎								○		
				◎	◎								○		
				◎	◎								○		
				◎	◎								○		
				◎	◎								○		
				◎	◎								○		
				◎	◎								○		
				◎	◎								○		
				○	○									◎	
				○	○									◎	
				○	○									◎	
				○	○									◎	
				○	○									◎	
				○	○									◎	
				○	○									◎	
				○	○									◎	
				○	○									◎	

WORK MATERIAL FOR SERIES

UNIT	CATEGORY	CLASS	SERIES	APPEARANCE	PAGE	CARBON STEELS			ALLOY STEELS (4140, 4340)	DIE STEELS
						LOW (1010, 1018)	MED (1035, 1045)	HIGH (1065)		
Inch	Milling	ZAMUS GRA MATE	WGE514A		30					
Inch	Milling	ZAMUS GRA MATE	WGE524A		30					
Inch	Milling	ZAMUS GRA MATE	WGE534A		30					
Inch	Milling	ZAMUS GRA MATE	WGR504A		32					
Inch	Milling	ZAMUS GRA MATE	WGR514A		32					
Inch	Milling	ZAMUS GRA MATE	WGR524A		32					
Inch	Milling	ZAMUS GRA MATE	WGR534A		32					
Inch	Milling	ZAMUS GRA MATE	WGNR504A		32					
Inch	Milling	GENERAL PURPOSE	BA302		36	○	○	○	○	○
Inch	Milling	GENERAL PURPOSE	BA304		36	○	○	○	○	○
Inch	Milling	GENERAL PURPOSE	ZB302		36	◎	◎	◎	◎	◎
Inch	Milling	GENERAL PURPOSE	ZB302S		36	◎	◎	◎	◎	◎
Inch	Milling	GENERAL PURPOSE	ZB304		36	◎	◎	◎	◎	◎
Inch	Milling	GENERAL PURPOSE	EA302		41	○	○	○	○	○
Inch	Milling	GENERAL PURPOSE	EA304		41	○	○	○	○	○
Inch	Milling	GENERAL PURPOSE	ZA302		41	◎	◎	◎	◎	◎
Inch	Milling	GENERAL PURPOSE	ZA304		41	◎	◎	◎	◎	◎
Inch	Milling	GENERAL PURPOSE	ZR304A		46	◎	◎	◎	◎	◎
Inch	Milling	ZAMUS STAR	DA702		50				○	○
Inch	Milling	ZAMUS STAR	DA703		50				○	○
Inch	Milling	ZAMUS STAR	DA734		50				○	○
Inch	Milling	ZAMUS STAR	ZB702A		50				○	○
Inch	Milling	ZAMUS STAR	ZE712A		52				○	○
Inch	Milling	ZAMUS STAR	ZE714A		52				○	○
Inch	Milling	ZAMUS STAR	ZE716A		52				○	○
Inch	Milling	ZAMUS STAR	ZR706A		55				○	○
Inch	Milling	ZAMUS STAR	ZS204A		55				○	○
Inch	Milling	ZAMUS STAR POWER MILL	ZSPM4A		58				○	○
Inch	Milling	ZAMUS CLASSIC	MD502		60	○	○	○	○	◎
Inch	Milling	ZAMUS CLASSIC	DA412		62	○	○	○	○	◎
Inch	Milling	ZAMUS CLASSIC	DA512		62	○	○	○	○	◎
Inch	Milling	ZAMUS CLASSIC	DA514		62	○	○	○	○	◎
Inch	Milling	ZAMUS CLASSIC	DA522		62	○	○	○	○	◎
Inch	Milling	ZAMUS CLASSIC	DA542		67	○	○	○	○	◎
Inch	Milling	ZAMUS CLASSIC	DA552		67	○	○	○	○	◎
Inch	Milling	ZAMUS CLASSIC	MZ502		70	○	○	○	○	◎

WIDIN
DINE GROUP

○ : GOOD ◎ : BEST

STAINLESS STEELS			CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS				MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
300	400	17-4 PH						35 HRc	35-45 HRc	45-50 HRc	50-70 HRc				
				○	○									◎	
				○	○									◎	
				○	○									◎	
				○	○									◎	
				○	○									◎	
				○	○									◎	
				○	○									◎	
				○	○									◎	
○															
○															
○								◎	○						
○								◎	○						
○								◎	○						
○															
○															
○								◎	○						
○								◎	○						
○								◎	○						
								○	○	◎	◎		○		
								○	○	◎	◎		○		
								○	○	◎	◎		○		
								○	○	◎	◎		○		
								○	○	◎	◎		○		
								○	○	◎	◎		○		
								○	○	◎	◎		○		
								○	○	◎	◎		○		
								○	○	◎	◎		○		
								○	○	◎	◎		○		
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				

WORK MATERIAL FOR SERIES

UNIT	CATEGORY	CLASS	SERIES	APPEARANCE	PAGE	CARBON STEELS			ALLOY STEELS (4140, 4340)	DIE STEELS
						LOW (1010, 1018)	MED (1035, 1045)	HIGH (1065)		
Inch	Milling	ZAMUS CLASSIC	ZA502		72	○	○	○	○	◎
Inch	Milling	ZAMUS CLASSIC	ZA504		72	○	○	○	○	◎
Inch	Milling	ZAMUS CLASSIC	ZA506		72	○	○	○	○	◎
Inch	Milling	ZAMUS CLASSIC	ZA508		72	○	○	○	○	◎
Inch	Milling	ZAMUS CLASSIC	ZA522		72	○	○	○	○	◎
Inch	Milling	ZAMUS CLASSIC	ZA524		72	○	○	○	○	◎
Inch	Milling	ZAMUS CLASSIC	ZA526		72	○	○	○	○	◎
Inch	Milling	ZAMUS CLASSIC	ZA528		72	○	○	○	○	◎
Inch	Milling	ZAMUS CLASSIC	ZR502A		78	○	○	○	○	◎
Inch	Milling	ZAMUS CLASSIC	ZR504A		78	○	○	○	○	◎
Inch	Milling	ZAMUS CLASSIC	ZR506A		78	○	○	○	○	◎
Inch	Milling	ZAMUS CLASSIC	ZR508A		78	○	○	○	○	◎
Inch	Milling	ZAMUS CLASSIC	ZR522A		78	○	○	○	○	◎
Inch	Milling	ZAMUS CLASSIC	ZR524A		78	○	○	○	○	◎
Inch	Milling	ZAMUS CLASSIC	ZR532A		78	○	○	○	○	◎
Inch	Milling	ZAMUS CLASSIC	ZR534A		78	○	○	○	○	◎
Inch	Milling	ZAMUS CLASSIC	FA503		81	○	○	○	○	◎
Inch	Milling	ZAMUS CLASSIC	FA504		81	○	○	○	○	◎
Inch	Milling	ZAMUS CLASSIC	FA505		81	○	○	○	○	◎
Inch	Milling	ZAMUS SUS MATE	XXB504A		83	◎	◎	◎	◎	○
Inch	Milling	ZAMUS SUS MATE	XXB524A		83	◎	◎	◎	◎	○
Inch	Milling	ZAMUS SUS MATE	XXE504A		84	◎	◎	◎	◎	○
Inch	Milling	ZAMUS SUS MATE	XXE524A		84	◎	◎	◎	◎	○
Inch	Milling	ZAMUS SUS MATE	XXE534A		84	◎	◎	◎	◎	○
Inch	Milling	ZAMUS SUS MATE	XXR504A		85	◎	◎	◎	◎	○
Inch	Milling	ZAMUS SUS MATE	XXR514A		85	◎	◎	◎	◎	○
Inch	Milling	ZAMUS SUS MATE	XXR524A		85	◎	◎	◎	◎	○
Inch	Milling	ZAMUS SUS MATE	XXR534A		85	◎	◎	◎	◎	○
Inch	Milling	NEO CLASSIC X-STAR	XXB504A		89	◎	◎	◎	◎	○
Inch	Milling	NEO CLASSIC X-STAR	XXB524A		89	◎	◎	◎	◎	○
Inch	Milling	NEO CLASSIC X-STAR	XE504A		90	◎	◎	◎	◎	○
Inch	Milling	NEO CLASSIC X-STAR	XE505A		90	◎	◎	◎	◎	○
Inch	Milling	NEO CLASSIC X-STAR	XE515A		90	◎	◎	◎	◎	○
Inch	Milling	NEO CLASSIC X-STAR	XR504A		92	◎	◎	◎	◎	○
Inch	Milling	NEO CLASSIC X-STAR	XR505A		92	◎	◎	◎	◎	○
Inch	Milling	NEO CLASSIC X-STAR	XR514A		92	◎	◎	◎	◎	○
Inch	Milling	NEO CLASSIC X-STAR	XR515A		92	◎	◎	◎	◎	○

○ : GOOD ◎ : BEST

STAINLESS STEELS			CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS				MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
300	400	17-4 PH						35 HRc	35-45 HRc	45-50 HRc	50-70 HRc				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
◎	◎	◎				○	○	○	○				○		
◎	◎	◎				○	○	○	○				○		
◎	◎	◎				○	○	○	○				○		
◎	◎	◎				○	○	○	○				○		
◎	◎	◎				○	○	○	○				○		
◎	◎	◎				○	○	○	○				○		
◎	◎	◎				○	○	○	○				○		
◎	◎	◎				○	○	○	○				○		
◎	◎	◎				○	○	○	○				○		
◎	◎	◎				○	○	○	○				○		
◎	◎	◎				○	○	○	○				○		
◎	◎	◎				○	○						○		
◎	◎	◎				◎	○	○	○	○			○		
◎	◎	◎				◎	○	○	○	○			○		
◎	◎	◎				○	○						○		
◎	◎	◎				◎	○	○	○	○			○		
◎	◎	◎				○	○						○		
◎	◎	◎				◎	○	○	○	○			○		

WORK MATERIAL FOR SERIES

UNIT	CATEGORY	CLASS	SERIES	APPEARANCE	PAGE	CARBON STEELS			ALLOY STEELS (4140, 4340)	DIE STEELS
						LOW (1010, 1018)	MED (1035, 1045)	HIGH (1065)		
Inch	Milling	NEO CLASSIC X-STAR	XR524A		92	◎	◎	◎	◎	○
Inch	Milling	NEO CLASSIC X-STAR	XR525A		92	◎	◎	◎	◎	○
Inch	Milling	NEO CLASSIC X-STAR	XR535A		92	◎	◎	◎	◎	○
Metric	Milling	ALU-WAVE	WAB312		98					
Metric	Milling	ALU-WAVE	WAE301		99					
Metric	Milling	ALU-WAVE	WAE302		99					
Metric	Milling	ALU-WAVE	WAE303		99					
Metric	Milling	ALU-WAVE	WAE323		99					
Metric	Milling	ALU-WAVE	WAR302		106					
Metric	Milling	ALU-WAVE	WAR303		106					
Metric	Milling	ALU-WAVE	WAR502		106					
Metric	Milling	ALU-WAVE	WAR503		106					
Metric	Milling	ALU-WAVE	WAF303		112					
Metric	Milling	ZAMUS GRA MATE	G		114					
Metric	Milling	ZAMUS GRA MATE	WGB504		114					
Metric	Milling	ZAMUS GRA MATE	IM-WGB504		114					
Metric	Milling	ZAMUS GRA MATE	GE		118					
Metric	Milling	ZAMUS GRA MATE	WGE504		118					
Metric	Milling	ZAMUS GRA MATE	GR502		120					
Metric	Milling	ZAMUS GRA MATE	GR504		120					
Metric	Milling	ZAMUS GRA MATE	WGR502		120					
Metric	Milling	ZAMUS GRA MATE	WGR504		120					
Metric	Milling	WINNER	WB502		124	○	○	○	○	◎
Metric	Milling	WINNER	WB503		124	○	○	○	○	◎
Metric	Milling	WINNER	WB504		124	○	○	○	○	◎
Metric	Milling	WINNER	WHPB902		130	○	○	○	○	◎
Metric	Milling	WINNER	WB502P		132	○	○	○	○	◎
Metric	Milling	WINNER	WB532		134	○	○	○	○	◎
Metric	Milling	WINNER	WSB502		136	○	○	○	○	◎
Metric	Milling	WINNER	WB512		138	○	○	○	○	◎
Metric	Milling	WINNER	WB512xxS6		138	○	○	○	○	◎
Metric	Milling	WINNER	WB542		150	○	○	○	○	◎
Metric	Milling	WINNER	WME502		161	○	○	○	○	◎
Metric	Milling	WINNER	WE504H		164	○	○	○	○	◎
Metric	Milling	WINNER	WE506		164	○	○	○	○	◎
Metric	Milling	WINNER	WME504		168	○	○	○	○	◎
Metric	Milling	WINNER	WXE504		172	○	○	○	○	◎

○ : GOOD ◎ : BEST

STAINLESS STEELS			CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS				MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
300	400	17-4 PH						35 HRc	35-45 HRc	45-50 HRc	50-70 HRc				
◎	◎	◎				○	○						○		
◎	◎	◎				◎	○	○	○	○			○		
◎	◎	◎				◎	○	○	○	○			○		
				◎	◎								○		
				◎	◎								○		
				◎	◎								○		
				◎	◎								○		
				◎	◎								○		
				◎	◎								○		
				◎	◎								○		
				◎	◎								○		
				◎	◎								○		
				◎	◎								○		
				○	○									◎	
				○	○									◎	
				○	○									◎	
				○	○									◎	
				○	○									◎	
				○	○									◎	
				○	○									◎	
				○	○									◎	
				○	○									◎	
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				

WORK MATERIAL FOR SERIES

UNIT	CATEGORY	CLASS	SERIES	APPEARANCE	PAGE	CARBON STEELS			ALLOY STEELS (4140, 4340)	DIE STEELS
						LOW (1010, 1018)	MED (1035, 1045)	HIGH (1065)		
Metric	Milling	WINNER	WE502		172	○	○	○	○	◎
Metric	Milling	WINNER	WE502xxS3		172	○	○	○	○	◎
Metric	Milling	WINNER	WE502xxS4		172	○	○	○	○	◎
Metric	Milling	WINNER	WE522		176	○	○	○	○	◎
Metric	Milling	WINNER	WE524		176	○	○	○	○	◎
Metric	Milling	WINNER	WE512		180	○	○	○	○	◎
Metric	Milling	WINNER	WE514		180	○	○	○	○	◎
Metric	Milling	WINNER	WR502		190	○	○	○	○	◎
Metric	Milling	WINNER	WR504		190	○	○	○	○	◎
Metric	Milling	WINNER	WR514		190	○	○	○	○	◎
Metric	Milling	WINNER	WDR503		197	○	○	○	○	◎
Metric	Milling	WINNER	WR506		197	○	○	○	○	◎
Metric	Milling	WINNER	WXR504		199	○	○	○	○	◎
Metric	Milling	WINNER	WXR514		199	○	○	○	○	◎
Metric	Milling	WINNER	WSPM4		211	○	○	○	○	◎
Metric	Milling	WINNER	WR542		214	○	○	○	○	◎
Metric	Milling	WINNER	WR544		214	○	○	○	○	◎
Metric	Milling	WINNER	WR512		224	○	○	○	○	◎
Metric	Milling	WINNER	WF613		235	○	○	○	○	◎
Metric	Milling	WINNER	WF614		235	○	○	○	○	◎
Metric	Milling	WINNER	WF615		235	○	○	○	○	◎
Metric	Milling	WINNER	WF603		237	○	○	○	○	◎
Metric	Milling	WINNER	WF604		237	○	○	○	○	◎
Metric	Milling	WINNER	WF605		237	○	○	○	○	◎
Metric	Milling	WINNER	WTB502		239	○	○	○	○	◎
Metric	Milling	WINNER	WTE502		242	○	○	○	○	◎
Metric	Milling	WINNER	WTE504		242	○	○	○	○	◎
Metric	Milling	WINNER	WTE514		246	○	○	○	○	◎
Metric	Milling	WINNER	WTR504		251	○	○	○	○	◎
Metric	Milling	ZAMUS STAR	DB702		258				○	○
Metric	Milling	ZAMUS STAR	DB712		258				○	○
Metric	Milling	ZAMUS STAR	DB703		261				○	○
Metric	Milling	ZAMUS STAR	ZSLNB		263				○	○
Metric	Milling	ZAMUS STAR	DB734		267				○	○
Metric	Milling	ZAMUS STAR	ZSTNB20		269				○	○
Metric	Milling	ZAMUS STAR	ZSTNB30		269				○	○
Metric	Milling	ZAMUS STAR	ZE712		275				○	○

○ : GOOD ◎ : BEST

STAINLESS STEELS			CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS				MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
300	400	17-4 PH						35 HRc	35-45 HRc	45-50 HRc	50-70 HRc				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
								○	○	◎	◎		○		
								○	○	◎	◎		○		
								○	○	◎	◎		○		
								○	○	◎	◎		○		
								○	○	◎	◎		○		
								○	○	◎	◎		○		
								○	○	◎	◎		○		
								○	○	◎	◎		○		

WORK MATERIAL FOR SERIES

UNIT	CATEGORY	CLASS	SERIES	APPEARANCE	PAGE	CARBON STEELS			ALLOY STEELS (4140, 4340)	DIE STEELS
						LOW (1010, 1018)	MED (1035, 1045)	HIGH (1065)		
Metric	Milling	ZAMUS STAR	ZE714		275				○	○
Metric	Milling	ZAMUS STAR	ZE716		275				○	○
Metric	Milling	ZAMUS STAR	ZE702		278				○	○
Metric	Milling	ZAMUS STAR	ZE704		278				○	○
Metric	Milling	ZAMUS STAR	ZS124		281				○	○
Metric	Milling	ZAMUS STAR	ZSLNS20		283				○	○
Metric	Milling	ZAMUS STAR	ZSLNS40		283				○	○
Metric	Milling	ZAMUS STAR	ZE724		288				○	○
Metric	Milling	ZAMUS STAR	ZE726		288				○	○
Metric	Milling	ZAMUS STAR	ZS104		290				○	○
Metric	Milling	ZAMUS STAR	ZS204		290				○	○
Metric	Milling	ZAMUS STAR	ZR724		293				○	○
Metric	Milling	ZAMUS STAR	ZR732		293				○	○
Metric	Milling	ZAMUS STAR	ZR734		293				○	○
Metric	Milling	ZAMUS STAR	ZR706		297				○	○
Metric	Milling	ZAMUS STAR	ZR736		299				○	○
Metric	Milling	ZAMUS STAR	ZR714		301				○	○
Metric	Milling	ZAMUS STAR	ZR702		303				○	○
Metric	Milling	ZAMUS STAR	ZR704		303				○	○
Metric	Milling	ZAMUS STAR	ZSTNR		311				○	○
Metric	Milling	ZAMUS STAR	ZSLNR		315				○	○
Metric	Milling	ZAMUS STAR POWER MILL	ZSPM4		321				○	○
Metric	Milling	ZAMUS CLASSIC	DB402		323	○	○	○	○	◎
Metric	Milling	ZAMUS CLASSIC	DB412		323	○	○	○	○	◎
Metric	Milling	ZAMUS CLASSIC	DB502		323	○	○	○	○	◎
Metric	Milling	ZAMUS CLASSIC	DB512		323	○	○	○	○	◎
Metric	Milling	ZAMUS CLASSIC	DB514		323	○	○	○	○	◎
Metric	Milling	ZAMUS CLASSIC	DB522		323	○	○	○	○	◎
Metric	Milling	ZAMUS CLASSIC	DB532		323	○	○	○	○	◎
Metric	Milling	ZAMUS CLASSIC	DB534		323	○	○	○	○	◎
Metric	Milling	ZAMUS CLASSIC	WB712		323				○	○
Metric	Milling	ZAMUS CLASSIC	DB542		335	○	○	○	○	◎
Metric	Milling	ZAMUS CLASSIC	DB552		335	○	○	○	○	◎
Metric	Milling	ZAMUS CLASSIC	ZM502		337	○	○	○	○	◎
Metric	Milling	ZAMUS CLASSIC	ZM504		337	○	○	○	○	◎
Metric	Milling	ZAMUS CLASSIC	WE712		339				○	○
Metric	Milling	ZAMUS CLASSIC	ZE502		339	○	○	○	○	◎

○ : GOOD ◎ : BEST

STAINLESS STEELS			CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS				MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
300	400	17-4 PH						35 HRc	35-45 HRc	45-50 HRc	50-70 HRc				
								○	○	◎	◎		○		
								○	○	◎	◎		○		
								○	○	◎	◎		○		
								○	○	◎	◎		○		
								○	○	◎	◎		○		
								○	○	◎	◎		○		
								○	○	◎	◎		○		
								○	○	◎	◎		○		
								○	○	◎	◎		○		
								○	○	◎	◎		○		
								○	○	◎	◎		○		
								○	○	◎	◎		○		
								○	○	◎	◎		○		
								○	○	◎	◎		○		
								○	○	◎	◎		○		
								○	○	◎	◎		○		
								○	○	◎	◎		○		
								○	○	◎	◎		○		
								○	○	◎	◎		○		
								○	○	◎	◎		○		
								○	○	◎	◎		○		
								○	○	◎	◎		○		
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
								○	○	◎	◎		○		
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
								○	○	◎	◎		○		
○	○	○	○					◎	◎	◎	○				

WORK MATERIAL FOR SERIES

UNIT	CATEGORY	CLASS	SERIES	APPEARANCE	PAGE	CARBON STEELS			ALLOY STEELS (4140, 4340)	DIE STEELS
						LOW (1010, 1018)	MED (1035, 1045)	HIGH (1065)		
Metric	Milling	ZAMUS CLASSIC	ZE503		339	○	○	○	○	◎
Metric	Milling	ZAMUS CLASSIC	ZE504		339	○	○	○	○	◎
Metric	Milling	ZAMUS CLASSIC	ZE506		339	○	○	○	○	◎
Metric	Milling	ZAMUS CLASSIC	ZE514		339	○	○	○	○	◎
Metric	Milling	ZAMUS CLASSIC	ZR502		349	○	○	○	○	◎
Metric	Milling	ZAMUS CLASSIC	ZR504		349	○	○	○	○	◎
Metric	Milling	ZAMUS CLASSIC	ZR512		349	○	○	○	○	◎
Metric	Milling	ZAMUS CLASSIC	ZR514		349	○	○	○	○	◎
Metric	Milling	ZAMUS CLASSIC	ZR522		349	○	○	○	○	◎
Metric	Milling	ZAMUS CLASSIC	ZR524		349	○	○	○	○	◎
Metric	Milling	ZAMUS CLASSIC	PK503		352	○	○	○	○	◎
Metric	Milling	ZAMUS CLASSIC	ZF603		342	○	○	○	○	◎
Metric	Milling	ZAMUS CLASSIC	ZF604		342	○	○	○	○	◎
Metric	Milling	ZAMUS CLASSIC	ZF605		342	○	○	○	○	◎
Metric	Milling	ZAMUS CLASSIC	ZF606		342	○	○	○	○	◎
Metric	Milling	ZAMUS CLASSIC	ZF613		342	○	○	○	○	◎
Metric	Milling	ZAMUS CLASSIC	ZF614		342	○	○	○	○	◎
Metric	Milling	ZAMUS CLASSIC	ZF615		342	○	○	○	○	◎
Metric	Milling	ZAMUS COPPER MATE	BC502		355	○	○	○	○	
Metric	Milling	ZAMUS COPPER MATE	RC502		357	○	○	○	○	
Metric	Milling	ZAMUS SUS MATE	DS502		359	○	○	○	○	○
Metric	Milling	ZAMUS SUS MATE	SM503		361	○	○	○	○	○
Metric	Milling	ZAMUS SUS MATE	XCE503		361	◎	◎	◎	◎	○
Metric	Milling	ZAMUS SUS MATE	XCE504		361	◎	◎	◎	◎	○
Metric	Milling	ZAMUS SUS MATE	XE504		361	◎	◎	◎	◎	○
Metric	Milling	ZAMUS SUS MATE	XE505		361	◎	◎	◎	◎	○
Metric	Milling	ZAMUS SUS MATE	XE514		361	◎	◎	◎	◎	○
Metric	Milling	ZAMUS SUS MATE	XE515		361	◎	◎	◎	◎	○
Metric	Milling	ZAMUS SUS MATE	XE524		361	◎	◎	◎	◎	○
Metric	Milling	ZAMUS SUS MATE	XCC503		365	◎	◎	◎	◎	○
Metric	Milling	ZAMUS SUS MATE	XCC504		365	◎	◎	◎	◎	○
Metric	Milling	ZAMUS SUS MATE	SM504		367	○	○	○	○	○
Metric	Milling	ZAMUS SUS MATE	XCR503		367	◎	◎	◎	◎	○
Metric	Milling	ZAMUS SUS MATE	XCR504		367	◎	◎	◎	◎	○
Metric	Milling	ZAMUS SUS MATE	XR504		367	◎	◎	◎	◎	○

○ : GOOD ◎ : BEST

STAINLESS STEELS			CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS				MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
300	400	17-4 PH						35 HRc	35-45 HRc	45-50 HRc	50-70 HRc				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
○	○	○	○					◎	◎	◎	○				
				○	○								◎		
				○	○								◎		
◎	◎	◎											○		
◎	◎	◎											○		
◎	◎	◎				○	○						○		
◎	◎	◎				○	○						○		
◎	◎	◎				○	○						○		
◎	◎	◎				◎	○	○	○	○			○		
◎	◎	◎				○	○						○		
◎	◎	◎				◎	○	○	○	○			○		
◎	◎	◎				○	○						○		
◎	◎	◎				○	○						○		
◎	◎	◎				○	○						○		
◎	◎	◎											○		
◎	◎	◎				○	○						○		
◎	◎	◎				○	○						○		
◎	◎	◎				○	○						○		

WORK MATERIAL FOR SERIES

UNIT	CATEGORY	CLASS	SERIES	APPEARANCE	PAGE	CARBON STEELS			ALLOY STEELS (4140, 4340)	DIE STEELS
						LOW (1010, 1018)	MED (1035, 1045)	HIGH (1065)		
Metric	Milling	ZAMUS SUS MATE	XR505		367	◎	◎	◎	◎	○
Metric	Milling	ZAMUS SUS MATE	XR514		367	◎	◎	◎	◎	○
Metric	Milling	ZAMUS SUS MATE	XR524		367	◎	◎	◎	◎	○
Metric	Milling	ZAMUS SUS MATE	ZF624 (F)		372	○	○	○	○	○
Metric	Milling	ZAMUS SUS MATE	ZF625 (F)		372	○	○	○	○	○
Metric	Milling	ZAMUS SUS MATE	ZF626 (F)		372	○	○	○	○	○
Metric	Milling	ZAMUS THUNDER	DB312		374	◎	◎	◎	◎	◎
Metric	Milling	ZAMUS THUNDER	TXB202		374	◎	◎	◎	◎	◎
Metric	Milling	ZAMUS THUNDER	TXB204		374	◎	◎	◎	◎	◎
Metric	Milling	ZAMUS THUNDER	TXB222		374	◎	◎	◎	◎	◎
Metric	Milling	ZAMUS THUNDER	TXB232		374	◎	◎	◎	◎	◎
Metric	Milling	ZAMUS THUNDER	TXB302		374	◎	◎	◎	◎	◎
Metric	Milling	ZAMUS THUNDER	TXB304		374	◎	◎	◎	◎	◎
Metric	Milling	ZAMUS THUNDER	DB342		378	◎	◎	◎	◎	◎
Metric	Milling	ZAMUS THUNDER	TX202		380	◎	◎	◎	◎	◎
Metric	Milling	ZAMUS THUNDER	TX204		380	◎	◎	◎	◎	◎
Metric	Milling	ZAMUS THUNDER	TX222		380	◎	◎	◎	◎	◎
Metric	Milling	ZAMUS THUNDER	TX224		380	◎	◎	◎	◎	◎
Metric	Milling	ZAMUS THUNDER	TX302		380	◎	◎	◎	◎	◎
Metric	Milling	ZAMUS THUNDER	TX304		380	◎	◎	◎	◎	◎
Metric	Milling	ZAMUS THUNDER	ZE302		380	◎	◎	◎	◎	◎
Metric	Milling	ZAMUS THUNDER	ZE304		380	◎	◎	◎	◎	◎
Metric	Milling	ZAMUS THUNDER	ZE322		380	◎	◎	◎	◎	◎
Metric	Milling	ZAMUS THUNDER	ZE324		380	◎	◎	◎	◎	◎
Metric	Milling	ZAMUS THUNDER	TX304H		389	◎	◎	◎	◎	◎
Metric	Milling	ZAMUS THUNDER	ZR304H		391	◎	◎	◎	◎	◎
Metric	Milling	ZAMUS THUNDER	ZR324H		391	◎	◎	◎	◎	◎
Metric	Milling	ZAMUS THUNDER	ZR322		393	◎	◎	◎	◎	◎
Metric	Milling	ZAMUS THUNDER	ZR324		393	◎	◎	◎	◎	◎
Metric	Milling	NEO CLASSIC X-STAR	XXB504		395	◎	◎	◎	◎	○
Inch/Metric	Drilling	ALU-WAVE	APF505		400	○	○	○		
Inch/Metric	Drilling	POWER MAX DRILL	HPI503		404	○	○	○	◎	◎
Inch/Metric	Drilling	POWER MAX DRILL	HPI505		404	○	○	○	◎	◎
Inch/Metric	Drilling	POWER MAX DRILL	HPI508N		404	○	○	○	◎	◎
Inch/Metric	Drilling	POWER MAX DRILL	HP503		414	○	○	○	◎	◎

○ : GOOD ◎ : BEST

STAINLESS STEELS			CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS				MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
300	400	17-4 PH						35 HRc	35-45 HRc	45-50 HRc	50-70 HRc				
◎	◎	◎				◎	○	○	○	○			○		
◎	◎	◎				○	○						○		
◎	◎	◎				○	○						○		
◎	◎	◎											○		
◎	◎	◎											○		
◎	◎	◎											○		
								◎	○						
○								◎	○						
○								◎	○						
○								◎	○						
○								◎	○						
○								◎	○						
○								◎	○						
								◎	○						
○								◎	○						
○								◎	○						
○								◎	○						
○								◎	○						
○								◎	○						
○								◎	○						
○								◎	○						
○								◎	○						
○								◎	○						
○								◎	○						
○								◎	○						
○								◎	○						
○								◎	○						
○								◎	○						
◎	◎	◎				○	○	○	○				○		
				◎	◎										
◎	◎	◎	◎					◎	◎	◎	○				
◎	◎	◎	◎					◎	◎	◎	○				
◎	◎	◎	◎					◎	◎	◎	○				
◎	◎	◎	◎					◎	◎	◎	○				

WORK MATERIAL FOR SERIES

UNIT	CATEGORY	CLASS	SERIES	APPEARANCE	PAGE	CARBON STEELS			ALLOY STEELS (4140, 4340)	DIE STEELS
						LOW (1010, 1018)	MED (1035, 1045)	HIGH (1065)		
Inch/Metric	Drilling	POWER MAX DRILL	PF503		418	○	○	○	◎	◎
Inch/Metric	Drilling	POWER MAX DRILL	PF505		418	○	○	○	◎	◎
Inch/Metric	Drilling	POWER MAX DRILL	SF503		428	○	○	○	◎	◎
Inch/Metric	Drilling	POWER MAX DRILL	SF505		428	○	○	○	◎	◎
Metric	Drilling	POWER MAX DRILL	SF510		428	○	○	○	◎	◎
Metric	Drilling	POWER MAX DRILL	SF520		428	○	○	○	◎	◎
Metric	Drilling	POWER DRILL	PDS		441	◎	◎	◎	◎	○
Metric	Drilling	POWER DRILL	PDM		441	◎	◎	◎	◎	○
Metric	Drilling	POWER DRILL	PDSI		450	◎	◎	◎	◎	○
Metric	Drilling	POWER DRILL	PDMI		450	◎	◎	◎	◎	○
Metric	Drilling	SOLID SPIRAL DRILL	SSD		458	○				
Metric	Drilling	SOLID SPIRAL DRILL	SSDL		460	○				
Metric	Drilling	SOLID SPIRAL DRILL	SSTD		461	○				
Inch	Centering Tools	NC SPOT DRILLS	LDA		466	○	○	○	○	○
Metric	Centering Tools	NC SPOT DRILLS	LDS		468	○	○	○	○	○
Metric	Centering Tools	SOLID CENTER DRILLS	CDS		470	○	○	○	○	
Metric	Centering Tools	CENTERING END MILLS	CEM		472	○	○	○	○	○
Metric	Centering Tools	CENTERING END MILLS	CES		474	○	○	○	○	○

○ : GOOD ◎ : BEST

STAINLESS STEELS			CAST IRON	ALUMINUM (6061, 7075)	ALUMINUM CASTINGS	NICKEL ALLOYS INCONNEL	TITANIUM (6A14V)	HARDENED STEELS				MAGNESIUM	BRASS BRONZE	GRAPHITE	COBALT CHROME
300	400	17-4 PH						35 HRc	35-45 HRc	45-50 HRc	50-70 HRc				
◎	◎	◎	◎					◎	◎	◎	○				
◎	◎	◎	◎					◎	◎	◎	○				
◎	◎	◎	◎					◎	◎	◎	○				
◎	◎	◎	◎					◎	◎	◎	○				
◎	◎	◎	◎					◎	◎	◎	○				
◎	◎	◎	◎					◎	◎	◎	○				
			○					○	○	○					
			○					○	○	○					
			○					○	○	○					
			○					○	○	○					
				○	○								○		
				○	○								○		
				○	○								○		
○	○	○	○	○	○			○	○	○			○		
○	○	○	○	○	○			○	○	○			○		
○	○	○		○	○										
○	○	○		○	○			○	○	○					
○	○	○		○	○			○	○	○					

HARDNESS FOR SERIES

UNIT	CATEGORY	CLASS	SERIES	APPEARANCE	PAGE
Inch	Milling	ALU-WAVE	WAB312A		18
Inch	Milling	ALU-WAVE	WAE302A		20
Inch	Milling	ALU-WAVE	WAE303A		20
Inch	Milling	ALU-WAVE	WAE312A		20
Inch	Milling	ALU-WAVE	WAE313A		20
Inch	Milling	ALU-WAVE	WAE322A		20
Inch	Milling	ALU-WAVE	WAE323A		20
Inch	Milling	ALU-WAVE	WAE502A		20
Inch	Milling	ALU-WAVE	WAE503A		20
Inch	Milling	ALU-WAVE	WAE512A		20
Inch	Milling	ALU-WAVE	WAE513A		20
Inch	Milling	ALU-WAVE	WAE522A		20
Inch	Milling	ALU-WAVE	WAE523A		20
Inch	Milling	ALU-WAVE	WAR302A		22
Inch	Milling	ALU-WAVE	WAR303A		22
Inch	Milling	ALU-WAVE	WAR312A		22
Inch	Milling	ALU-WAVE	WAR313A		22
Inch	Milling	ALU-WAVE	WAR322A		22
Inch	Milling	ALU-WAVE	WAR323A		22
Inch	Milling	ALU-WAVE	WAR502A		22
Inch	Milling	ALU-WAVE	WAR503A		22
Inch	Milling	ALU-WAVE	WAR512A		22
Inch	Milling	ALU-WAVE	WAR513A		22
Inch	Milling	ALU-WAVE	WAR522A		22
Inch	Milling	ALU-WAVE	WAR523A		22
Inch	Milling	ALU-WAVE	WAF303A		26
Inch	Milling	ALU-WAVE	WAF313A		26
Inch	Milling	ZAMUS GRA MATE	WGB502A		28
Inch	Milling	ZAMUS GRA MATE	WGB504A		28
Inch	Milling	ZAMUS GRA MATE	WGB512A		28
Inch	Milling	ZAMUS GRA MATE	WGB514A		28
Inch	Milling	ZAMUS GRA MATE	WGB524A		28
Inch	Milling	ZAMUS GRA MATE	WGB534A		28
Inch	Milling	ZAMUS GRA MATE	WGNB504A		28
Inch	Milling	ZAMUS GRA MATE	WGE502A		30
Inch	Milling	ZAMUS GRA MATE	WGE504A		30

Hardness (HRc)											Note
20	25	30	35	40	45	50	55	60	65	70	
O	O	O	O	O	-	-	-	-	-	-	For Aluminium
O	O	O	O	O	-	-	-	-	-	-	For Aluminium
O	O	O	O	O	-	-	-	-	-	-	For Aluminium
O	O	O	O	O	-	-	-	-	-	-	For Aluminium
O	O	O	O	O	-	-	-	-	-	-	For Aluminium
O	O	O	O	O	-	-	-	-	-	-	For Aluminium
O	O	O	O	O	-	-	-	-	-	-	For Aluminium
O	O	O	O	O	-	-	-	-	-	-	For Aluminium
O	O	O	O	O	-	-	-	-	-	-	For Aluminium
O	O	O	O	O	-	-	-	-	-	-	For Aluminium
O	O	O	O	O	-	-	-	-	-	-	For Aluminium
O	O	O	O	O	-	-	-	-	-	-	For Aluminium
O	O	O	O	O	-	-	-	-	-	-	For Aluminium
O	O	O	O	O	-	-	-	-	-	-	For Aluminium
O	O	O	O	O	-	-	-	-	-	-	For Aluminium
O	O	O	O	O	-	-	-	-	-	-	For Aluminium
O	O	O	O	O	-	-	-	-	-	-	For Aluminium
O	O	O	O	O	-	-	-	-	-	-	For Aluminium
O	O	O	O	O	-	-	-	-	-	-	For Aluminium
O	O	O	O	O	-	-	-	-	-	-	For Aluminium
O	O	O	O	O	-	-	-	-	-	-	For Aluminium
O	O	O	O	O	-	-	-	-	-	-	For Aluminium
O	O	O	O	O	-	-	-	-	-	-	For Aluminium
O	O	O	O	O	-	-	-	-	-	-	For Aluminium
O	O	O	O	O	-	-	-	-	-	-	For Aluminium
O	O	O	O	O	-	-	-	-	-	-	For Aluminium
O	O	O	O	O	-	-	-	-	-	-	For Aluminium
-	-	-	-	-	-	-	-	-	-	-	For Graphite
-	-	-	-	-	-	-	-	-	-	-	For Graphite
-	-	-	-	-	-	-	-	-	-	-	For Graphite
-	-	-	-	-	-	-	-	-	-	-	For Graphite
-	-	-	-	-	-	-	-	-	-	-	For Graphite
-	-	-	-	-	-	-	-	-	-	-	For Graphite
-	-	-	-	-	-	-	-	-	-	-	For Graphite
-	-	-	-	-	-	-	-	-	-	-	For Graphite
-	-	-	-	-	-	-	-	-	-	-	For Graphite

HARDNESS FOR SERIES

UNIT	CATEGORY	CLASS	SERIES	APPEARANCE	PAGE
Inch	Milling	ZAMUS GRA MATE	WGE514A		30
Inch	Milling	ZAMUS GRA MATE	WGE524A		30
Inch	Milling	ZAMUS GRA MATE	WGE534A		30
Inch	Milling	ZAMUS GRA MATE	WGR504A		32
Inch	Milling	ZAMUS GRA MATE	WGR514A		32
Inch	Milling	ZAMUS GRA MATE	WGR524A		32
Inch	Milling	ZAMUS GRA MATE	WGR534A		32
Inch	Milling	ZAMUS GRA MATE	WGNR504A		32
Inch	Milling	GENERAL PURPOSE	BA302		36
Inch	Milling	GENERAL PURPOSE	BA304		36
Inch	Milling	GENERAL PURPOSE	ZB302		36
Inch	Milling	GENERAL PURPOSE	ZB302S		36
Inch	Milling	GENERAL PURPOSE	ZB304		36
Inch	Milling	GENERAL PURPOSE	EA302		41
Inch	Milling	GENERAL PURPOSE	EA304		41
Inch	Milling	GENERAL PURPOSE	ZA302		41
Inch	Milling	GENERAL PURPOSE	ZA304		41
Inch	Milling	GENERAL PURPOSE	ZR304A		46
Inch	Milling	ZAMUS STAR	DA702		50
Inch	Milling	ZAMUS STAR	DA703		50
Inch	Milling	ZAMUS STAR	DA734		50
Inch	Milling	ZAMUS STAR	ZB702A		50
Inch	Milling	ZAMUS STAR	ZE712A		52
Inch	Milling	ZAMUS STAR	ZE714A		52
Inch	Milling	ZAMUS STAR	ZE716A		52
Inch	Milling	ZAMUS STAR	ZR706A		55
Inch	Milling	ZAMUS STAR	ZS204A		55
Inch	Milling	ZAMUS STAR POWER MILL	ZSPM4A		58
Inch	Milling	ZAMUS CLASSIC	MD502		60
Inch	Milling	ZAMUS CLASSIC	DA412		62
Inch	Milling	ZAMUS CLASSIC	DA512		62
Inch	Milling	ZAMUS CLASSIC	DA514		62
Inch	Milling	ZAMUS CLASSIC	DA522		62
Inch	Milling	ZAMUS CLASSIC	DA542		67
Inch	Milling	ZAMUS CLASSIC	DA552		67
Inch	Milling	ZAMUS CLASSIC	MZ502		70

Hardness (HRc)											Note
20	25	30	35	40	45	50	55	60	65	70	
-	-	-	-	-	-	-	-	-	-	-	For Graphite
-	-	-	-	-	-	-	-	-	-	-	For Graphite
-	-	-	-	-	-	-	-	-	-	-	For Graphite
-	-	-	-	-	-	-	-	-	-	-	For Graphite
-	-	-	-	-	-	-	-	-	-	-	For Graphite
-	-	-	-	-	-	-	-	-	-	-	For Graphite
-	-	-	-	-	-	-	-	-	-	-	For Graphite
-	-	-	-	-	-	-	-	-	-	-	For Graphite
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-
-	-	-	-	-	-	O	O	O	O	O	-
-	-	-	-	-	-	O	O	O	O	O	-
-	-	-	-	-	-	O	O	O	O	O	-
-	-	-	-	-	-	O	O	O	O	O	-
-	-	-	-	-	-	O	O	O	O	O	-
-	-	-	-	-	-	O	O	O	O	O	-
-	-	-	-	-	-	O	O	O	O	O	-
-	-	-	-	-	-	O	O	O	O	-	-
-	-	-	-	-	-	O	O	O	O	O	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-

HARDNESS FOR SERIES

UNIT	CATEGORY	CLASS	SERIES	APPEARANCE	PAGE
Inch	Milling	ZAMUS CLASSIC	ZA502		72
Inch	Milling	ZAMUS CLASSIC	ZA504		72
Inch	Milling	ZAMUS CLASSIC	ZA506		72
Inch	Milling	ZAMUS CLASSIC	ZA508		72
Inch	Milling	ZAMUS CLASSIC	ZA522		72
Inch	Milling	ZAMUS CLASSIC	ZA524		72
Inch	Milling	ZAMUS CLASSIC	ZA526		72
Inch	Milling	ZAMUS CLASSIC	ZA528		72
Inch	Milling	ZAMUS CLASSIC	ZR502A		78
Inch	Milling	ZAMUS CLASSIC	ZR504A		78
Inch	Milling	ZAMUS CLASSIC	ZR506A		78
Inch	Milling	ZAMUS CLASSIC	ZR508A		78
Inch	Milling	ZAMUS CLASSIC	ZR522A		78
Inch	Milling	ZAMUS CLASSIC	ZR524A		78
Inch	Milling	ZAMUS CLASSIC	ZR532A		78
Inch	Milling	ZAMUS CLASSIC	ZR534A		78
Inch	Milling	ZAMUS CLASSIC	FA503		81
Inch	Milling	ZAMUS CLASSIC	FA504		81
Inch	Milling	ZAMUS CLASSIC	FA505		81
Inch	Milling	ZAMUS SUS MATE	XXB504A		83
Inch	Milling	ZAMUS SUS MATE	XXB524A		83
Inch	Milling	ZAMUS SUS MATE	XXE504A		84
Inch	Milling	ZAMUS SUS MATE	XXE524A		84
Inch	Milling	ZAMUS SUS MATE	XXE534A		84
Inch	Milling	ZAMUS SUS MATE	XXR504A		85
Inch	Milling	ZAMUS SUS MATE	XXR514A		85
Inch	Milling	ZAMUS SUS MATE	XXR524A		85
Inch	Milling	ZAMUS SUS MATE	XXR534A		85
Inch	Milling	NEO CLASSIC X-STAR	XXB504A		89
Inch	Milling	NEO CLASSIC X-STAR	XXB524A		89
Inch	Milling	NEO CLASSIC X-STAR	XE504A		90
Inch	Milling	NEO CLASSIC X-STAR	XE505A		90
Inch	Milling	NEO CLASSIC X-STAR	XE515A		90
Inch	Milling	NEO CLASSIC X-STAR	XR504A		92
Inch	Milling	NEO CLASSIC X-STAR	XR505A		92
Inch	Milling	NEO CLASSIC X-STAR	XR514A		92

Hardness (HRc)											Note
20	25	30	35	40	45	50	55	60	65	70	
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-

HARDNESS FOR SERIES

UNIT	CATEGORY	CLASS	SERIES	APPEARANCE	PAGE
Inch	Milling	NEO CLASSIC X-STAR	XR515A		92
Inch	Milling	NEO CLASSIC X-STAR	XR524A		92
Inch	Milling	NEO CLASSIC X-STAR	XR525A		92
Inch	Milling	NEO CLASSIC X-STAR	XR535A		92
Metric	Milling	ALU-WAVE	WAB312		98
Metric	Milling	ALU-WAVE	WAE301		99
Metric	Milling	ALU-WAVE	WAE302		99
Metric	Milling	ALU-WAVE	WAE303		99
Metric	Milling	ALU-WAVE	WAE323		99
Metric	Milling	ALU-WAVE	WAR302		106
Metric	Milling	ALU-WAVE	WAR303		106
Metric	Milling	ALU-WAVE	WAR502		106
Metric	Milling	ALU-WAVE	WAR503		106
Metric	Milling	ALU-WAVE	WAF303		112
Metric	Milling	ZAMUS GRA MATE	G		114
Metric	Milling	ZAMUS GRA MATE	WGB504		114
Metric	Milling	ZAMUS GRA MATE	IM-WGB504		114
Metric	Milling	ZAMUS GRA MATE	GE		118
Metric	Milling	ZAMUS GRA MATE	WGE504		118
Metric	Milling	ZAMUS GRA MATE	GR502		120
Metric	Milling	ZAMUS GRA MATE	GR504		120
Metric	Milling	ZAMUS GRA MATE	WGR502		120
Metric	Milling	ZAMUS GRA MATE	WGR504		120
Metric	Milling	WINNER	WB502		124
Metric	Milling	WINNER	WB503		124
Metric	Milling	WINNER	WB504		124
Metric	Milling	WINNER	WHPB902		130
Metric	Milling	WINNER	WB502P		132
Metric	Milling	WINNER	WB532		134
Metric	Milling	WINNER	WSB502		136
Metric	Milling	WINNER	WB512		138
Metric	Milling	WINNER	WB512xxS6		138
Metric	Milling	WINNER	WB542		150
Metric	Milling	WINNER	WME502		161
Metric	Milling	WINNER	WE504H		164
Metric	Milling	WINNER	WE506		164

Hardness (HRc)											Note
20	25	30	35	40	45	50	55	60	65	70	
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	-	-	-	-	-	-	For Aluminium
O	O	O	O	O	-	-	-	-	-	-	For Aluminium
O	O	O	O	O	-	-	-	-	-	-	For Aluminium
O	O	O	O	O	-	-	-	-	-	-	For Aluminium
O	O	O	O	O	-	-	-	-	-	-	For Aluminium
O	O	O	O	O	-	-	-	-	-	-	For Aluminium
O	O	O	O	O	-	-	-	-	-	-	For Aluminium
O	O	O	O	O	-	-	-	-	-	-	For Aluminium
O	O	O	O	O	-	-	-	-	-	-	For Aluminium
O	O	O	O	O	-	-	-	-	-	-	For Aluminium
-	-	-	-	-	-	-	-	-	-	-	For Graphite
-	-	-	-	-	-	-	-	-	-	-	For Graphite
-	-	-	-	-	-	-	-	-	-	-	For Graphite
-	-	-	-	-	-	-	-	-	-	-	For Graphite
-	-	-	-	-	-	-	-	-	-	-	For Graphite
-	-	-	-	-	-	-	-	-	-	-	For Graphite
-	-	-	-	-	-	-	-	-	-	-	For Graphite
-	-	-	-	-	-	-	-	-	-	-	For Graphite
-	-	-	-	-	-	-	-	-	-	-	For Graphite
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-

HARDNESS FOR SERIES

UNIT	CATEGORY	CLASS	SERIES	APPEARANCE	PAGE
Metric	Milling	WINNER	WME504		168
Metric	Milling	WINNER	WXE504		172
Metric	Milling	WINNER	WE502		172
Metric	Milling	WINNER	WE502xxS3		172
Metric	Milling	WINNER	WE502xxS4		172
Metric	Milling	WINNER	WE522		176
Metric	Milling	WINNER	WE524		176
Metric	Milling	WINNER	WE512		180
Metric	Milling	WINNER	WE514		180
Metric	Milling	WINNER	WR502		190
Metric	Milling	WINNER	WR504		190
Metric	Milling	WINNER	WR514		190
Metric	Milling	WINNER	WDR503		197
Metric	Milling	WINNER	WR506		197
Metric	Milling	WINNER	WXR504		199
Metric	Milling	WINNER	WXR514		199
Metric	Milling	WINNER	WSPM4		211
Metric	Milling	WINNER	WR542		214
Metric	Milling	WINNER	WR544		214
Metric	Milling	WINNER	WR512		224
Metric	Milling	WINNER	WF613		235
Metric	Milling	WINNER	WF614		235
Metric	Milling	WINNER	WF615		235
Metric	Milling	WINNER	WF603		237
Metric	Milling	WINNER	WF604		237
Metric	Milling	WINNER	WF605		237
Metric	Milling	WINNER	WTB502		239
Metric	Milling	WINNER	WTE502		242
Metric	Milling	WINNER	WTE504		242
Metric	Milling	WINNER	WTE514		246
Metric	Milling	WINNER	WTR504		251
Metric	Milling	ZAMUS STAR	DB702		258
Metric	Milling	ZAMUS STAR	DB712		258
Metric	Milling	ZAMUS STAR	DB703		261
Metric	Milling	ZAMUS STAR	ZSLNB		263
Metric	Milling	ZAMUS STAR	DB734		267

Hardness (HRc)											Note
20	25	30	35	40	45	50	55	60	65	70	
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
-	-	-	-	-	-	O	O	O	O	O	-
-	-	-	-	-	-	O	O	O	O	O	-
-	-	-	-	-	-	O	O	O	O	O	-
-	-	-	-	-	-	O	O	O	O	O	-
-	-	-	-	-	-	O	O	O	O	O	-

HARDNESS FOR SERIES

UNIT	CATEGORY	CLASS	SERIES	APPEARANCE	PAGE
Metric	Milling	ZAMUS STAR	ZSTNB20		269
Metric	Milling	ZAMUS STAR	ZSTNB30		269
Metric	Milling	ZAMUS STAR	ZE712		275
Metric	Milling	ZAMUS STAR	ZE714		275
Metric	Milling	ZAMUS STAR	ZE716		275
Metric	Milling	ZAMUS STAR	ZE702		278
Metric	Milling	ZAMUS STAR	ZE704		278
Metric	Milling	ZAMUS STAR	ZS124		281
Metric	Milling	ZAMUS STAR	ZSLNS20		283
Metric	Milling	ZAMUS STAR	ZSLNS40		283
Metric	Milling	ZAMUS STAR	ZE724		288
Metric	Milling	ZAMUS STAR	ZE726		288
Metric	Milling	ZAMUS STAR	ZS104		290
Metric	Milling	ZAMUS STAR	ZS204		290
Metric	Milling	ZAMUS STAR	ZR724		293
Metric	Milling	ZAMUS STAR	ZR732		293
Metric	Milling	ZAMUS STAR	ZR734		293
Metric	Milling	ZAMUS STAR	ZR706		297
Metric	Milling	ZAMUS STAR	ZR736		299
Metric	Milling	ZAMUS STAR	ZR714		301
Metric	Milling	ZAMUS STAR	ZR702		303
Metric	Milling	ZAMUS STAR	ZR704		303
Metric	Milling	ZAMUS STAR	ZSTNR		311
Metric	Milling	ZAMUS STAR	ZSLNR		315
Metric	Milling	ZAMUS STAR POWER MILL	ZSPM4		321
Metric	Milling	ZAMUS CLASSIC	DB402		323
Metric	Milling	ZAMUS CLASSIC	DB412		323
Metric	Milling	ZAMUS CLASSIC	DB502		323
Metric	Milling	ZAMUS CLASSIC	DB512		323
Metric	Milling	ZAMUS CLASSIC	DB514		323
Metric	Milling	ZAMUS CLASSIC	DB522		323
Metric	Milling	ZAMUS CLASSIC	DB532		323
Metric	Milling	ZAMUS CLASSIC	DB534		323
Metric	Milling	ZAMUS CLASSIC	WB712		323
Metric	Milling	ZAMUS CLASSIC	DB542		335
Metric	Milling	ZAMUS CLASSIC	DB552		335

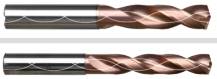
Hardness (HRc)											Note
20	25	30	35	40	45	50	55	60	65	70	
-	-	-	-	-	-	O	O	O	O	O	-
-	-	-	-	-	-	O	O	O	O	O	-
-	-	-	-	-	-	O	O	O	O	O	-
-	-	-	-	-	-	O	O	O	O	O	-
-	-	-	-	-	-	O	O	O	O	O	-
-	-	-	-	-	-	O	O	O	O	O	-
-	-	-	-	-	-	O	O	O	O	O	-
-	-	-	-	-	-	O	O	O	O	O	-
-	-	-	-	-	-	O	O	O	O	O	-
-	-	-	-	-	-	O	O	O	O	O	-
-	-	-	-	-	-	O	O	O	O	O	-
-	-	-	-	-	-	O	O	O	O	O	-
-	-	-	-	-	-	O	O	O	O	-	-
-	-	-	-	-	-	O	O	O	O	-	-
-	-	-	-	-	-	O	O	O	O	O	-
-	-	-	-	-	-	O	O	O	O	O	-
-	-	-	-	-	-	O	O	O	O	O	-
-	-	-	-	-	-	O	O	O	O	O	-
-	-	-	-	-	-	O	O	O	O	O	-
-	-	-	-	-	-	O	O	O	O	O	-
-	-	-	-	-	-	O	O	O	O	O	-
-	-	-	-	-	-	O	O	O	O	O	-
-	-	-	-	-	-	O	O	O	O	O	-
-	-	-	-	-	-	O	O	O	O	O	-
-	-	-	-	-	-	O	O	O	O	O	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-

HARDNESS FOR SERIES

UNIT	CATEGORY	CLASS	SERIES	APPEARANCE	PAGE
Metric	Milling	ZAMUS CLASSIC	ZM502		337
Metric	Milling	ZAMUS CLASSIC	ZM504		337
Metric	Milling	ZAMUS CLASSIC	WE712		339
Metric	Milling	ZAMUS CLASSIC	ZE502		339
Metric	Milling	ZAMUS CLASSIC	ZE503		339
Metric	Milling	ZAMUS CLASSIC	ZE504		339
Metric	Milling	ZAMUS CLASSIC	ZE506		339
Metric	Milling	ZAMUS CLASSIC	ZE514		339
Metric	Milling	ZAMUS CLASSIC	ZR502		349
Metric	Milling	ZAMUS CLASSIC	ZR504		349
Metric	Milling	ZAMUS CLASSIC	ZR512		349
Metric	Milling	ZAMUS CLASSIC	ZR514		349
Metric	Milling	ZAMUS CLASSIC	ZR522		349
Metric	Milling	ZAMUS CLASSIC	ZR524		349
Metric	Milling	ZAMUS CLASSIC	PK503		352
Metric	Milling	ZAMUS CLASSIC	ZF603		342
Metric	Milling	ZAMUS CLASSIC	ZF604		342
Metric	Milling	ZAMUS CLASSIC	ZF605		342
Metric	Milling	ZAMUS CLASSIC	ZF606		342
Metric	Milling	ZAMUS CLASSIC	ZF613		342
Metric	Milling	ZAMUS CLASSIC	ZF614		342
Metric	Milling	ZAMUS CLASSIC	ZF615		342
Metric	Milling	ZAMUS COPPER MATE	BC502		355
Metric	Milling	ZAMUS COPPER MATE	RC502		357
Metric	Milling	ZAMUS SUS MATE	DS502		359
Metric	Milling	ZAMUS SUS MATE	SM503		361
Metric	Milling	ZAMUS SUS MATE	XCE503		361
Metric	Milling	ZAMUS SUS MATE	XCE504		361
Metric	Milling	ZAMUS SUS MATE	XE504		361
Metric	Milling	ZAMUS SUS MATE	XE505		361
Metric	Milling	ZAMUS SUS MATE	XE514		361
Metric	Milling	ZAMUS SUS MATE	XE515		361
Metric	Milling	ZAMUS SUS MATE	XE524		361
Metric	Milling	ZAMUS SUS MATE	XCC503		365
Metric	Milling	ZAMUS SUS MATE	XCC504		365
Metric	Milling	ZAMUS SUS MATE	SM504		367

Hardness (HRc)											Note
20	25	30	35	40	45	50	55	60	65	70	
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
O	O	O	O	O	O	O	O	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	For Copper
-	-	-	-	-	-	-	-	-	-	-	For Copper
O	O	O	O	O	O	-	-	-	-	-	For Stainless
O	O	O	O	O	O	-	-	-	-	-	For Stainless
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	For Stainless

HARDNESS FOR SERIES

UNIT	CATEGORY	CLASS	SERIES	APPEARANCE	PAGE
Metric	Milling	ZAMUS SUS MATE	XCR503		367
Metric	Milling	ZAMUS SUS MATE	XCR504		367
Metric	Milling	ZAMUS SUS MATE	XR504		367
Metric	Milling	ZAMUS SUS MATE	XR505		367
Metric	Milling	ZAMUS SUS MATE	XR514		367
Metric	Milling	ZAMUS SUS MATE	XR524		367
Metric	Milling	ZAMUS SUS MATE	ZF624 (F)		372
Metric	Milling	ZAMUS SUS MATE	ZF625 (F)		372
Metric	Milling	ZAMUS SUS MATE	ZF626 (F)		372
Metric	Milling	ZAMUS THUNDER	DB312		374
Metric	Milling	ZAMUS THUNDER	TXB202		374
Metric	Milling	ZAMUS THUNDER	TXB204		374
Metric	Milling	ZAMUS THUNDER	TXB222		374
Metric	Milling	ZAMUS THUNDER	TXB232		374
Metric	Milling	ZAMUS THUNDER	TXB302		374
Metric	Milling	ZAMUS THUNDER	TXB304		374
Metric	Milling	ZAMUS THUNDER	DB342		378
Metric	Milling	ZAMUS THUNDER	TX202		380
Metric	Milling	ZAMUS THUNDER	TX204		380
Metric	Milling	ZAMUS THUNDER	TX222		380
Metric	Milling	ZAMUS THUNDER	TX224		380
Metric	Milling	ZAMUS THUNDER	TX302		380
Metric	Milling	ZAMUS THUNDER	TX304		380
Metric	Milling	ZAMUS THUNDER	ZE302		380
Metric	Milling	ZAMUS THUNDER	ZE304		380
Metric	Milling	ZAMUS THUNDER	ZE322		380
Metric	Milling	ZAMUS THUNDER	ZE324		380
Metric	Milling	ZAMUS THUNDER	TX304H		389
Metric	Milling	ZAMUS THUNDER	ZR304H		391
Metric	Milling	ZAMUS THUNDER	ZR324H		391
Metric	Milling	ZAMUS THUNDER	ZR322		393
Metric	Milling	ZAMUS THUNDER	ZR324		393
Metric	Milling	NEO CLASSIC X-STAR	XXB504		395
Inch/Metric	Drilling	ALU-WAVE	APF505		400
Inch/Metric	Drilling	POWER MAX DRILL	HPI503		404
Inch/Metric	Drilling	POWER MAX DRILL	HPI505		404

Hardness (HRc)											Note
20	25	30	35	40	45	50	55	60	65	70	
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	For Stainless
O	O	O	O	O	O	-	-	-	-	-	For Stainless
O	O	O	O	O	O	-	-	-	-	-	For Stainless
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	-	-	-	-	-	-	For Aluminium
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-

HARDNESS FOR SERIES

UNIT	CATEGORY	CLASS	SERIES	APPEARANCE	PAGE
Inch/Metric	Drilling	POWER MAX DRILL	HPI508N		404
Inch/Metric	Drilling	POWER MAX DRILL	HP503		414
Inch/Metric	Drilling	POWER MAX DRILL	PF503		418
Inch/Metric	Drilling	POWER MAX DRILL	PF505		418
Inch/Metric	Drilling	POWER MAX DRILL	SF503		428
Inch/Metric	Drilling	POWER MAX DRILL	SF505		428
Metric	Drilling	POWER MAX DRILL	SF510		428
Metric	Drilling	POWER MAX DRILL	SF520		428
Metric	Drilling	POWER DRILL	PDS		441
Metric	Drilling	POWER DRILL	PDM		441
Metric	Drilling	POWER DRILL	PDSI		450
Metric	Drilling	POWER DRILL	PDMI		450
Metric	Drilling	SOLID SPIRAL DRILL	SSD		458
Metric	Drilling	SOLID SPIRAL DRILL	SSDL		460
Metric	Drilling	SOLID SPIRAL DRILL	SSTD		461
Inch	Centering Tool	NC SPOT DRILLS	LDA		466
Metric	Centering Tool	NC SPOT DRILLS	LDS		468
Metric	Centering Tool	SOLID CENTER DRILLS	CDS		470
Metric	Centering Tool	CENTERING END MILLS	CEM		472
Metric	Centering Tool	CENTERING END MILLS	CES		474

Hardness (HRc)											Note
20	25	30	35	40	45	50	55	60	65	70	
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	O	O	-	-	-	-	-	-
O	O	O	O	-	-	-	-	-	-	-	-
O	O	O	O	-	-	-	-	-	-	-	-
O	O	O	O	-	-	-	-	-	-	-	-
O	O	O	O	-	-	-	-	-	-	-	-
O	-	-	-	-	-	-	-	-	-	-	-
O	-	-	-	-	-	-	-	-	-	-	-
O	-	-	-	-	-	-	-	-	-	-	-
O	O	O	O	O	O	O	-	-	-	-	-
O	O	O	O	O	O	O	-	-	-	-	-
O	O	O	O	-	-	-	-	-	-	-	-
O	O	O	O	-	-	-	-	-	-	-	-
O	O	O	O	-	-	-	-	-	-	-	-

END CUTTING TYPE FOR SERIES

Unit	Category	Products		END CUTTING (Best: ● // Good: ○)				
		Class	Series	Plunge	Profile	Ramping	Slotting	Side milling
Inch	Milling	ALU-WAVE	WAB312A	○	●	-	-	-
Inch	Milling	ALU-WAVE	WAE302A	-	-	-	●	●
Inch	Milling	ALU-WAVE	WAE303A	-	-	-	●	●
Inch	Milling	ALU-WAVE	WAE312A	-	-	-	●	●
Inch	Milling	ALU-WAVE	WAE313A	-	-	-	●	●
Inch	Milling	ALU-WAVE	WAE322A	-	-	-	●	●
Inch	Milling	ALU-WAVE	WAE323A	-	-	-	●	●
Inch	Milling	ALU-WAVE	WAE502A	-	-	-	●	●
Inch	Milling	ALU-WAVE	WAE503A	-	-	-	●	●
Inch	Milling	ALU-WAVE	WAE512A	-	-	-	●	●
Inch	Milling	ALU-WAVE	WAE513A	-	-	-	●	●
Inch	Milling	ALU-WAVE	WAE522A	-	-	-	●	●
Inch	Milling	ALU-WAVE	WAE523A	-	-	-	●	●
Inch	Milling	ALU-WAVE	WAR302A	-	-	-	●	●
Inch	Milling	ALU-WAVE	WAR303A	-	-	-	●	●
Inch	Milling	ALU-WAVE	WAR312A	-	-	-	●	●
Inch	Milling	ALU-WAVE	WAR313A	-	-	-	●	●
Inch	Milling	ALU-WAVE	WAR322A	-	-	-	●	●
Inch	Milling	ALU-WAVE	WAR323A	-	-	-	●	●
Inch	Milling	ALU-WAVE	WAR502A	-	-	-	●	●
Inch	Milling	ALU-WAVE	WAR503A	-	-	-	●	●
Inch	Milling	ALU-WAVE	WAR512A	-	-	-	●	●
Inch	Milling	ALU-WAVE	WAR513A	-	-	-	●	●
Inch	Milling	ALU-WAVE	WAR522A	-	-	-	●	●
Inch	Milling	ALU-WAVE	WAR523A	-	-	-	●	●
Inch	Milling	ALU-WAVE	WAF303A	-	-	-	●	●
Inch	Milling	ALU-WAVE	WAF313A	-	-	-	●	●
Inch	Milling	ZAMUS GRA MATE	WGB502A	○	●	-	-	-
Inch	Milling	ZAMUS GRA MATE	WGB504A	○	●	-	-	-
Inch	Milling	ZAMUS GRA MATE	WGB512A	○	●	-	-	-
Inch	Milling	ZAMUS GRA MATE	WGB514A	○	●	-	-	-
Inch	Milling	ZAMUS GRA MATE	WGB524A	○	●	-	-	-
Inch	Milling	ZAMUS GRA MATE	WGB534A	○	●	-	-	-
Inch	Milling	ZAMUS GRA MATE	WGNB504A	○	●	-	-	-
Inch	Milling	ZAMUS GRA MATE	WGE502A	-	-	-	●	●
Inch	Milling	ZAMUS GRA MATE	WGE504A	-	-	-	●	●
Inch	Milling	ZAMUS GRA MATE	WGE514A	-	-	-	●	●
Inch	Milling	ZAMUS GRA MATE	WGE524A	-	-	-	●	●
Inch	Milling	ZAMUS GRA MATE	WGE534A	-	-	-	●	●
Inch	Milling	ZAMUS GRA MATE	WGR504A	-	-	-	●	●

Unit	Category	Products		END CUTTING (Best: ● // Good: ○)				
		Class	Series	Plunge	Profile	Ramping	Slotting	Side milling
Inch	Milling	ZAMUS GRA MATE	WGR514A	-	-	-	●	●
Inch	Milling	ZAMUS GRA MATE	WGR524A	-	-	-	●	●
Inch	Milling	ZAMUS GRA MATE	WGR534A	-	-	-	●	●
Inch	Milling	ZAMUS GRA MATE	WGNR504A	-	-	-	●	●
Inch	Milling	GENERAL PURPOSE	BA302	○	●	-	-	-
Inch	Milling	GENERAL PURPOSE	BA304	○	●	-	-	-
Inch	Milling	GENERAL PURPOSE	ZB302	○	●	-	-	-
Inch	Milling	GENERAL PURPOSE	ZB302S	○	●	-	-	-
Inch	Milling	GENERAL PURPOSE	ZB304	○	●	-	-	-
Inch	Milling	GENERAL PURPOSE	EA302	-	-	-	●	●
Inch	Milling	GENERAL PURPOSE	EA304	-	-	-	●	●
Inch	Milling	GENERAL PURPOSE	ZA302	-	-	-	●	●
Inch	Milling	GENERAL PURPOSE	ZA304	-	-	-	●	●
Inch	Milling	GENERAL PURPOSE	ZR304A	-	-	-	●	●
Inch	Milling	ZAMUS STAR	DA702	○	●	-	-	-
Inch	Milling	ZAMUS STAR	DA703	○	●	-	-	-
Inch	Milling	ZAMUS STAR	DA734	○	●	-	-	-
Inch	Milling	ZAMUS STAR	ZB702A	○	●	-	-	-
Inch	Milling	ZAMUS STAR	ZE712A	-	-	-	●	●
Inch	Milling	ZAMUS STAR	ZE714A	-	-	-	●	●
Inch	Milling	ZAMUS STAR	ZE716A	-	-	-	●	●
Inch	Milling	ZAMUS STAR	ZR706A	-	-	-	●	●
Inch	Milling	ZAMUS STAR	ZS204A	-	-	-	●	●
Inch	Milling	ZAMUS STAR POWER MILL	ZSPM4A	-	-	-	●	●
Inch	Milling	ZAMUS CLASSIC	MD502	○	●	-	-	-
Inch	Milling	ZAMUS CLASSIC	DA412	○	●	-	-	-
Inch	Milling	ZAMUS CLASSIC	DA512	○	●	-	-	-
Inch	Milling	ZAMUS CLASSIC	DA514	○	●	-	-	-
Inch	Milling	ZAMUS CLASSIC	DA522	○	●	-	-	-
Inch	Milling	ZAMUS CLASSIC	DA542	○	●	-	-	-
Inch	Milling	ZAMUS CLASSIC	DA552	○	●	-	-	-
Inch	Milling	ZAMUS CLASSIC	MZ502	-	-	-	●	●
Inch	Milling	ZAMUS CLASSIC	ZA502	-	-	-	●	●
Inch	Milling	ZAMUS CLASSIC	ZA504	-	-	-	●	●
Inch	Milling	ZAMUS CLASSIC	ZA506	-	-	-	●	●
Inch	Milling	ZAMUS CLASSIC	ZA508	-	-	-	●	●
Inch	Milling	ZAMUS CLASSIC	ZA522	-	-	-	●	●
Inch	Milling	ZAMUS CLASSIC	ZA524	-	-	-	●	●
Inch	Milling	ZAMUS CLASSIC	ZA526	-	-	-	●	●
Inch	Milling	ZAMUS CLASSIC	ZA528	-	-	-	●	●

END CUTTING TYPE FOR SERIES

Unit	Category	Products		END CUTTING (Best: ● // Good: ○)				
		Class	Series	Plunge	Profile	Ramping	Slotting	Side milling
Inch	Milling	ZAMUS CLASSIC	ZR502A	-	-	-	●	●
Inch	Milling	ZAMUS CLASSIC	ZR504A	-	-	-	●	●
Inch	Milling	ZAMUS CLASSIC	ZR506A	-	-	-	●	●
Inch	Milling	ZAMUS CLASSIC	ZR508A	-	-	-	●	●
Inch	Milling	ZAMUS CLASSIC	ZR522A	-	-	-	●	●
Inch	Milling	ZAMUS CLASSIC	ZR524A	-	-	-	●	●
Inch	Milling	ZAMUS CLASSIC	ZR532A	-	-	-	●	●
Inch	Milling	ZAMUS CLASSIC	ZR534A	-	-	-	●	●
Inch	Milling	ZAMUS CLASSIC	FA503	-	-	-	●	●
Inch	Milling	ZAMUS CLASSIC	FA504	-	-	-	●	●
Inch	Milling	ZAMUS CLASSIC	FA505	-	-	-	●	●
Inch	Milling	ZAMUS SUS MATE	XXB504A	○	●	-	-	-
Inch	Milling	ZAMUS SUS MATE	XXB524A	○	●	-	-	-
Inch	Milling	ZAMUS SUS MATE	XXE504A	-	-	-	●	●
Inch	Milling	ZAMUS SUS MATE	XXE524A	-	-	-	●	●
Inch	Milling	ZAMUS SUS MATE	XXE534A	-	-	-	●	●
Inch	Milling	ZAMUS SUS MATE	XXR504A	-	-	○	○	○
Inch	Milling	ZAMUS SUS MATE	XXR514A	-	-	○	○	○
Inch	Milling	ZAMUS SUS MATE	XXR524A	-	-	○	○	○
Inch	Milling	ZAMUS SUS MATE	XXR534A	-	-	○	○	○
Inch	Milling	NEO CLASSIC X-STAR	XXB504A	○	●	-	-	-
Inch	Milling	NEO CLASSIC X-STAR	XXB524A	○	●	-	-	-
Inch	Milling	NEO CLASSIC X-STAR	XE504A	-	-	-	●	●
Inch	Milling	NEO CLASSIC X-STAR	XE505A	-	-	-	●	●
Inch	Milling	NEO CLASSIC X-STAR	XE515A	-	-	-	●	●
Inch	Milling	NEO CLASSIC X-STAR	XR504A	-	-	○	○	○
Inch	Milling	NEO CLASSIC X-STAR	XR505A	-	-	○	○	○
Inch	Milling	NEO CLASSIC X-STAR	XR514A	-	-	○	○	○
Inch	Milling	NEO CLASSIC X-STAR	XR515A	-	-	○	○	○
Inch	Milling	NEO CLASSIC X-STAR	XR524A	-	-	○	○	○
Inch	Milling	NEO CLASSIC X-STAR	XR525A	-	-	○	○	○
Inch	Milling	NEO CLASSIC X-STAR	XR535A	-	-	○	○	○
Metric	Milling	ALU-WAVE	WAB312	○	●	-	-	-
Metric	Milling	ALU-WAVE	WAE301	-	-	-	●	●
Metric	Milling	ALU-WAVE	WAE302	-	-	-	●	●
Metric	Milling	ALU-WAVE	WAE303	-	-	-	●	●
Metric	Milling	ALU-WAVE	WAE323	-	-	-	●	●
Metric	Milling	ALU-WAVE	WAR302	-	-	-	●	●
Metric	Milling	ALU-WAVE	WAR303	-	-	-	●	●
Metric	Milling	ALU-WAVE	WAR502	-	-	-	●	●

Unit	Category	Products		END CUTTING (Best: ● // Good: ○)				
		Class	Series	Plunge	Profile	Ramping	Slotting	Side milling
Metric	Milling	ALU-WAVE	WAR503	-	-	-	●	●
Metric	Milling	ALU-WAVE	WAF303	-	-	-	●	●
Metric	Milling	ZAMUS GRA MATE	G	○	●	-	●	●
Metric	Milling	ZAMUS GRA MATE	WGB504	○	●	-	-	-
Metric	Milling	ZAMUS GRA MATE	IM-WGB504	○	●	-	-	-
Metric	Milling	ZAMUS GRA MATE	GE	-	-	-	●	●
Metric	Milling	ZAMUS GRA MATE	WGE504	-	-	-	●	●
Metric	Milling	ZAMUS GRA MATE	GR502	-	-	-	●	●
Metric	Milling	ZAMUS GRA MATE	GR504	-	-	-	●	●
Metric	Milling	ZAMUS GRA MATE	WGR502	-	-	-	●	●
Metric	Milling	ZAMUS GRA MATE	WGR504	-	-	-	●	●
Metric	Milling	WINNER	WB502	○	●	-	-	-
Metric	Milling	WINNER	WB503	○	●	-	-	-
Metric	Milling	WINNER	WB504	○	●	-	-	-
Metric	Milling	WINNER	WHPB902	○	●	-	-	-
Metric	Milling	WINNER	WB502P	○	●	-	-	-
Metric	Milling	WINNER	WB532	○	●	-	-	-
Metric	Milling	WINNER	WSB502	○	●	-	-	-
Metric	Milling	WINNER	WB512	○	●	-	-	-
Metric	Milling	WINNER	WB512xxS6	○	●	-	-	-
Metric	Milling	WINNER	WB542	○	●	-	-	-
Metric	Milling	WINNER	WME502	-	-	-	●	●
Metric	Milling	WINNER	WE504H	-	-	-	●	●
Metric	Milling	WINNER	WE506	-	-	-	●	●
Metric	Milling	WINNER	WME504	-	-	-	●	●
Metric	Milling	WINNER	WXE504	-	-	-	●	●
Metric	Milling	WINNER	WE502	-	-	-	●	●
Metric	Milling	WINNER	WE502xxS3	-	-	-	●	●
Metric	Milling	WINNER	WE502xxS4	-	-	-	●	●
Metric	Milling	WINNER	WE522	-	-	-	●	●
Metric	Milling	WINNER	WE524	-	-	-	●	●
Metric	Milling	WINNER	WE512	-	-	-	●	●
Metric	Milling	WINNER	WE514	-	-	-	●	●
Metric	Milling	WINNER	WR502	-	-	-	●	●
Metric	Milling	WINNER	WR504	-	-	-	●	●
Metric	Milling	WINNER	WR514	-	-	-	●	●
Metric	Milling	WINNER	WDR503	-	-	-	●	●
Metric	Milling	WINNER	WR506	-	-	-	●	●
Metric	Milling	WINNER	WXR504	-	-	-	●	●
Metric	Milling	WINNER	WXR514	-	-	-	●	●

END CUTTING TYPE FOR SERIES

Unit	Category	Products		END CUTTING (Best: ● // Good: ○)				
		Class	Series	Plunge	Profile	Ramping	Slotting	Side milling
Metric	Milling	WINNER	WSPM4	-	-	-	●	●
Metric	Milling	WINNER	WR542	-	-	-	●	●
Metric	Milling	WINNER	WR544	-	-	-	●	●
Metric	Milling	WINNER	WR512	-	-	-	●	●
Metric	Milling	WINNER	WF613	-	-	-	●	●
Metric	Milling	WINNER	WF614	-	-	-	●	●
Metric	Milling	WINNER	WF615	-	-	-	●	●
Metric	Milling	WINNER	WF603	-	-	-	●	●
Metric	Milling	WINNER	WF604	-	-	-	●	●
Metric	Milling	WINNER	WF605	-	-	-	●	●
Metric	Milling	WINNER	WTB502	-	-	-	●	●
Metric	Milling	WINNER	WTE502	-	-	-	●	●
Metric	Milling	WINNER	WTE504	-	-	-	●	●
Metric	Milling	WINNER	WTE514	-	-	-	●	●
Metric	Milling	WINNER	WTR504	-	-	-	●	●
Metric	Milling	ZAMUS STAR	DB702	○	●	-	-	-
Metric	Milling	ZAMUS STAR	DB712	○	●	-	-	-
Metric	Milling	ZAMUS STAR	DB703	○	●	-	-	-
Metric	Milling	ZAMUS STAR	ZSLNB	-	-	-	●	●
Metric	Milling	ZAMUS STAR	DB734	○	●	-	-	-
Metric	Milling	ZAMUS STAR	ZSTNB20	○	●	-	-	-
Metric	Milling	ZAMUS STAR	ZSTNB30	○	●	-	-	-
Metric	Milling	ZAMUS STAR	ZE712	-	-	-	●	●
Metric	Milling	ZAMUS STAR	ZE714	-	-	-	●	●
Metric	Milling	ZAMUS STAR	ZE716	-	-	-	●	●
Metric	Milling	ZAMUS STAR	ZE702	-	-	-	●	●
Metric	Milling	ZAMUS STAR	ZE704	-	-	-	●	●
Metric	Milling	ZAMUS STAR	ZS124	-	-	-	●	●
Metric	Milling	ZAMUS STAR	ZSLNS20	-	-	-	●	●
Metric	Milling	ZAMUS STAR	ZSLNS40	-	-	-	●	●
Metric	Milling	ZAMUS STAR	ZE724	-	-	-	●	●
Metric	Milling	ZAMUS STAR	ZE726	-	-	-	●	●
Metric	Milling	ZAMUS STAR	ZS104	-	-	-	●	●
Metric	Milling	ZAMUS STAR	ZS204	-	-	-	●	●
Metric	Milling	ZAMUS STAR	ZR724	-	-	-	●	●
Metric	Milling	ZAMUS STAR	ZR732	-	-	-	●	●
Metric	Milling	ZAMUS STAR	ZR734	-	-	-	●	●
Metric	Milling	ZAMUS STAR	ZR706	-	-	-	●	●
Metric	Milling	ZAMUS STAR	ZR736	-	-	-	●	●
Metric	Milling	ZAMUS STAR	ZR714	-	-	-	●	●

Unit	Category	Products		END CUTTING (Best: ● // Good: ○)				
		Class	Series	Plunge	Profile	Ramping	Slotting	Side milling
Metric	Milling	ZAMUS STAR	ZR702	-	-	-	●	●
Metric	Milling	ZAMUS STAR	ZR704	-	-	-	●	●
Metric	Milling	ZAMUS STAR	ZSTNR	-	-	-	●	●
Metric	Milling	ZAMUS STAR	ZSLNR	-	-	-	●	●
Metric	Milling	ZAMUS STAR POWER MILL	ZSPM4	-	-	-	●	●
Metric	Milling	ZAMUS CLASSIC	DB402	○	●	-	-	-
Metric	Milling	ZAMUS CLASSIC	DB412	○	●	-	-	-
Metric	Milling	ZAMUS CLASSIC	DB502	○	●	-	-	-
Metric	Milling	ZAMUS CLASSIC	DB512	○	●	-	-	-
Metric	Milling	ZAMUS CLASSIC	DB514	○	●	-	-	-
Metric	Milling	ZAMUS CLASSIC	DB522	○	●	-	-	-
Metric	Milling	ZAMUS CLASSIC	DB532	○	●	-	-	-
Metric	Milling	ZAMUS CLASSIC	DB534	○	●	-	-	-
Metric	Milling	ZAMUS CLASSIC	WB712	○	●	-	-	-
Metric	Milling	ZAMUS CLASSIC	DB542	○	●	-	-	-
Metric	Milling	ZAMUS CLASSIC	DB552	○	●	-	-	-
Metric	Milling	ZAMUS CLASSIC	ZM502	-	-	-	●	●
Metric	Milling	ZAMUS CLASSIC	ZM504	-	-	-	●	●
Metric	Milling	ZAMUS CLASSIC	WE712	-	-	-	●	●
Metric	Milling	ZAMUS CLASSIC	ZE502	-	-	-	●	●
Metric	Milling	ZAMUS CLASSIC	ZE503	-	-	-	●	●
Metric	Milling	ZAMUS CLASSIC	ZE504	-	-	-	●	●
Metric	Milling	ZAMUS CLASSIC	ZE506	-	-	-	●	●
Metric	Milling	ZAMUS CLASSIC	ZE514	-	-	-	●	●
Metric	Milling	ZAMUS CLASSIC	ZR502	-	-	-	●	●
Metric	Milling	ZAMUS CLASSIC	ZR504	-	-	-	●	●
Metric	Milling	ZAMUS CLASSIC	ZR512	-	-	-	●	●
Metric	Milling	ZAMUS CLASSIC	ZR514	-	-	-	●	●
Metric	Milling	ZAMUS CLASSIC	ZR522	-	-	-	●	●
Metric	Milling	ZAMUS CLASSIC	ZR524	-	-	-	●	●
Metric	Milling	ZAMUS CLASSIC	PK503	○	-	-	●	●
Metric	Milling	ZAMUS CLASSIC	ZF603	-	-	-	●	●
Metric	Milling	ZAMUS CLASSIC	ZF604	-	-	-	●	●
Metric	Milling	ZAMUS CLASSIC	ZF605	-	-	-	●	●
Metric	Milling	ZAMUS CLASSIC	ZF606	-	-	-	●	●
Metric	Milling	ZAMUS CLASSIC	ZF613	-	-	-	●	●
Metric	Milling	ZAMUS CLASSIC	ZF614	-	-	-	●	●
Metric	Milling	ZAMUS CLASSIC	ZF615	-	-	-	●	●
Metric	Milling	ZAMUS COPPER MATE	BC502	○	●	-	-	-
Metric	Milling	ZAMUS COPPER MATE	RC502	-	-	-	●	●

END CUTTING TYPE FOR SERIES

Unit	Category	Products		END CUTTING (Best: ● // Good: ○)				
		Class	Series	Plunge	Profile	Ramping	Slotting	Side milling
Metric	Milling	ZAMUS SUS MATE	DS502	○	●	-	-	-
Metric	Milling	ZAMUS SUS MATE	SM503	-	-	-	●	●
Metric	Milling	ZAMUS SUS MATE	XCE503	-	-	-	●	●
Metric	Milling	ZAMUS SUS MATE	XCE504	-	-	-	●	●
Metric	Milling	ZAMUS SUS MATE	XE504	-	-	-	●	●
Metric	Milling	ZAMUS SUS MATE	XE505	-	-	-	●	●
Metric	Milling	ZAMUS SUS MATE	XE514	-	-	-	●	●
Metric	Milling	ZAMUS SUS MATE	XE515	-	-	-	●	●
Metric	Milling	ZAMUS SUS MATE	XE524	-	-	-	●	●
Metric	Milling	ZAMUS SUS MATE	XCC503	-	-	○	○	○
Metric	Milling	ZAMUS SUS MATE	XCC504	-	-	○	○	○
Metric	Milling	ZAMUS SUS MATE	SM504	-	-	-	●	●
Metric	Milling	ZAMUS SUS MATE	XCR503	-	-	○	○	○
Metric	Milling	ZAMUS SUS MATE	XCR504	-	-	○	○	○
Metric	Milling	ZAMUS SUS MATE	XR504	-	-	○	○	○
Metric	Milling	ZAMUS SUS MATE	XR505	-	-	○	○	○
Metric	Milling	ZAMUS SUS MATE	XR514	-	-	○	○	○
Metric	Milling	ZAMUS SUS MATE	XR524	-	-	○	○	○
Metric	Milling	ZAMUS SUS MATE	ZF624 (F)	-	-	-	●	●
Metric	Milling	ZAMUS SUS MATE	ZF625 (F)	-	-	-	●	●
Metric	Milling	ZAMUS SUS MATE	ZF626 (F)	-	-	-	●	●
Metric	Milling	ZAMUS THUNDER	DB312	○	●	-	-	-
Metric	Milling	ZAMUS THUNDER	TXB202	-	-	-	●	●
Metric	Milling	ZAMUS THUNDER	TXB204	-	-	-	●	●
Metric	Milling	ZAMUS THUNDER	TXB222	-	-	-	●	●
Metric	Milling	ZAMUS THUNDER	TXB232	-	-	-	●	●
Metric	Milling	ZAMUS THUNDER	TXB302	-	-	-	●	●
Metric	Milling	ZAMUS THUNDER	TXB304	-	-	-	●	●
Metric	Milling	ZAMUS THUNDER	DB342	○	●	-	-	-
Metric	Milling	ZAMUS THUNDER	TX202	-	-	-	●	●
Metric	Milling	ZAMUS THUNDER	TX204	-	-	-	●	●
Metric	Milling	ZAMUS THUNDER	TX222	-	-	-	●	●
Metric	Milling	ZAMUS THUNDER	TX224	-	-	-	●	●
Metric	Milling	ZAMUS THUNDER	TX302	-	-	-	●	●
Metric	Milling	ZAMUS THUNDER	TX304	-	-	-	●	●
Metric	Milling	ZAMUS THUNDER	ZE302	-	-	-	●	●
Metric	Milling	ZAMUS THUNDER	ZE304	-	-	-	●	●
Metric	Milling	ZAMUS THUNDER	ZE322	-	-	-	●	●
Metric	Milling	ZAMUS THUNDER	ZE324	-	-	-	●	●
Metric	Milling	ZAMUS THUNDER	TX304H	-	-	-	●	●

Unit	Category	Products		END CUTTING (Best: ● // Good: ○)				
		Class	Series	Plunge	Profile	Ramping	Slotting	Side milling
Metric	Milling	ZAMUS THUNDER	ZR304H	-	-	-	●	●
Metric	Milling	ZAMUS THUNDER	ZR324H	-	-	-	●	●
Metric	Milling	ZAMUS THUNDER	ZR322	-	-	-	●	●
Metric	Milling	ZAMUS THUNDER	ZR324	-	-	-	●	●
Metric	Milling	NEO CLASSIC X-STAR	XXB504	○	●	-	-	-
Inch/Metric	Drilling	ALU-WAVE	APF505	-	-	-	-	-
Inch/Metric	Drilling	POWER MAX DRILL	HPI503	-	-	-	-	-
Inch/Metric	Drilling	POWER MAX DRILL	HPI505	-	-	-	-	-
Inch/Metric	Drilling	POWER MAX DRILL	HPI508N	-	-	-	-	-
Inch/Metric	Drilling	POWER MAX DRILL	HP503	-	-	-	-	-
Inch/Metric	Drilling	POWER MAX DRILL	PF503	-	-	-	-	-
Inch/Metric	Drilling	POWER MAX DRILL	PF505	-	-	-	-	-
Inch/Metric	Drilling	POWER MAX DRILL	SF503	-	-	-	-	-
Inch/Metric	Drilling	POWER MAX DRILL	SF505	-	-	-	-	-
Metric	Drilling	POWER MAX DRILL	SF510	-	-	-	-	-
Metric	Drilling	POWER MAX DRILL	SF520	-	-	-	-	-
Metric	Drilling	POWER DRILL	PDS	-	-	-	-	-
Metric	Drilling	POWER DRILL	PDM	-	-	-	-	-
Metric	Drilling	POWER DRILL	PDSI	-	-	-	-	-
Metric	Drilling	POWER DRILL	PDMI	-	-	-	-	-
Metric	Drilling	SOLID SPIRAL DRILL	SSD	-	-	-	-	-
Metric	Drilling	SOLID SPIRAL DRILL	SSDL	-	-	-	-	-
Metric	Drilling	SOLID SPIRAL DRILL	SSTD	-	-	-	-	-
Inch	Centering Tool	NC SPOT DRILLS	LDA	-	-	-	-	-
Metric	Centering Tool	NC SPOT DRILLS	LDS	-	-	-	-	-
Metric	Centering Tool	SOLID CENTER DRILLS	CDS	-	-	-	-	-
Metric	Centering Tool	CENTERING END MILLS	CEM	-	-	-	-	-
Metric	Centering Tool	CENTERING END MILLS	CES	-	-	-	-	-

MEMO

MEMO

MEMO