

Zamus Thunder Endmill

Low Hardness HRc 10~30

Features

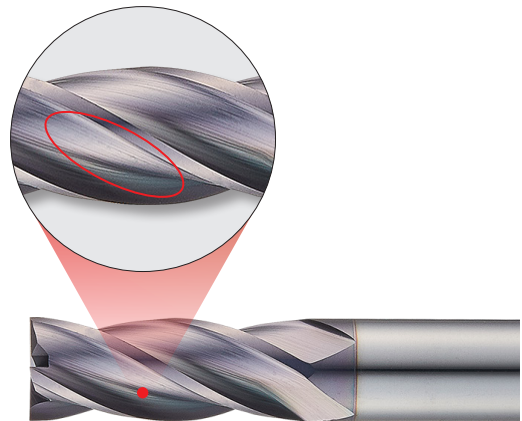
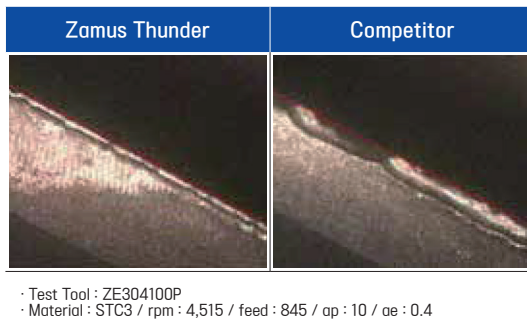
- Suitable for low hardness steel(HRc 10~30) : alloy steel, carbon steel, pre-harden, hardened steel etc.
- General purpose suitable for rough machining, finishing and curved and sloped surfaces

Characteristics

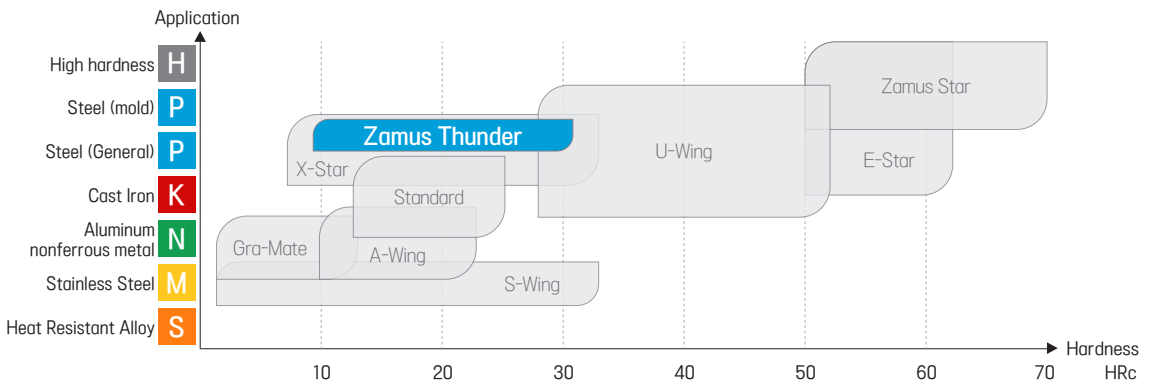
- Excellent Rake angle and Cutting edge considered the characteristics of workpiece.
- Improved chipping resistance and enhanced machinability by using high toughness materials
- TiAlN coating for enhanced oxidation resistance and chipping resistance

Case Study







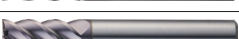
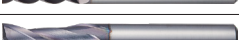
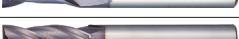
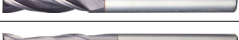


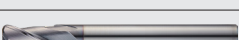
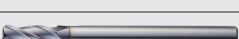
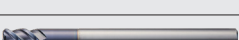








► 4F D3.0 Square End Mill



Applications



Contents

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

Zamus Thunder Endmill

Low Hardness HRc 10~30

EDP No. System

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

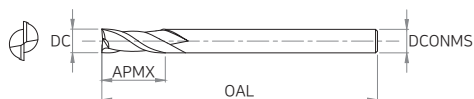
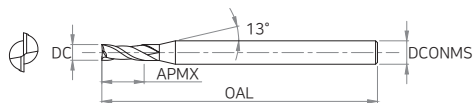
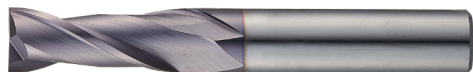


①	②	③	④	⑤	⑥	⑦	⑧
Type	Appearance	Grade	Length, Shank Type	Flute	Cutting Dia	Corner R	Shank Dia
D : Dynamic	E : Square	2 : Grade	0 : Straight	3 : 3 Flutes	1	0.05	0.2
Z : Zamus Endmill	R : Radius	3 : Grade	1 : Long Cutting Length	4 : 4 Flutes	~	~	~
T : Thunder	B : Ball		2 : Long Cutting Length	4H : 4 Flutes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

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

TX202

2 Flutes Short Shank Square End Mill



► Tolerance

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

h6



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

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

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

Endmill

Zamus Star

E-Star

U-Wing

Zamus Thunder

X-Star

S-Wing

A-Wing

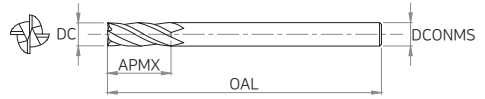
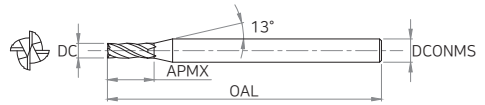
Standard

Copper-Mate

Gra-Mate

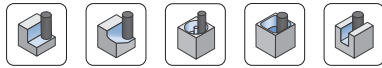
TX204 4 Flutes Short Shank Square End Mill

Endmill



► Tolerance

DC	Shank Dia
Ø1 ~ Ø3	h6
Ø4 ~ Ø6	
Ø8 ~ Ø10	
Ø12 ~ Ø16	
Ø20 ~	



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

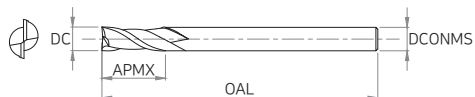
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FC500					
		◎	◎	○						

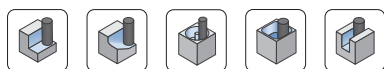
TX222

2 Flutes Long Square End Mill



► Tolerance

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



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

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

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

Endmill

Zamus Star

E-Star

U-Wing

Zamus Thunder

X-Star

S-Wing

A-Wing

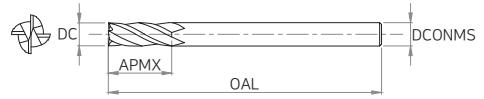
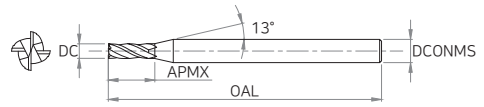
Standard

Copper-Mate

Gra-Mate

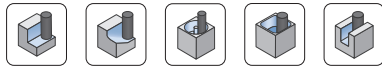
TX224 4 Flutes Long Square End Mill

Endmill



► Tolerance

DC	Shank Dia
ø3	h6
ø4 ~ ø6	
ø8 ~ ø10	
ø12 ~ ø18	
ø20 ~	



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

► Applicable Working Material

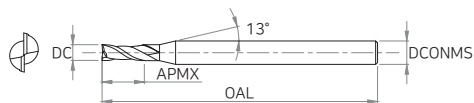
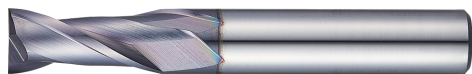
○ : GOOD ◎ : EXCELLENT

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

TX302

2 Flutes Square End Mill

Endmill



► Tolerance

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



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

Zamus Star

E-Star

U-Wing

Zamus Thunder

X-Star

S-Wing

A-Wing

Standard

Copper-Mate

Gra-Mate

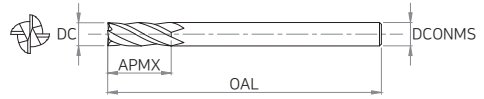
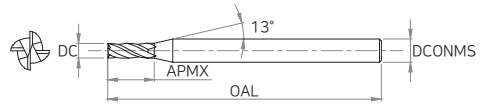
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

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

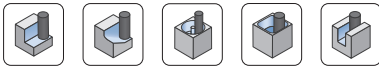
TX304 4 Flutes Square End Mill

Endmill



► Tolerance

DC	Shank Dia
Ø1 ~ Ø3	h6
Ø4 ~ Ø6	
Ø7 ~ Ø10	
Ø12 ~ Ø18	
Ø20 ~	



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

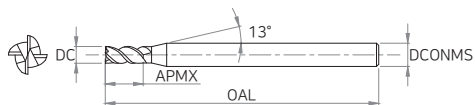
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

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

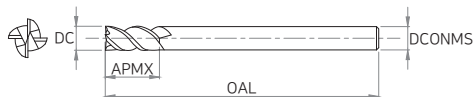
TX304H 4 Flutes 45° Helix Square End Mill

Endmill



► Tolerance

DC	Shank Dia
ø3	h6
ø4 ~ ø6	
ø8 ~ ø10	
ø12 ~ ø18	
ø20 ~	



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

Zamus Star

E-Star

U-Wing

Zamus Thunder

X-Star

S-Wing

A-Wing

Standard

Copper-Mate

Gra-Mate

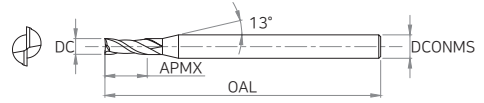
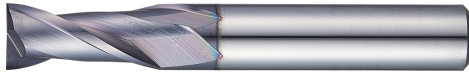
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

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

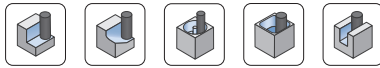
ZE302P 2 Flutes Square End Mill

Endmill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.02	h6



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

Copper
-Mate

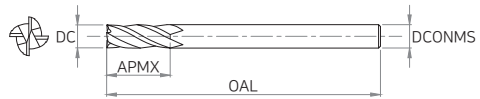
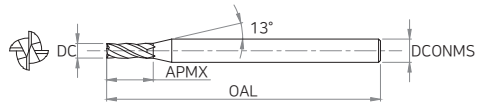
Gra
-Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

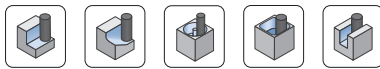
H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRc30~50	~FC500					
		◎	◎	○						

ZE304P 4 Flutes Square End Mill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.02	h6



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

► Applicable Working Material

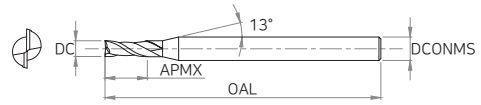
○ : GOOD ◎ : EXCELLENT

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

ZE322

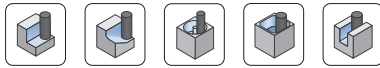
2 Flutes Extra Long Square End Mill

Endmill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.03	h6



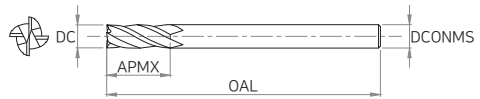
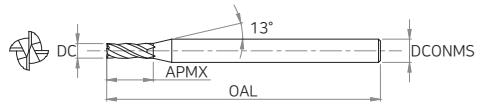
EDP No	DC	APMX	OAL	DCONMS	EDP No	DC	APMX	OAL	DCONMS
ZE322 030	3	15	60	6	ZE322 101	10	35	100	10
ZE322 031	3	20	70	6	ZE322 102	10	45	150	10
ZE322 030S	3	20	100	3	ZE322 103	10	55	180	10
ZE322 040	4	15	60	6	ZE322 120	12	30	90	12
ZE322 041	4	20	70	6	ZE322 121	12	40	110	12
ZE322 040S	4	20	100	4	ZE322 122	12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

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

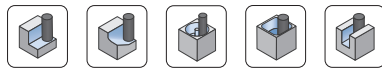
H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	Steel ~HB225	Alloy Steel HB225 ~325	Prehardened Steel HRC30~50	Cast Iron ~FC500	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant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

ZE324 4 Flutes Extra Long Square End Mill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.03	h6



EDP No	DC	APMX	OAL	DCONMS	EDP No	DC	APMX	OAL	DCONMS
ZE324 030	3	15	60	6	ZE324 101	10	35	100	10
ZE324 031	3	20	70	6	ZE324 102	10	45	150	10
ZE324 030S	3	20	100	3	ZE324 103	10	55	180	10
ZE324 040	4	15	60	6	ZE324 120	12	30	90	12
ZE324 041	4	20	70	6	ZE324 121	12	40	110	12
ZE324 040S	4	20	100	4	ZE324 122	12	50	150	12
ZE324 050	5	20	60	6	ZE324 123	12	60	200	12
ZE324 051	5	20	80	6	ZE324 140	14	40	120	14
ZE324 052	5	25	100	6	ZE324 141	14	60	150	14
ZE324 060	6	20	80	6	ZE324 160	16	50	140	16
ZE324 061	6	30	100	6	ZE324 161	16	70	160	16
ZE324 062	6	40	150	6	ZE324 162	16	80	200	16
ZE324 080	8	30	90	8	ZE324 180	18	50	140	18
ZE324 081	8	35	100	8	ZE324 200	20	60	150	20
ZE324 082	8	40	150	8	ZE324 201	20	100	200	20
ZE324 100	10	30	90	10	ZE324 202	20	130	250	20

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

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

Endmill

Zamus Star

E-Star

U-Wing

Zamus Thunder

X-Star

S-Wing

A-Wing

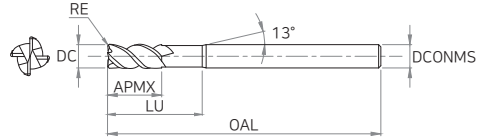
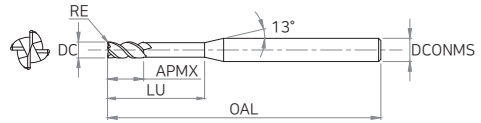
Standard

Copper-Mate

Gra-Mate

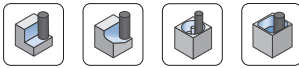
ZR304H 4 Flutes 45° Helix Radius End Mill

Endmill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.03	h6



CARBIDE
TIAlN
4
45° HELIX
R ±0.02
DATA P.712

All Sizes

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

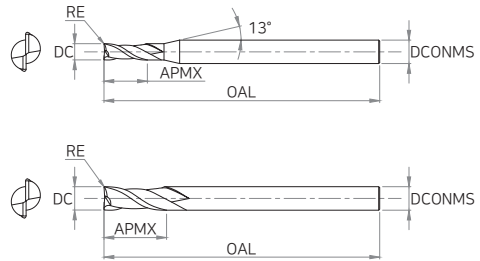
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

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

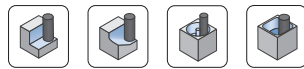
ZR322 2 Flutes Long Shank Radius End Mill

Endmill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.03	h6



CARBIDE
TiAIN
2
30° HELIX
R ±0.02
DATA P.712

All Sizes

EDP No	DC	RE	APMX	OAL	DCON MS	EDP No	DC	RE	APMX	OAL	DCON MS
ZR322 0302S4	3	0.2	8	60	4	ZR322 0610	6	1	13	90	6
ZR322 0302	3	0.2	8	60	6	ZR322 0803	8	0.3	19	100	8
ZR322 0303	3	0.3	8	60	6	ZR322 0805	8	0.5	19	100	8
ZR322 0305S4	3	0.5	8	60	4	ZR322 0810	8	1	19	100	8
ZR322 0305	3	0.5	8	60	6	ZR322 0815	8	1.5	19	100	8
ZR322 0402S4	4	0.2	11	70	4	ZR322 0820	8	2	19	100	8
ZR322 0402	4	0.2	11	70	6	ZR322 1003	10	0.3	22	100	10
ZR322 0403	4	0.3	11	70	6	ZR322 1005	10	0.5	22	100	10
ZR322 0405S4	4	0.5	11	70	4	ZR322 1010	10	1	22	100	10
ZR322 0405	4	0.5	11	70	6	ZR322 1015	10	1.5	22	100	10
ZR322 0410S4	4	1	11	70	4	ZR322 1020	10	2	22	100	10
ZR322 0410	4	1	11	70	6	ZR322 1025	10	2.5	22	100	10
ZR322 0502	5	0.2	13	80	6	ZR322 1205	12	0.5	26	110	12
ZR322 0503	5	0.3	13	80	6	ZR322 1210	12	1	26	110	12
ZR322 0505	5	0.5	13	80	6	ZR322 1215	12	1.5	26	110	12
ZR322 0510	5	1	13	80	6	ZR322 1220	12	2	26	110	12
ZR322 0602	6	0.2	13	90	6	ZR322 1225	12	2.5	26	110	12
ZR322 0603	6	0.3	13	90	6	ZR322 1230	12	3	26	110	12
ZR322 0605	6	0.5	13	90	6						

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

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

Zamus Star

E-Star

U-Wing

Zamus Thunder

X-Star

S-Wing

A-Wing

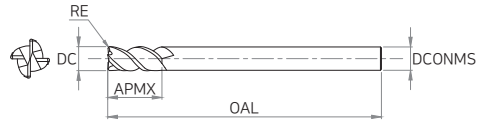
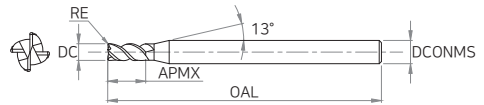
Standard

Copper-Mate

Gra-Mate

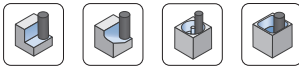
ZR324 4 Flutes Long Shank Radius End Mill

Endmill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.03	h6



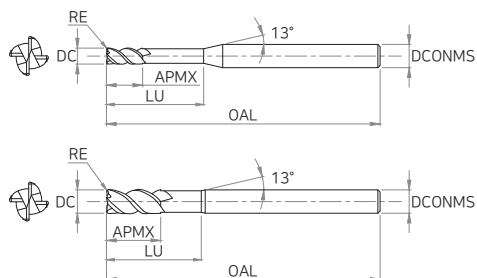
EDP No	DC	RE	APMX	OAL	DCON MS	EDP No	DC	RE	APMX	OAL	DCON MS
ZR324 0302S4	3	0.2	8	60	4	ZR324 0610	6	1	13	90	6
ZR324 0302	3	0.2	8	60	6	ZR324 0803	8	0.3	19	100	8
ZR324 0303	3	0.3	8	60	6	ZR324 0805	8	0.5	19	100	8
ZR324 0305S4	3	0.5	8	60	4	ZR324 0810	8	1	19	100	8
ZR324 0305	3	0.5	8	60	6	ZR324 0815	8	1.5	19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

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

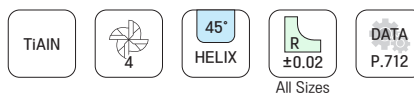
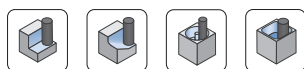
H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	Steel ~HB225	Alloy Steel HB225 ~325	Prehardened Steel HRC30~50	Cast Iron ~FCD500	Copper	Graphite	Aluminum	Stainless Steel	Heat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

ZR324H 4 Flutes 45° Helix Radius End Mill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.03	h6



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

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

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

Endmill

Zamus Star

E-Star

U-Wing

Zamus Thunder

X-Star

S-Wing

A-Wing

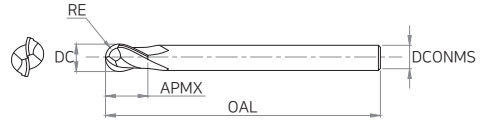
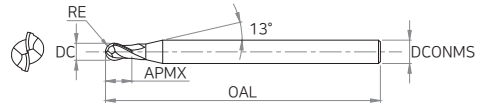
Standard

Copper-Mate

Gra-Mate

DB312 2 Flutes Ball End Mill

Endmill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.02	h6



CARBIDE
TIAlN
2
30° HELIX
R ±0.01
DATA P.714

All Sizes

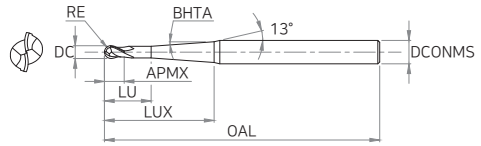
EDP No	DC	RE	APMX	OAL	DCON MS	EDP No	DC	RE	APMX	OAL	DCON MS
DB312 010S4	1	0.5	2.5	50	4	DB312 055	5.5	2.75	10	80	6
DB312 010	1	0.5	2.5	50	6	DB312 060S	6	3	12	60	6
DB312 012	1.2	0.6	3	50	6	DB312 060	6	3	12	90	6
DB312 015	1.5	0.75	4	50	6	DB312 065	6.5	3.25	12	90	8
DB312 020S4	2	1	5	50	4	DB312 070	7	3.5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

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

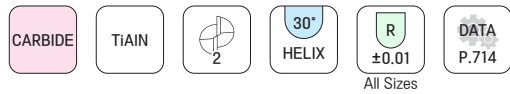
H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRC30~50	~FC500					
		◎	◎	○						

DB342 2 Flutes Tapered Neck Ball End Mill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.02	h6



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

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

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

Endmill

Zamus Star

E-Star

U-Wing

Zamus Thunder

X-Star

S-Wing

A-Wing

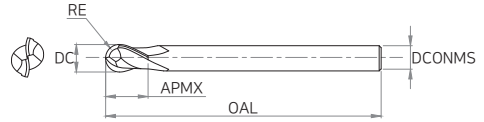
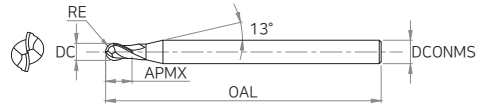
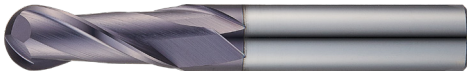
Standard

Copper-Mate

Gra-Mate

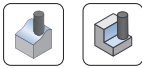
TXB202 2 Flutes Short Shank Ball End Mill

Endmill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.04	h6



CARBIDE
TIAlN
2
30° HELIX
R ±0.02 All Sizes
DATA P.716

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

Zamus Star

E-Star

U-Wing

Zamus Thunder

X-Star

S-Wing

A-Wing

Standard

Copper -Mate

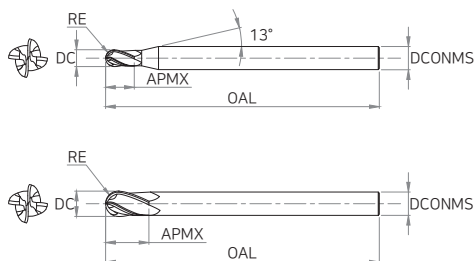
Gra -Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

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

TXB204 4 Flutes Short Shank Ball End Mill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.04	h6



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

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

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

Endmill

Zamus Star

E-Star

U-Wing

Zamus Thunder

X-Star

S-Wing

A-Wing

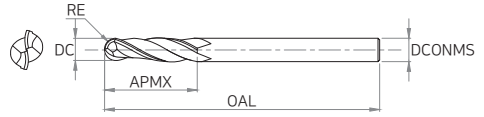
Standard

Copper-Mate

Gra-Mate

TXB222 2 Flutes Long Ball End Mill

Endmill



Zamus Star

E-Star

► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.04	h6

U-Wing



CARBIDE
TIAlN
2
30° HELIX
R ±0.02 All Sizes
DATA P.716

Zamus Thunder

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

X-Star

S-Wing

A-Wing

Standard

Copper-Mate

Gra-Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

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

TXB232 2 Flutes Long Shank Ball End Mill



Endmill

► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.04	h6



CARBIDE
TiAIN
2
30° HELIX
R ±0.02
DATA P.716

All Sizes

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

Zamus Star

E-Star

U-Wing

Zamus Thunder

X-Star

S-Wing

A-Wing

Standard

Copper-Mate

Gra-Mate

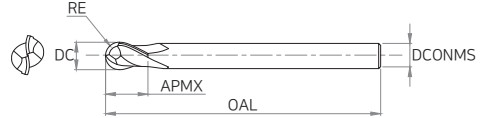
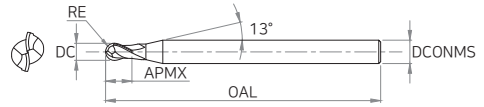
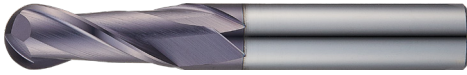
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

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

TXB302 2 Flutes Ball End Mill

Endmill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.04	h6



CARBIDE
TIAlN
2
30° HELIX
R ±0.02 All Sizes
DATA P.716

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

Copper
-Mate

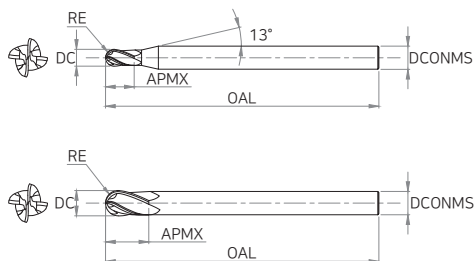
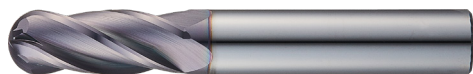
Gra
-Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

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

TXB304 4 Flutes Ball End Mill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.04	h6



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

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

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

Endmill

Zamus Star

E-Star

U-Wing

Zamus Thunder

X-Star

S-Wing

A-Wing

Standard

Copper-Mate

Gra-Mate