

X-Star Endmill

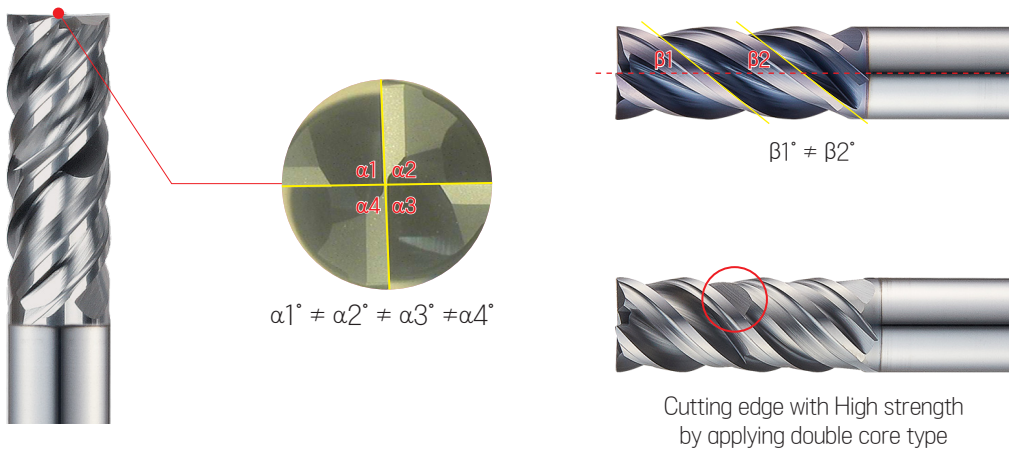
Difficult To Cut Material and Low Hardness Material HRc ~35

Characteristics

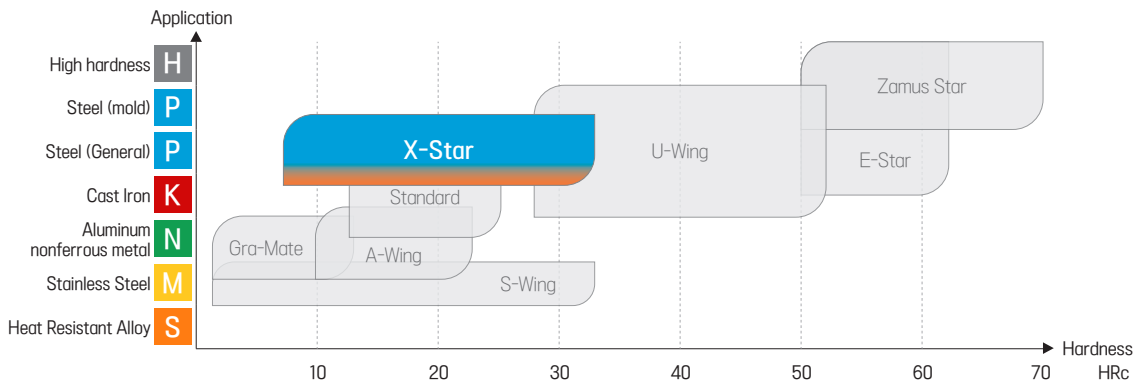
- Suitable for the difficult to cut material and low hardness material (HRc ~35) Stainless and Inconel etc.
- Various product line considered machining methods for rough and finishing for the difficult to cut materials and flat, sloped surfaces.

Features





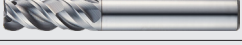





- High machining efficiency through unequal index cutting edge in all series
- Excellent chipping resistance and Minimized sudden breakage by using high toughness materials
- TiAlN, AlTiN coating for enhanced oxidation resistance and high hardness on surface
- Superb Groove design to improve chip emission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



Applications



Contents

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

X-Star Endmill

Difficult To Cut Material and Low Hardness Material HRc ~35

EDP No. System

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

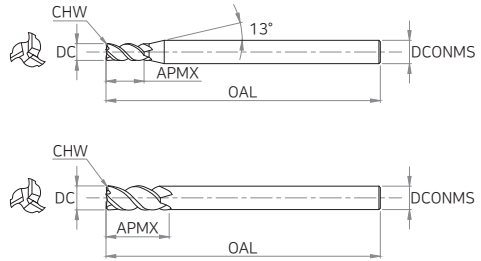


①	②	③	④	⑤	⑥	⑦
Section	Appearance	Grade	Length, Shank Type	Flutes	Cutting Dia	Corner R
X : X-Star (Unequal Pitch)	E : Square	3 : Grade	0 : Straight	3 : 3 Flutes	1	0.1
	R : Radius	5 : Grade	1 : Neck	4 : 4 Flutes	~	~
	XE : Square		2 : Long neck	5 : 5 Flutes	25.4	5
	XB : Ball					
	XR : Radius (Edge Protection)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

EX) 3 Flutes / Cutting Dia \varnothing 12 / 50 Grade / Straight type Double Core Radius X-Star End Mill

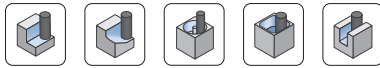
XCE503

3 Flutes Double Core Square End Mill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.02	h6



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

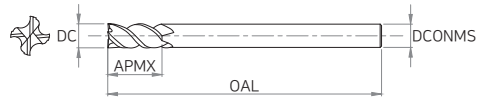
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

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

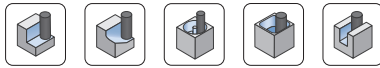
XCE504

4 Flutes Double Core Square End Mill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.02	h6



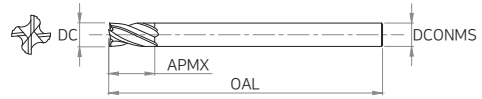
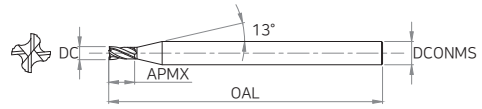
EDP No	DC	APMX	OAL	DCONMS
XCE504 060	6	15	50	6
XCE504 080	8	20	60	8
XCE504 100	10	25	70	10
XCE504 120	12	30	75	12
XCE504 160	16	40	90	16
XCE504 200	20	45	100	20
XCE504 250	25	50	120	25

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

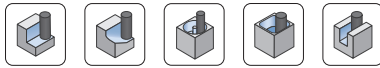
H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
		○	○	○					◎	

XE504 4 Flutes Variable Helix Square End Mill



► Tolerance

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



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

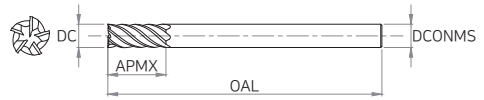
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

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

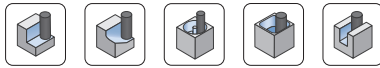
XE505

5 Flutes Variable Helix Square End Mill



► Tolerance

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



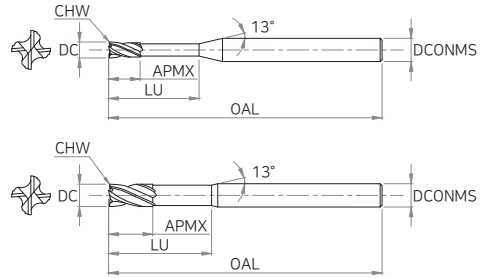
EDP No	DC	APMX	OAL	DCONMS
XE505 060	6	13	57	6
XE505 080	8	19	63	8
XE505 100	10	22	72	10
XE505 120	12	26	83	12
XE505 140	14	26	83	14
XE505 160	16	32	92	16
XE505 180	18	32	92	18
XE505 200	20	38	104	20
XE505 250	25	38	104	25

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

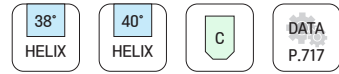
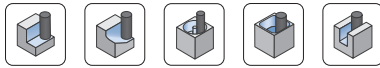
H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	~HB225	~325	HRc30~50	~FC500					
		○	○	○					◎	

XE514 4 Flutes Variable Helix Neck Type Square End Mill



► Tolerance

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



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

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRc55	SKD11 HRc55~	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

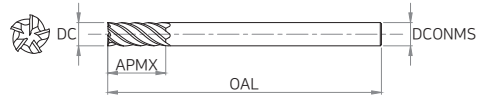
Standard

Copper-Mate

Gra-Mate

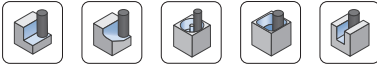
XE515

5 Flutes Variable Helix Neck Type Square End Mill



► Tolerance

DC		Shank Dia
ø6 ~ ø8	0 ~ -0.04	
ø10 ~ ø20	0 ~ -0.04	h6



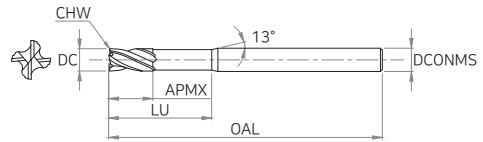
EDP No	DC	APMX	OAL	DCONMS
XE515 060	6	25	75	6
XE515 080	8	30	75	8
XE515 100	10	45	100	10
XE515 120	12	75	150	12
XE515 160	16	75	150	16
XE515 200	20	75	150	20

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

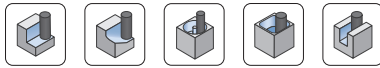
H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	~HB225	HB225 ~325	HRc30~50	~FCD500					
		○	○	○					◎	

XE524 4 Flutes Variable Helix Long Shank Square End Mill



► Tolerance

DC		Shank Dia
∅6 ~ ∅12	0 ~ -0.02	
∅16	0 ~ -0.03	



CARBIDE
AlTiN

38° HELIX
40° HELIX
C
DATA P.717

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

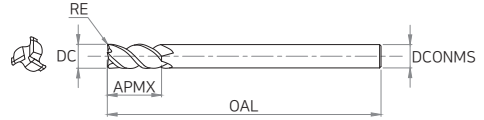
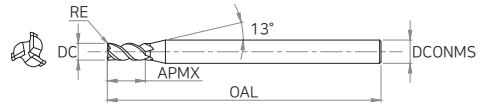
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

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

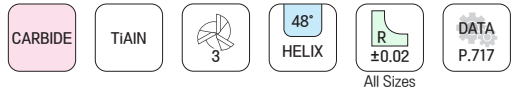
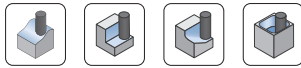
XCR503

3 Flutes Double Core Radius End Mill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.02	h6



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

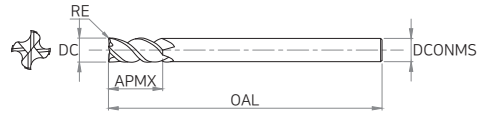
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

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

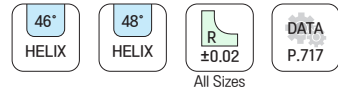
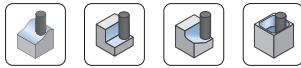
XCR504

4 Flutes Double Core Radius End Mill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.02	h6



All Sizes

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

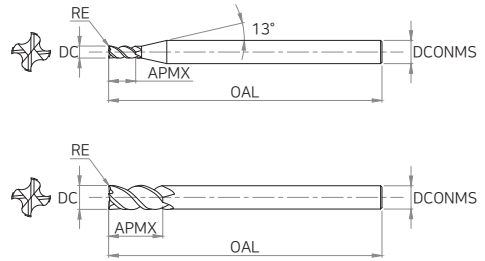
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

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

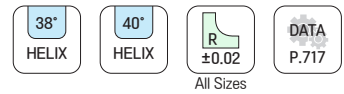
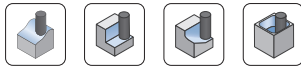
XR504 4 Flutes Variable Helix Radius End Mill

Endmill



► Tolerance

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



All Sizes

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

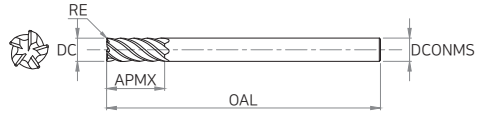
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

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

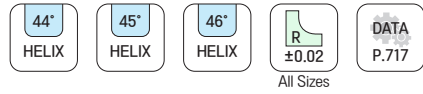
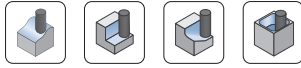
XR505

5 Flutes Variable Helix Radius End Mill



► Tolerance

DC		Shank Dia
ø6 ~ ø8	0 ~ -0.04	
ø10 ~ ø25	0 ~ -0.05	



All Sizes

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

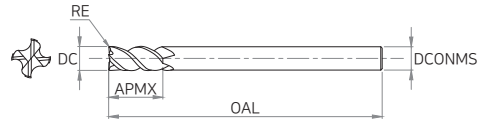
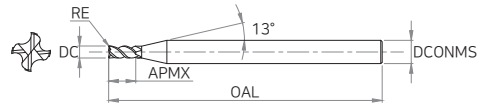
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

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

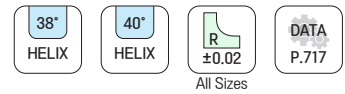
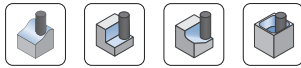
XR514 4 Flutes Variable Helix Radius End Mill

Endmill



► Tolerance

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



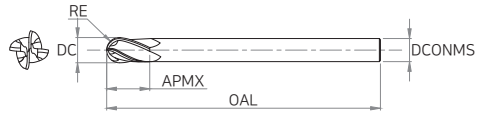
EDP No	DC	RE	APMX	OAL	DCON MS	EDP No	DC	RE	APMX	OAL	DCON MS
XR514 0201	2	0.1	5	45	4	XR514 0820	8	2	19	60	8
XR514 0202	2	0.2	5	45	4	XR514 1005	10	0.5	22	70	10
XR514 0302	3	0.2	8	50	6	XR514 1010	10	1	22	70	10
XR514 0303	3	0.3	8	50	6	XR514 1015	10	1.5	22	70	10
XR514 0305	3	0.5	8	50	6	XR514 1020	10	2	22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

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

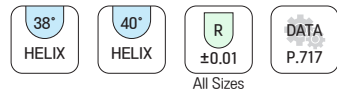
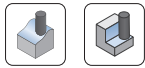
H		P			K	N			M	S
Hardened Steel		Carbon Steel	Alloy Steel	Prehardened Steel	Cast Iron	Copper	Graphite	Aluminum	Stainless Steel	Heat Resistant Alloy
SKD61 ~HRC55	SKD11 HRC55~	Steel ~HB225	HB225 ~325	Steel HRC30~50	~FC500					
		○	○	○					◎	

XXB504 4 Flutes Variable Helix Ball End Mill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.02	h6



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

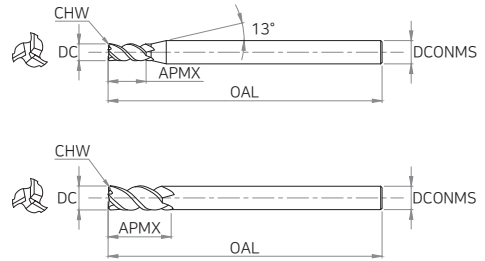
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

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

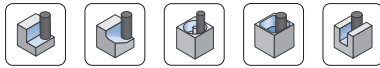
XCC503

3 Flutes Double Core Chamfer End Mill



► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.02	h6



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

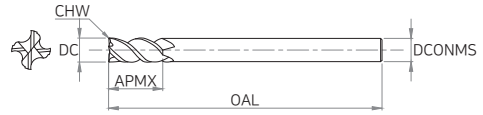
► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

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

XCC504

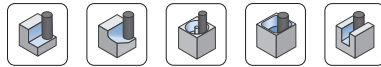
4 Flutes Double Core Chamfer End Mill



Endmill

► Tolerance

DC		Shank Dia
All Sizes	0 ~ -0.02	h6



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

Zamus Star

E-Star

U-Wing

Zamus Thunder

X-Star

S-Wing

A-Wing

Standard

Copper -Mate

Gra -Mate

► Applicable Working Material

○ : GOOD ◎ : EXCELLENT

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