

Good Products are Produced by Precise Carbide End Mills

CUTTING TOOLS 2015 VOL.4 CATALOG

索引
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スクエア
Square

ラジアス
Radius

ボール
Ball

ロングネック
Long Neck

ラフニング
Roughing

面取り加工用
Chamfering

ドリル
Drill



スクエア Square End Mill

用途 Work		一般鋼						
刃数 Flute		2	2	4	4	3	3	4
形状 Shape								
型番 Model		EM2	CX200-EM2	EM4	CX200-EM4	CX200-HEM3	CX200-PHEM3	CX200-HEM4
表面処理 Coating			CX200 Coat		CX200 Coat	CX200 Coat	CX200 Coat	CX200 Coat
炭素鋼 Carbon Steel		◎	◎	◎	◎	◎	◎	◎
合金鋼 Alloy Steel		◎	◎	◎	◎	◎	◎	◎
調質鋼 SUJ, NAK		○	◎	○	◎	◎	◎	◎
焼入れ鋼 Hardened Steels	~45HRC	○	◎	○	◎	◎	◎	◎
	~55HRC		○		○	○	○	○
	~60HRC							
	~65HRC							
鋳鉄 Cast Iron		○	○	○	○	○	○	○
ステンレス Stainless Steels			○		○	◎	◎	◎
アルミ合金 Aluminum Alloys			○		○	○	○	○
銅合金 Copper Alloys			○		○	○	○	○
チタン合金 耐熱合金 Ti/Ni Alloys								
グラファイト Graphite								
樹脂 Resin								
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スクエア

Square End Mill

用途 Work		一般鋼				アルミニウム合金				チタン合金
刃数 Flute		4 6	4 6 8	4	4	3	4	2	3	4
形状 Shape										
型番 Mode		CX200-PMER	CX500-HMER	CX200-ZHE4	CX200-MEM4	DLC-HEM3	DLC-HEM4	ALHEM2	ALHEM3	CX400-TEM4
表面処理 Coating		CX200 Coat	CX500 Coat	CX200 Coat	CX200 Coat	DLC Coat	DLC Coat			CX400 Coat
炭素鋼 Carbon Steel		◎	○	◎	◎					◎
合金鋼 Alloy Steel		◎	○	◎	◎					◎
調質鋼 SUJ, NAK		◎	○	◎	◎					◎
焼入れ鋼 Hardened Steels	~45HRC	◎	○	◎	◎					◎
	~55HRC	○	◎	○	○					◎
	~60HRC		◎							
	~65HRC		◎							
鋳鉄 Cast Iron		○	◎	○	○					○
ステンレス Stainless Steels		◎	○	◎	◎					◎
アルミ合金 Aluminum Alloys		○				◎	◎	◎	◎	
銅合金 Copper Alloys		○				○	○	○	○	
チタン合金 耐熱合金 Ti/Ni Alloys										◎
グラファイト Graphite								○	○	
樹脂 Resin						○	○	○	○	
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スクエア Square

ラジアス Radius

ボール Ball

ロングネック Long Neck

ラフニング Roughing

面取り加工用 Chamfering

ドリル Drill

コート特性 Coating Characteristic

コート Coating type	TiAlN Coat	CX200 Coat	CX400 Coat	CX500 Coat	DLC Coat	DIA Coat
表面硬度 (HV) Hardness (HV)	2,800HV	3,300HV	3,500HV	3,400HV	5,000HV	9,000HV
膜厚 (μm) Thickness (μm)	1~4	0.5~3	0.5~3	0.5~3	1.0~2.0	8
酸化開始温度 (°C) Oxidation Temp (°C)	800°C	1,100°C	1,100°C	1,300°C	550°C	600°C
摩擦係数 Friction Coefficient	0.35~0.40	0.30~0.35	0.30~0.35	0.25~0.35	≤0.10	0.15
色調 Color	暗紫色 Dark Violet	快灰色 Light grey	暗灰色 Dark grey	明銅色 Light brown	黒色 Black	黒色 Black
特性 Characteristic	一般 高耐熱性 耐摩耗性 Standard High heat resistance Wear resistance	一般 高耐熱性 耐摩耗性 Standard High heat resistance Wear resistance	高硬度 高耐熱性 高速切削向け High hardness High heat resistance High speed grade	高硬度 高耐熱性 高速切削向け High hardness High heat resistance High speed grade	非鉄金属 耐溶着性 耐腐食性 Non-Ferrous Welding resistance corrosion resistance	高硬度 非鉄金属 耐溶着性 耐腐食性 High hardness Non Ferrous Welding resistance corrosion resistance
被削材 Work Materials	普通鋼 調質鋼 40-52HRC Steel Prehardened Steel	普通鋼 調質鋼 ~45HRC Steel Prehardened Steel	調質鋼 高硬度鋼 40-65HRC Prehardened Steel Hardened Steel	調質鋼 高硬度鋼 40-65HRC Prehardened Steel Hardened Steel	アルミ合金 40-65HRC Non-Ferrous Aluminum	グラファイト 樹脂 アルミ合金 Graphite Non-Ferrous Aluminum
乾式 Dry cutting	◎	◎	◎	◎	◎	◎
湿式 Wet cutting	△	◎	◎	○	○	

※ ◎Best ○Good △Quite good ×No good

※ Regraing to the application implied datum, it show a generally selected datum and could be changeable according to the applicable conditions.



安全使用注意事項

Attention on Safety

- 工具をケースから取り出す際は、工具の飛び出しや刃先が素手に直接触れないように十分注意して下さい。
When removing tool from case, be careful of getting-out of tools and don't touch directly the cutting edges.
- 切れ刃を直接素手で触れないようにして下さい。
Never touch the cutting edges directly with bare hand.
- 工具を使用する際は破損する危険がありますので、必ずカバー・保護メガネ等を使用して下さい。
Use safety covers and eye protection, as tools may be broken.
- ホルダ等は、工具や加工内容に見合った物を使用して下さい。
工具はホルダにしっかりと固定し、振れを抑えるようにして下さい。
Use holders, etc. that match the tools and nature of the processing operations.
The tool should be firmly attached to the holder to prevent shaking.
- 被削材はしっかりと固定して下さい。
The work materials clamp firmly.
- 工具及び被削材の寸法はあらかじめ確認しておいて下さい。
Make sure of dimensions of tools work pieces before starting operation.
- 切削条件は加工物や使用機械に合わせて、調節する必要があります。
It is necessary to adjust conditions according to the dimensions of work materials and the machine.
- 用途に応じて切削油を選定して下さい。
不水溶性切削油を使用する場合は加工時に発生する火花や破損で引火、火災の危険があります。
防火対策を必ず行って下さい。
Select a cutting fluid appropriate to the particular usage.
Using a non-water cutting fluid could lead to fires due to sparks generated during processing or heat caused by breakage.
Ensure that you take proper fire-prevention measures.
- 使用中に異常(切削音・煙)が発生した場合は、ただちに機械を止めてください。
If abnormal sound, etc. occurs during processing, stop the machine immediately.
- 工具の改造はしないで下さい。
Don't modify tools.

アイコンガイド

Guide Lines to Icons

表面処理 Coating

TiAlN コート
TiAlN Coating

CX200 コート
CX200 Coating

CX400 コート
CX400 Coating

CX500 コート
CX500 Coating

DLC コート
DLC Coating

DIA コート
DIA Coating

工具材料 Tool Material

MG 超微粒子超硬合金
超微粒 Micro Grain Carbide

SMG 超々微粒子超硬合金
超々微粒 Super Micro Grain Carbide

刃数 Number of Flutes

  **2枚刃**
2Flutes

  **3枚刃**
3Flutes

 **4枚刃**
4Flutes

 **6枚刃**
6Flutes

 **8枚刃**
8Flutes

先端形状 Shape

 **ピンカド**
Sharp Edge

 **アタリ付**
Corner Protect

 **ラジウス**
Corner Radius

 **ボール**
Ball Nose

 **先端角 140°**
Point Angle 140°

 **先端角 145°**
Point Angle 145°

ねじれ角 Helix Angle

 **20°**
Helix Angle 20°

 **30°**
Helix Angle 30°

 **40°**
Helix Angle 40°

 **45°**
Helix Angle 45°

 **50°**
Helix Angle 50°

 **53°**
Helix Angle 53°

超硬合金エンドミル

Solid Carbide End Mills

スクエア Square

スクエア Square

ラジウス Radius

ボール Ball

ロングネック Long Neck

ラフニング Roughing

面取り加工用 Chamfering

ドリル Drill

2枚刃スクエアエンドミル

2-Flute Square End Mill

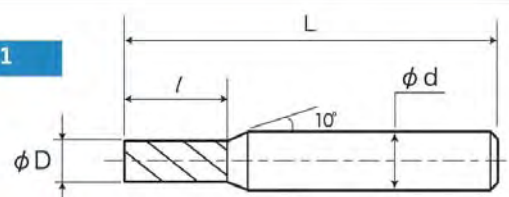
EM2



EM2060S

Model Flute D

Type 1



Type 2



特性 Features

- Wide Application available in work material from Steel to Alloy steel
- Addition to the original series of precision ultra-micro machining for aluminum alloys and plastic
- Reduce Chattering and provides an excellent machined surface.



外径公差 Tolerance
0
-0.02

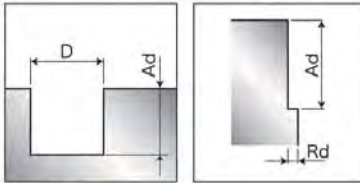


炭素鋼 Carbon Steel	合金鋼 Alloy Steel	調質鋼 Prehardened Steel	焼き入れ鋼 Hardened Steel				鋳鉄 Cast Iron	ステンレス鋼 Stainless Steels	アルミ合金 Aluminium Alloys	銅合金 Copper Alloys	チタン合金 耐熱合金 Ti/Ni Alloy	グラファイト Graphite	樹脂 Resin
~45HRC	~55HRC	~60HRC	~65HRC										
◎	◎	○	○				○						

◎ = Best ○ = Good

MODEL 型番	D 外径	/ 刃長	L 全長	d シャンク径	Type
EM2005S	0.5	1	40	4	1
EM2010S	1	2.5	40	4	1
EM2015S	1.5	3	40	4	1
EM2020S	2	6	40	4	1
EM2025S	2.5	7	40	4	1
EM2030S	3	8	45	6	1
EM2035S	3.5	8.5	45	6	1
EM2040S	4	11	45	6	1
EM2045S	4.5	11.5	45	6	1
EM2050S	5	12	45	6	1
EM2060S	6	13	50	6	2
EM2080S	8	19	60	8	2
EM2100S	10	22	70	10	2
EM2120S	12	26	75	12	2
EM2160S	16	32	90	16	2
EM2200S	20	38	100	20	2

推奨切削条件 Standard Milling Condition



- The table shows standard milling guidance of perforating process as written picture.
- Use a rigid and precise machine and tool holder.
- Select a cutting fluid appropriate to the particular usage.

溝切削 Slotting

被削材 Work Material	一般構造用圧延鋼, 炭素鋼 Structural steel, Carbon steel (~20HRC) S45C, S45C, S50C 等 AISI 1045, AISI 1049 鋳鉄, FC250 Cast Iron		炭素鋼, 合金鋼 Carbon steel Alloy steel (20 ~ 30HRC) S50C, SCM AISI 1049		合金鋼, 工具鋼 Alloy steel, Tool steel 調質鋼 Pre-hardened steel (30 ~ 45HRC) SKD61, NAK AISI H13		ステンレス鋼 Austenitic stainless steels SUS304 AISI 304 チタン合金 Titanium alloy	
外径 (mm) Diameter	回転数 (min ⁻¹) Revolution	送り速度 (mm/min) Feed rate	回転数 (min ⁻¹) Revolution	送り速度 (mm/min) Feed rate	回転数 (min ⁻¹) Revolution	送り速度 (mm/min) Feed rate	回転数 (min ⁻¹) Revolution	送り速度 (mm/min) Feed rate
0.5	17,000	50	14000	45	11000	30	9000	30
1	10,000	65	8500	55	6400	40	5200	35
2	5,500	90	4800	80	3800	55	3100	50
3	4,100	100	3500	85	2800	65	2300	60
4	3,400	135	2900	110	2200	70	1900	60
6	2,500	160	2100	135	1600	90	1300	65
8	1,900	160	1600	135	1200	85	1000	70
10	1,500	145	1250	120	950	75	800	65
12	1,250	120	1050	130	800	65	660	50
16	940	90	800	75	600	50	500	40
20	750	70	640	65	480	40	400	30
切削深度 Depth of Cut	Ad ≤ 0.5D (D > φ3) Ad ≤ 0.3D (φ2 ≤ D ≤ φ3) Ad ≤ 0.1D (D < φ2)							

側面切削 Side Milling

被削材 Work Material	一般構造用圧延鋼, 炭素鋼 Structural steel, Carbon steel (~20HRC) S45C, S45C, S50C 等 AISI 1045, AISI 1049 鋳鉄, FC250 Cast Iron		炭素鋼, 合金鋼 Carbon steel Alloy steel (20 ~ 30HRC) S50C, SCM AISI 1049		合金鋼, 工具鋼 Alloy steel, Tool steel 調質鋼 Pre-hardened steel (30 ~ 45HRC) SKD61, NAK AISI H13		ステンレス鋼 Austenitic stainless steels SUS304 AISI 304 チタン合金 Titanium alloy	
外径 (mm) Diameter	回転数 (min ⁻¹) Revolution	送り速度 (mm/min) Feed rate	回転数 (min ⁻¹) Revolution	送り速度 (mm/min) Feed rate	回転数 (min ⁻¹) Revolution	送り速度 (mm/min) Feed rate	回転数 (min ⁻¹) Revolution	送り速度 (mm/min) Feed rate
0.5	17,000	50	14000	45	11000	30	9000	30
1	10,000	65	8500	55	6400	40	5200	35
2	5,500	90	4800	80	3800	55	3100	50
3	4,100	100	3500	85	2800	65	2300	60
4	3,400	170	2900	140	2200	90	1900	80
6	2,500	200	2100	170	1600	110	1300	95
8	1,900	200	1600	170	1200	105	1000	100
10	1,500	180	1250	150	950	95	800	90
12	1,250	150	1050	130	800	80	660	75
16	940	110	800	95	600	60	500	55
20	750	90	640	80	480	50	400	45
切削深度 Depth of Cut	Ad ≤ 0.5D Rd ≤ 0.2D							

CX200 2枚刃スクエアエンドミル

2-Flute Square End Mill TiAlN Coat

CX200-EM2



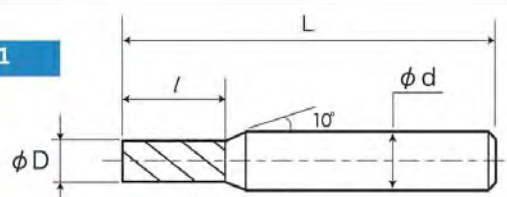
CX200-EM2060S

Model Flute D

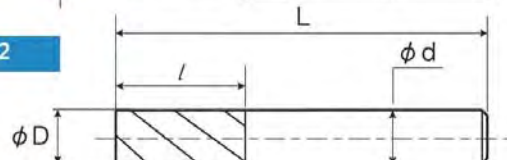
特性 Features

- Wide Application available in work material from Steel (HRC45) to Alloy steel
- Addition to the original series of precision ultra-micro machining for aluminum alloys and plastic
- Reduce Chattering and provides an excellent machined surface.
- Employs CX200 Coating

Type 1



Type 2

MG
超微粒

外径公差 Tolerance
0
-0.02

CX200
Coat

炭素鋼 Carbon Steel	合金鋼 Alloy Steel	調質鋼 Prehardened Steel	焼き入れ鋼 Hardened Steel				鋳鉄 Cast Iron	ステンレス鋼 Stainless Steels	アルミ合金 Aluminium Alloys	銅合金 Copper Alloys	チタン合金 耐熱合金 Ti/Ni Alloy	グラファイト Graphite	樹脂 Resin
~45HRC	~55HRC	~60HRC	~65HRC										
◎	◎	◎	◎	○			○	○	○	○			

◎ = Best ○ = Good

MODEL 型番	D 外径	/ 刃長	L 全長	d シャンク径	Type
CX200-EM2005S	0.5	1	40	4	1
CX200-EM2010S	1	2.5	40	4	1
CX200-EM2015S	1.5	3	40	4	1
CX200-EM2020S	2	6	40	4	1
CX200-EM2025S	2.5	7	40	4	1
CX200-EM2030S	3	8	45	6	1
CX200-EM2035S	3.5	8.5	45	6	1
CX200-EM2040S	4	11	45	6	1
CX200-EM2045S	4.5	11.5	45	6	1
CX200-EM2050S	5	12	45	6	1
CX200-EM2060S	6	13	50	6	2
CX200-EM2080S	8	19	60	8	2
CX200-EM2100S	10	22	70	10	2
CX200-EM2120S	12	26	75	12	2
CX200-EM2160S	16	32	90	16	2
CX200-EM2200S	20	38	100	20	2

スクエア Square

スクエア Square

ラジアス Radius

ボール Ball

ロングネック Long Neck

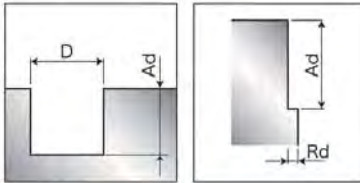
ラフニング Roughing

面取り加工用 Chamfering

ドリル Drill

CX200-EM2

推奨切削条件 Standard Milling Condition



- The table show standard milling guidance of perforating process as written picture.
- Use a rigid and precise machine and tool holder.
- Select a cutting fluid appropriate to the particular usage.

溝切削 Slotting

被削材 Work Material	一般構造用圧延鋼・炭素鋼 Structural steel, Carbon steel (~20HRC) SS400, S45C, S50C 等 AISI 1045, AISI 1049 鋳鉄, FC250 Cast Iron		炭素鋼・合金鋼 Carbon steel Alloy steel (20~30HRC) S50C, SCM AISI 1049		合金鋼・工具鋼 Alloy steel, Tool steel 調質鋼 Pre-hardened steel (30~45HRC) SKD61, NAK AISI H13		ステンレス鋼 Austenitic stainless steels SUS304 AISI 304 チタン合金 Titanium alloy		調質鋼, 焼き入れ鋼 Pre-harden Steel, Hardened Steels CEN A1, NAK80, SKD (35~45HRC)	
外径 (mm) Diameter	回転数 (min^{-1}) Revolution	送り速度 (mm/min) Feed rate	回転数 (min^{-1}) Revolution	送り速度 (mm/min) Feed rate	回転数 (min^{-1}) Revolution	送り速度 (mm/min) Feed rate	回転数 (min^{-1}) Revolution	送り速度 (mm/min) Feed rate	回転数 (min^{-1}) Revolution	送り速度 (mm/min) Feed rate
1	32000	300	14000	100	9500	70	9000	67	8000	50
2	16000	300	7100	120	4800	80	4600	76	4000	50
3	11000	300	4700	140	3100	90	2900	86	2600	55
4	8000	300	3500	140	2300	90	2200	86	1900	55
6	5300	300	2300	140	1500	90	1400	86	1300	55
8	4000	300	1700	140	1100	90	1000	86	990	60
10	3200	300	1400	140	950	95	900	90	790	60
12	2700	300	1100	140	790	95	750	90	660	60
16	2000	300	800	140	550	95	500	90	450	60
20	1600	300	650	140	450	95	400	90	350	60
切削深度 Depth of Cut	$Ad \leq 0.5D (D > \phi 3)$ $Ad \leq 0.3D (\phi 2 \leq D \leq \phi 3)$ $Ad \leq 0.1D (D < \phi 2)$									

側面切削 Side Milling

被削材 Work Material	一般構造用圧延鋼・炭素鋼 Structural steel, Carbon steel (~20HRC) SS400, S45C, S50C 等 AISI 1045, AISI 1049 鋳鉄, FC250 Cast Iron		炭素鋼・合金鋼 Carbon steel Alloy steel (20~30HRC) S50C, SCM AISI 1049		合金鋼・工具鋼 Alloy steel, Tool steel 調質鋼 Pre-hardened steel (30~45HRC) SKD61, NAK AISI H13		ステンレス鋼 Austenitic stainless steels SUS304 AISI 304 チタン合金 Titanium alloy		調質鋼, 焼き入れ鋼 Pre-harden Steel, Hardened Steels CEN A1, NAK80, SKD (35~45HRC)	
外径 (mm) Diameter	回転数 (min^{-1}) Revolution	送り速度 (mm/min) Feed rate	回転数 (min^{-1}) Revolution	送り速度 (mm/min) Feed rate	回転数 (min^{-1}) Revolution	送り速度 (mm/min) Feed rate	回転数 (min^{-1}) Revolution	送り速度 (mm/min) Feed rate	回転数 (min^{-1}) Revolution	送り速度 (mm/min) Feed rate
1	20000	600	20000	220	16000	160	15200	150	12000	60
2	20000	700	12000	250	8000	200	7600	190	6500	80
3	20000	750	9500	280	5800	220	5500	210	4700	90
4	16000	800	7100	280	4300	220	4100	210	3500	90
6	1060	900	4700	280	2900	220	2800	210	2300	90
8	8000	950	3500	280	2100	220	2000	210	1700	100
10	6400	950	2800	280	1700	220	1600	210	1400	100
12	5300	950	2300	280	1400	220	1300	210	1100	100
16	4000	950	1700	280	1000	220	950	210	800	100
20	3200	950	1400	280	800	220	760	210	650	100
切削深度 Depth of Cut	$Ad \leq 0.5D$ $Rd \leq 0.2D$									

スクエア Square

スクエア Square

ラジアス Radius

ボール Ball

ロングネック Long Neck

ラフニング Roughing

面取り加工用 Chamfering

ドリル Drill

4枚刃スクエアエンドミル

4-Flute Square End Mill

EM4



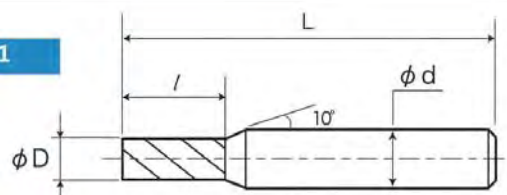
EM4060S

Model Flute D

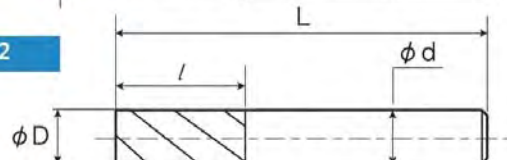
特性 Features

- Wide Application available in work material from Steel to Alloy steel
- Addition to the original series of precision ultra-micro machining for aluminum alloys and plastic
- Reduce Chattering and provides an excellent machined surface.

Type 1



Type 2



外径公差 Tolerance
0
-0.02

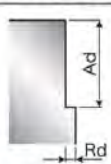


炭素鋼 Carbon Steel	合金鋼 Alloy Steel	調質鋼 Prehardened Steel	焼き入れ鋼 Hardened Steel				鋳鉄 Cast Iron	ステンレス鋼 Stainless Steels	アルミ合金 Aluminium Alloys	銅合金 Copper Alloys	チタン合金 耐熱合金 Ti/Ni Alloy	グラファイト Graphite	樹脂 Resin
~45HRC	~55HRC	~60HRC	~65HRC										
◎	◎	○	○				○						

◎ = Best ○ = Good

MODEL 型番	D 外径	/ 刃長	L 全長	d シャンク径	Type
EM4030S	3	8	45	6	1
EM4040S	4	9	45	6	1
EM4060S	6	13	50	6	2
EM4080S	8	19	60	8	2
EM4100S	10	22	70	10	2
EM4120S	12	26	75	12	2
EM4160S	16	32	90	16	2
EM4200S	20	38	100	20	2

推奨切削条件 Standard Milling Condition



- The table show standard milling guidance of perforating process as written picture.
- Use a rigid and precise machine and tool holder.
- Select a cutting fluid appropriate to the particular usage.

側面切削 Side Milling

被削材 Work Material	一般構造用圧延鋼・炭素鋼 Structural steel, Carbon steel (~ 20HRC) S5400, S45C, S50C AISI 1045, AISI1049 鋼鉄, FC250 Cast Iron			炭素鋼, 合金鋼 Carbon steel Alloy steel (20 ~ 30HRC) S50C, SCM AISI 1049		合金鋼, 工具鋼 Alloy steel, Tool steel 調質鋼 Pre-hardened steel (30 ~ 45HRC) SKD61, NAK AISI H13		ステンレス鋼 Austenitic stainless steels SUS304 AISI 304 チタン合金 Titanium alloy	
	外径 (mm) Diameter	回転数 (min ⁻¹) Revolution	送り速度 (mm/min) Feed rate	回転数 (min ⁻¹) Revolution	送り速度 (mm/min) Feed rate	回転数 (min ⁻¹) Revolution	送り速度 (mm/min) Feed rate	回転数 (min ⁻¹) Revolution	送り速度 (mm/min) Feed rate
	3	4100	150	3500	130	2800	100	2300	90
	4	3400	260	2900	210	2200	140	1900	120
	6	2500	300	2100	260	1600	170	1300	140
	8	1900	300	1600	260	1200	160	1000	150
	10	1500	270	1250	230	950	140	800	135
	12	1250	230	1050	200	800	120	660	110
	16	940	170	800	140	600	90	500	80
	20	750	140	640	120	480	75	400	70
切削深度 Depth of cut	Ads0.05D Rds1.5D Rds0.2D								

CX200 4 枚刃スクエアエンドミル

4-Flute Square End Mill TiAlN Coat

CX200-EM4



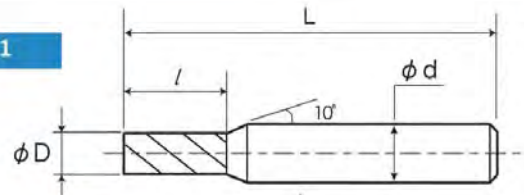
CX200-EM4060S

Model Flute D

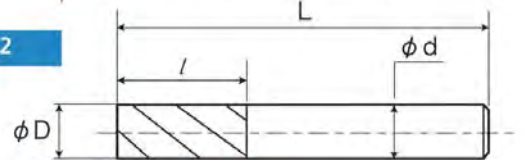
特性 Features

- 4 Fluted endmill for general application.
- Employs TiAlN Coating and is applicable for high speed And high feed operations

Type 1



Type 2

MG
超微粒

外径公差 Tolerance
0
-0.02

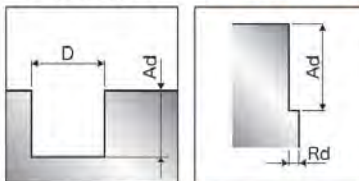
CX200
Coat

炭素鋼 Carbon Steel	合金鋼 Alloy Steel	調質鋼 Prehardened Steel	焼き入れ鋼 Hardened Steel				鋳鉄 Cast Iron	ステンレス鋼 Stainless Steels	アルミ合金 Aluminium Alloys	銅合金 Copper Alloys	チタン合金 耐熱合金 Ti/Ni Alloy	グラファイト Graphite	樹脂 Resin
◎	◎	◎	◎	○			○	○	○	○			

◎ = Best ○ = Good

MODEL 型番	D 外径	l 刃長	L 全長	d シャンク径	Type
CX200-EM4030S	3	8	45	6	1
CX200-EM4040S	4	9	45	6	1
CX200-EM4060S	6	13	50	6	2
CX200-EM4080S	8	19	60	8	2
CX200-EM4100S	10	22	70	10	2
CX200-EM4120S	12	26	75	12	2
CX200-EM4160S	16	32	90	16	2
CX200-EM4200S	20	38	100	20	2

推奨切削条件 Standard Milling Condition



- The table show standard milling guidance of perforating process as written picture.
- Use a rigid and precise machine and tool holder.
- Select a cutting fluid appropriate to the particular usage.

側面切削 Side Milling

被削材 Work Material	一般構造用圧延鋼、炭素鋼 Structural steel, Carbon steel (~20HRC) S5400, S45C, S50C AISI 1045, AISI1049 銕鉄, FC250 Castiron	炭素鋼・合金鋼 Carbon steel Alloy steel (20 ~ 30HRC) S50C, SCM AISI 1049	合金鋼、工具鋼 Alloy steel, Tool steel 調質鋼 Pre-hardened steel (30 ~ 45HRC) SKD6L, NAK AISI H13	ステンレス鋼 Austenitic stainless steels SUS304 AISI 304 チタン合金 Titanium alloy	調質鋼・焼き入れ鋼 Pre-harden Steel Hardened Steels CENAI, NAK80, SKD (35 ~ 45HRC)	焼き入れ鋼、超耐熱合金 Hardened steel, Hert Resistant alloy SKD11 (55 ~ 60HRC)						
外径 (mm) Diameter	回転数 (min ⁻¹) Revolution	送り速度 (mm/min) Feed rate	回転数 (min ⁻¹) Revolution	送り速度 (mm/min) Feed rate	回転数 (min ⁻¹) Revolution	送り速度 (mm/min) Feed rate	回転数 (min ⁻¹) Revolution	送り速度 (mm/min) Feed rate	回転数 (min ⁻¹) Revolution	送り速度 (mm/min) Feed rate	回転数 (min ⁻¹) Revolution	送り速度 (mm/min) Feed rate
3	20000	1125	9500	420	5800	330	5500	315	4700	135	2100	60
4	16000	1200	7100	420	4300	330	4100	315	3500	135	1500	60
6	10600	1350	4700	420	2900	330	2800	315	2300	135	1000	60
8	8000	1425	3500	420	2100	330	2000	315	1700	150	790	67.5
10	6400	1425	2800	420	1700	330	1600	315	1400	150	630	67.5
12	5300	1425	2300	420	1400	330	1300	315	1100	150	530	67.5
16	4000	1425	1700	420	1000	330	950	315	800	150	390	67.5
20	3200	1425	1400	420	800	330	760	315	650	150	310	67.5
溝切削 Slotting	Ad≤0.2D(D>φ3) Ad≤0.1D(D≤φ3) Rd≤1.5D								Ad≤0.05D Rd≤1.5D			
側面切削 Side Milling	Ad≤0.05D(D>φ3) Ad≤0.3D(φ2≤D≤φ3)								Ad≤0.05D			

スクエア Square

スクエア Square

Radius ラジアス

Ball ボール

Long Neck ロングネック

Roughing ラフニング

Chamfering 面取り加工

Drill ドリル

CX200 3枚刃スクエアエンドミル

CX200 Series 3-Flute Square End Mill

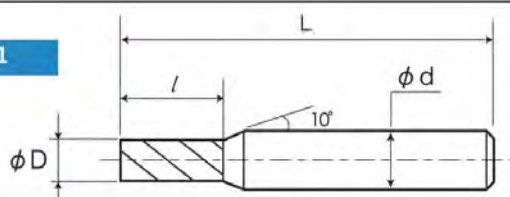
CX200-HEM3



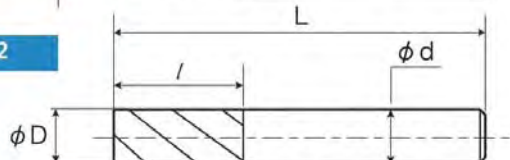
CX200-HEM3010

Model Flute D

Type 1



Type 2



特性 Features

- CX200-Coating is new epoch-Making Coating for super-long tool life, High-speed processing and dry cutting due to the high acid resistance and hardening if compared with other conventional and opular coating which is existing in the market
- 3-Flutes eliminates chattering and realizes processing from drilling to grooving without steps.
- CKK original designed chip-pocket enables similar or same cutting depth. And then feed rate can be increased more than double if compare with normal square endmill.



MG
超微粒



45°
Corner Protect



CX200
Coat

外径公差 Tolerance
0
-0.02

Corner Protect

炭素鋼 Carbon Steel	合金鋼 Alloy Steel	調質鋼 Prehardened Steel	焼き入れ鋼 Hardened Steel				鋳鉄 Cast Iron	ステンレス鋼 Stainless Steels	アルミ合金 Aluminium Alloys	銅合金 Copper Alloys	チタン合金 耐熱合金 Ti/Ni Alloy	グラファイト Graphite	樹脂 Resin
~45HRC	~55HRC	~60HRC	~65HRC										
◎	◎	◎	◎	○			○	◎	○	○			

◎ = Best ○ = Good

MODEL 型番	D 外径	/ 刃長	L 全長	d シャンク径	Type
CX200-HEM3010	1	4	60	6	1
CX200-HEM3015	1.5	6	60	6	1
CX200-HEM3020	2	8	60	6	1
CX200-HEM3025	2.5	10	60	6	1
CX200-HEM3030	3	16	60	6	1
CX200-HEM3040	4	18	60	6	1
CX200-HEM3050	5	21	60	6	1
CX200-HEM3060	6	21	60	6	2
CX200-HEM3070	7	24	70	8	1
CX200-HEM3075	7.5	24	70	8	1
CX200-HEM3080	8	26	75	8	2
CX200-HEM3090	9	26	80	10	1
CX200-HEM3100	10	34	90	10	2
CX200-HEM3110	11	34	100	12	1
CX200-HEM3120	12	38	100	12	2
CX200-HEM3160	16	48	110	16	2
CX200-HEM3200	20	56	130	20	2

スクエア Square

スクエア Square

ラジアス Radius

ボール Ball

ロングネック Long Neck

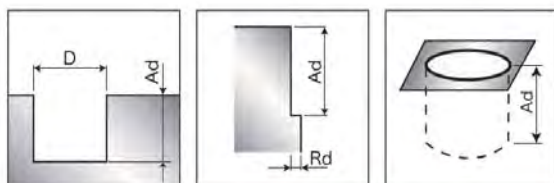
ラフニング Roughing

面取り加工用 Chamfering

ドリル Drill

CX200-HEM3

推奨切削条件 Standard Milling Condition



- The table shows standard milling guidance of perforating process as written picture.
- Use a rigid and precise machine and tool holder.
- Select a cutting fluid appropriate to the particular usage.
- In case the Revolution could not be increased by the machine used, please reduce feed speed and Revolution at same ratio.
- When mounting End Mills, the run out of the lip will have to be set within 0.01mm.
- In case of milling for stainless steel, please take wet cut milling.

溝切削 Slotting

被削材 Work Material	炭素鋼 Carbon Steel S45-S55C		合金鋼 工具鋼 Alloy Steel Tool Steel SKD.SCM		調質鋼 プリハードン鋼 Prehardened Steel 35-40HRC.HPM.NAK	
外径 (mm) Diameter	送り速度 (mm/min) Feed rate	回転数 (min ⁻¹) Revolution	送り速度 (mm/min) Feed rate	回転数 (min ⁻¹) Revolution	送り速度 (mm/min) Feed rate	回転数 (min ⁻¹) Revolution
1 ~ 1.5	277	25000	150	22300	127	19100
2 ~ 2.5	457	14700	232	12300	202	10700
3	502	10600	255	9000	232	8000
4	525	8000	270	6800	240	6000
5	592	6400	300	5400	270	4800
6	585	5300	300	4500	270	4000
7 ~ 7.5	577	4500	307	3900	262	3400
8	585	4000	300	3400	270	3000
9	592	3500	307	3000	277	2700
10	570	3200	292	2700	262	2400
11	570	2900	300	2500	262	2200
12	577	2700	300	2300	262	2000
16	472	2000	240	1700	210	1500
20	345	1600	180	1400	157	1200

Ad≤0.3D

側面切削 Side Milling

被削材 Work Material	炭素鋼 Carbon Steel S45-S55C				合金鋼 工具鋼 Alloy Steel Tool Steel SKD.SCM				調質鋼 プリハードン鋼 Prehardened Steel 35-40HRC.HPM.NAK			
	送り速度 (mm/min) Feed rate		回転数 (min ⁻¹) Revolution		送り速度 (mm/min) Feed rate		回転数 (min ⁻¹) Revolution		送り速度 (mm/min) Feed rate		回転数 (min ⁻¹) Revolution	
外径 (mm) Diameter	Standard	High Speed	Standard	High Speed	Standard	High Speed	Standard	High Speed	Standard	High Speed	Standard	High Speed
1 ~ 1.5	412	637	25000	50000	277	427	22300	44600	232	367	19100	38200
2 ~ 2.5	682	1050	14700	29400	435	667	12300	24700	375	577	10700	21500
3	750	1147	10600	21200	480	735	9000	18000	427	652	8000	15900
4	787	1200	8000	15900	502	772	6800	13500	442	682	6000	11900
5	877	1342	6400	12700	562	862	5400	10800	495	757	4800	9500
6	877	1350	5300	10600	562	862	4500	9000	502	765	4000	8000
7 ~ 7.5	862	1342	4500	9100	570	862	3900	7700	495	757	3400	6800
8	870	1342	4000	8000	562	862	3400	6800	495	757	3000	6000
9	885	1380	3500	7100	570	877	3000	6000	517	780	2700	5300
10	855	1312	3200	6400	547	840	2700	5400	487	742	2400	4800
11	855	1312	2900	5800	555	832	2500	4900	487	735	2200	4300
12	862	1305	2700	5300	555	840	2300	4500	480	742	2000	4000
16	697	1072	2000	4000	450	690	1700	3400	397	607	1500	3000
20	510	787	1600	3200	337	502	1400	2700	292	450	1200	2400

Ad≤1.5D Rd≤0.1D

Ad≤1.5D Rd≤0.05D

突っ込み切削 Perforating

被削材 Work Material	炭素鋼 Carbon Steel S45-S55C		合金鋼 工具鋼 Alloy Steel Tool Steel SKD.SCM		調質鋼 プリハードン鋼 Prehardened Steel 35-40HRC.HPM.NAK	
外径 (mm) Diameter	送り速度 (mm/min) Feed rate	回転数 (min ⁻¹) Revolution	送り速度 (mm/min) Feed rate	回転数 (min ⁻¹) Revolution	送り速度 (mm/min) Feed rate	回転数 (min ⁻¹) Revolution
1 ~ 1.5	70	15000	40	15000	50	15000
2 ~ 2.5	100	11000	60	9100	60	9100
3	200	9500	90	6000	100	6000
4	210	7200	110	4500	110	4500
5	260	5700	110	3600	120	3600
6	300	4800	140	3000	130	3000
7 ~ 7.5	300	4100	140	2600	110	2600
8	300	3600	120	2300	100	2300
9	300	3200	90	2000	90	2000
10	290	2900	90	1800	80	1800
11	280	2600	90	1600	80	1600
12	260	2400	80	1500	70	1500
16	210	1800	60	1100	60	1100
20	160	1400	50	900	50	900

Ad≤0.3D

スクエア Square

スクエア Square

ラジアス Radius

ボール Ball

ロングネック Long Neck

ラフニング Roughing

面取り加工用 Chamfering

ドリル Drill

CX200 3枚刃スクエアエンドミル ピンカド

CX200 Series 3-Flute Square End Mill Sharp Edge

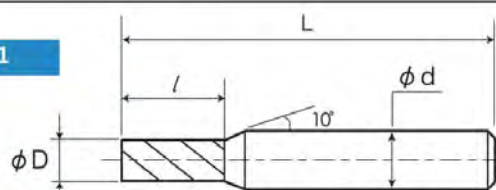
CX200-PHEM3



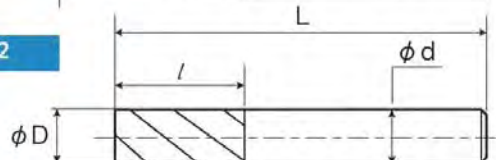
CX200-PHEM3010

Model Flute D

Type 1



Type 2



特性 Features

- CX200-Coating have high oxidation resistance and hardening which exceeds the existing coating and provides long tool life, and suitable for high speed processing and dry milling.
- Combination of Negative radius blade and 45 degree helix blades enables high rigidity and sharpness by high feed speed, with high efficiency
- 3Flute eliminates chattering and suitable for drilling processing
- CKK Original design Chip pocket enables similar or same cutting depth which 3-flutes could realize



MG
超微粒



45°



Sharp
Edge

外径公差 Tolerance
0
-0.02



CX200
Coat

炭素鋼 Carbon Steel	合金鋼 Alloy Steel	調質鋼 Prehardened Steel	焼き入れ鋼 Hardened Steel				鋳鉄 Cast Iron	ステンレス鋼 Stainless Steels	アルミ合金 Aluminium Alloys	銅合金 Copper Alloys	チタン合金 耐熱合金 Ti/Ni Alloy	グラファイト Graphite	樹脂 Resin
~45HRC	~55HRC	~60HRC	~65HRC										
◎	◎	◎	◎	○			○	◎	○	○			

◎ = Best ○ = Good

MODEL 型番	D 外径	l 刃長	L 全長	d シャンク径	Type
CX200-PHEM3010	1	4	60	6	1
CX200-PHEM3015	1.5	6	60	6	1
CX200-PHEM3020	2	8	60	6	1
CX200-PHEM3025	2.5	10	60	6	1
CX200-PHEM3030	3	16	60	6	1
CX200-PHEM3040	4	18	60	6	1
CX200-PHEM3050	5	21	60	6	1
CX200-PHEM3060	6	21	60	6	2
CX200-PHEM3070	7	24	70	8	1
CX200-PHEM3075	7.5	24	70	8	1
CX200-PHEM3080	8	26	75	8	2
CX200-PHEM3090	9	26	80	10	1
CX200-PHEM3100	10	34	90	10	2
CX200-PHEM3110	11	34	100	12	1
CX200-PHEM3120	12	38	100	12	2
CX200-PHEM3160	16	48	110	16	2
CX200-PHEM3200	20	56	130	20	2

スクエア Square

スクエア Square

ラジアス Radius

ボール Ball

ロングネック Long Neck

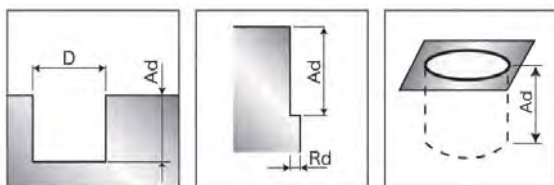
ラフニング Roughing

面取り加工用 Chamfering

ドリル Drill

CX200-PHEM3

推奨切削条件 Standard Milling Condition



- The table shows standard milling guidance of perforating process as written picture.
- Use a rigid and precise machine and tool holder.
- Select a cutting fluid appropriate to the particular usage.
- In case the Revolution could not be increased by the machine used, please reduce feed speed and Revolution at same ratio.
- When mounting End Mills, the run out of the lip will have to be set within 0.01mm.
- In case of milling for stainless steel, please take wet cut milling.

溝切削 Slotting

被削材 Work Material	炭素鋼 Carbon Steel S45-S55 C		合金鋼 工具鋼 Alloy Steel Tool Steel SKD,SCM		調質鋼 プリハードン鋼 Prehardened Steel 35-40HRC,HPM,NAK	
外径 (mm) Diameter	送り速度 (mm/min) Feed rate	回転数 (min ⁻¹) Revolution	送り速度 (mm/min) Feed rate	回転数 (min ⁻¹) Revolution	送り速度 (mm/min) Feed rate	回転数 (min ⁻¹) Revolution
1 ~ 1.5	277	25000	150	22300	127	19100
2 ~ 2.5	457	14700	232	12300	202	10700
3	502	10600	255	9000	232	8000
4	525	8000	270	6800	240	6000
5	592	6400	300	5400	270	4800
6	585	5300	300	4500	270	4000
7 ~ 7.5	577	4500	307	3900	262	3400
8	585	4000	300	3400	270	3000
9	592	3500	307	3000	277	2700
10	570	3200	292	2700	262	2400
11	570	2900	300	2500	262	2200
12	577	2700	300	2300	262	2000
16	472	2000	240	1700	210	1500
20	345	1600	180	1400	157	1200

Ad≤0.3D

側面切削 Side Milling

被削材 Work Material	炭素鋼 Carbon Steel S45-S55 C				合金鋼 工具鋼 Alloy Steel Tool Steel SKD,SCM				調質鋼 プリハードン鋼 Prehardened Steel 35-40HRC,HPM,NAK			
	送り速度 (mm/min) Feed rate		回転数 (min ⁻¹) Revolution		送り速度 (mm/min) Feed rate		回転数 (min ⁻¹) Revolution		送り速度 (mm/min) Feed rate		回転数 (min ⁻¹) Revolution	
外径 (mm) Diameter	Standard	High Speed	Standard	High Speed	Standard	High Speed	Standard	High Speed	Standard	High Speed	Standard	High Speed
1 ~ 1.5	412	637	25000	50000	277	427	22300	44600	232	367	19100	38200
2 ~ 2.5	682	1050	14700	29400	435	667	12300	24700	375	577	10700	21500
3	750	1147	10600	21200	480	735	9000	18000	427	652	8000	15900
4	787	1200	8000	15900	502	772	6800	13500	442	682	6000	11900
5	877	1342	6400	12700	562	862	5400	10800	495	757	4800	9500
6	877	1350	5300	10600	562	862	4500	9000	502	765	4000	8000
7 ~ 7.5	862	1342	4500	9100	570	862	3900	7700	495	757	3400	6800
8	870	1342	4000	8000	562	862	3400	6800	495	757	3000	6000
9	885	1380	3500	7100	570	877	3000	6000	517	780	2700	5300
10	855	1312	3200	6400	547	840	2700	5400	487	742	2400	4800
11	855	1312	2900	5800	555	832	2500	4900	487	735	2200	4300
12	862	1305	2700	5300	555	840	2300	4500	480	742	2000	4000
16	697	1072	2000	4000	450	690	1700	3400	397	607	1500	3000
20	510	787	1600	3200	337	502	1400	2700	292	450	1200	2400

Ad≤1.5D Rd≤0.1D

Ad≤1.5D Rd≤0.05D

突っ込み切削 Perforating

被削材 Work Material	炭素鋼 Carbon Steel S45-S55 C		合金鋼 工具鋼 Alloy Steel Tool Steel SKD,SCM		調質鋼 プリハードン鋼 Prehardened Steel 35-40HRC,HPM,NAK	
外径 (mm) Diameter	送り速度 (mm/min) Feed rate	回転数 (min ⁻¹) Revolution	送り速度 (mm/min) Feed rate	回転数 (min ⁻¹) Revolution	送り速度 (mm/min) Feed rate	回転数 (min ⁻¹) Revolution
1 ~ 1.5	70	15000	40	15000	50	15000
2 ~ 2.5	100	11000	60	9100	60	9100
3	200	9500	90	6000	100	6000
4	210	7200	110	4500	110	4500
5	260	5700	110	3600	120	3600
6	300	4800	140	3000	130	3000
7 ~ 7.5	300	4100	140	2600	110	2600
8	300	3600	120	2300	100	2300
9	300	3200	90	2000	90	2000
10	290	2900	90	1800	80	1800
11	280	2600	90	1600	80	1600
12	260	2400	80	1500	70	1500
16	210	1800	60	1100	60	1100
20	160	1400	50	900	50	900

Ad≤0.3D

スクエア Square

スクエア Square

ラジアス Radius

ボール Ball

ロングネック Long Neck

ラフニング Roughing

面取り加工用 Chamfering

ドリル Drill

CX200 4枚刃スクエアエンドミル

CX200 Series 4-Flute Square End Mill

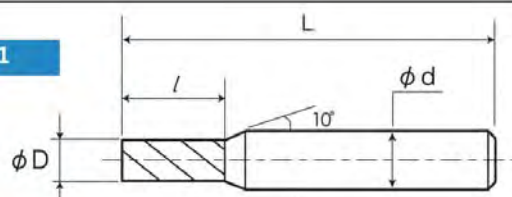
CX200-HEM4



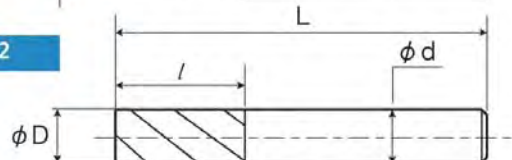
CX200-HEM4020

Model Flute D

Type 1



Type 2



特性 Features

- CX200-Coating have high oxidation resistance and hardening which exceeds the existing coating and provides long tool life, and suitable for high speed processing and dry milling.
- Combination of Negative radius blade and 45 degree helix blades enables high rigidity and sharpness by high feed speed, with high efficiency
- 4Flute eliminates chattering and suitable for drilling processing
- CKK Original design Chip pocket enables similar or same cutting depth which 2-flutes could realize
- Feed rate can be increased more than double if compared with standard End-Mills



MG
超微粒



45°



Corner
Protect

外径公差 Tolerance
0
-0.02

CX200
Coat

炭素鋼 Carbon Steel	合金鋼 Alloy Steel	調質鋼 Prehardened Steel	焼き入れ鋼 Hardened Steel				鋳鉄 Cast Iron	ステンレス鋼 Stainless Steels	アルミ合金 Aluminium Alloys	銅合金 Copper Alloys	チタン合金 耐熱合金 Ti/Ni Alloy	グラファイト Graphite	樹脂 Resin
			~45HRC	~55HRC	~60HRC	~65HRC							
◎	◎	◎	◎	○			○	◎	○	○			

◎ = Best ○ = Good

MODEL 型番	D 外径	/ 刃長	L 全長	d シャンク径	Type
CX200-HEM4020	2	8	60	6	1
CX200-HEM4025	2.5	10	60	6	1
CX200-HEM4030	3	16	60	6	1
CX200-HEM4040	4	18	60	6	1
CX200-HEM4050	5	21	60	6	1
CX200-HEM4060	6	21	60	6	2
CX200-HEM4070	7	24	60	8	1
CX200-HEM4075	7.5	24	60	8	1
CX200-HEM4080	8	26	75	8	2
CX200-HEM4100	10	34	90	10	2
CX200-HEM4120	12	38	100	12	2
CX200-HEM4160	16	48	110	16	2
CX200-HEM4200	20	56	130	20	2

スクエア Square

スクエア Square

ラジアス Radius

ボール Ball

ロングネック Long Neck

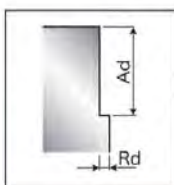
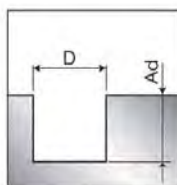
ラフニング Roughing

面取り加工用 Chamfering

ドリル Drill

CX200-HEM4

推奨切削条件 Standard Milling Condition



- The table shows standard milling guidance of perforating process as written picture.
- Use a rigid and precise machine and tool holder.
- Select a cutting fluid appropriate to the particular usage.
- In case the Revolution could not be increased by the machine used, please reduce feed speed and Revolution at same ratio.
- When mounting End Mills, the run out of the lip will have to be set within 0.01mm.
- In case of milling for stainless steel, please take wet cut milling.

溝切削 Slotting

被削材 Work Material	炭素鋼 Carbon Steel S45-S55C		合金鋼 工具鋼 Alloy Steel/Tool Steel SKD,SCM		調質鋼 プリハードン鋼 Prehardened Steel 35-40HRC,HPM,NAK	
外径 (mm) Diameter	送り速度 (mm/min) Feed rate	回転数 (min ⁻¹) Revolution	送り速度 (mm/min) Feed rate	回転数 (min ⁻¹) Revolution	送り速度 (mm/min) Feed rate	回転数 (min ⁻¹) Revolution
2 ~ 2.5	610	14700	310	12300	270	10700
3	670	10600	340	9000	310	8000
4	700	8000	360	6800	320	6000
5	790	6400	400	5400	360	4800
6	780	5300	400	4500	360	4000
7 ~ 7.5	770	4500	410	3900	350	3400
8	780	4000	400	3400	360	3000
10	760	3200	390	2700	350	2400
12	770	2700	400	2300	350	2000
16	630	2000	320	1700	280	1500
20	460	1600	240	1400	210	1200
Ad≤0.3D						

側面切削 Side Milling

被削材 Work Material	炭素鋼 Carbon Steel S45-S55C				合金鋼 工具鋼 Alloy Steel/Tool Steel SKD,SCM				調質鋼 プリハードン鋼 Prehardened Steel 35-40HRC,HPM,NAK			
	送り速度 (mm/min) Feed rate		回転数 (min ⁻¹) Revolution		送り速度 (mm/min) Feed rate		回転数 (min ⁻¹) Revolution		送り速度 (mm/min) Feed rate		回転数 (min ⁻¹) Revolution	
外径 (mm) Diameter	Standard	High Speed	Standard	High Speed	Standard	High Speed	Standard	High Speed	Standard	High Speed	Standard	High Speed
2 ~ 2.5	910	1400	14700	29400	580	890	12300	24700	500	770	10700	21500
3	1000	1530	10600	21200	640	980	9000	18000	570	870	8000	15900
4	1050	1600	8000	15900	670	1030	6800	13500	590	910	6000	11900
5	1170	1790	6400	12700	750	1150	5400	10800	660	1010	4800	9500
6	1170	1800	5300	10600	750	1150	4500	9000	670	1020	4000	8000
7 ~ 7.5	1150	1790	4500	9100	760	1150	3900	7700	660	1010	3400	6800
8	1160	1790	4000	8000	750	1150	3400	6800	660	1010	3000	6000
10	1140	1750	3200	6400	730	1120	2700	5400	650	990	2400	4800
12	1150	1740	2700	5300	740	1120	2300	4500	640	990	2000	4000
16	930	1430	2000	4000	600	920	1700	3400	530	810	1500	3000
20	680	1050	1600	3200	450	670	1400	2700	390	600	1200	2400
Ad≤1.5D Rd≤0.1D					Ad≤1.5D Rd≤0.05D							

スクエア Square

スクエア Square

ラジアス Radius

ボール Ball

ロングネック Long Neck

ラフニング Roughing

面取り加工用 Chamfering

ドリル Drill

CX200 4枚刃スクエアエンドミル ピンカド

CX200 Series 4-Flute Square End Mill Sharp Edge

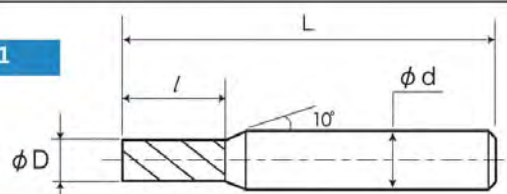
CX200-PHEM4



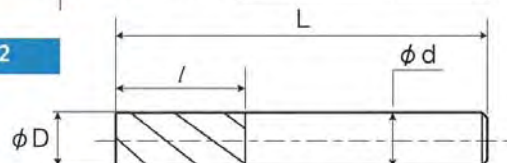
CX200-PHEM4100

Model Flute D

Type 1



Type 2



特性 Features

- New series CX200-HEM4 Shape Edge
- CX200-Coating have high oxidation resistance and hardening which exceeds the existing coating and provides long tool life, and suitable for high speed processing and dry milling.
- Combination of Negative radius blade and 45 degree helix blades enables high rigidity and sharpness by high feed speed, with high efficiency
- 4Flute eliminates chattering and suitable for drilling processing
- CKK Original design Chip pocket enables similar or same cutting depth which 2-flutes could realize
- Feed rate can be increased more than double if compared with standard End-Mills



外径公差 Tolerance
0
-0.02



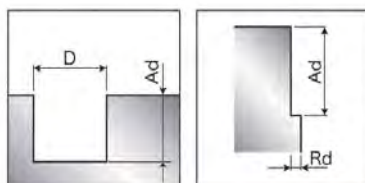
炭素鋼 Carbon Steel	合金鋼 Alloy Steel	調質鋼 Prehardened Steel	焼き入れ鋼 Hardened Steel				鋳鉄 Cast Iron	ステンレス鋼 Stainless Steels	アルミ合金 Aluminium Alloys	銅合金 Copper Alloys	チタン合金 耐熱合金 Ti/Ni Alloy	グラファイト Graphite	樹脂 Resin
			~45HRC	~55HRC	~60HRC	~65HRC							
◎	◎	◎	◎	○			○	◎	○	○			

◎ = Best ○ = Good

MODEL 型番	D 外径	l 刃長	L 全長	d シャンク径	Type
CX200-PHEM4020	2	8	60	6	1
CX200-PHEM4025	2.5	10	60	6	1
CX200-PHEM4030	3	16	60	6	1
CX200-PHEM4040	4	18	60	6	1
CX200-PHEM4050	5	21	60	6	1
CX200-PHEM4060	6	21	60	6	2
CX200-PHEM4070	7	24	60	8	1
CX200-PHEM4075	7.5	24	60	8	1
CX200-PHEM4080	8	26	75	8	2
CX200-PHEM4100	10	34	90	10	2
CX200-PHEM4120	12	38	100	12	2
CX200-PHEM4160	16	48	110	16	2
CX200-PHEM4200	20	56	130	20	2

CX200-PHEM4

推奨切削条件 Standard Milling Condition



- The table shows standard milling guidance of perforating process as written picture.
- Use a rigid and precise machine and tool holder.
- Select a cutting fluid appropriate to the particular usage.
- In case the Revolution could not be increased by the machine used, please reduce feed speed and Revolution at same ratio.
- When mounting End Mills, the run out of the lip will have to be set within 0.01mm.
- In case of milling for stainless steel, please take wet cut milling.

溝切削 Slotting

被削材 Work Material	炭素鋼 Carbon Steel S45-S55C		合金鋼 工具鋼 Alloy Steel Tool Steel SKD.SCM		調質鋼 35-40HRC.HPM.NAK	
	送り速度 (mm/min) Feed rate	回転数 (min ⁻¹) Revolution	送り速度 (mm/min) Feed rate	回転数 (min ⁻¹) Revolution	送り速度 (mm/min) Feed rate	回転数 (min ⁻¹) Revolution
2 ~ 2.5	610	14700	310	12300	270	10700
3	670	10600	340	9000	310	8000
4	700	8000	360	6800	320	6000
5	790	6400	400	5400	360	4800
6	780	5300	400	4500	360	4000
7 ~ 7.5	770	4500	410	3900	350	3400
8	780	4000	400	3400	360	3000
10	760	3200	390	2700	350	2400
12	770	2700	400	2300	350	2000
16	630	2000	320	1700	280	1500
20	460	1600	240	1400	210	1200
Ad≤0.3D						

側面切削 Side Milling

被削材 Work Material	炭素鋼 S45-S55C				合金鋼 工具鋼 Alloy Steel Tool Steel SKD.SCM				調質鋼 35-40HRC.HPM.NAK			
	送り速度 (mm/min) Feed rate		回転数 (min ⁻¹) Revolution		送り速度 (mm/min) Feed rate		回転数 (min ⁻¹) Revolution		送り速度 (mm/min) Feed rate		回転数 (min ⁻¹) Revolution	
	Standard	High Speed	Standard	High Speed	Standard	High Speed	Standard	High Speed	Standard	High Speed	Standard	High Speed
2 ~ 2.5	910	1400	14700	29400	580	890	12300	24700	500	770	10700	21500
3	1000	1530	10600	21200	640	980	9000	18000	570	870	8000	15900
4	1050	1600	8000	15900	670	1030	6800	13500	590	910	6000	11900
5	1170	1790	6400	12700	750	1150	5400	10800	660	1010	4800	9500
6	1170	1800	5300	10600	750	1150	4500	9000	670	1020	4000	8000
7 ~ 7.5	1150	1790	4500	9100	760	1150	3900	7700	660	1010	3400	6800
8	1160	1790	4000	8000	750	1150	3400	6800	660	1010	3000	6000
10	1140	1750	3200	6400	730	1120	2700	5400	650	990	2400	4800
12	1150	1740	2700	5300	740	1120	2300	4500	640	990	2000	4000
16	930	1430	2000	4000	600	920	1700	3400	530	810	1500	3000
20	680	1050	1600	3200	450	670	1400	2700	390	600	1200	2400
Ad≤1.5D Rd≤0.1D					Ad≤1.5D Rd≤0.05D							

スクエア Square

スクエア Square

ラジアス Radius

ボール Ball

ロングネック Long Neck

ラフニング Roughing

面取り加工用 Chamfering

ドリル Drill

CX200 4・6枚刃 ハイヘリカル スクエアエンドミル

CX200 Series 4・6-Flute High-helical Square End Mill

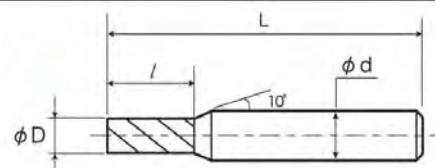
CX200-PMER



CX200-PMER6100

Model Flute D

Type 1



Type 2



特性 Features

- Improvement of CX200 Coating have high oxidation resistance and high hardening exceeding the existing coating meet our own high rigidity requirement to ensure exceptional piece-to-piece conformity and tool life in the processing of prehardened steel and carbon steel
- Combination of Negative radius blade and 45 degree helix blades enables high rigidity and sharpness by high feed speed, with high efficiency
- Positive shaped rake angle, bottom edge corner of the shape edge and 53 degree helix flutes provide best processing of steel, prehardened steel, aluminum and finishing of pocket wall process of Mold base



外径 Diameter	公差 Tolerance
1~3	-0.014
4~6	-0.028
8~10	-0.020
12~16	-0.038
20	-0.025
	-0.045
	-0.032
	-0.059
	-0.040
	-0.070

炭素鋼 Carbon Steel	合金鋼 Alloy Steel	調質鋼 Prehardened Steel	焼き入れ鋼 Hardened Steel				鋳鉄 Cast Iron	ステンレス鋼 Stainless Steels	アルミ合金 Aluminium Alloys	銅合金 Copper Alloys	チタン合金 耐熱合金 Ti/Ni Alloy	グラファイト Graphite	樹脂 Resin
~45HRC	~55HRC	~60HRC	~65HRC										
◎	◎	◎	◎	○			○	◎	○	○			

◎ = Best ○ = Good

MODEL 型番	D 外径	l 刃長	L 全長	d シャンク径	Flute 刃数	Type
CX200-PMER4010	1	2.5	60	6	4	1
CX200-PMER4020	2	5	60	6	4	1
CX200-PMER4030	3	10	60	6	4	1
CX200-PMER4040	4	12	60	6	4	1
CX200-PMER4050	5	15	60	6	4	1
CX200-PMER6060	6	15	60	6	6	2
CX200-PMER6080	8	20	75	8	6	2
CX200-PMER6100	10	25	80	10	6	2
CX200-PMER6120	12	30	100	12	6	2
CX200-PMER6160	16	40	110	16	6	2
CX200-PMER6200	20	45	130	20	6	2

スクエア Square

スクエア Square

ラジアス Radius

ボール Ball

ロングネック Long Neck

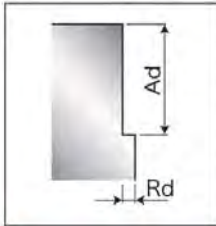
ラフニング Roughing

面取り加工用 Chamfering

ドリル Drill

CX200-PMER

推奨切削条件 Standard Milling Condition



- The table shows standard milling guidance of perforating process as written picture.
- Use a rigid and precise machine and tool holder.
- Select a cutting fluid appropriate to the particular usage.
- In case the Revolution could not be increased by the machine used, please reduce feed speed and Revolution at same ratio.
- When mounting End Mills, the run out of the lip will have to be set within 0.01mm.
- Down Cut milling is required for side milling processing.
- Reduce milling condition when chattering is occurred in side milling processing.
- For Groove milling, it is recommended to take 80% of feed speed and Revolution written in the table.
- In case of milling for stainless steel, please take wet cut milling.

被削材 Work Material	炭素鋼 Carbon Steel S45~S55C				合金鋼 工具鋼 Alloy Steel bTool Steel SKD.SCM				調質鋼 プリハートン鋼 Prehardened Steel 35~40HRC.HP.M.NAK			
	送り速度 (mm/min) Feed rate		回転数 (min ⁻¹) Revolution		送り速度 (mm/min) Feed rate		回転数 (min ⁻¹) Revolution		送り速度 (mm/min) Feed rate		回転数 (min ⁻¹) Revolution	
	Standard	High Speed	Standard	High Speed	Standard	High Speed	Standard	High Speed	Standard	High Speed	Standard	High Speed
1	600	1600	17500	50000	600	1600	17500	50000	500	1600	17500	50000
2	1300	3200	17500	45000	1300	3200	17500	45000	1100	2900	17500	43800
3	1700	3400	14000	30500	1700	3400	14000	30500	1300	3100	13000	29500
4	1700	3800	10500	22800	1700	3800	10500	22800	1300	3400	9500	22000
5	2000	4300	8600	18500	2000	4300	8600	18500	1400	3900	7800	17800
6	2500	5500	6900	15000	2500	5500	6900	15000	1900	5100	6400	14500
8	2600	5600	5200	11300	2600	5600	5200	11300	1900	5100	4800	11000
10	2500	5500	4100	9000	2500	5500	4100	9000	1800	5000	3800	8800
12	2400	5300	3500	7600	2400	5300	3500	7600	1800	4800	3200	7300
16	2200	4900	2600	5700	2200	4900	2600	5700	1700	4400	2400	5500
20	2100	4500	2200	4600	2100	4500	2200	4600	1600	4100	2100	4400
Ad	≤1.5D											
Rd 標準	≤0.1D											
高速	≤0.05D											

スクエア Square

スクエア Square

ラジアス Radius

ボール Ball

ロングネック Long Neck

ラフニング Roughing

面取り加工用 Chamfering

ドリル Drill

CX500 高硬度用スクエアエンドミル

CX500-HMER



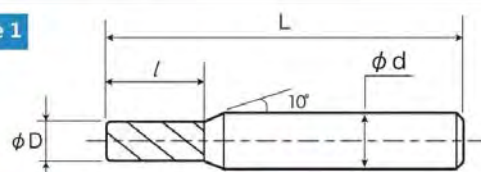
CX500-HMER6100

Model Flute D

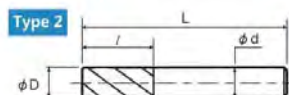
| 特 征 Features

- CX500-Coating is new epoch-making coating developed for super-long tool life, High-speed processing and dry cutting due to the high acid resistance and hardening if compared with other conventional and popular coating which is existing in the market.
- The blades designed with infinitesimal radius in order to eliminate chattering.(D3 only)
- Minimize falling of tools in side milling processing
- Applied for hardened steel processing (Up to 65 HRC)

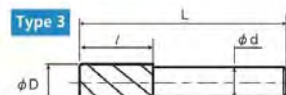
Type 1



Type 2



Type 3



外径 Diameter	公差 Tolerance
1~25	-0.005 -0.035



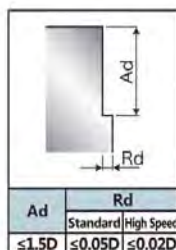
炭素鋼 Carbon Steel	合金鋼 Alloy Steel	調質鋼 Prehardened Steel	焼き入れ鋼 Hardened Steel				鋳鉄 Cast Iron	ステンレス鋼 Stainless Steels	アルミ合金 Aluminium Alloys	銅合金 Copper Alloys	チタン合金 耐熱合金 Ti/Ni Alloy	グラファイト Graphite	樹脂 Resin
○	○	○	○	◎	◎	◎	◎	○					

◎ = Best ○ = Good

MODEL 型番	D 外径	l 刃長	L 全長	d シャンク径	Flute 刃数	Type
CX500-HMER4010	1	2.5	60	6	4	1
CX500-HMER4015	1.5	3.8	60	6	4	1
CX500-HMER4020	2	5	60	6	4	1
CX500-HMER4025	2.5	6.3	60	6	4	1
CX500-HMER4030	3	10	60	6	4	1
CX500-HMER4035	3.5	12	60	6	4	1
CX500-HMER4040	4	12	60	6	4	1
CX500-HMER4045	4.5	15	60	6	4	1
CX500-HMER4050	5	15	60	6	4	1
CX500-HMER4055	5.5	15	60	6	4	1
CX500-HMER6060	6	18	60	6	6	2
CX500-HMER6080	8	24	75	8	6	2
CX500-HMER6100	10	30	100	10	6	2
CX500-HMER6120	12	35	100	12	6	2
CX500-HMER6140	14	35	105	16	6	1
CX500-HMER6160	16	45	110	16	6	2
CX500-HMER6180	18	40	120	20	6	1
CX500-HMER6200	20	50	125	20	6	2
CX500-HMER6220	22	50	135	20	6	3
CX500-HMER8250	25	50	140	25	8	2

CX500-HMER

推奨切削条件 Standard Milling Condition



- The table show standard milling guidance of perforating process as written picture
- Use a rigid and precise machine and tool holder
- Select a cutting fluid appropriate to the particular usage
- In case the Revolution could not be increased by the machine used, Please reduce feed speed and Revolution speed at same ration
- When mounting End Mills, The run out of the till will have to be set within 0.01mm

被削材 Work Material	炭素鋼 carbon steel (40 ~ 55RHC)				高硬度鋼 Hardened steel (55 ~ 60RHC)				高硬度鋼 Hardened steel (60 ~ 65RHC)			
	送り速度 (mm/min) Feed rate		回転数 (mm ⁻¹) Revolution		送り速度 (mm/min) Feed rate		回転数 (mm ⁻¹) Revolution		送り速度 (mm/min) Feed rate		回転数 (mm ⁻¹) Revolution	
	Standard	High Speed	Standard	High Speed	Standard	High Speed	Standard	High Speed	Standard	High Speed	Standard	High Speed
外径 (mm) Diameter												
1	650	1660	22300	50000	380	1140	17200	40700	270	800	13700	32100
1.5	660	1940	14900	37800	400	1190	11500	27200	280	830	9100	21400
2	660	1940	11100	28300	400	1190	8600	20400	280	830	6800	16100
2.5	680	2010	8900	22700	410	1230	6900	16300	290	860	5500	12900
3	680	2010	7400	18900	410	1230	5700	13600	290	860	4600	10700
3.5	680	2010	6400	16200	420	1290	4900	11600	290	880	3900	9200
4	700	2070	5600	14200	420	1290	4300	10200	290	880	3400	8000
4.5	850	2500	5000	12600	500	1400	3800	9100	340	1000	3000	7100
5	950	2900	4500	11300	550	1600	3400	8100	380	1110	2700	6400
5.5	1050	3070	4100	10300	630	1750	3100	7400	420	1250	2500	5800
6	1050	3070	3700	9400	630	1900	2900	6800	450	1340	2300	5400
8	1050	3120	2800	7100	610	1900	2100	5100	430	1320	1700	4000
10	1020	3070	2200	5700	610	1870	1700	4100	440	1290	1400	3200
12	1020	2940	1900	4700	590	1870	1400	3400	350	1260	1100	2700
14	900	2500	1600	4000	530	1650	1200	2900	350	1080	1000	2300
16	770	2310	1400	3500	480	1500	1100	2500	350	1080	900	2000
18	770	2310	1200	3100	480	1500	1000	2300	350	1080	800	1800
20	710	2210	110	2800	450	1440	900	2000	350	1080	700	1600
22	710	2210	1000	2600	450	1440	800	1900	350	1080	600	1500
25	710	2210	900	2300	450	1440	700	1600	350	1080	500	1300

スクエア Square

スクエア Square

ラジアス Radius

ボール Ball

ロングネック Long Neck

ラフィング Roughing

面取り加工用 Chamfering

ドリル Drill

CX200 4枚刃 スクエアエンドミル

CX200 Series 4-Flute Square End Mill For Plunge Cutting

CX200-ZHEM4



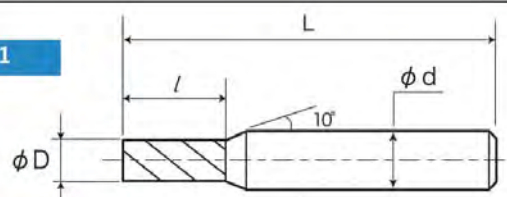
CX200-ZHEM4010

Model Flute D

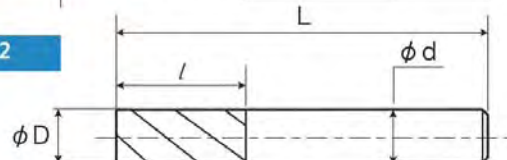
特性 Features

- CX200-Coating have high oxidation resistance and hardening which exceeds the existing coating and provides long tool life, and suitable for high speed processing and dry milling.
- Combination of Negative radius blade and 45 degree helix blades enables high rigidity and sharpness by high feed speed, with high efficiency
- 4Flute eliminates chattering and suitable for drilling processing
- CKK Original design Chip pocket enables similar or same cutting depth which 2-flutes could realize
- Feed rate can be increased more than double if compared with standard End-Mills

Type 1



Type 2



外径公差 Tolerance
0
-0.02



炭素鋼 Carbon Steel	合金鋼 Alloy Steel	調質鋼 Prehardened Steel	焼き入れ鋼 Hardened Steel				鋳鉄 Cast Iron	ステンレス鋼 Stainless Steels	アルミ合金 Aluminium Alloys	銅合金 Copper Alloys	チタン合金 耐熱合金 Ti/Ni Alloy	グラファイト Graphite	樹脂 Resin
			~45HRC	~55HRC	~60HRC	~65HRC							
◎	◎	◎	◎	○			○	◎					

◎ = Best ○ = Good

MODEL 型番	D 外径	l 刃長	L 全長	d シャンク径	Type
CX200-ZHEM4030	3	8	60	6	1
CX200-ZHEM4040	4	11	60	6	1
CX200-ZHEM4050	5	13	60	6	1
CX200-ZHEM4060	6	13	60	6	2
CX200-ZHEM4080	8	19	75	8	2
CX200-ZHEM4100	10	22	80	10	2
CX200-ZHEM4120	12	26	100	12	2

スクエア Square

スクエア Square

ラジアス Radius

ボール Ball

ロングネック Long Neck

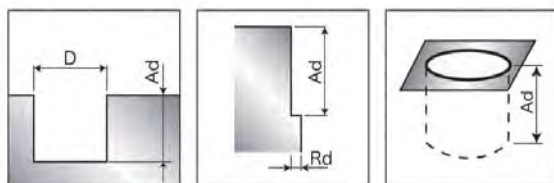
ラフニング Roughing

面取り加工用 Chamfering

ドリル Drill

CX200-ZHEM4

推奨切削条件 Standard Milling Condition



- The table shows standard milling guidance of perforating process as written picture.
- Use a rigid and precise machine and tool holder.
- Select a cutting fluid appropriate to the particular usage.
- In case the Revolution could not be increased by the machine used, please reduce feed speed and Revolution at same ratio.
- When mounting End Mills, the run out of the lip will have to be set within 0.01mm.
- In case of milling for stainless steel, please take wet cut milling.

溝切削 Slotting

被削材 Work Material	炭素鋼 Carbon Steel S45-S55C		合金鋼 工具鋼 Alloy Steel Tool Steel SKD.SCM		調質鋼 プリハードン鋼 Prehardened Steel 35-40HRC.HPM.NAK	
外径 (mm) Diameter	送り速度 (mm/min) Feed rate	回転数 (min ⁻¹) Revolution	送り速度 (mm/min) Feed rate	回転数 (min ⁻¹) Revolution	送り速度 (mm/min) Feed rate	回転数 (min ⁻¹) Revolution
3	670	10600	340	9000	310	8000
4	700	8000	360	6800	320	6000
5	790	6400	400	5400	360	4800
6	780	5300	400	4500	360	4000
8	780	4000	400	3400	360	3000
10	760	3200	390	2700	350	2400
12	770	2700	400	2300	350	2000
Ad≤0.3D						

側面切削 Side Milling

被削材 Work Material	炭素鋼 Carbon Steel S45-S55C				合金鋼 工具鋼 Alloy Steel Tool Steel SKD.SCM				調質鋼 プリハードン鋼 Prehardened Steel 35-40HRC.HPM.NAK			
	送り速度 (mm/min) Feed rate		回転数 (min ⁻¹) Revolution		送り速度 (mm/min) Feed rate		回転数 (min ⁻¹) Revolution		送り速度 (mm/min) Feed rate		回転数 (min ⁻¹) Revolution	
外径 (mm) Diameter	Standard	High Speed	Standard	High Speed	Standard	High Speed	Standard	High Speed	Standard	High Speed	Standard	High Speed
3	1000	1530	10600	21200	640	980	9000	18000	570	870	8000	15900
4	1050	1600	8000	15900	670	1030	6800	13500	590	910	6000	11900
5	1170	1790	6400	12700	750	1150	5400	10800	660	1010	4800	9500
6	1170	1800	5300	10600	750	1150	4500	9000	670	1020	4000	8000
8	1160	1790	4000	8000	750	1150	3400	6800	660	1010	3000	6000
10	1140	1750	3200	6400	730	1120	2700	5400	650	990	2400	4800
12	1150	1740	2700	5300	740	1120	2300	4500	640	990	2000	4000
Ad≤1.5D Rd≤0.1D					Ad≤1.5D Rd≤0.05D							

突っ込み切削 Perforating

被削材 Work Material	炭素鋼 Carbon Steel S45-S55C		合金鋼 工具鋼 Alloy Steel Tool Steel SKD.SCM		調質鋼 プリハードン鋼 Prehardened Steel 35-40HRC.HPM.NAK	
外径 (mm) Diameter	送り速度 (mm/min) Feed rate	回転数 (min ⁻¹) Revolution	送り速度 (mm/min) Feed rate	回転数 (min ⁻¹) Revolution	送り速度 (mm/min) Feed rate	回転数 (min ⁻¹) Revolution
3	200	9500	90	6000	100	6000
4	210	7200	110	4500	110	4500
5	260	5700	110	3600	120	3600
6	300	4800	140	3000	130	3000
8	300	3600	120	2300	100	2300
10	290	2900	90	1800	80	1800
12	260	2400	80	1500	70	1500
Ad≤0.3D						

スクエア Square

スクエア Square

Radius ラジウス

ボール Ball

ロングネック Long Neck

ラフニング Roughing

面取り加工用 Chamfering

ドリル Drill

CX200 不等分割 4 枚刃スクエアエンドミル

CX200 Variable-Lead 4-Flute Square End Mill

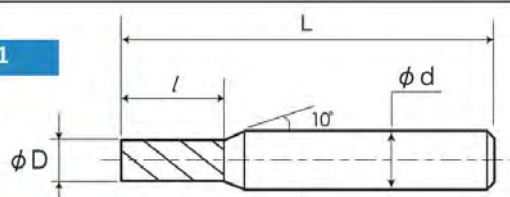
CX200-MEM4



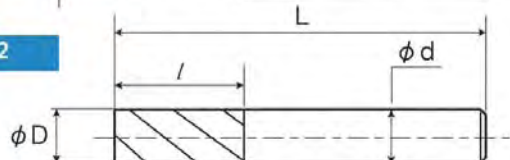
CX200-MEM4060

Model Flute D

Type 1



Type 2



特性 Features

- Wide Application available in work material from Steel (HRC45) to SUS, FD/FCD, Ti/Ni Alloy
- Employs CX200 Coating and is applicable for high speed And high feed operations
- Reduce Chattering and provides an excellent machined surface.
- Introducing the highly evolved "Variable-lead" Shape. Suppresses chattering allowing for outstanding milling performance.



外径公差 Tolerance

0

-0.02



炭素鋼 Carbon Steel	合金鋼 Alloy Steel	調質鋼 Prehardened Steel	焼き入れ鋼 Hardened Steel				鋳鉄 Cast Iron	ステンレス鋼 Stainless Steels	アルミ合金 Aluminium Alloys	銅合金 Copper Alloys	チタン合金 耐熱合金 Ti/Ni Alloy	グラファイト Graphite	樹脂 Resin
			~45HRC	~55HRC	~60HRC	~65HRC							
◎	◎	◎	◎	○			○	◎					

◎ = Best ○ = Good

MODEL 型番	D 外径	/ 刃長	L 全長	d シャンク径	Type
CX200-MEM4030	3	6	45	6	1
CX200-MEM4040	4	8	45	6	1
CX200-MEM4050	5	10	45	6	1
CX200-MEM4060	6	12	50	6	2
CX200-MEM4080	8	16	60	8	2
CX200-MEM4100	10	20	70	10	2
CX200-MEM4120	12	24	75	12	2
CX200-MEM4160	16	32	100	16	2
CX200-MEM4200	20	40	125	20	2

スクエア Square

スクエア Square

ラジアス Radius

ボール Ball

ロングネック Long Neck

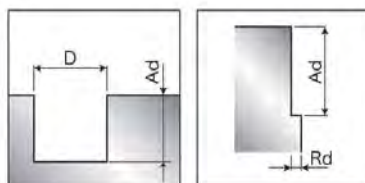
ラフニング Roughing

面取り加工用 Chamfering

ドリル Drill

CX200-MEM4

推奨切削条件 Standard Milling Condition



- The table shows standard milling guidance of perforating process as written picture.
- Use a rigid and precise machine and tool holder.
- Select a cutting fluid appropriate to the particular usage.
- In case the Revolution could not be increased by the machine used, please reduce feed speed and Revolution at same ratio.
- When mounting End Mills, the run out of the lip will have to be set within 0.01mm.
- In case of milling for stainless steel, please take wet cut milling.

溝切削 Slotting

被削材 Work Material	炭素鋼、鋳鉄 SS, S50C, FC		合金工具鋼 Tool Steel SKD, SCM		調質鋼 (35~40HRC) HPM, NAK		ステンレス、調質鋼 (40~50HRC) SUS, SKD		チタン合金、調質鋼 (50HRC-) Titan Alloy		超耐熱合金鋼 インコネル Inconel	
外径 (mm) Diameter	送り速度 (mm/min) Feed rate	回転数 (mm ⁻¹) Revolution	送り速度 (mm/min) Feed rate	回転数 (mm ⁻¹) Revolution	送り速度 (mm/min) Feed rate	回転数 (mm ⁻¹) Revolution	送り速度 (mm/min) Feed rate	回転数 (mm ⁻¹) Revolution	送り速度 (mm/min) Feed rate	回転数 (mm ⁻¹) Revolution	送り速度 (mm/min) Feed rate	回転数 (mm ⁻¹) Revolution
3	730	10500	680	8550	520	7850	460	7450	440	7200	125	2500
4	730	7750	775	6400	520	5900	515	5550	495	5400	135	1900
5	735	6200	755	5100	545	4700	545	4450	535	4300	145	1500
6	740	5150	635	4250	575	3950	570	3700	545	3600	145	1250
8	600	3850	550	3200	550	2950	525	2800	510	2700	155	945
10	580	3100	540	2550	480	2350	475	2250	455	2150	145	760
12	560	2600	475	2150	460	1950	440	1850	435	1800	145	630
16	555	1950	430	1600	370	1500	370	1400	365	1350	110	475
20	450	1600	340	1250	300	1200	290	1100	290	1100	87	380
Ad	≤1D						≤0.5D		≤0.2D			

側面切削 Side Milling

被削材 Work Material	炭素鋼、鋳鉄 SS, S50C, FC		合金工具鋼 Tool Steel SKD, SCM		調質鋼 (35~40HRC) HPM, NAK		ステンレス、調質鋼 (40~50HRC) SUS, SKD		チタン合金、調質鋼 (50HRC-) Titan Alloy		超耐熱合金鋼 インコネル Inconel	
外径 (mm) Diameter	送り速度 (mm/min) Feed rate	回転数 (mm ⁻¹) Revolution	送り速度 (mm/min) Feed rate	回転数 (mm ⁻¹) Revolution	送り速度 (mm/min) Feed rate	回転数 (mm ⁻¹) Revolution	送り速度 (mm/min) Feed rate	回転数 (mm ⁻¹) Revolution	送り速度 (mm/min) Feed rate	回転数 (mm ⁻¹) Revolution	送り速度 (mm/min) Feed rate	回転数 (mm ⁻¹) Revolution
3	1100	12500	840	9550	625	8100	615	7650	545	7400	220	3800
4	1200	9750	985	7550	680	6400	710	6050	630	5850	240	3000
5	1300	7950	1050	6150	725	5250	775	4950	670	4800	245	2450
6	1600	6750	1200	5250	890	4450	835	4200	695	4050	250	2100
8	1550	5050	1100	3950	815	3350	810	3150	675	3050	225	1600
10	1450	4100	1050	3200	725	2700	715	2550	635	2405	215	1250
12	1400	3400	1000	2650	720	2250	675	2100	605	2050	210	1050
16	1200	2550	940	2000	635	1700	555	1600	505	1550	210	765
20	930	1550	2080	1600	500	1350	440	1250	410	1250	170	600
Ad	≤1.5D											
Rd	≤0.2D				≤0.1D				≤0.05D			

スクエア Square

スクエア Square

Radius ラジウス

Ball ボール

Long Neck ロングネック

Roughing ラフニング

Chamfering 面取り加工用

Drill ドリル

アルミ加工用3枚刃スクエアエンドミル DLCコート

DLC 3-Flute Square End Mill for Aluminum

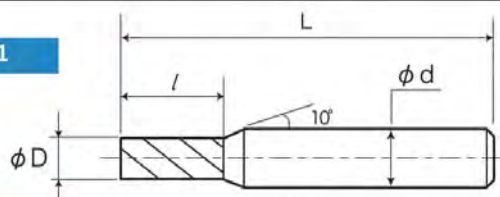
DLC-HEM3



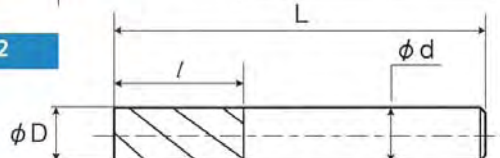
DLC-HEM3010

Model Flute D

Type 1



Type 2



特性 Features

- DLC Coating has high abrasion, adhesion and friction resistance.
Best for aluminum alloy processing
- Best for drilling, Milling of soft material where the adhesion and the chip packing such as aluminum alloy are generated very easily due to the sharp cutting edge
- 3Flute eliminates chattering and suitable for drilling processing
- CKK Original design Chip pocket enables similar or same cutting depth which 2-flutes could realize



外径公差 Tolerance
0
-0.02

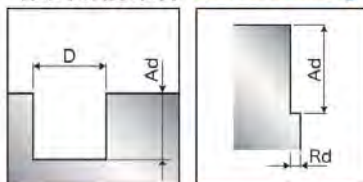


炭素鋼 Carbon Steel	合金鋼 Alloy Steel	調質鋼 Prehardened Steel	焼き入れ鋼 Hardened Steel				鋳鉄 Cast Iron	ステンレス鋼 Stainless Steels	アルミ合金 Aluminium Alloys	銅合金 Copper Alloys	チタン合金 耐熱合金 Ti/Ni Alloy	グラファイト Graphite	樹脂 Resin
			~45HRC	~55HRC	~60HRC	~65HRC				◎	○		○

◎ = Best ○ = Good

MODEL 型番	D 外径	l 刃長	L 全長	d シャンク径	Type
DLC-HEM3010	1	3	40	4	1
DLC-HEM3015	1.5	4.5	40	4	1
DLC-HEM3020	2	6	40	4	1
DLC-HEM3025	2.5	7.5	40	4	1
DLC-HEM3030	3	9	50	6	1
DLC-HEM3040	4	12	50	6	1
DLC-HEM3050	5	15	55	6	1
DLC-HEM3060	6	18	55	6	2
DLC-HEM3080	8	24	65	8	2
DLC-HEM3100	10	30	75	10	2
DLC-HEM3120	12	36	80	12	2

推奨切削条件 Standard Milling Condition



- The table shows standard milling guidance of perforating process as written picture.
- Use a rigid and precise machine and tool holder.
- Select a cutting fluid appropriate to the particular usage.
- In case the revolution could not be increased by the machine used, please reduce feed speed and revolution at same ratio.
- When mounting End Mills, the run out of the lip will have to be set with in 0.01mm.

被削材 Work Material		アルミニウム合金 Aluminium Alloy		
外径 (mm) Diameter	送り速度 Feed Rate (mm/min)		回転数 Revolution (min ⁻¹)	
	溝切削 Slotting	側面切削 Side Milling		
1	840	1260	50000	
1.5	840	1260	48850	
2	840	1260	47700	
2.5	967	1455	39750	
3	1095	1650	31800	
4	1095	1650	23900	
5	1095	1650	19100	
6	1095	1650	15900	
8	1095	1650	11900	
10	1095	1650	9500	
12	1095	1650	8000	
切削深度 Depth of Cut		Ad≤0.2D	Ad≤1.5D	Rd≤0.2D

アルミ加工用4枚刃スクエアエンドミル DLCコート

DLC 4-Flute Square End Mill for Aluminum

DLC-HEM4



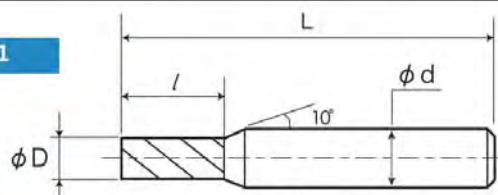
DLC-HEM4010

Model Flute D

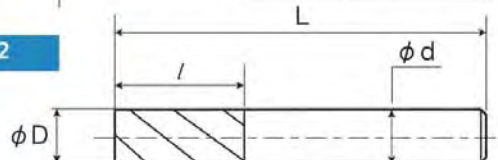
特性 Features

- DLC Coating has high abrasion, adhesion and friction resistance. Best for aluminum alloy processing
- Best for drilling, Milling of soft material where the adhesion and the chip packing such as aluminum alloy are generated very easily due to the sharp cutting edge
- 4Flute eliminates chattering and suitable for drilling processing
- CKK Original design Chip pocket enables similar or same cutting depth which 2-flutes could realize

Type 1



Type 2



MG
超微粒



45°



Sharp
Edge

外径公差 Tolerance
0
-0.02

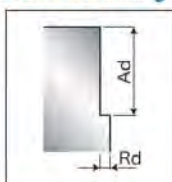
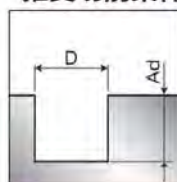
DLC
Coat

炭素鋼 Carbon Steel	合金鋼 Alloy Steel	調質鋼 Prehardened Steel	焼き入れ鋼 Hardened Steel				鋳鉄 Cast Iron	ステンレス鋼 Stainless Steels	アルミ合金 Aluminium Alloys	銅合金 Copper Alloys	チタン合金 耐熱合金 Ti/Ni Alloy	グラファイト Graphite	樹脂 Resin
			~45HRC	~55HRC	~60HRC	~65HRC			◎	○			○

◎ = Best ○ = Good

MODEL 型番	D 外径	/ 刃長	L 全長	d シャンク径	Type
DLC-HEM4010	1	2.8	40	4	1
DLC-HEM4015	1.5	4.4	40	4	1
DLC-HEM4020	2	7	40	4	1
DLC-HEM4025	2.5	9	40	4	1
DLC-HEM4030	3	11	50	6	1
DLC-HEM4040	4	14	50	6	1
DLC-HEM4050	5	17	55	6	1
DLC-HEM4060	6	17	55	6	2
DLC-HEM4080	8	22	65	8	2
DLC-HEM4100	10	28	75	10	2
DLC-HEM4120	12	28	80	12	2

推奨切削条件 Standard Milling Condition



- The table shows standard milling guidance of perforating process as written picture.
- Use a rigid and precise machine and tool holder.
- Select a cutting fluid appropriate to the particular usage.
- In case the revolution could not be increased by the machine used, please reduce feed speed and revolution at same ratio.
- When mounting End Mills, the run out of the lip will have to be set with in 0.01mm.

被削材 Work Material		アルミニウム合金 Aluminium Alloy		
外径 (mm) Diameter	送り速度 Feed Rate (mm/min)		回転数 Revolution (min ⁻¹)	
	溝切削 Slotting	側面切削 Side Milling		
1	1120	1680	50000	
1.5	1120	1680	48850	
2	1120	1680	47700	
2.5	1290	1940	39700	
3	1460	2200	31800	
4	1460	2200	23900	
5	1460	2200	19100	
6	1460	2200	15900	
8	1460	2200	11900	
10	1460	2200	9500	
12	1460	2200	8000	
切削深度 Depth of Cut	外径 (mm) Diameter	Ad	Ad≤1.5D Rd≤0.2D	
	≤3	≤0.5D		
	>3	≤1.0D		

スクエア Square

スクエア Square

Radius ラジウス

Ball ボール

Long Neck ロングネック

Roughing ラフニング

Chamfering 面取り加工用

Drill ドリル

アルミ加工用 2枚刃スクエアエンドミル

2-Flute Square End Mill for Aluminum

ALHEM2



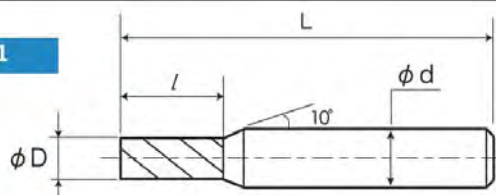
ALHEM2010

Model Flute D

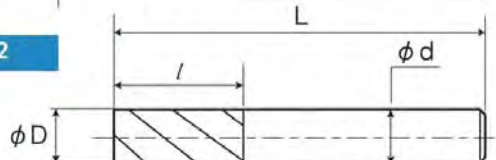
特性 Features

●Wide Application available in AC/ADC

Type 1



Type 2



MG
超微粒



45°



Sharp Edge

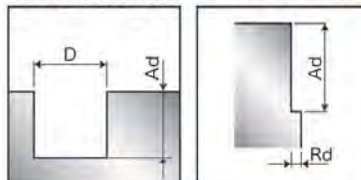
外径公差 Tolerance
0
-0.02

炭素鋼 Carbon Steel	合金鋼 Alloy Steel	調質鋼 Prehardened Steel	焼き入れ鋼 Hardened Steel				鋳鉄 Cast Iron	ステンレス鋼 Stainless Steels	アルミ合金 Aluminium Alloys	銅合金 Copper Alloys	チタン合金 耐熱合金 Ti/Ni Alloy	グラファイト Graphite	樹脂 Resin
			~45HRC	~55HRC	~60HRC	~65HRC				◎	○	○	○

◎ = Best ○ = Good

MODEL 型番	D 外径	l 刃長	L 全長	d シャンク径	Type
ALHEM2010	1	3	40	4	1
ALHEM2020	2	6	40	4	1
ALHEM2030	3	9	50	6	1
ALHEM2040	4	12	50	6	1
ALHEM2050	5	15	55	6	1
ALHEM2060	6	18	55	6	2
ALHEM2080	8	24	65	8	2
ALHEM2100	10	30	75	10	2
ALHEM2120	12	36	80	12	2
ALHEM2160	16	48	110	16	2

推奨切削条件 Standard Milling Condition



- The table shows standard milling guidance of perforating process as written picture.
- Use a rigid and precise machine and tool holder.
- Select a cutting fluid appropriate to the particular usage.
- In case the revolution could not be increased by the machine used, please reduce feed speed and revolution at same ratio.
- When mounting End Mills, the run out of the lip will have to be set with in 0.01mm.

被削材 Work Material	アルミニウム合金 Aluminium Alloy		
	送り速度 Feed Rate (mm/min)		回転数 Revolution (min ⁻¹)
外径 (mm) Diameter	溝切削 Slotting	側面切削 Side Milling	
1	270	400	50000
2	270	400	31800
3	270	400	21200
4	330	500	15900
5	330	500	12700
6	330	500	10600
8	400	600	8000
10	400	600	6400
12	470	700	5300
16	470	700	3930
切削深度 Depth of Cut	Ad≤0.2D	Ad≤1.5D Rds0.2D	

アルミ加工用3枚刃スクエアエンドミル

3-Flute Square End Mill for Aluminum

ALHEM3



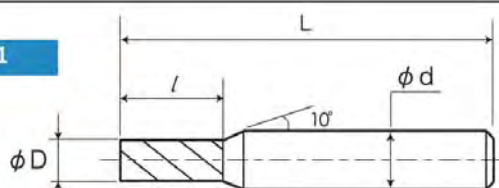
ALHEM3010

Model Flute D

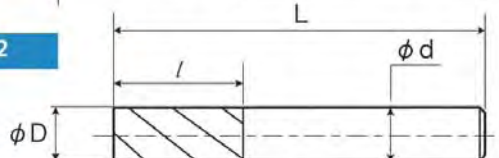
特性 Features

- Wide Application available in AC/ADC
- 3Flute eliminates chattering and suitable for drilling processing

Type 1



Type 2



MG
超微粒



45°



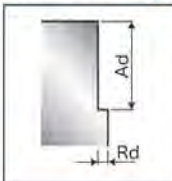
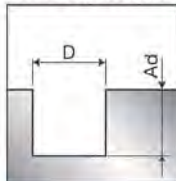
外径公差 Tolerance
0
-0.02

炭素鋼 Carbon Steel	合金鋼 Alloy Steel	調質鋼 Prehardened Steel	焼き入れ鋼 Hardened Steel				鋳鉄 Cast Iron	ステンレス鋼 Stainless Steels	アルミ合金 Aluminium Alloys	銅合金 Copper Alloys	チタン合金 耐熱合金 Ti/Ni Alloy	グラファイト Graphite	樹脂 Resin
			~45HRC	~55HRC	~60HRC	~65HRC				◎	○	○	○

◎ = Best ○ = Good

MODEL 型番	D 外径	l 刃長	L 全長	d シャンク径	Type
ALHEM3010	1	3	40	4	1
ALHEM3020	2	6	40	4	1
ALHEM3030	3	9	50	6	1
ALHEM3040	4	12	50	6	1
ALHEM3050	5	15	55	6	1
ALHEM3060	6	18	55	6	2
ALHEM3080	8	24	65	8	2
ALHEM3100	10	30	75	10	2
ALHEM3120	12	36	80	12	2
ALHEM3160	16	48	110	16	2

推奨切削条件 Standard Milling Condition



- The table shows standard milling guidance of perforating process as written picture.
- Use a rigid and precise machine and tool holder.
- Select a cutting fluid appropriate to the particular usage.
- In case the revolution could not be increased by the machine used, please reduce feed speed and revolution at same ratio.
- When mounting End Mills, the run out of the lip will have to be set with in 0.01mm.

被削材 Work Material	アルミニウム合金 Aluminium Alloy		
	送り速度 Feed Rate (mm/min)		回転数 Revolution (min ⁻¹)
外径 (mm) Diameter	溝切削 Slotting	側面切削 Side Milling	
1	405	600	50000
2	405	600	31800
3	405	600	21200
4	495	750	15900
5	495	750	12700
6	495	750	10600
8	600	900	8000
10	600	900	6400
12	705	1050	5300
16	705	1050	3930
側面切削 Depth of Cut	Ad≤0.2D	Ad≤1.5D	Rd≤0.2D

スクエア Square

スクエア Square

Radius ラジアス

Ball ボール

Long Neck ロングネック

Roughing ラフニング

Chamfering 面取り加工用

Drill ドリル

CX400 チタン加工用 4枚刃スクエアエンドミル

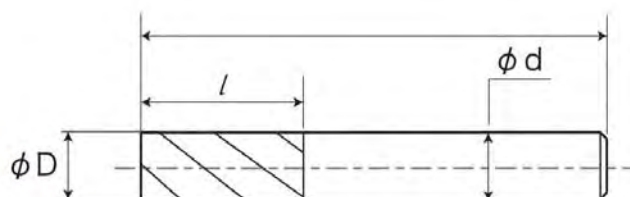
CX400 Series 4-Flute Square End Mill for Titanium Alloy

CX400-TEM4



CX400-TEM4060

Model Flute D



特性 Features

- CX400-Coating have high oxidation resistance and hardening which exceeds the existing coating and provides long tool life, and suitable for high speed processing and dry milling.
- 45 Degree Helix Baled Achieves high-feed operation
- The Fine pitch nick achieves high accurate surface roughness after processing



外経公差 Tolerance
+0.06
-0.06



炭素鋼 Carbon Steel	合金鋼 Alloy Steel	調質鋼 Prehardened Steel	焼き入れ鋼 Hardened Steel				鋳鉄 Cast Iron	ステンレス鋼 Stainless Steels	アルミ合金 Aluminium Alloys	銅合金 Copper Alloys	チタン合金 耐熱合金 Ti/Ni Alloy	グラファイト Graphite	樹脂 Resin
			~45HRC	~55HRC	~60HRC	~65HRC							
◎	◎	◎	◎	◎			○	◎			◎		

◎ = Best ○ = Good

MODEL 型番	D 外径	/ 刃長	L 全長	d シャンク径
CX400-TEM4060	6	14	60	6
CX400-TEM4080	8	18	75	8
CX400-TEM4100	10	22	90	10
CX400-TEM4120	12	26	100	12
CX400-TEM4160	16	34	110	16
CX400-TEM4200	20	42	120	20

スクエア Square

スクエア Square

ラジアス Radius

ボール Ball

ロングネック Long Neck

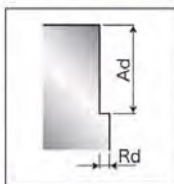
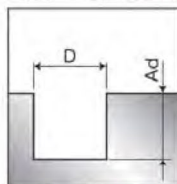
ラフニング Roughing

面取り加工用 Chamfering

ドリル Drill

CX200-TEM4

推奨切削条件 Standard Milling Condition



- The table shows standard milling guidance of perforating process as written picture.
- Use a rigid and precise machine and tool holder.
- Select a cutting fluid appropriate to the particular usage.
- In case the Revolution could not be increased by the machine used, please reduce feed speed and Revolution at same ratio.
- When mounting End Mills, the run out of the lip will have to be set with in 0.01mm.

溝切削 Slotting

被削材 Work Material	チタン合金・ステンレス Titan Alloy・Stainless		炭素鋼 Carbon Steel (S45C~S55C)		合金鋼 工具鋼 Alloy Steel Tool Steel (SKD.SCM)		調質鋼 (35~40HRC) (HPM.NAK)	
外径 (mm) Diameter	送り速度 (mm/min) Feed rate	回転数 (min ⁻¹) Revolution	送り速度 (mm/min) Feed rate	回転数 (min ⁻¹) Revolution	送り速度 (mm/min) Feed rate	回転数 (min ⁻¹) Revolution	送り速度 (mm/min) Feed rate	回転数 (min ⁻¹) Revolution
6	80	2700	140	4200	120	3700	90	2900
8	160	2000	250	3200	220	2800	180	2200
10	150	1600	240	2500	210	2200	170	1800
12	130	1300	200	2100	180	1900	140	11500
16	130	1000	200	1600	180	1400	140	1100
20	120	800	180	1300	160	1100	130	900
Ad	≤0.2D		≤0.5D		≤0.3D			

側面切削 Side Milling

被削材 Work Material	チタン合金・ステンレス Titan Alloy・Stainless		炭素鋼 Carbon Steel (S45C~S55C)		合金鋼 工具鋼 Alloy Steel Tool Steel (SKD.SCM)		調質鋼 (35~40HRC) (HPM.NAK)	
外径 (mm) Diameter	送り速度 (mm/min) Feed rate	回転数 (min ⁻¹) Revolution	送り速度 (mm/min) Feed rate	回転数 (min ⁻¹) Revolution	送り速度 (mm/min) Feed rate	回転数 (min ⁻¹) Revolution	送り速度 (mm/min) Feed rate	回転数 (min ⁻¹) Revolution
6	130	3200	190	4800	170	4200	140	3400
8	240	2400	360	3600	320	3200	260	2600
10	230	1900	340	2900	310	2500	250	2100
12	190	1600	290	2400	250	2100	210	1700
16	190	1200	290	1800	250	1600	210	1300
20	170	1000	260	1400	230	1300	190	1000
Ad	≤1.0D		≤1.5D		≤1.0D			
Rd	≤0.2D		≤0.5D		≤0.3D			



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スクエア Square

スクエア Square

ラジアス Radius

ボール Ball

ロングネック Long Neck

ラフニング Roughing

面取り加工用 Chamfering

ドリル Drill