Size φ3～φ12

CXRS

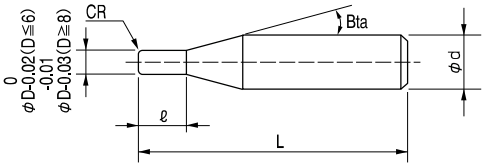
Super MG | UT COAT | 42°~45° | R | R ±0.01 (φ3～φ6) | R ±0.015 (φ8～φ12) | Shank Dia 0/-0.005 | Variable Pitch | Variable Helix

Material Applications（★ Highly Recommended ● Recommended ○ Suggested）

Work Material																
Carbon Steels S45C S55C	Alloy Steels SK / SCM SUS	Prehardened Steels NAK HPM	Hardened Steels ～50HRC	Hardened Steels ～55HRC	Hardened Steels ～60HRC	Hardened Steels ～65HRC	Hardened Steels ～70HRC	Cast Iron	Aluminum Alloys	Graphite	Copper	Plastics	Glass Filled Plastics	Titanium Alloys	Heat Resistant Alloys	Cemented Carbide	Hard Brittle (Non-Metallic) Materials
●	●	●	●	●				○	○		●			○	○		

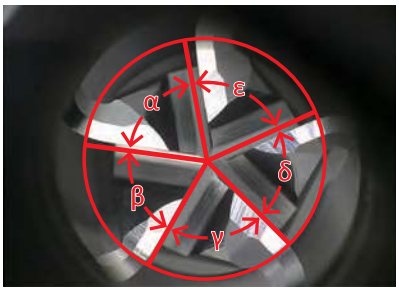
Features

Recommended on a wide range of materials – Carbon Steels and Hardened steels up to 55 HRC.
Variable pitch & helix design and positive rake angle offer highly efficient side milling.
Seamless corner radius design greatly reduces cutting force.



The shank taper angle shown is not an exact value and to avoid contact with the work piece, we recommend the user controls the precise value of this angle. Shank taper angle should not make contact with the work piece.

Variable Pitch



$\alpha \neq \beta \neq \gamma \neq \delta \neq \varepsilon$

Corner Radius Design

Variable Helix

$\beta_1 \neq \beta_2$

Total 30 models

Unit（mm）

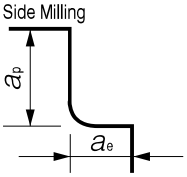
Model Number	Outside Diameter φD	Corner Radius CR	Length of Cut ℓ	Shank Taper Angle Bta	Overall Length L	Shank Diameter φd	Suggested Retail Price ¥
CXRS 5030-05-0600	3	R0.5	6	16°	50	6	8,250
CXRS 5030-05-0900			9		50	6	8,250
CXRS 5040-05-0800	4	R0.5	8	16°	60	6	8,900
CXRS 5040-05-1200			12		60	6	8,900
CXRS 5040-10-0800		R1	8		60	6	8,900
CXRS 5040-10-1200			12		60	6	8,900
CXRS 5060-05-1200	6	R0.5	12	—	70	6	9,600
CXRS 5060-05-1800			18		70	6	9,600
CXRS 5060-10-1200		R1	12		70	6	9,600
CXRS 5060-10-1800			18		70	6	9,600
CXRS 5080-05-1600	8	R0.5	16	—	70	8	13,800
CXRS 5080-05-2400			24		70	8	13,800
CXRS 5080-10-1600		R1	16		70	8	13,800
CXRS 5080-10-2400			24		70	8	13,800
CXRS 5100-05-2000	10	R0.5	20	—	80	10	16,800
CXRS 5100-05-3000			30		80	10	16,800
CXRS 5100-10-2000		R1	20		80	10	16,800
CXRS 5100-10-3000			30		80	10	16,800
CXRS 5100-15-2000		R1.5	20		80	10	16,800
CXRS 5100-15-3000			30		80	10	16,800
CXRS 5100-20-2000		R2	20		80	10	16,800
CXRS 5100-20-3000			30		80	10	16,800
CXRS 5120-05-2400	12	R0.5	24	—	80	12	22,000
CXRS 5120-05-3600			36		100	12	22,000
CXRS 5120-10-2400		R1	24		80	12	22,000
CXRS 5120-10-3600			36		100	12	22,000
CXRS 5120-15-2400		R1.5	24		80	12	22,000
CXRS 5120-15-3600			36		100	12	22,000
CXRS 5120-20-2400		R2	24		80	12	22,000
CXRS 5120-20-3600			36		100	12	22,000

Milling Conditions for CXRS

WORK MATERIAL			CARBON STEELS S45C / S50C Annealed Materials (~225HB)				ALLOY STEELS SK / SCM Annealed Materials (225~325HB)				PREHARDENED STEELS HPM / NAK (30~45HRC)				HARDENED STEELS SKD / SKT / STAVAX (45~55HRC)			
Model Number	Outside Diameter (mm)	Length of Cut (mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	a_p Axial Depth (mm)	a_e Radial Depth (mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	a_p Axial Depth (mm)	a_e Radial Depth (mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	a_p Axial Depth (mm)	a_e Radial Depth (mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	a_p Axial Depth (mm)	a_e Radial Depth (mm)
5030	3	6	20,000	10,000	6	0.3	20,000	10,000	6	0.3	20,000	10,000	6	0.09	20,000	12,000	6	0.06
		9	20,000	6,000	8	0.24	20,000	6,000	8	0.24	20,000	6,400	8	0.09	20,000	12,000	8	0.05
5040	4	8	18,200	9,100	8	0.4	18,200	9,100	8	0.4	19,800	9,900	8	0.12	15,000	11,500	8	0.08
		12	18,200	5,460	10.8	0.32	18,200	5,460	10.8	0.32	15,900	4,770	10.8	0.12	15,000	11,500	10.8	0.05
5060	6	12	12,200	6,100	12	0.6	12,200	6,100	12	0.6	13,200	6,500	12	0.21	10,000	7,600	12	0.15
		18	12,200	5,100	16	0.48	12,200	5,100	16	0.48	12,000	5,000	16	0.18	10,000	7,600	16	0.1
5080	8	16	9,100	4,550	16	0.8	9,100	4,550	16	0.8	9,900	4,950	16	0.4	7,600	5,600	16	0.2
		24	9,100	4,550	21	0.64	9,100	4,550	21	0.64	9,000	4,500	21	0.32	7,600	5,600	21	0.15
5100	10	20	7,300	3,650	20	1	7,300	3,650	20	1	8,000	4,600	20	0.5	6,000	4,500	20	0.25
		30	7,300	3,650	27	0.8	7,300	3,650	27	0.8	7,300	3,650	27	0.4	6,000	4,500	27	0.22
5120	12	24	6,100	3,050	24	1.2	6,100	3,050	24	1.2	6,600	3,960	24	0.6	5,000	3,800	24	0.3
		36	6,100	3,050	32	0.96	6,100	3,050	32	0.96	6,100	3,050	32	0.48	5,000	3,800	32	0.25

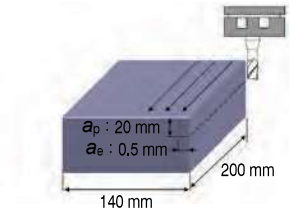
Note:
- Please be sure to use water soluble coolant.
- These milling parameters are for reference only.
- For best result, fine parameter adjustments may be required, depending on the milling shape / application / machine used and so on.
- Decrease both spindle speed and feed rate proportionally when the milling parameters exceed the machine's maximum spindle speed.
- WARNING: Because of high material removal rate, you must pay attention to your chip and coolant management.

Side Milling

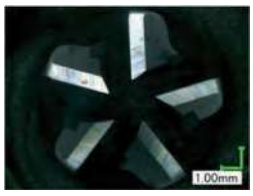


5 Flutes v.s. 4 Flutes　Comparison of Cutting Chips　　STAVAX（53HRC）

Size：140 × 200 mm
Coolant：Oil Mist
Milling Method：Side Milling
Spindle Speed：4,000 min^{-1}
Feed Rate：2,500 mm/min
a_p：20 mm
a_e：0.5 mm



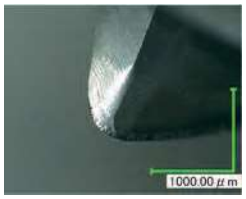
◆5 Flute Radius　φ10 × CR0.5 × L20

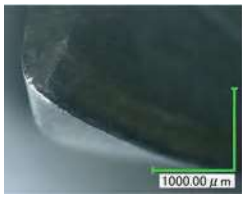


After 40 min

After 80 min

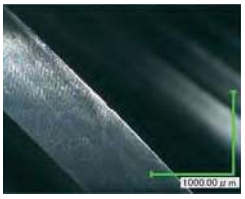
Rake Face





Relief Face

Peripheral Cutting Edge



◆4 Flute Radius　φ10 × CR1 × L26

After 40 min

Rake Face

Relief Face

Peripheral Cutting Edge

◆Comparison of Cutting Chips

5 Flutes
Uniform cutting chips

4 Flutes
Irregular size cutting chips

5 flutes, variable pitch and variable helix design protect the tool from chattering and chipping under high-speed condition.