

*Create a world-famous cutting tool brand and  
become a prestigious enterprise.*



## Content

### **B** Milling

Indexable milling  
Solid carbide end mills

B1-B85  
B86-B178

**T79.RU**

**HUAREAL**

**New**

**CFM145**

**Face milling tools**



**HUAREAL**

**C/SSM 190**

**Square shoulder milling tools**



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# Introduction

■ This catalogue presents Huareal's major cutting products as of October 2021.

■ This catalogue mainly introduces turning tools, milling tools and drilling tools. Wherein:

Turning tools include general turning tool, parting and grooving tool and threading tool;

Milling tools include indexable milling tool and solid carbide end mill;

Drilling tools include indexable short hole drills and solid carbide drill.

■ Products in this catalogue may be attached with the following symbols:

Indexable inserts: ★ Recommended grade ☆ Available grade

Indexable cutting tools: ▲ Running stock △ Make-to-order

Solid carbide cutting tool: ● Running stock ○ Make-to-order

Application: ✱ Fit well ✨ Applicable

■ Marking of product dimensions

The basic dimensions of products in this catalogue are marked according to the ISO13399 Standard, and the specific symbols and corresponding definitions are following attached. According to the ISO13399 Standard, customers can input cutting tool information into PLM, CAD, CAM, CNC, etc. without replacing data from different companies.

Huareal is actively engaged in providing "cutting tool data" based on the ISO13399 Standard.

## Overview of dimension codes according to ISO13399 Standard

Parameter	Definition	Parameter	Definition
ADJLN	Adjust lower tolerance	CICTE	Cutting item count - limit position
ADJLX	Adjust upper tolerance	CICTP	Cutting item count - peripheral position
ADJRG	Adjust range	CICTS	Cutting item count - side position
ALP	Clearance angle axial	CICTSP	Cutting item count - cutter bar protection insert
AN	Clearance angle major	CICTT	Cutting item count - total amount
ANN	Clearance angle minor	CND	Coolant entry diameter
APMX	Maximum cutting depth	CNSC	Coolant entry style code
APMX_EFW	Maximum cutting depth – longitudinal fixed–range feed	CNT	Coolant entry thread size
APMX_FFW	Maximum cutting depth - side feed	COATING	Coating
AZ	Maximum depth of plug in milling	CP	Maximum coolant pressure
B	Shank width	CRKS	Connection retention knob thread size
BAWS	Body angle of workpiece side	CRNT	Coolant radial entry thread size
BAMS	Body angle of machine side	CTPT	Operation type
BBD	Balanced by design	CUTDIA	Workpiece parting diameter maximum
BBR	Balanced by rotational test	CW	Insert width
BCH	Corner chamfer length	CWN	Cutting width minimum
BD	Body diameter	CWTOLL	Insert width lower tolerance
BHTA	Half cone angle of the tool body	CWTOLU	Insert width upper tolerance
BN	Negative land width	CWX	Cutting width maximum
BS	Wiper edge length	CXSC	Coolant exit style
BSG	Basic standard group	CZC	Connection size code
BSR	Wiper edge radius	CZCMS	Connection size code machine side
CDX	Overhang maximum	CZCWS	Connection size code workpiece side
CEMR	Cutting edge main radius	D1	Fixing hole diameter
CF	Crest width	DAH	Diameter access hole
CHBA	Body chamfer angle	DAXIN	Axial groove inside diameter minimum
CHBL	Body chamfer length	DAXN	Face groove outside diameter minimum
CHW	Corner chamfer width	DAXX	Axial groove outside diameter maximum
CICT	Cutting item count	DBC	Bolt diameter
CICTBALL	Cutting item count - ball nose insert	DC	Cutting diameter
DCB	Bolt diameter	KRINS	Cutting edge angle major
DCBN	Connection bore diameter minimum	KWW	Keyway width
DCBX	Connection bore diameter maximum	L	Cutting edge length
DCF	Cutting diameter face contact	LAMS	Cutting inclination angle
DCIN	Cutting inside diameter	LB	Body length
DCN	Cutting diameter minimum	LCF	Length chip flute
DCON	Connection diameter	LCOX	Parting length maximum
DCON <sub>ms</sub>	Connection diameter machine side	LE	Cutting edge effective length
DCON <sub>ws</sub>	Connection diameter workpiece side	LF	Overall length
DCONN <sub>ws</sub>	Interface diameter minimum workpiece side	LFN	Functional length minimum

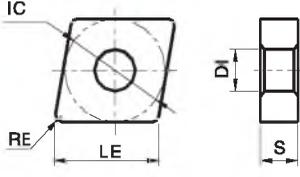
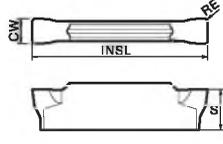
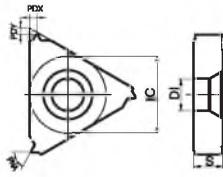
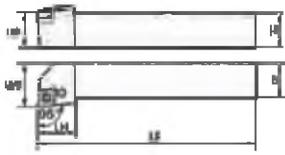
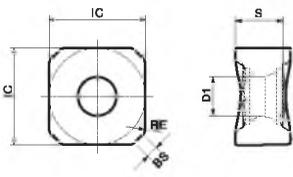
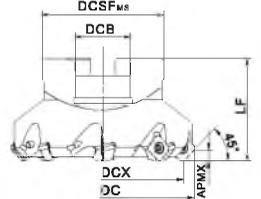
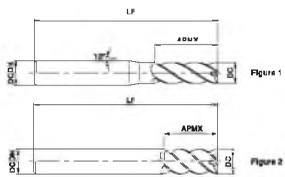
## Overview of dimension codes according to ISO13399 Standard

Parameter	Definition	Parameter	Definition
DCONXWS	Interface diameter maximum workpiece side	LH	Cutting head length
DCPS	Data chip size	LPR	Protruding length
DCSFMS	Contact surface diameter machine side	LS	Shank length
DCSFWS	Contact surface diameter workpiece side	LSC	Clamping length
DCX	Cutting diameter maximum	LSCN	Clamping length minimum
DHUB	Hub diameter	LSCS	Distance to clamping starting point
DIX	Tool changer interference diameter maximum	LSCX	Clamping length maximum
DMIN	Machined hole diameter minimum	LSD	Dead shank length
DMM	Shank diameter	LU	Usable length (max. recommended)
DN	Neck diameter	LU_BFW	Usable length - back face milling
DRVCT	Number of drives	LUX	Usable length maximum
DSGN	Design	MHD	Mounting hole distance
EPSR	Insert inclined angle	MIID	Master insert identification
FHA	Helical angle	MIIDE	Master insert identification - limit position
FLGT	Flange thickness	MIIDS	Master insert identification - side position
FTDZ	Thread diameter size	MIIDC	Master insert identification - central position
GB	Negative land angle	MIIDP	Master insert identification - peripheral position
H	Shank height	MIIDI	Master insert identification - in-between position
HA	Theoretical thread height	MMCC	Order number of preset torque
HB	Thread height difference	MMCX	Cutting torque maximum
HBH	Bottom offset height of cutting head	NOF	Flute count
HC	Actual thread height	NT	Number of teeth
HF	Functional height	OAH	Overall height
HRY	Lowest point from reference plain	OAL	Overall length
HTB	Body height	OAW	Overall width
HTH	Height	OH	Recommended overhang
IC	Inscribed circle diameter	OHN	Overhang minimum
INSL	Insert length	OHX	Overhang maximum
INSUC	Insert usage code	ORDCODE	Order number
IZC	Insert size code	PCL	Length of peripheral cylindrical shank
KAPR	Cutting edge angle	PDX	Profile distance ex
KAPR_EFW	Tool cutting edge angle – longitudinal fixed–range feed	PDY	Profile distance ey
KCH	Corner chamfer	PHD	Premachined hole diameter
PHDX	Premachined hole diameter maximum	TCT	Tolerance class tool
PL	Point length	TCTR	Tolerance class thread
PNA	Angle profile included	TD	Thread diameter
PRFRAD	Profile radius	TDZ	Thread diameter size
PRSPC	Profile specification	TFLA	Tap floating length ahead
PSIR	Tool lead angle	TFLB	Tap floating length behind
PSIRL	Cutting edge angle major left hand	TG	Tap gradient

## Overview of dimension codes according to ISO13399 Standard

Parameter	Definition	Parameter	Definition
PSIRR	Cutting edge angle major right hand	THBTP	Thread back taper characteristics
PSW	Premachined groove width	THCA	Thread spiral correction angle
RADH	Radial body height	THCHT	Threading chamfer type
RADW	Radial body width	THFT	Thread form
RAR	Clearance angle right hand	THFTS	Standard series thread profile
RE	Corner fillet radius	THL	Thread length
REEQ	Corner fillet radius equivalence	THUB	Hub thickness
REL	Corner fillet radius left hand	TP	Thread pitch
RER	Corner fillet radius right hand	TPI	Threads per inch
RETOLL	Corner radius lower tolerance	TPIN	Threads per inch minimum
RETOLU	Corner radius upper tolerance	TPIX	Threads per inch maximum
RGL	Regrind length	TPN	Thread pitch minimum
RMPX	Ramping angle maximum	TPT	Thread profile type
RPMX	Rotational speed maximum	TPX	Thread pitch maximum
S	Insert thickness	TRMAX	Tap range maximum
SDL	Step diameter length	TQ	Torque
SIG	Corner angle	TSYC	Tool style code
SPTL	Parting line	TTP	Thread type
SSC	Insert seat model	ULDR	Diameter ratio of machinable length
SSCE	Insert seat size code - limit position	VCX	Cutting speed maximum
SSCP	Insert seat size code - peripheral position	W1	Insert width
SSCS	Insert seat size code - side position	WB	Body width
STA	Step inclined angle	WF	Functional width
STDNO	Standard Number	WFCIRP	Width to reference point of cutting parts
SUBSTRATE	Tool substrate	WSC	Clamping width
TCDC	Tolerance class cutting diameter	WT	Weight
TCDCON	Interface diameter tolerance	ZADJ	Adjustable insert count
TCDMM	Shank diameter tolerance	ZEFF	Face effective cutting edge count
TCHA	Achievable hole tolerance	ZEFP	Peripheral effective cutting edge count (ZEFP)
TCHAL	Achievable hole lower tolerance	ZWX	Number of wiper edge inserts maximum
TCHAU	Achievable hole upper tolerance		

## Examples of basic dimension according to ISO13399 Standard

Tool type	Basic size marking form	Code	Definition
Turning insert		IC	Inscribed circle diameter
		LE	Cutting edge length
		S	Insert thickness
		D1	Insert hole diameter
		RE	Corner radius
Parting and grooving insert		INSL	Insert length
		CW	Insert width
		S	Insert thickness
		RE	Corner radius
Thread insert		IC	Inscribed circle diameter
		PDX	Profile distance ex
		PDY	Profile distance ey
		S	Insert thickness
		DI	Insert hole diameter
		PNA	Angle profile
Turning tool		H	Shank height
		B	Shank width
		LF	Overall length
		LH	Cutting head length
		HF	Functional height
		WF	Functional width
Indexable milling insert		IC	Inscribed circle diameter
		S	Insert thickness
		D1	Insert hole diameter
		BS	Wiper edge length
		RE	Corner radius
Indexable milling tool		DC	Cutting diameter
		DCB	Bolt diameter
		DCX	Cutting diameter maximum
		DCSFMS	Connection diameter machine side
		LF	Overall length
		APMX	Cutting depth maximum
Solid carbide end mill		DC	Cutting diameter
		DCON	Shank connection diameter
		LF	Overall length
		APMX	Cutting depth maximum
		ZEFP	Number of teeth

**CFM145**

Face milling tool



**New**



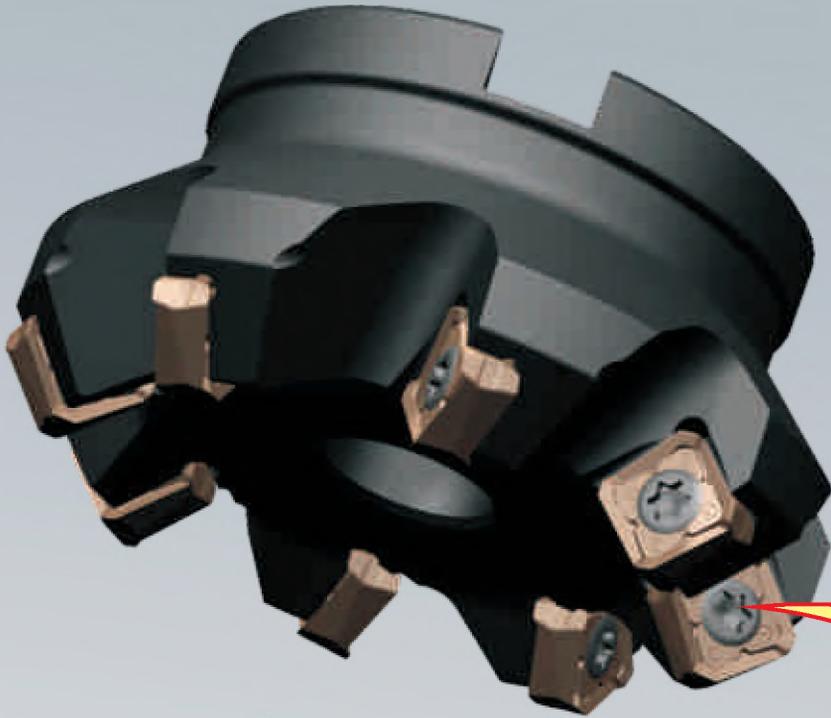
**C/SSM190**

Square shoulder milling tool



# CFM345

## Load-bearing universal face milling tool



- Sparse teeth, dense teeth and ultra-dense teeth are optional to meet different working conditions and machining efficiency requirements.
- The wedge-shaped installation structure has a greater bearing capacity, safety and reliability.

**New**

- Its precise double-side slotted inserts are cost-effective. The main cutting edge has high strength and strong impact resistance.
- The cutting edge is sharp and can produce excellent surface machining quality.



# C/SSM390

Square shoulder milling tool



**New**



## Overview of indexable milling inserts

Type	Material	ISO	CVD coating		PVD coating				Carbide	Cermet	ISO	
			HR8140	HR5110	HR5120	HR5130	HR7130	HR7140	HRK10	HRC20		
P	Non-alloyed steel/alloy steel	P01									P01	
		P05									P05	
		P10									P10	
		P15			HR5110							P15
		P20				HR5120					HRC20	P20
		P25					HR5130					P25
		P30						HR7130				P30
		P35			HR8140							P35
		P40							HR7140			P40
		P45										P45
P50										P50		
M	Stainless steel	M05									M05	
		M10									M10	
		M15			HR5110							M15
		M20				HR5120						M20
		M25					HR5130					M25
		M30							HR7140			M30
		M35										M35
		M40										M40
		M45										M45
		K	Cast iron	K01								
K05											K05	
K10											K10	
K15											K15	
K20											K20	
K25						HR5120					K25	
K30											K30	
K35											K35	
K40					HR8140							K40
K45												K45
K50										K50		
N	Aluminum/aluminum alloy	N01									N01	
		N05									N05	
		N10							HRK10		N10	
		N15									N15	
		N20									N20	
		N25									N25	
S	High-temp alloy	S01									S01	
		S05									S05	
		S10									S10	
		S15									S15	
		S20									S20	
		S25									S25	
S30									S30			
S40										S40		

## B Milling

### Indexable milling

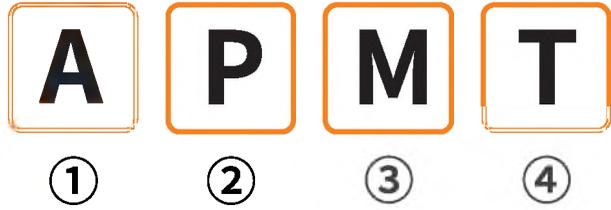
- ◆ Code key of indexable milling inserts ..... B1-B2
- ◆ Code key of indexable milling tools ..... B3-B4
- ◆ Overview of indexable milling tools ..... B5-B8
- ◆ Overview of indexable milling inserts ..... B9-B10
- ◆ Details of indexable milling tools ..... B11-B85
  - Face milling tool series ..... B11-B25
  - Square shoulder milling tool series ..... B26-B49
  - Profile milling tool series ..... B50-B61
  - High feed milling tool series ..... B62-B65
  - Helical end milling cutter series ..... B66-B67
  - Heavy milling inserts ..... B71-B85

### Solid carbide end mills

- ◆ Selection guidance of solid carbide end mills ..... B89
- ◆ Code key of solid carbide end mills ..... B90
- ◆ Overview of solid carbide end mills ..... B91
- ◆ Details and parameters recommendation ..... B92-B177
  - Of solid carbide end mills
    - Series B - basic end mills ..... B92-B127
    - Series P - high performance end mills ..... B128-B169
    - Series X - special end mills ..... B170-B177
- ◆ Non-standard customization of solid carbide end mills ..... B178

A General turning  
B Parting and grooving  
C Threading  
B Indexable milling  
C Solid carbide end mills  
C Short hole drills  
C Solid carbide drills

## Code key of indexable milling inserts



**① Shape code**

<b>A</b>	<b>B</b>	<b>C</b>
<b>D</b>	<b>E</b>	<b>H</b>
<b>K</b>	<b>L</b>	<b>M</b>
<b>O</b>	<b>P</b>	<b>R</b>
<b>S</b>	<b>T</b>	<b>T</b>
		<b>Others</b>
<b>V</b>	<b>W</b>	<b>Z</b>

**③ Tolerance (mm)**

Class	Corner height (m)	Inscribed circle (φD)	Thickness (S)	♦ M-class tolerance requirements (distinguished by shape and inscribed circle size)						
				♦ Corner height (m) tolerance						
				Inscribed circle	Regular triangle	Square	80° Rhombus	55° Rhombus	35° Rhombus	Circular
<b>A</b>	±0.005	±0.025	±0.025							
<b>F</b>	±0.005	±0.013	±0.025	6.35	±0.08	±0.08	±0.08	±0.11	±0.16	---
<b>C</b>	±0.013	±0.025	±0.025	9.525	±0.08	±0.08	±0.08	±0.11	±0.16	---
<b>H</b>	±0.013	±0.013	±0.025	12.7	±0.13	±0.13	±0.13	±0.15	---	---
<b>E</b>	±0.025	±0.025	±0.025	15.875	±0.15	±0.15	±0.15	±0.18	---	---
<b>G</b>	±0.025	±0.025	±0.13	19.05	±0.15	±0.15	±0.15	±0.18	---	---
<b>J</b>	±0.005	±0.05-±0.13	±0.025	25.4	---	±0.18	---	---	---	---
<b>K</b>	±0.013	±0.05-±0.13	±0.025	♦ Inscribed circle (φD) tolerance						
<b>L</b>	±0.025	±0.05-±0.13	±0.025	Inscribed circle	Regular triangle	Square	80° Rhombus	55° Rhombus	35° Rhombus	Circular
<b>M</b>	±0.08-±0.18	±0.05-±0.13	±0.13	6.35	±0.05	±0.05	±0.05	±0.05	±0.05	---
<b>N</b>	±0.08-±0.18	±0.05-±0.13	±0.025	9.525	±0.05	±0.05	±0.05	±0.05	±0.05	±0.05
<b>U</b>	±0.13-±0.38	±0.08-±0.25	±0.13	12.7	±0.08	±0.08	±0.08	±0.08	---	±0.08
				15.875	±0.10	±0.10	±0.10	±0.10	---	±0.10
				19.05	±0.10	±0.10	±0.10	±0.10	---	±0.10
				25.4	---	±0.13	---	---	---	±0.13

**② Cutting edge clearance angle major**

Code	Clearance angle	Code	Clearance angle
<b>A</b>		<b>B</b>	
<b>C</b>		<b>D</b>	
<b>E</b>		<b>F</b>	
<b>G</b>		<b>N</b>	
<b>P</b>		<b>O</b>	Others

**④ Chipbreaker and clamping form**

Code	Hole	Chipbreaker	Sectional view	Code	Hole	Chipbreaker	Sectional view
<b>B</b>	Y	N/A		<b>N</b>	N/A	N/A	
<b>H</b>	Y	Single-sided		<b>R</b>	N/A	Single-sided	
<b>C</b>	Y	N/A		<b>F</b>	N/A	Double-sided	
<b>J</b>	Y	Double-sided		<b>A</b>	Y	N/A	
<b>W</b>	Y	N/A		<b>M</b>	Y	Single-sided	
<b>T</b>	Y	Single-sided		<b>G</b>	Y	Double-sided	
<b>Q</b>	Y	N/A		<b>X</b>	---	---	Exception
<b>U</b>	Y	Double-sided					

**16** **05** **PD** **E** **R** - **FM**

⑤      ⑥      ⑦      ⑧      ⑨      ⑩

**⑤ Cutting edge length**

Inscribed circle diameter (mm)	Insert shape							
	C	D	R	S	T	V	W	K
32.00			32					
31.75			31					
25.40			25	25				
25.00	25	25	25					
20.00			20					
19.05	19		19	19	33			
16.00		19	16					
15.875	16		15	15	27			
12.70	12	15	12	15	22	22	08	
12.00			12					
10.00			10					
9.525	09	11	09	19	16	16	06	16
8.00			08					
6.35	06	07			11	11		
6.00			06					
5.56					09			
5.50			05					
3.97					06			

**⑥ Insert thickness**

Code	Thickness(mm)
12	12.70
10	11.11
T9	9.72
09	9.52
07	7.94
T6	6.75
06	6.35
T5	5.95
05	5.56
T4	4.96
04	4.76
T3	3.97
03	3.18
T2	2.58
02	2.38
T1	1.98
01	1.59
T0	0.99
00	0.79

**⑦ Wiper edge**

Code	Angle	Code	Angle
A	45°	A	3°
D	60°	B	5°
E	75°	C	7°
F	85°	D	15°
P	90°	E	20°
Z	Others	F	25°
		G	30°
		N	0°
		P	11°
		Z	Others

**⑧ Cutting edge form**

Code	Angle	Value	Code
F	0-5°	0-0.10	K (or not marked)
E	1-10°	1-0.15	P
	2-15°	2-0.20	
T	3-20°	3-0.25	W
	4-25°	4-0.30	
S	5-30°	5-0.35	Q
	1-10°	6-0.40	
	1-10°	7-0.45	

**⑨ Cutting direction**

Code	Direction
R	Right
L	Left
N	Two-way

**⑩ Chipbreaker code**

A

General turning

Parting and grooving

Threading

B

Indexable milling

Solid carbide end mills

C

Short hole drills

Solid carbide drills

## Code key of indexable milling tools



① Tool type	
C	Disc-type tools
S	Rod-type tools

③ Type	
1	Type 1
2	Type 2
...	...

⑥ Outside diameter	
016	∅ 16mm
020	∅ 20mm
025	∅ 25mm
032	∅ 32mm
040	∅ 40mm
050	∅ 50mm
063	∅ 63mm
080	∅ 80mm
100	∅ 100mm
125	∅ 125mm

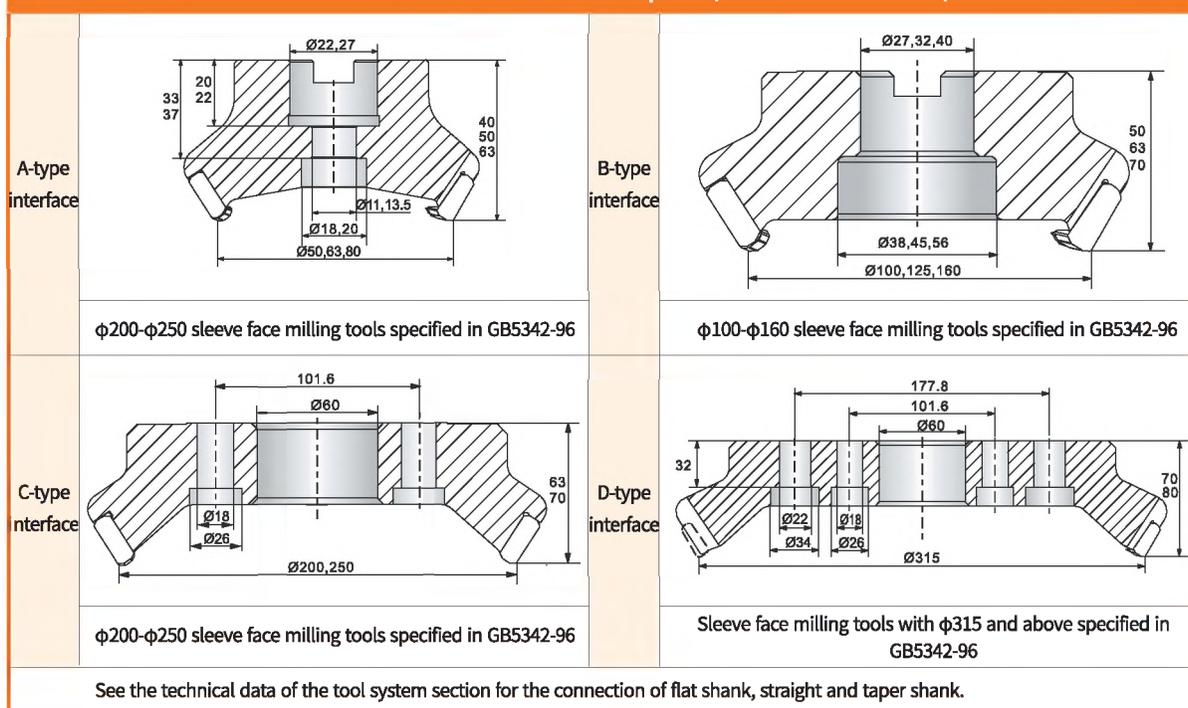
⑦ Interface type	
A	A-type interface
B	B-type interface
C	C-type interface
D	D-type interface
G	Straight shank
X	Flat shank
BT	BT taper shank
JT	JT taper shank
MT	Morse taper shank
XPX	Compound shank
HSK	Short taper shank

② Usage	
FM	Face milling
TM	Slot milling
SM	Square shoulder milling
PM	Profile milling
CM	Chamfer milling
EM	High feed
HM	Helical end milling

④ Cutting edge angle	
45	45°
60	60°
75	75°
90	90°
00	Exception

⑤ Cutting direction	
R	Default
L	Sinistral cutting

### Structure of tool installation part (Sleeve structure)



# Code key of indexable milling tools



⑧ Sizes of tool installation parts	
16	∅ 16mm
22	∅ 22mm
27	∅ 27mm
32	∅ 32mm
40	∅ 40mm
60	∅ 60mm

⑨ Unit	
Inch	I
Metric	Default

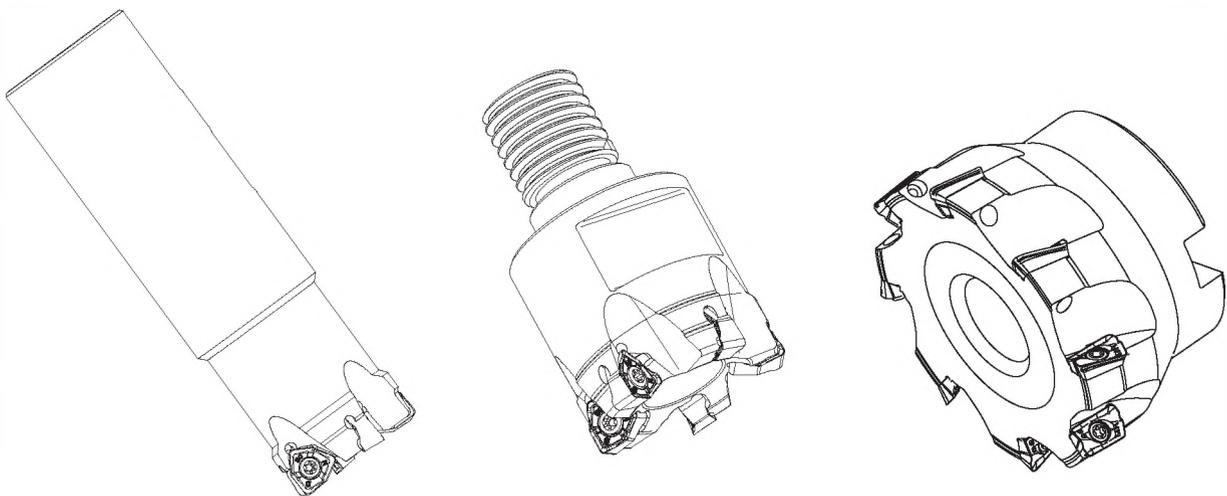
⑩ Number of teeth	
02	Two teeth
03	Three teeth
04	Four teeth
...	...

⑪ Length type	
Cutterhead style	Omit
Shank style	Omit
S	Short
L	Long
XL	Lengthened

⑫ Insert shape	
A	
H	
L	
O	
R	
S	
T	
W	
Others	

⑬ Insert clearance angle	
A	3°
B	5°
C	7°
D	15°
E	20°
F	25°
G	30°
N	0°
P	11°
O	Others

⑭ Cutting edge length	
09	9mm
10	10mm
12	12mm
15	15mm
19	19mm
Others	



- A  
General turning
- Parting and grooving
- Threading
- B  
Indexable milling
- Solid carbide end mills
- C  
Short hole drills
- Solid carbide drills

A

General turning

Parting and grooving

Threading

B

Indexable milling

Solid carbide end mills

C

Short hole drills

Solid carbide drills

## Overview of indexable milling tools

Machining form	Series/shape	Cutting edge angle	Applicable inserts	Insert shape	Usage and features	Page
Face milling tool	CFM143 	KAPR=43°	OD□□		<ul style="list-style-type: none"> <li>Light and fast in cutting, it is cost-effective with unilateral octagonal inserts;</li> <li>It is suitable for face milling P, M, K and other materials.</li> </ul>	B11-B12
	CFM145 	KAPR=45°	SNGX1005ANR-GM SNGX1005ANR-GE		<ul style="list-style-type: none"> <li>Supported by grinding level/precision molded level quadrilateral negative angle inserts, cutting can be finished in a light and fast manner;</li> <li>Tools with either sparse or dense tooth structure are suitable for different working conditions and machining efficiency requirements.</li> <li>It is suitable for face milling P, M, K and other materials and the first choice of general machining.</li> </ul>	B13-B14
	CFM245 	KAPR=45°	SEET13T3-GM SEMT13T3AGTN-FM		<ul style="list-style-type: none"> <li>Supported by grinding level/precision molded level quadrilateral 20° clearance angle inserts, the cutting force is decreased;</li> <li>They are convenient to clamp with screwing down construction, thus suitable for light cutting.</li> </ul>	B15-B16
	CFM345 	KAPR=45°	SZMX1206ANR-GM		<ul style="list-style-type: none"> <li>It is equipped with self-developed new structured groove inserts, ensuring both high machining efficiency and long service life.</li> <li>It is suitable for machining P, M, K and other materials and the first choice for roughing.</li> </ul>	B17-B18
	CFM445 	KAPR=45°	SEEN1203AFTN SEKR1203AFTN SEMR1203AFTN	 	<ul style="list-style-type: none"> <li>With 20° clearance angle cutting inserts, the milling tool is for multiple purposes and can finish cutting in a light and fast manner.</li> <li>It is suitable for face milling of P, M, K and other materials.</li> </ul>	B19-B20
	CFM645 	KAPR=45°	HNMX0906ANSN-M		<ul style="list-style-type: none"> <li>Cost-effective face milling tool series</li> <li>It has double-sided high strength hexagonal insert with 12 cutting edges.</li> </ul>	B21-B22
	CFM745 	KAPR=45°	XNGX0705ANN-R		<ul style="list-style-type: none"> <li>Cost-effective face milling tools series</li> <li>It has double-sided heptagon insert with 14 cutting edges.</li> </ul>	B23-B24

# Overview of indexable milling tools

Machining form	Series/shape	Cutting edge angle	Applicable inserts	Insert shape	Usage and features	Page
Square shoulder milling tool	<b>CSM188</b> 	KAPR=88°	SNGX1005ZNN-GM		<ul style="list-style-type: none"> <li>Supported by grinding level/precision molded level quadrilateral negative angle inserts, the cutting process proceeds stably.</li> <li>It is suitable for general face milling of P, M, K and other materials, being both cost-effective and multi-functional.</li> </ul>	B26-B28
			SNMX100512-GM			
	<b>CSM190</b> 	KAPR=90°	AOKT06□□		<ul style="list-style-type: none"> <li>High-precision shoulder milling tool series</li> <li>It is a 90° shoulder milling tool with a helical edge design providing low cutting forces.</li> <li>The tool is available in diameters <math>\phi 11</math>-<math>\phi 80</math>.</li> <li>It is suitable for side milling, groove milling, Ramp Milling and other multifunctional machining of P-, M-, K- and S-type materials, and it is a preferred tool for shoulder milling.</li> </ul>	B29-B32
	<b>SSM190</b> 		AOKT11□□			
	<b>KH</b> 		AOKT16□□			
	<b>CSM290</b> 	KAPR=90°	APKT11□□		<ul style="list-style-type: none"> <li>Square shoulder milling tool series with high performance. It is suitable for milling mild steel, stainless steel, titanium alloy, high-temp alloy, etc.</li> <li>The tool is available in diameters <math>\phi 16</math>-<math>\phi 80</math>, with a 90° cutting edge angle structure.</li> <li>It is suitable for shoulder milling, groove milling, Ramp Milling, face milling and other machining.</li> </ul>	B34-B36
	<b>SSM290</b> 		APKT16□□			
	<b>CSM390</b> 	KAPR=90°	ZNMU0403□□		<ul style="list-style-type: none"> <li>Cost-effective shoulder milling cutter series. It has 6 edges on both sides.</li> <li>The tool's locating is stable. As a result, the cutting process is reliable.</li> <li>There are rod-shaped, sleeve-type cutterhead and replaceable tools for option.</li> </ul>	B37-B44
	<b>SSM390</b> 		ZNMU0806□□			
<b>KH</b> 						

A

General turning

Parting and grooving

Threading

B

Indexable milling

Solid carbide end mills

C

Short hole drills

Solid carbide drills

A

General turning

Parting and grooving

Threading

B

Indexable milling

Solid carbide end mills

C

Short hole drills

Solid carbide drills

## Overview of indexable milling tools

Machining form	Series/shape	Cutting edge angle	Applicable inserts	Insert shape	Usage and features	Page
Square shoulder milling tool	<b>CSM590</b> 	KAPR=90°	APMT11□□		<ul style="list-style-type: none"> <li>◎ Universal shoulder milling tool series</li> <li>◎ It is suitable for shoulder milling, groove milling, Ramp Milling and face milling of P, K and N materials.</li> </ul>	B45-B47
	<b>SSM590</b> 		APGT11□□			
Profile milling tool	<b>CPM100</b> 		RC□□		<ul style="list-style-type: none"> <li>◎ It is suitable for machining P, M, K and other materials.</li> <li>◎ It is of different diameters and can be used for machining planes, curved surfaces and cavities.</li> </ul>	B50-B52
	<b>SPM100</b> 					
	<b>CPM200</b> 					
<b>SPM200</b> 	<ul style="list-style-type: none"> <li>◎ It is suitable for machining P, M, K and other materials.</li> <li>◎ It is of different diameters and can be used for machining planes, curved surfaces and cavities.</li> </ul>	B53-B55				

# Overview of indexable milling tools

Machining form	Series/shape	Cutting edge angle	Applicable inserts	Insert shape	Usage and features	Page
Profile milling tool	<b>CPM300</b> 		RD□□		<ul style="list-style-type: none"> <li>◎ It is suitable for the machining of P, K materials and hardened materials.</li> <li>◎ It is of different diameters and can be used for machining flat, curved surfaces and cavities.</li> </ul>	B56-B58
	<b>SPM300</b> 					
High-feed milling tool	<b>CEM100</b> 		SD□□		<ul style="list-style-type: none"> <li>◎ It is suitable for cavity milling and face milling of P, K and other materials, which can realize high Feed rate, and can also be used for insert milling.</li> <li>◎ The tool is available in diameters Φ20-Φ160mm.</li> </ul>	B62-B64
	<b>SEM100</b> 					
Helical end mill	<b>CHM190</b> 	KAPR=90°	SP12□□  AP15□□		<ul style="list-style-type: none"> <li>◎ Large cutting depth milling tools are made of steel, alloy steel and cast iron.</li> <li>◎ The tool is available in diameters φ 63 mm and φ 80 mm with BT and JT interface.</li> </ul>	B66-B67

- A
- General turning
- Parting and grooving
- Threading
- B
- Indexable milling
- Solid carbide end mills
- C
- Short hole drills
- Solid carbide drills

A

General turning

Parting and grooving

Threading

B

Indexable milling

Solid carbide end mills

C

Short hole drills

Solid carbide drills

## Overview of indexable milling inserts

Insert shape	Insert model	Page
	APMT1135PDER-HM	B47
	APMT1605PDER-HM	
	APGT1135PDFR-AK	B47
	APGT1604PDFR-AK	
	APKT113604PEER-FM	B36
	APKT1136PEER-FM	
	APKT113612PEER-FM	
	APKT113620PEER-FM	
	APKT1605PDER-FM	
	APKT160512PDER-FM	
	APKT160520PDER-FM	
	SPMT120408-MM	B67
	APMT150412-MM	
	SPHX120408T21	
	APHX1504	
	AOKT060202PEER-VM	B32
	AOKT060204PEER-VM	
	AOKT060208PEER-VM	
	AOKT113504PEER-VM	
	AOKT113508PEER-VM	
	AOKT113512PEER-VM	
	AOKT113516PEER-VM	
	AOKT160408PEER-VM	
	AOKT160412PEER-VM	
	AOKT160416PEER-VM	

Insert shape	Insert model	Page
	HNMX0906ANSN-M	B22
	ODKT0605ADN	B12
	ODMT060508-R	
	RCKT10T3MO-FM	B52
	RCKT1204MO-FM	
	RCKT1606MO-FM	
	RCKT2006MO-FM	
	RDMW0602MO	B58
	RDMW0802MO	
	RDMW10T3MO	
	RDMW1204MO	
	RDMW1605MO	
	RDKW10T3MO	B58
	RDKW1204MO	
	RDKW1604MO	
	RPMT08T2MO-HM	B55
	RPMT1003MO	
	RPMT1204MO-HM	

Insert shape	Insert model	Page
	RPKT10T3MO-MS	B55
	RPKT1204MO-MS	
	RPKT1606MO-MS	
	RPMT10T3MO-SM	B55
	RPMT1204MO-SM	
	RPMT1606MO-SM	
	SDMT1205ZTN-FM	B64
	SDMT1505ZTN-FM	
	SDMW1205ZTN	B64
	SDMW1505ZTN	
	SEET13T3-GM	B16
	SEMT13T3AGTN-FM	
	SEKR1203AFTN	B20
	SEMR1203AFTN	
	SEEN1203AFTN	B20
	SPKN1504EDTL	B41
	SPKN1504EDTR	

Insert shape	Insert model	Page
	SNGX1005ANR-GM	B14
	SNGX1005ANR-GE	
	SNGX1005ZNN-GM	B28
	SNMX100512-GM	
	SZMX1206ANR-GM	B18
	XNGX0705ANN-R	B24
	ZNMU040308PNR-GM	B41
	ZNMU080608PNR-GM	
	ZNMU040308PNR-GL	B41
	ZNMU080608PNR-GL	

**A**

General turning

Parting and grooving

Threading

**B**

Indexable milling

Solid carbide end mills

**C**

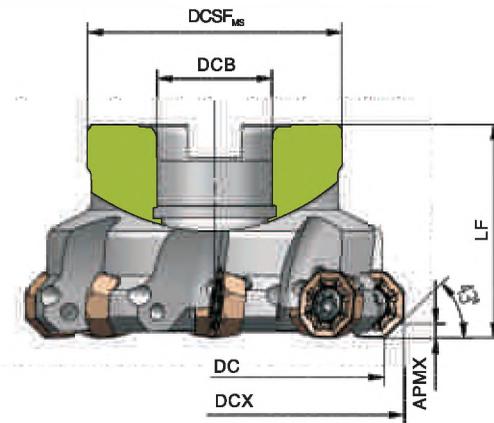
Short hole drills

Solid carbide drills

## Face milling

### CFM143 series

KAPR=43°



Tool specification	Number of edges	Inventory	Basic dimension (mm)					APMX (mm)	Interface form	Applicable inserts	Screw	Wrench
			DC	DCB	DCSF <sub>MS</sub>	DCX	LF					
CFM143-040A1603-OD06	3	△	40	16	35	50	40	4	A	OD□□	M5×13	WR20S
CFM143-050A2204-OD06	4	△	50	22	42	60	40	4				
CFM143-063A2205-OD06	5	▲	63	22	50	72	40	4				
CFM143-080A2206-OD06	6	▲	80	22	60	90	50	4	B	OD□□	M5×13	WR20S
CFM143-100B3207-OD06	7	▲	100	32	70	110	50	4				
CFM143-125B4008-OD06	8	▲	125	40	85	135	63	4	C	OD□□	M5×13	WR20S
CFM143-160C4010-OD06	10	△	160	40	100	170	63	4				
CFM143-200C6012-OD06	12	▲	200	60	175	210	63	4				

▲Running stock    △Make-to-order

A

General turning

Parting and grooving

Threading

B

Indexable milling

Solid carbide end mills

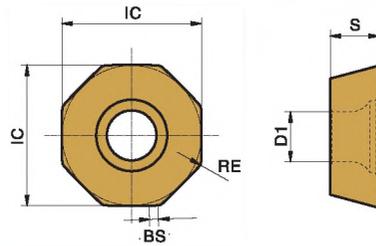
C

Short hole drills

Solid carbide drills

# Applicable inserts

OD □ □



Working condition: ● Stable ● Average ✱ Tough

Type	Basic dimension (mm)					APMX (mm)	CVD						Cemented carbide	
	IC	S	D1	BS	RE		HR8140	HR5110	HR5120	HR5130	HR7130	HR7140	HRK10	HRC20
Applicable inserts	<b>P</b> Steel	✱	●	●	✱	✱	✱	●	●	✱	✱	●	●	
	<b>M</b> Stainless steel		●	●	✱			●	●	✱				
	<b>K</b> Cast iron	✱	●	●	✱			●	●	✱				
	<b>N</b> Non-ferrous metal											●		
	<b>S</b> Heat-resistant alloy, titanium alloy													
ODKT0605ADN	15.875	5.56	5.5	1.2	0.8	4		✱	✱	✱				
ODMT060508-R	15.875	5.56	5.5	1.2	0.8	4		✱	✱	✱				

★ Recommended grade ☆ Available grade

## Recommended cutting parameters

Workpiece material	Hardness (HB)	Insert grade	Cutting data	
			Cutting speed $v_c$ (m/min)	Feed rate $f_z$ (mm/z)
<b>P</b>	Low-carbon steel, mild steel	HR5110	270(220-350)	0.3(0.1-0.5)
		HR5120	270(220-360)	
		HR5130	270(220-360)	
	High-carbon steel, alloy steel	HR5110	240(200-320)	0.2(0.1-0.4)
		HR5120	240(180-350)	
		HR5130	240(180-350)	
Alloy tool steel	280-350	HR5110	220(180-200)	0.15(0.1-0.3)
		HR5120	220(170-340)	
		HR5130	220(170-340)	
<b>M</b>	Stainless steel	HR5110	230(180-300)	0.2(0.1-0.3)
		HR5120	150(120-250)	
		HR5130	150(120-250)	
<b>K</b>	Cast iron	HR5110	240(180-300)	0.2(0.1-0.4)
		HR5120	200(150-250)	
		HR5130	200(150-250)	

**A**

General turning

Parting and grooving

Threading

**B**

Indexable milling

Solid carbide end mills

**C**

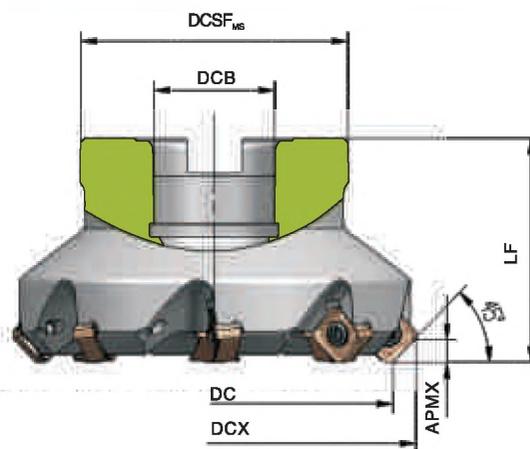
Short hole drills

Solid carbide drills

## Face milling

### CFM145 series

KAPR=45°



Tool specification	Number of edges	Inventory	Basic dimension (mm)					APMX (mm)	Interface form	Applicable inserts	Screw	Wrench
			DC	DCB	DCSF <sub>ms</sub>	DCX	LF					
CFM145-050A2204-SN10	4	▲	50	22	42	60.5	40	4.7	A	SNGX□□	M3.5×10	WR15S
CFM145-050A2205-SN10	5	△	50	22	42	60.5	40	4.7				
CFM145-063A2205-SN10	5	△	63	22	50	73.5	40	4.7				
CFM145-063A2206-SN10	6	▲	63	22	50	73.5	40	4.7				
CFM145-080A2706-SN10	6	△	80	27	60	90.5	50	4.7				
CFM145-080A2708-SN10	8	▲	80	27	60	90.5	50	4.7				
CFM145-100B3206-SN10	6	△	100	32	70	110.5	50	4.7	B	SNGX□□	M3.5×10	WR15S
CFM145-100B3208-SN10	8	△	100	32	70	110.5	50	4.7				
CFM145-100B3205-SN10	10	▲	100	32	70	110.5	50	4.7				
CFM145-125B4008-SN10	8	△	125	40	85	135.5	63	4.7				
CFM145-125B4010-SN10	10	▲	125	40	85	135.5	63	4.7				
CFM145-125B4012-SN10	12	△	125	40	85	135.5	63	4.7				
CFM145-160C4008-SN10	8	△	160	40	100	170.5	63	4.7	C	SNGX□□	M3.5×10	WR15S
CFM145-160C4012-SN10	12	▲	160	40	100	170.5	63	4.7				
CFM145-160C4014-SN10	14	△	160	40	100	170.5	63	4.7				

▲Running stock    △Make-to-order

A

General turning

Parting and grooving

Threading

B

Indexable milling

Solid carbide end mills

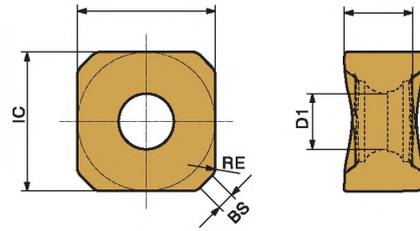
C

Short hole drills

Solid carbide drills

# Applicable inserts

## SN □□



Working condition: ● Stable ● Average ✎ Tough

Applicable inserts	Workpiece material	Working condition							
		●	●	●	✎	✎	✎	●	●
		Stable	Average	Tough	Stable	Average	Tough	Stable	Average
<b>P</b> Steel		✎	●	●	✎	✎	✎	●	
<b>M</b> Stainless steel			●	●	✎		✎		
<b>K</b> Cast iron		✎	●	●	✎				
<b>N</b> Non-ferrous metal								●	
<b>S</b> Heat-resistant alloy, titanium alloy									

Type	Basic dimension (mm)						APMX (mm)	CVD						Cemented carbide		Cermets	
	IC	S	D1	BS	RE	APMX		PVD						HRK10	HRC20		
								HR8140	HR5110	HR5120	HR5130	HR7130	HR7140				
SNGX1005ANR-GM	10.0	5.0	4.0	1.2	0.8	4.7		☆	★	★							
SNGX1005ANR-GE	10.0	5.0	4.0	1.2	0.8	4.7		☆	★	★							

★ Recommended grade ☆ Available grade

### ▶ Recommended cutting parameters

Workpiece material	Hardness (HB)	Insert grade	Cutting data	
			Cutting speed $v_c$ (m/min)	Feed rate $f_z$ (mm/z)
<b>P</b>	Low-carbon steel, mild steel	HR5110	270(220-350)	0.2(0.1-0.4)
		HR5120	270(220-350)	
		HR5130	270(220-350)	
	High-carbon steel, alloy steel	HR5110	260(200-320)	0.2(0.1-0.4)
		HR5120	260(200-320)	
		HR5130	260(200-320)	
Alloy tool steel	280-350	HR5110	240(180-300)	0.2(0.1-0.4)
		HR5120	240(180-300)	
		HR5130	240(180-300)	
<b>M</b>	Stainless steel	HR5110	150(120-240)	0.2(0.1-0.4)
		HR5120	160(110-270)	
		HR5130	140(100-250)	
<b>K</b>	Cast iron	HR5110	270(150-300)	0.3(0.1-0.5)
		HR5120	200(150-250)	
		HR5130	200(150-250)	

**A**  
General turning

Parting and grooving

Threading

**B**  
Indexable milling

Solid carbide end mills

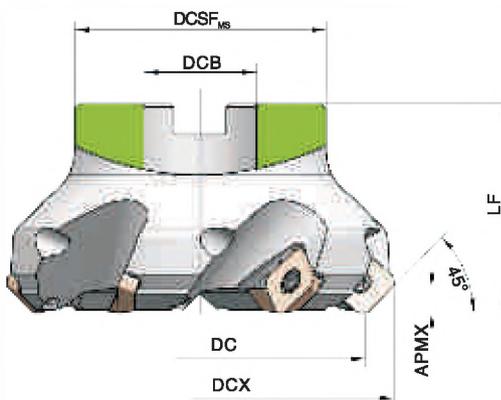
**C**  
Short hole drills

Solid carbide drills

## Face milling

### CFM245 series

KAPR=45°



Tool specification	Number of edges	Inventory	Basic dimension (mm)					APMX (mm)	Interface form	Applicable inserts	Screw	Wrench
			DC	DCB	DCSF <sub>MS</sub>	DCX	LF					
CFM245-050A2203-SE13	3	△	50	22	42	61	40	6	A	SEET□□	M3.5×10	WR15S
CFM245-050A2204-SE13	4	▲	50	22	42	61	40	6				
CFM245-063A2204-SE13	4	△	63	22	50	74	40	6				
CFM245-063A2205-SE13	5	▲	63	22	50	74	40	6				
CFM245-080A2704-SE13	4	△	80	27	60	91	50	6				
CFM245-080A2706-SE13	6	▲	80	27	60	91	50	6				
CFM245-100B3205-SE13	5	△	100	32	70	107	50	6	B	SEET□□	M3.5×10	WR15S
CFM245-100B3207-SE13	7	△	100	32	70	107	50	6				
CFM245-125B4006-SE13	6	▲	125	40	85	131	63	6				
CFM245-125B4008-SE13	8	△	125	40	85	136	63	6	C	SEET□□	M3.5×10	WR15S
CFM245-160C4010-SE13	10	▲	160	40	100	170	63	6				
CFM245-160C4012-SE13	12	△	160	40	100	210	63	6				
CFM245-200C6014-SE13	14	▲	200	60	175	260	63	6				
CFM245-200C6018-SE13	18	△	200	60	175	325	70	6				

▲Running stock    △Make-to-order

A

General turning

Parting and grooving

Threading

B

Indexable milling

Solid carbide end mills

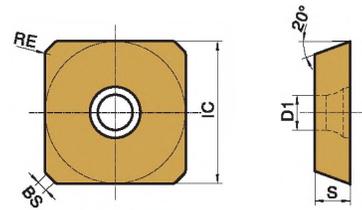
C

Short hole drills

Solid carbide drills

# Applicable inserts

SE □□



Working condition: ● Stable ● Average ⚡ Tough

Type	Basic dimension (mm)					APMX (mm)	CVD						Cemented carbide		Cermets			
	IC	S	D1	BS	RE		HR8140	HR5110	HR5120	HR5130	HR7130	HR7140	HRK10	HRC20				
Applicable inserts	Workpiece material																	
	P Steel						⚡	●	●	⚡	⚡	⚡	●			●		
	M Stainless steel							●	●	⚡		⚡						
	K Cast iron						⚡	●	●	⚡								
	N Non-ferrous metal												●					
S Heat-resistant alloy, titanium alloy																		
SEET13T3-GM	13.4	3.97	4.1	1.4	1.5	6		☆	★	★								
SEMT13T3AGTN-FM	13.4	3.97	4.1	1.4	1.5	6		☆	★	★								

★ Recommended grade ☆ Available grade

## Recommended cutting parameters

Workpiece material	Hardness (HB)	Insert grade	Cutting data	
			Cutting speed $v_c$ (m/min)	Feed rate $f_z$ (mm/z)
P Low-carbon steel, mild steel	≤180	HR5110	270(220-350)	0.2(0.1-0.3)
		HR5120	270(200-360)	
		HR5130	230(170-350)	
	180-280	HR5110	240(200-320)	0.2(0.1-0.3)
		HR5120	240(180-350)	
		HR5130	220(180-350)	
280-350	Alloy tool steel	HR5110	220(180-300)	0.2(0.1-0.3)
		HR5120	220(170-340)	
		HR5130	190(130-300)	
M Stainless steel	≤270	HR5110	150(120-240)	0.2(0.1-0.3)
		HR5120	160(110-270)	
		HR5130	140(100-250)	
K Cast iron	180-250	HR5110	240(180-300)	0.2(0.1-0.3)
		HR5120	200(150-250)	
		HR5130	200(150-250)	

A

General turning

Parting and grooving

Threading

B

Indexable milling

Solid carbide end mills

C

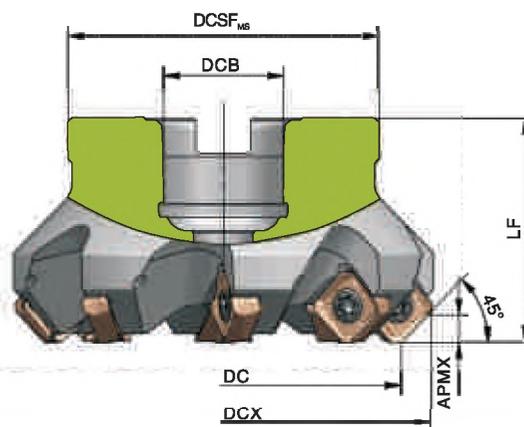
Short hole drills

Solid carbide drills

## Face milling

### CFM345 series

KAPR=45°



Tool specification	Number of edges	Inventory	Basic dimension (mm)					APMX (mm)	Interface form	Applicable inserts	Screw	Wrench
			DC	DCB	DCSF <sub>MS</sub>	DCX	Lf					
CFM345-050A2204-SZ12	4	△	50	22	42	63.7	40	6	A	SZMX□□	M4×10	WR15S
CFM345-050A2205-SZ12	5	▲	50	22	42	63.7	40	6				
CFM345-063A2205-SZ12	5	△	63	22	50	76.7	40	6				
CFM345-063A2206-SZ12	6	▲	63	22	50	76.7	40	6				
CFM345-080A2706-SZ12	6	△	80	27	60	93.7	50	6				
CFM345-080A2708-SZ12	8	▲	80	27	60	93.7	50	6				
CFM345-100B3206-SZ12	6	△	100	32	70	113.7	50	6	B	SZMX□□	M4×10	WR15S
CFM345-100B3208-SZ12	8	△	100	32	70	113.7	50	6				
CFM345-100B3210-SZ12	10	▲	100	32	70	113.7	50	6				
CFM345-125B4008-SZ12	8	△	125	40	85	138.7	63	6				
CFM345-125B4010-SZ12	10	△	125	40	85	138.7	63	6				
CFM345-125B4012-SZ12	12	▲	125	40	85	138.7	63	6				
CFM345-160C4008-SZ12	8	△	160	40	100	173.7	63	6	C	SZMX□□	M4×10	WR15S
CFM345-160C4012-SZ12	12	△	160	40	100	173.7	63	6				
CFM345-160C4014-SZ12	14	▲	160	40	100	173.7	63	6				

▲Running stock    △Make-to-order

A

General turning

Parting and grooving

Threading

B

Indexable milling

Solid carbide end mills

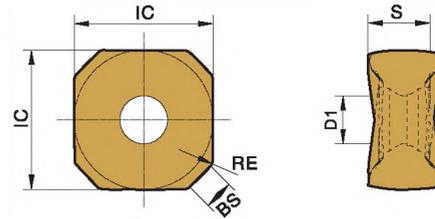
C

Short hole drills

Solid carbide drills

# Applicable inserts

## SZMX □□



Working condition: ● Stable ● Average ✎ Tough

Applicable inserts	Workpiece material	Working condition						
		●	●	✎	✎	✎	✎	●
Applicable inserts	<b>P</b> Steel	✎	●	●	✎	✎	✎	●
	<b>M</b> Stainless steel		●	●	✎	✎		
	<b>K</b> Cast iron	✎	●	●	✎			
	<b>N</b> Non-ferrous metal							●
	<b>S</b> Heat-resistant alloy, titanium alloy							

Type	Basic dimension (mm)					APMX (mm)	CVD / PVD						Cemented carbide	Cermets
	IC	S	D1	BS	RE		HR8140	HR5110	HR5120	HR5130	HR7130	HR7140		
SZMX1206ANR-GM	13.4	6.0	4.6	1.4	0.8	6		☆	★	★				

★ Recommended grade ☆ Available grade

### ▶ Recommended cutting parameters

Workpiece material	Hardness (HB)	Insert grade	Cutting data	
			Cutting speed $v_c$ (m/min)	Feed rate $f_z$ (mm/z)
<b>P</b>	Low-carbon steel, mild steel	HR5110	270(220-350)	0.2(0.1-0.4)
		HR5120	270(220-350)	
		HR5130	270(220-350)	
	High-carbon steel, alloy steel	HR5110	260(200-320)	0.2(0.1-0.4)
		HR5120	260(200-320)	
		HR5130	260(200-320)	
Alloy tool steel	280-350	HR5110	240(180-300)	0.2(0.1-0.4)
		HR5120	240(180-300)	
		HR5130	240(180-300)	
<b>M</b>	Stainless steel	HR5110	150(120-240)	0.2(0.1-0.4)
		HR5120	160(110-270)	
		HR5130	140(100-250)	
<b>K</b>	Cast iron	HR5110	270(150-300)	0.3(0.1-0.5)
		HR5120	200(150-250)	
		HR5130	200(150-250)	

**A**

General turning

Parting and grooving

Threading

**B**

Indexable milling

Solid carbide end mills

**C**

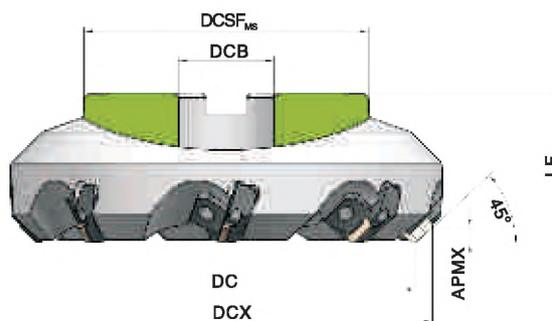
Short hole drills

Solid carbide drills

## Face milling

### CFM445 series

KAPR=45°



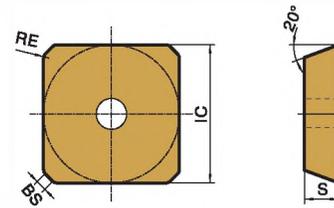
Tool specification	Number of edges	Inventory	Basic dimension (mm)					APMX (mm)	Interface form	Applicable inserts
			DC	DCB	DCSF <sub>MS</sub>	DCX	LF			
CFM445-080A2704-SE12	4	▲	80	27	60	103	50	5.5	A	SE□R1203□
CFM445-100B3205-SE12	5	▲	100	32	70	122	50	5.5	B	
CFM445-125B4006-SE12	6	▲	125	40	85	147	63	5.5	C	
CFM445-160C4008-SE12	8	▲	160	40	100	181	63	5.5		
CFM445-200C6010-SE12	10	▲	200	60	175	221	63	5.5	D	
CFM445-250C6012-SE12	12	△	250	60	210	270	63	5.5		
CFM445-315D6015-SE12	15	△	315	60	250	353	63	5.5		

▲Running stock    △Make-to-order

Insert	Toolholder	Brale	Stud screw	Clamping screw	Wrench
SE□□12	HSERR/L	H05R/L	HM8×21	HOM5×15.4	HT20T HH40T

# Applicable inserts

SE □ □



Working condition: ● Stable ● Average ✱ Tough

Applicable inserts	Workpiece material	Working condition														
		P	M	K	N	S	Stable	Average	Tough	Stable	Average	Tough				
		●	●	●	●	●	●	●	●	●	●	●				
	<b>P</b> Steel	✱	●	●	✱	✱	✱	●								
	<b>M</b> Stainless steel		●	●	✱			✱								
	<b>K</b> Cast iron	✱	●	●	✱											
	<b>N</b> Non-ferrous metal												●			
	<b>S</b> Heat-resistant alloy, titanium alloy															

Type	Basic dimension (mm)						APMX (mm)	CVD						Cemented carbide		Cermets	
	IC	S	D1	BS	RE	PVD						HRK10	HRC20				
						HR8140		HR5110	HR5120	HR5130	HR7130			HR7140			
SEEN1203AFTN	12.7	3.18	2.5	1.2	0.8	5.5											★
SEKR1203AFTN	12.7	3.18	2.5	1.3	1.6	5.5		☆	★	★							
SEMR1203AFTN	12.7	3.18	2.5	1.3	1.6	5.5		☆	★	★							

★ Recommended grade ☆ Available grade

## Recommended cutting parameters

Workpiece material	Hardness (HB)	Insert grade	Cutting data	
			Cutting speed $v_c$ (m/min)	Feed rate $f_z$ (mm/z)
<b>P</b>	Low-carbon steel, mild steel	HR5110	270(220-350)	0.3(0.1-0.5)
		HR5120	270(220-360)	
		HR5130	270(220-360)	
	High-carbon steel, alloy steel	HR5110	240(200-320)	0.15(0.1-0.4)
		HR5120	240(180-350)	
		HR5130	240(180-350)	
Alloy tool steel	280-350	HR5110	220(180-200)	0.15(0.1-0.3)
		HR5120	220(170-340)	
		HR5130	220(170-340)	
<b>M</b>	Stainless steel	HR5110	230(180-300)	0.15(0.1-0.3)
		HR5120	150(120-250)	
		HR5130	150(120-250)	
<b>K</b>	Cast iron	HR5110	240(180-300)	0.2(0.1-0.4)
		HR5120	200(150-250)	
		HR5130	200(150-250)	

**A**  
General turning

Parting and grooving

Threading

**B**  
Indexable milling

Solid carbide end mills

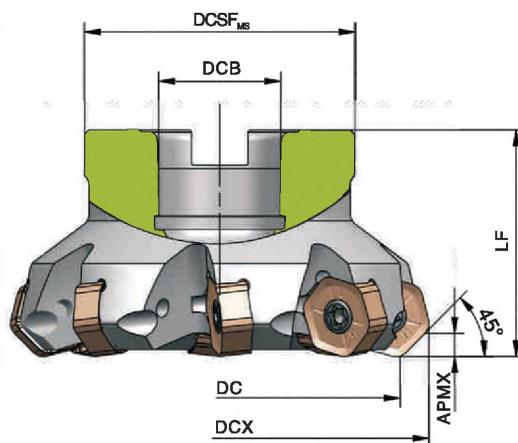
**C**  
Short hole drills

Solid carbide drills

## Face milling

### CFM645 series

KAPR=45°

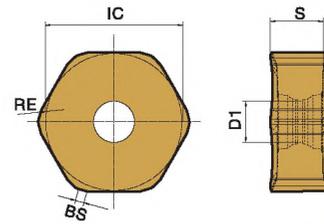


Tool specification	Number of edges	Inventory	Basic dimension (mm)					APMX (mm)	Interface form	Applicable inserts	Screw	Wrench						
			DC	DCB	DCSF <sub>ms</sub>	DCX	LF											
CFM645-050A1604-HN09	4	△	50	16	42	61.7	40	5	A	HNMX0906□□	M4×11	WR15S						
CFM645-063A2206-HN09	6	▲	63	22	50	74.7	40	5										
CFM645-080A2706-HN09	6	△	80	27	60	91.7	50	5										
CFM645-080A2708-HN09	8	▲	80	27	60	91.7	50	5										
CFM645-100B3206-HN09	6	△	100	32	70	111.7	50	5	B				HNMX0906□□	M4×11	WR15S			
CFM645-100B3208-HN09	8	▲	100	32	70	111.7	50	5										
CFM645-100B3210-HN09	10	△	100	32	70	111.7	50	5										
CFM645-125B4006-HN09	6	△	125	40	85	136.7	63	5										
CFM645-125B4008-HN09	8	▲	125	40	85	136.7	63	5	C							HNMX0906□□	M4×11	WR15S
CFM645-125B4010-HN09	10	△	125	40	85	136.7	63	5										
CFM645-125B4012-HN09	12	▲	125	40	85	136.7	63	5										
CFM645-160C4008-HN09	8	△	160	40	100	171.7	63	5										
CFM645-160C4012-HN09	12	▲	160	40	100	171.7	63	5	C	HNMX0906□□	M4×11	WR15S						
CFM645-160C4014-HN09	14	△	160	40	100	171.7	63	5										
CFM645-200C6010-HN09	10	△	200	60	175	211.7	63	5										
CFM645-250C6014-HN09	14	▲	250	60	210	261.7	63	5										
CFM645-315D6016-HN09	16	△	315	60	250	326.7	80	5	C				HNMX0906□□	M4×11	WR15S			

▲Running stock    △Make-to-order

# Applicable inserts

## HNMX □□



Working condition: ● Stable ● Average ✚ Tough

Applicable inserts	Workpiece material	Working condition								
		Stable	Average	Tough	Stable	Average	Tough	Stable	Average	Tough
Applicable inserts	<b>P</b> Steel	✚	●	●	✚	✚	✚	●		
	<b>M</b> Stainless steel		●	●	✚	✚				
	<b>K</b> Cast iron	✚	●	●	✚					
	<b>N</b> Non-ferrous metal							●		
	<b>S</b> Heat-resistant alloy, titanium alloy									

Type	Basic dimension (mm)					APMX (mm)	CVD / PVD / Cermets							
	IC	S	D1	BS	RE		HR8140	HR5110	HR5120	HR5130	HR7130	HR7140	HRK10	HRC20
HNMX0906ANSN-M	16.5	6.34	4.9	1.0	1.2	5		☆	★	★				

★ Recommended grade ☆ Available grade

### Recommended cutting parameters

Workpiece material	Hardness (HB)	Insert grade	Cutting data	
			Cutting speed $v_c$ (m/min)	Feed rate $f_z$ (mm/z)
<b>P</b> Steel	Low-carbon steel, mild steel	HR5110	270(220-350)	0.2(0.1-0.4)
		HR5120	270(220-350)	
		HR5130	270(220-350)	
	High-carbon steel, alloy steel	HR5110	260(200-320)	0.2(0.1-0.4)
		HR5120	260(200-320)	
		HR5130	260(200-320)	
Alloy tool steel	280-350	HR5110	240(180-300)	0.2(0.1-0.4)
		HR5120	240(180-300)	
		HR5130	240(180-300)	
<b>M</b> Stainless steel	≤270	HR5110	150(120-240)	0.2(0.1-0.4)
		HR5120	160(110-270)	
		HR5130	140(100-250)	
<b>K</b> Cast iron	180-250	HR5110	270(150-300)	0.3(0.1-0.5)
		HR5120	200(150-250)	
		HR5130	200(150-250)	

**A**

General turning

Parting and grooving

Threading

**B**

Indexable milling

Solid carbide end mills

**C**

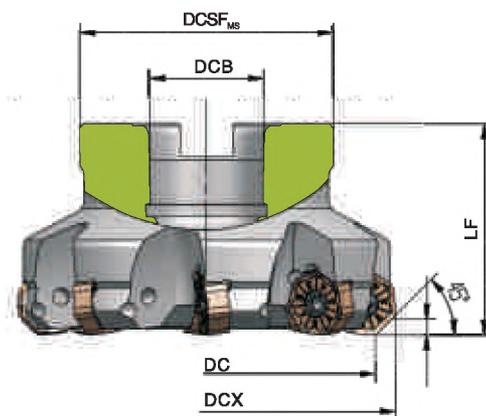
Short hole drills

Solid carbide drills

## Face milling

### CFM745 series

KAPR=45°



Tool specification	Number of edges	Inventory	Basic dimension (mm)					APMX (mm)	Interface form	Applicable inserts	Screw	Wrench
			DC	DCB	DCSF <sub>MS</sub>	DCX	LF					
CFM745-040A1603-XN07	3	△	40	16	35	49.6	40	4.4	A	XMIX0705□□	M3.5×10	WR15S
CFM745-050A2204-XN07	4	▲	50	22	42	59.6	40	4.4				
CFM745-050A2205-XN07	5	△	50	22	42	59.6	40	4.4				
CFM745-063A2205-XN07	5	▲	63	22	50	72.6	40	4.4				
CFM745-063A2206-XN07	6	△	63	22	50	72.6	40	4.4				
CFM745-080A2706-XN07	6	△	80	27	60	89.6	50	4.4				
CFM745-080A2707-XN07	7	▲	80	27	60	89.6	50	4.4				
CFM745-100B3207-XN07	7	△	100	32	70	109.6	50	4.4				
CFM745-100B3208-XN07	8	▲	100	32	70	109.6	50	4.4				
CFM745-125B4008-XN07	8	▲	125	40	85	134.6	63	4.4				
CFM745-125B4010-XN07	10	▲	125	40	85	134.6	63	4.4				
CFM745-160C4011-XN07	11	△	160	40	100	169.6	63	4.4				
CFM745-160C4012-XN07	12	▲	160	40	100	169.6	63	4.4				

▲Running stock    △Make-to-order

A

General turning

Parting and grooving

Threading

B

Indexable milling

Solid carbide end mills

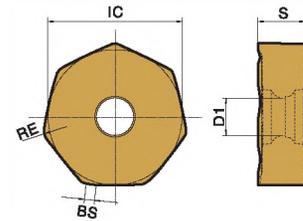
C

Short hole drills

Solid carbide drills

# Applicable inserts

XN □□



Working condition: ● Stable ● Average ✎ Tough

Applicable inserts	Workpiece material	Basic dimension (mm)						CVD		PVD		Cemented carbide	Cermet	
		IC	S	D1	BS	RE	APMX (mm)	HR8140	HR5110	HR5120	HR5130	HR7130	HR7140	HRK10
Applicable inserts	<b>P</b> Steel	✎	●	●	✎	✎	✎	●	●	✎	✎	●		
	<b>M</b> Stainless steel		●	●	✎				●	✎				
	<b>K</b> Cast iron	✎	●	●	✎				●	✎				
	<b>N</b> Non-ferrous metal											●		
	<b>S</b> Heat-resistant alloy, titanium alloy												●	
XNGX0705ANN-R		14.5	5.02	4.0	1.0	0.8	4.4		☆	★	★			

★ Recommended grade ☆ Available grade

## Recommended cutting parameters

Workpiece material	Hardness (HB)	Insert grade	Cutting data	
			Cutting speed $v_c$ (m/min)	Feed rate $f_z$ (mm/z)
<b>P</b>	Low-carbon steel, mild steel	HR5110	270(220-350)	0.2(0.1-0.3)
		HR5120	270(200-360)	
		HR5130	230(170-350)	
	High-carbon steel, alloy steel	HR5110	240(200-320)	0.2(0.1-0.3)
		HR5120	240(180-350)	
		HR5130	220(180-350)	
Alloy tool steel	280-350	HR5110	220(180-300)	0.2(0.1-0.3)
		HR5120	220(170-340)	
		HR5130	190(130-300)	
<b>M</b>	Stainless steel	HR5110	150(120-240)	0.2(0.1-0.3)
		HR5120	160(110-270)	
		HR5130	140(100-250)	
<b>K</b>	Cast iron	HR5110	240(180-300)	0.2(0.1-0.3)
		HR5120	200(150-250)	
		HR5130	200(150-250)	

A

General turning

Parting and grooving

Threading

B

Indexable milling

Solid carbide end mills

C

Short hole drills

Solid carbide drills

A

General turning

Parting and grooving

Threading

B

Indexable milling

Solid carbide end mills

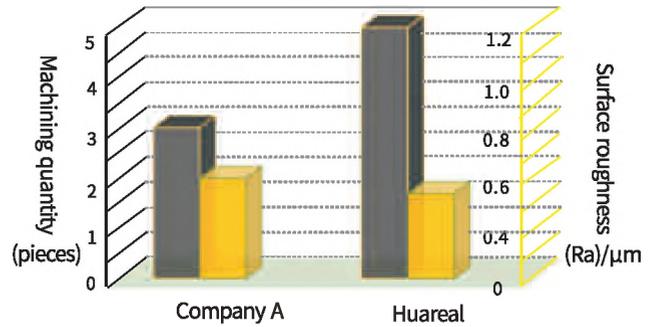
C

Short hole drills

Solid carbide drills

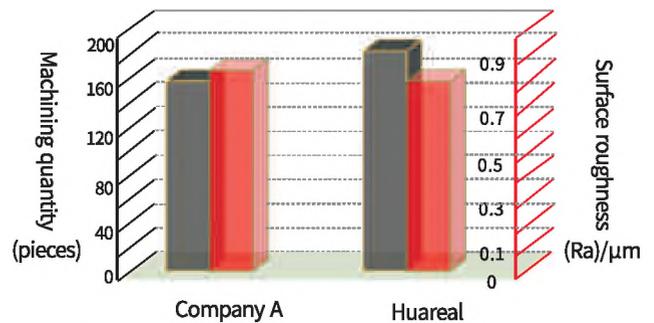
## Machining cases

- **Workpiece material** 1Cr18Ni9Ti
- **Machining method** Face milling
- **Cooling method** Water cooling
- **Insert** SNGX1005ANR-GM, HR5120
- **Cutting tools** CFM145-063A2206-SN10
- **Machining parameters**  $V_c=130\text{m/min}$ ,  $f_z=0.15\text{mm/z}$ ,  $a_p=1\text{mm}$



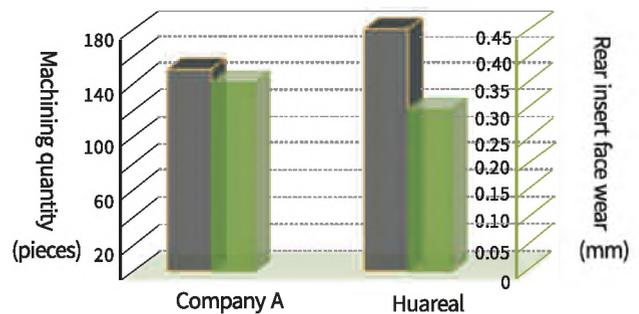
## Machining cases

- **Workpiece material** HT250
- **Machining method** Face milling
- **Cooling method** No cooling
- **Insert** SZMX1206ANN-GM, HR5130
- **Cutting tools** CFM345-063A2206-SZ12
- **Machining parameters**  $V_c=150\text{m/min}$ ,  $f_z=0.2\text{mm/z}$ ,  $a_p=3\text{mm}$



## Machining cases

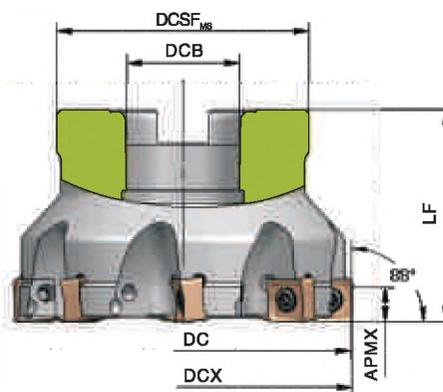
- **Workpiece material** QT500
- **Machining method** Face milling
- **Cooling method** No cooling
- **Insert** HNMX0906ANSN-M HR5110
- **Cutting tools** CFM645-063A2206-HN09
- **Machining parameters**  $V_c=240\text{m/min}$ ,  $f_z=0.15\text{mm/z}$ ,  $a_p=2\text{mm}$



# Square shoulder milling

## CSM188 series

KAPR=88°



Tool specification and model	Number of edges	Inventory	Basic dimension (mm)					APMX (mm)	Interface form	Applicable inserts	Screw	Wrench
			DC	DCB	DCSF <sub>188</sub>	DCX	LF					
CSM188-050A2204-SN10	4	▲	50	22	42	50.7	40	8	A	SN□X1005□	M3.5×10	WR15S
CSM188-050A2205-SN10	5	△	50	22	42	50.7	40	8				
CSM188-063A2205-SN10	5	△	63	22	50	63.7	40	8				
CSM188-063A2206-SN10	6	▲	63	22	50	63.7	40	8				
CSM188-080A2706-SN10	6	△	80	27	60	80.7	50	8				
CSM188-080A2708-SN10	8	▲	80	27	60	80.7	50	8				
CSM188-100B3206-SN10	6	△	100	32	70	100.7	50	8				
CSM188-100B3208-SN10	8	△	100	32	70	100.7	50	8				
CSM188-100B3211-SN10	11	▲	100	32	70	100.7	50	8				
CSM188-125B4008-SN10	8	△	125	40	85	125.7	63	8				
CSM188-125B4010-SN10	10	▲	125	40	85	125.7	63	8				
CSM188-125B4014-SN10	14	△	125	40	85	125.7	63	8				
CSM188-160C4008-SN10	8	△	160	40	100	160.7	63	8	C			
CSM188-160C4012-SN10	12	▲	160	40	100	160.7	63	8				
CSM188-160C4014-SN10	14	△	160	40	100	160.7	63	8				

▲Running stock    △Make-to-order

A

General turning

Parting and grooving

Threading

B

Indexable milling

Solid carbide end mills

C

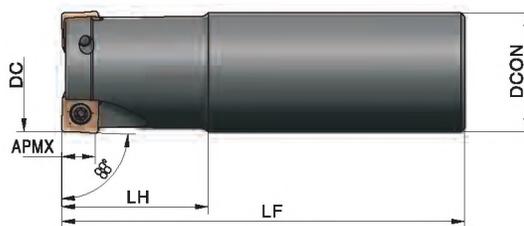
Short hole drills

Solid carbide drills

## Square shoulder milling

### SFM188 series

KAPR=88°



Tool specification	Number of edges	Inventory	Basic dimension (mm)				APMX (mm)	Applicable inserts	Screw	Wrench
			DC	DCON	LF	LH				
SSM188-032G3202-SN10	2	▲	32	32	110	32.8	8	SN□X1005□	M3.5×10	WR15
SSM188-032G3203-SN10	3	△	32	32	110	32.8	8			
SSM188-040G3203-SN10	3	△	40	32	110	40.8	8			
SSM188-040G3204-SN10	4	△	40	32	110	40.8	8			

▲Running stock    △Make-to-order

A

General turning

Parting and grooving

Threading

B

Indexable milling

Solid carbide end mills

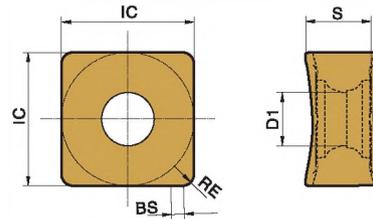
C

Short hole drills

Solid carbide drills

# Applicable inserts

SN □□



Working condition: ● Stable ● Average ✱ Tough

Applicable inserts	Workpiece material	Working condition												
		P	M	K	N	S	HR8140	HR5110	HR5120	HR5130	HR7130	HR7140	HRK10	HRC20
		●	●	●	●	●	●	●	●	●	●	●	●	●
	<b>P</b> Steel	✱	●	●	✱	✱	✱	●					●	
	<b>M</b> Stainless steel		●	●	✱	✱								
	<b>K</b> Cast iron	✱	●	●	✱	✱								
	<b>N</b> Non-ferrous metal											●		
	<b>S</b> Heat-resistant alloy, titanium alloy													
Type	Basic dimension (mm)						APMX (mm)	CVD		PVD		Cemented carbide	Cermet	
	IC	S	D1	BS	RE			HR8140	HR5110	HR5120	HR5130	HR7130	HR7140	HRK10
SNGX1005ZNN-GM	10.0	5.0	4.0	1.0	0.8	8		☆	★	★				
SNMX100512-GM	10.0	5.0	4.0	\	1.2	8		☆	★	★				

★ Recommended grade ☆ Available grade

## Recommended cutting parameters

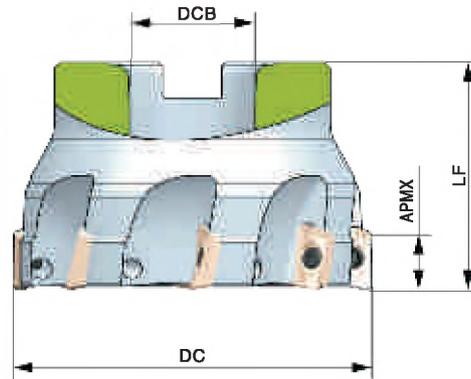
Workpiece material	Hardness (HB)	Insert grade	Cutting data	
			Cutting speed $v_c$ (m/min)	Feed rate $f_z$ (mm/z)
<b>P</b>	Low-carbon steel, mild steel	HR5110	270(220-350)	0.2(0.1-0.4)
		HR5120	270(220-350)	
		HR5130	270(220-350)	
	High-carbon steel, alloy steel	HR5110	260(200-320)	0.2(0.1-0.4)
		HR5120	260(200-320)	
		HR5130	260(200-320)	
Alloy tool steel	280-350	HR5110	240(180-300)	0.2(0.1-0.4)
		HR5120	240(180-300)	
		HR5130	240(180-300)	
<b>M</b>	Stainless steel	HR5110	150(120-240)	0.2(0.1-0.4)
		HR5120	160(110-270)	
		HR5130	140(100-250)	
<b>K</b>	Cast iron	HR5110	270(150-300)	0.3(0.1-0.5)
		HR5120	200(150-250)	
		HR5130	200(150-250)	

**A** General turning  
 Parting and grooving  
 Threading  
**B** Indexable milling  
 Solid carbide end mills  
**C** Short hole drills  
 Solid carbide drills

## Square shoulder milling

### CSM190 series

KAPR=90°



Tool specification	Number of edges	Inventory	Basic dimension (mm)			APMX (mm)	Interface form	Applicable inserts	Screw	Wrench
			DC	DCB	LF					
CSM190-040A1605-AO11	5	△	40	16	40	9.5	A	AOKT11□□	M2.5×6.5	WR08S
CSM190-050A2206-AO11	6	▲	50	22	50	9.5				
CSM190-063A2207-AO11	7	▲	63	22	63	9.5				
CSM190-050A2204-AO16	4	△	50	22	50	14.5		AOKT16□□	M4×8.4	WR15S
CSM190-063A2205-AO16	5	▲	63	22	63	14.5				
CSM190-080A2706-AO16	6	▲	80	27	80	14.5				

▲Running stock    △Make-to-order

A

General turning

Parting and grooving

Threading

B

Indexable milling

Solid carbide end mills

C

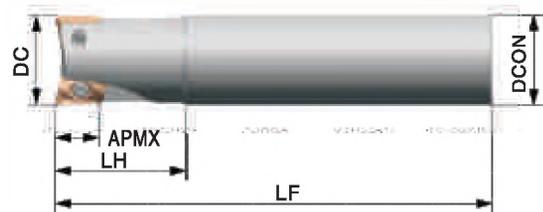
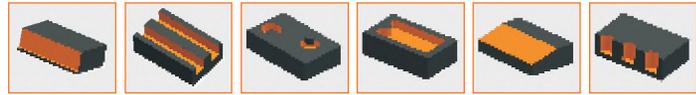
Short hole drills

Solid carbide drills

# Square shoulder milling

## SSM190 series

KAPR=90°



Tool specification	Number of edges	Inventory	Basic dimension (mm)				APMX (mm)	Applicable inserts	Screw	Wrench
			DC	DCON	LF	LH				
SSM190-016G1602-AO11	2	▲	16	16	130	40	AOKT11□□	M2.5×6.5	WR08	
SSM190-016G1602L-AO11	2	△	16	16	160	40				
SSM190-017G1602-AO11	2	△	17	16	160	40				
SSM190-017G1602L-AO11	2	△	17	16	200	40				
SSM190-020G2002-AO11	2	▲	20	20	130	40				
SSM190-020G2002L-AO11	2	△	20	20	160	40				
SSM190-021G2002L-AO11	2	△	21	20	200	50				
SSM190-021G2002-AO11	2	△	21	20	160	50				
SSM190-025G2503-AO11	3	▲	25	25	120	50				
SSM190-025G2503L-AO11	3	△	25	25	160	50				
SSM190-025G2502-AO16	2	▲	25	25	160	50	AOKT16□□	M4×8.4	WR15	
SSM190-025G2502L-AO16	2	△	25	25	200	50				
SSM190-026G2502-AO16	2	△	26	25	160	50				
SSM190-026G2502L-AO16	2	△	26	25	200	50				
SSM190-032G3202-AO16	2	▲	32	32	160	80				
SSM190-032G3202L-AO16	2	△	32	32	200	80				

▲Running stock    △Make-to-order

A

General turning

Parting and grooving

Threading

B

Indexable milling

Solid carbide end mills

C

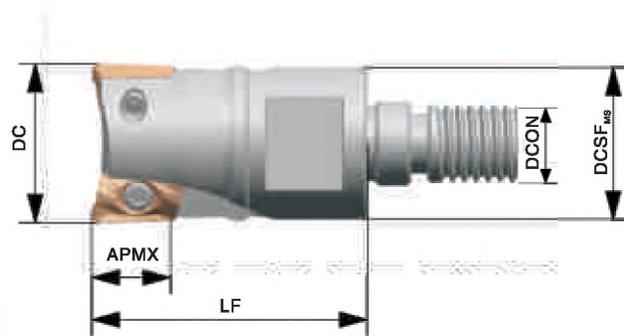
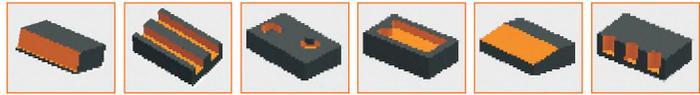
Short hole drills

Solid carbide drills

## Square shoulder milling

### KH- series

KAPR=90°



Tool specification	Number of edges	Inventory	Basic dimension (mm)				APMX (mm)	Applicable inserts	Screw	Wrench
			DC	DCSF <sub>ms</sub>	LF	DCON				
KH-1102-AOKT06-M05	2	△	11	9	18	5	6.0	AO06	M1.8×3.9	WR06
KH-1303-AOKT06-M06	3	△	13	10	18	6	6.0			
KH-1503-AOKT06-M08	3	▲	15	14	22	8	6.0			
KH-1704-AOKT06-M08	4	△	17	15	22	8	6.0			
KH-1702-AOKT11-M08	2	△	17	15	25	8	9.5	AO11	M2.5×6.5	WR08
KH-2102-AOKT11-M10	2	▲	21	19	30	10	9.5			
KH-2603-AOKT11-M12	3	△	26	24	35	12	9.5			
KH-3304-AOKT11-M16	4	△	33	30	40	16	9.5			

▲Running stock    △Make-to-order

A

General turning

Parting and grooving

Threading

B

Indexable milling

Solid carbide end mills

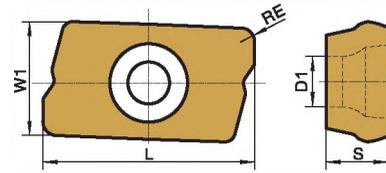
C

Short hole drills

Solid carbide drills

# Applicable inserts

AO □□



Working condition: ● Stable ● Average ✱ Tough

Applicable inserts	Workpiece material	Basic dimension (mm)								APMX (mm)	Cutting data					
		IC	S	D1	BS	RE	CVD HR8140	PVD HR5110	PVD HR5120		PVD HR5130	PVD HR7130	PVD HR7140	Cemented carbide HRK10	Cermet HRC20	
Applicable inserts	<b>P</b> Steel	✱	●	●	✱	✱	✱	●								
	<b>M</b> Stainless steel		●	●	✱	✱	✱									
	<b>K</b> Cast iron	✱	●	●	✱	✱	✱									
	<b>N</b> Non-ferrous metal												●			
	<b>S</b> Heat-resistant alloy, titanium alloy															
AOKT060202PEER-VM		7.61	4.20	2.38	2.10	0.20	6.0		☆	★	★					☆
AOKT060204PEER-VM		7.61	4.20	2.38	2.10	0.40	6.0		☆	★	★					☆
AOKT060208PEER-VM		7.61	4.20	2.38	2.10	0.80	6.0		☆	★	★					☆
AOKT113504PEER-VM		11.75	6.42	3.50	2.80	0.40	9.5		☆	★	★					☆
AOKT113508PEER-VM		11.75	6.42	3.50	2.80	0.80	9.5		☆	★	★					☆
AOKT113512PEER-VM		11.75	6.42	3.50	2.80	1.20	9.5		☆	★	★					☆
AOKT113516PEER-VM		11.75	6.42	3.50	2.80	1.60	9.5		☆	★	★					☆
AOKT160408PEER-VM		17.65	9.64	4.76	4.40	0.80	14.5		☆	★	★					☆
AOKT160412PEER-VM		17.65	9.64	4.76	4.40	1.20	14.5		☆	★	★					☆
AOKT160416PEER-VM		17.65	9.64	4.76	4.40	1.60	14.5		☆	★	★					☆

★ Recommended grade ☆ Available grade

## Recommended cutting parameters

Workpiece material	Hardness (HB)	Insert grade	Cutting data	
			Cutting speed $v_c$ (m/min)	Feed rate $f_z$ (mm/z)
<b>P</b> Low-carbon steel, mild steel	≤180	HR5110	330(240-400)	0.2(0.1-0.3)
		HR5120	310(200-400)	
		HR5130	300(220-350)	
	180-280	HR5110	290(210-380)	0.2(0.1-0.3)
		HR5120	260(180-350)	
		HR5130	260(150-380)	
		HR5110	290(180-350)	
		HR5120	260(160-330)	
		HR5130	220(150-280)	
280-350	HR5110	220(110-300)	0.2(0.1-0.3)	
	HR5120	200(150-300)		
	HR5130	200(150-300)		
<b>M</b> Stainless steel	≤270	HR5110	200(150-250)	0.2(0.1-0.3)
		HR5120	180(150-250)	
		HR5130	180(150-250)	
<b>K</b> Cast iron	180-250	HR5110	200(150-250)	0.2(0.1-0.3)
		HR5120	180(150-250)	
		HR5130	180(150-250)	

A

General turning

Parting and grooving

Threading

B

Indexable milling

Solid carbide end mills

C

Short hole drills

Solid carbide drills

A

General turning

Parting and grooving

Threading

B

Indexable milling

Solid carbide end mills

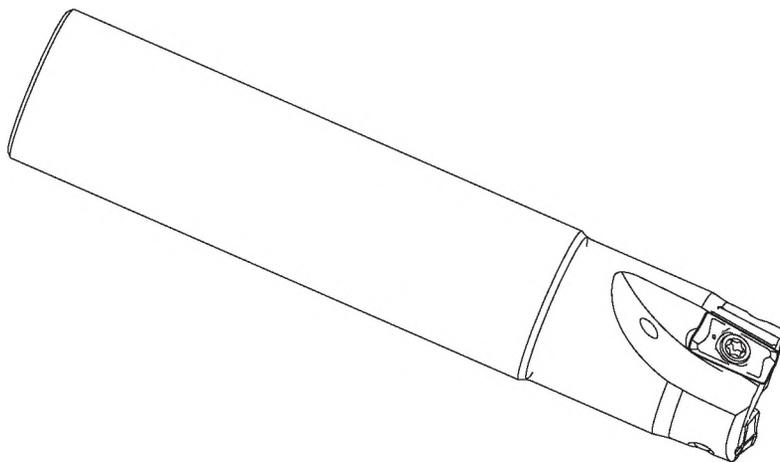
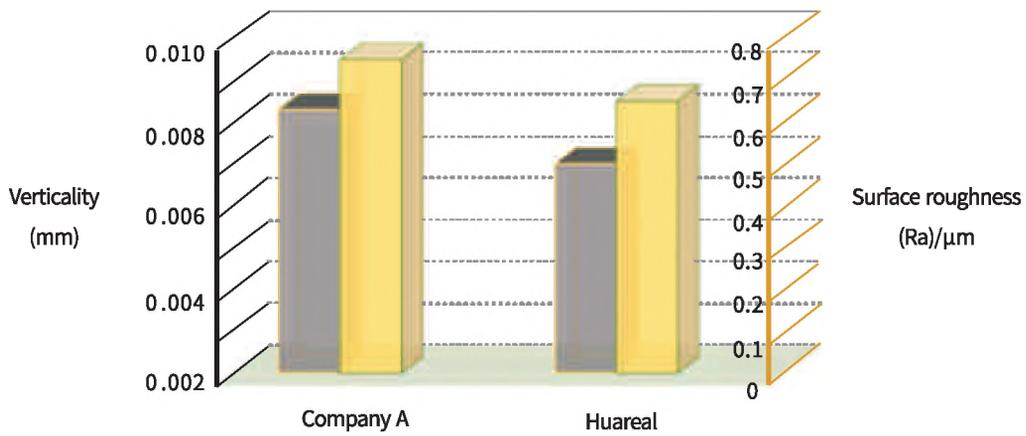
C

Short hole drills

Solid carbide drills

## ▶ Machining cases

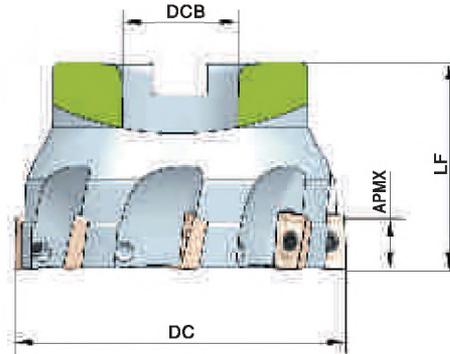
- **Workpiece material**      Mold material P20
- **Machining method**      Mold sidewall finish milling
- **Insert**                      AOKT113508PEER-VM
- **Cutting tools**              SSM190-020G2002-AO11
- **Machining parameters**     $V_c=259\text{m/min}$ ,  $f_z=0.25\text{mm/z}$ ,  $a_e=0.12\text{mm}$ ,  $a_p=1\text{mm}$



# Square shoulder milling

## CSM290 series

KAPR=90°



Tool specification	Number of edges	Inventory	Basic dimension (mm)			APMX (mm)	Interface form	Applicable inserts	Screw	Wrench
			DC	DCB	LF					
CSM290-050A2206-AP11	6	▲	50	22	40	9.5	A	APKT11	M2.5×6.5	WR08S
CSM290-063A2207-AP11	7	▲	63	22	40	9.5				
CSM290-080A2708-AP11	8	▲	80	27	50	9.5				
CSM290-100B3210-AP11	10	△	100	32	50	9.5	B	APKT16	M4×8.4	WR15S
CSM290-050A2204-AP16	4	▲	50	22	40	14.5	A			
CSM290-063A2205-AP16	5	▲	63	22	40	14.5				
CSM290-080A2706-AP16	6	▲	80	27	50	14.5	B	APKT16	M4×8.4	WR15S
CSM290-100B3208-AP16	8	▲	100	32	50	14.5				
CSM290-125B4010-AP16	10	△	125	40	63	14.5				

▲Running stock    △Make-to-order

A

General turning

Parting and grooving

Threading

B

Indexable milling

Solid carbide end mills

C

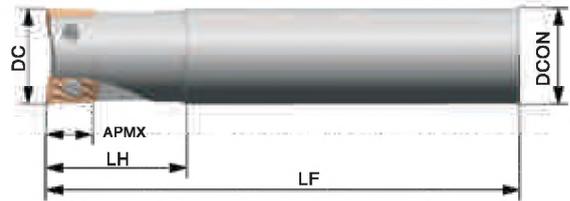
Short hole drills

Solid carbide drills

## Square shoulder milling

### SSM290 series

KAPR=90°



Tool specification	Number of edges	Inventory	Basic dimension (mm)				APMX (mm)	Applicable inserts	Screw	Wrench
			DC	DCON	LF	LH				
SSM290-016G1602-AP11	2	△	16	16	130	40	9.5	APKT11	M2.5×6.5	WR08
SSM290-016G1602L-AP11	2	△	16	16	160	50	9.5			
SSM290-020G2002-AP11	2	△	20	20	130	40	9.5			
SSM290-020G2002L-AP11	2	△	20	20	160	50	9.5			
SSM290-025G2503-AP11	3	▲	25	25	130	40	9.5			
SSM290-025G2503L-AP11	3	△	25	25	160	50	9.5			
SSM290-032G3204-AP11	4	▲	32	32	130	40	9.5	APKT16	M4×8.4	WR15
SSM290-032G3204L-AP11	4	△	32	32	160	50	9.5			
SSM290-025G2502-AP16	2	▲	25	25	160	50	14.5			
SSM290-025G2502L-AP16	2	△	25	25	200	75	14.5			
SSM290-032G3202-AP16	2	▲	32	32	160	50	14.5			
SSM290-032G3202L-AP16	2	△	32	32	200	80	14.5			
SSM290-040G3204-AP16	4	△	40	32	160	50	14.5			
SSM290-040G3204L-AP16	4	△	40	32	200	80	14.5			

▲Running stock    △Make-to-order

A

General turning

Parting and grooving

Threading

B

Indexable milling

Solid carbide end mills

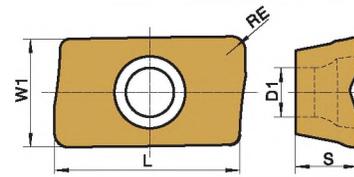
C

Short hole drills

Solid carbide drills

# Applicable inserts

AP □□



Working condition: ● Stable ● Average ✖ Tough

Type	Basic dimension (mm)					APMX (mm)	CVD		PVD			Cemented carbide	Cermet
	L	W1	S	D1	RE		HR8140	HR5110	HR5120	HR5130	HR7130	HR7140	HRK10
APKT113604PEER-FM	11.30	6.25	3.60	2.80	0.40	9.5	✖	☆	★	★			
APKT1136PEER-FM	11.30	6.25	3.60	2.80	0.80	9.5	✖	☆	★	★			
APKT113612PEER-FM	11.30	6.25	3.60	2.80	1.20	9.5	✖	☆	★	★			
APKT113620PEER-FM	11.30	6.25	3.60	2.80	2.00	9.5	✖	☆	★	★			
APKT1605PDER-FM	17.42	9.33	5.20	4.50	0.80	14.5	✖	☆	★	★			
APKT160512PDER-FM	17.42	9.33	5.20	4.50	1.20	14.5	✖	☆	★	★			
APKT160520PDER-FM	17.42	9.33	5.20	4.50	2.00	14.5	✖	☆	★	★			

★ Recommended grade ☆ Available grade

## Recommended cutting parameters

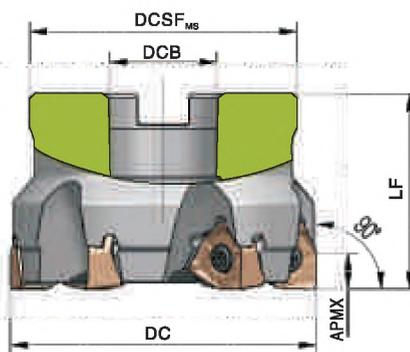
Workpiece material	Hardness (HB)	Insert grade	Cutting data	
			Cutting speed $v_c$ (m/min)	Feed rate $f_z$ (mm/z)
<p><b>P</b></p> <p>Low-carbon steel, mild steel</p> <p>High-carbon steel, alloy steel</p> <p>Alloy tool steel</p>	≤180	HR5110	320(240-400)	0.2(0.1-0.3)
		HR5120	320(200-400)	
		HR5130	300(220-350)	
	180-280	HR5110	280(210-380)	0.2(0.1-0.3)
		HR5120	280(180-350)	
		HR5130	260(150-380)	
280-350	HR5110	260(180-350)	0.2(0.1-0.3)	
	HR5120	260(160-330)		
	HR5130	220(150-280)		
<p><b>M</b></p> <p>Stainless steel</p>	≤270	HR5110	200(110-300)	0.2(0.1-0.3)
		HR5120	180(150-300)	
		HR5130	180(150-300)	
<p><b>K</b></p> <p>Cast iron</p>	180-250	HR5110	180(150-250)	0.2(0.1-0.3)
		HR5120	200(150-250)	
		HR5130	200(150-250)	

**A** General turning  
 Parting and grooving  
 Threading  
**B** Indexable milling  
 Solid carbide end mills  
**C** Short hole drills  
 Solid carbide drills

## Square shoulder milling

### CSM390 series

KAPR=90°



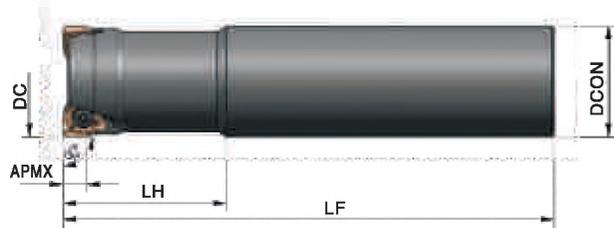
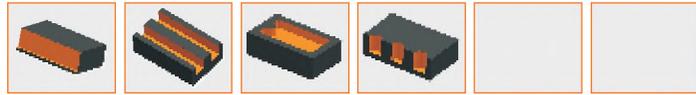
Tool specification	Number of edges	Inventory	Basic dimension (mm)				APMX (mm)	Interface form	Applicable inserts	Screw	Wrench
			DC	DCB	DCSF <sub>MS</sub>	LF					
CSM390-040A1605-ZN04	5	△	40	16	35	40	4.2	A	ZNMU0403□□	M2.5×6.5	WR08S
CSM390-040A1607-ZN04	7	△	40	16	35	40	4.2				
CSM390-050A2206-ZN04	6	△	50	22	42	40	4.2				
CSM390-050A2208-ZN04	8	△	50	22	42	40	4.2				
CSM390-063A2207-ZN04	7	△	63	22	50	40	4.2				
CSM390-063A2210-ZN04	10	△	63	22	50	40	4.2				
CSM390-040A1604-ZN08	4	△	40	16	35	40	7.3				
CSM390-050A2204-ZN08	4	▲	50	22	42	40	7.3				
CSM390-050A2205-ZN08	5	△	50	22	42	40	7.3				
CSM390-063A2205-ZN08	5	▲	63	22	50	40	7.3				
CSM390-063A2206-ZN08	6	△	63	22	50	40	7.3				
CSM390-080A2706-ZN08	6	▲	80	27	60	50	7.3				
CSM390-080A2707-ZN08	7	△	80	27	60	50	7.3				
CSM390-080A2709-ZN08	9	△	80	27	60	50	7.3				
CSM390-100A3207-ZN08	7	▲	100	32	70	50	7.3				
CSM390-100A3208-ZN08	8	△	100	32	70	50	7.3				
CSM390-100A3211-ZN08	11	△	100	32	70	50	7.3				
CSM390-125B4008-ZN08	8	▲	125	40	85	63	7.3				
CSM390-125B4011-ZN08	11	▲	125	40	85	63	7.3				
CSM390-125B4014-ZN08	14	△	125	40	85	63	7.3				
CSM390-160C4010-ZN08	10	△	160	40	100	63	7.3				
CSM390-160C4012-ZN08	12	▲	160	40	100	63	7.3				
CSM390-160C4016-ZN08	16	△	160	40	100	63	7.3				
CSM390-200C6012-ZN08	12	△	200	60	175	63	7.3				
CSM390-200C6016-ZN08	16	△	200	60	175	63	7.3				
CSM390-250C6014-ZN08	14	△	250	60	210	63	7.3				
CSM390-250C6018-ZN08	18	△	250	60	210	63	7.3				

▲Running stock    △Make-to-order

# Square shoulder milling

## SSM390 series

KAPR=90°



Tool specification	Number of edges	Inventory	Basic dimension (mm)				APMX (mm)	Applicable inserts	Screw	Wrench
			DC	DCON	LF	LH				
SSM390-018G1602L-ZN04	2	△	18	16	150	30	4.2	ZNMU0403□□	M2.5×6.5	WR08
SSM390-020G2002L-ZN04	2	▲	20	20	150	30	4.2			
SSM390-020G2003L-ZN04	3	△	20	20	150	30	4.2			
SSM390-021G2002L-ZN04	2	▲	21	20	150	30	4.2			
SSM390-021G2003L-ZN04	3	△	21	20	150	30	4.2			
SSM390-025G2502L-ZN04	2	▲	25	25	170	30	4.2			
SSM390-025G2503L-ZN04	3	▲	25	25	170	30	4.2			
SSM390-025G2504L-ZN04	4	△	25	25	170	30	4.2			
SSM390-025G2505L-ZN04	5	△	25	25	170	30	4.2			
SSM390-026G2502L-ZN04	2	▲	26	25	170	30	4.2			
SSM390-026G2503L-ZN04	3	△	26	25	170	30	4.2			
SSM390-032G3202L-ZN04	2	▲	32	32	200	30	4.2			
SSM390-032G3203L-ZN04	3	▲	32	32	200	30	4.2			
SSM390-032G3204L-ZN04	4	△	32	32	200	30	4.2			
SSM390-032G3205L-ZN04	5	△	32	32	200	30	4.2			
SSM390-032G3206L-ZN04	6	△	32	32	200	30	4.2			
SSM390-035G3202L-ZN04	2	▲	35	32	200	30	4.2			
SSM390-035G3203L-ZN04	3	▲	35	32	200	30	4.2			
SSM390-035G3204L-ZN04	4	△	35	32	200	30	4.2			
SSM390-040G3204L-ZN04	4	△	40	32	200	30	4.2			
SSM390-040G3205L-ZN04	5	△	40	32	200	30	4.2			
SSM390-040G3206L-ZN04	6	△	40	32	200	30	4.2			

▲Running stock    △Make-to-order

A

General turning

Parting and grooving

Threading

B

Indexable milling

Solid carbide end mills

C

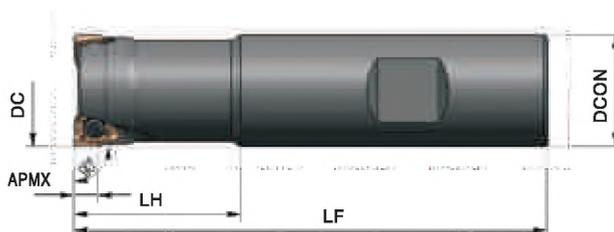
Short hole drills

Solid carbide drills

## Square shoulder milling

### SSM390 series

KAPR=90°



Tool specification	Number of edges	Inventory	Basic dimension (mm)				APMX (mm)	Applicable inserts	Screw	Wrench
			DC	DCON	LF	LH				
SSM390-020X2002-ZN04	2	△	20	20	90	30	4.2	ZNMU0403□□	M2.5×6.5	WR08
SSM390-020X2003-ZN04	3	△	20	20	90	30	4.2			
SSM390-025X2502-ZN04	2	▲	25	25	100	30	4.2			
SSM390-025X2503-ZN04	3	▲	25	25	100	30	4.2			
SSM390-025X2504-ZN04	4	△	25	25	100	30	4.2			
SSM390-025X2505-ZN04	5	△	25	25	100	30	4.2			
SSM390-032X3202-ZN04	2	▲	32	32	110	30	4.2			
SSM390-032X3203-ZN04	3	▲	32	32	110	30	4.2			
SSM390-032X3204-ZN04	4	△	32	32	110	30	4.2			
SSM390-032X3205-ZN04	5	△	32	32	110	30	4.2			
SSM390-032X3206-ZN04	6	△	32	32	110	30	4.2			

▲Running stock    △Make-to-order

A

General turning

Parting and grooving

Threading

B

Indexable milling

Solid carbide end mills

C

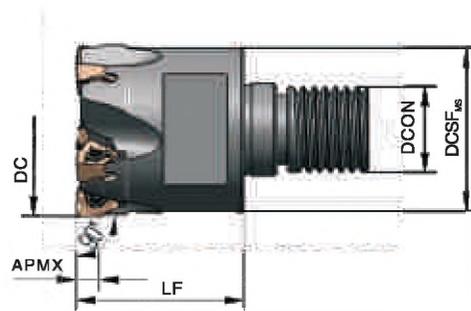
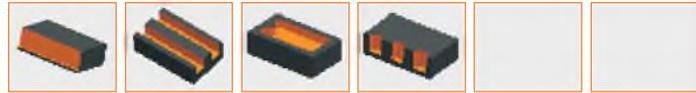
Short hole drills

Solid carbide drills

# Square shoulder milling

## KH- series

KAPR=90°



Tool specification	Number of edges	Inventory	Basic dimension (mm)				APMX (mm)	Applicable inserts	Screw	Wrench
			DC	DCSF <sub>MS</sub>	LF	DCON				
KH-2002-ZN04-M10	2	△	20	18	30	10	4.2	ZNMU0403□□	M2.5×6.5	WR08
KH-2003-ZN04-M10	3	△	20	18	30	10	4.2			
KH-2502-ZN04-M12	2	▲	25	23	30	12	4.2			
KH-2503-ZN04-M12	3	▲	25	23	30	12	4.2			
KH-2504-ZN04-M12	4	△	25	23	30	12	4.2			
KH-2505-ZN04-M12	5	△	25	23	30	12	4.2			
KH-3202-ZN04-M16	2	▲	32	30	40	16	4.2			
KH-3203-ZN04-M16	3	▲	32	30	40	16	4.2			
KH-3204-ZN04-M16	4	△	32	30	40	16	4.2			
KH-3205-ZN04-M16	5	△	32	30	40	16	4.2			
KH-3206-ZN04-M16	6	△	32	30	40	16	4.2			

▲Running stock    △Make-to-order

A

General turning

Parting and grooving

Threading

B

Indexable milling

Solid carbide end mills

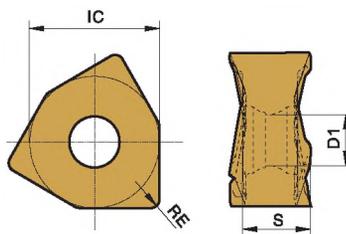
C

Short hole drills

Solid carbide drills

## Applicable inserts

ZU □□



Working condition: ● Stable ● Average ✚ Tough

Type	Basic dimension (mm)				APMX (mm)	CVD						PVD		Cemented carbide	Cermet
	IC	S	D1	RE		HR8140	HR5110	HR5120	HR5130	HR7130	HR7140	HRK10	HRC20		
ZNMU040308PNR-GM	7.00	3.65	2.80	0.80	4.2		☆	★	★						
ZNMU080608PNR-GM	12.00	6.35	4.60	0.80	7.3		☆	★	★						
ZNMU040308PNR-GL	7.00	3.65	2.80	0.80	4.2		☆	★	★						
ZNMU080608PNR-GL	12.00	6.35	4.60	0.80	7.3		☆	★	★						

★ Recommended grade ☆ Available grade

A

General turning

Parting and grooving

Threading

B

Indexable milling

Solid carbide end mills

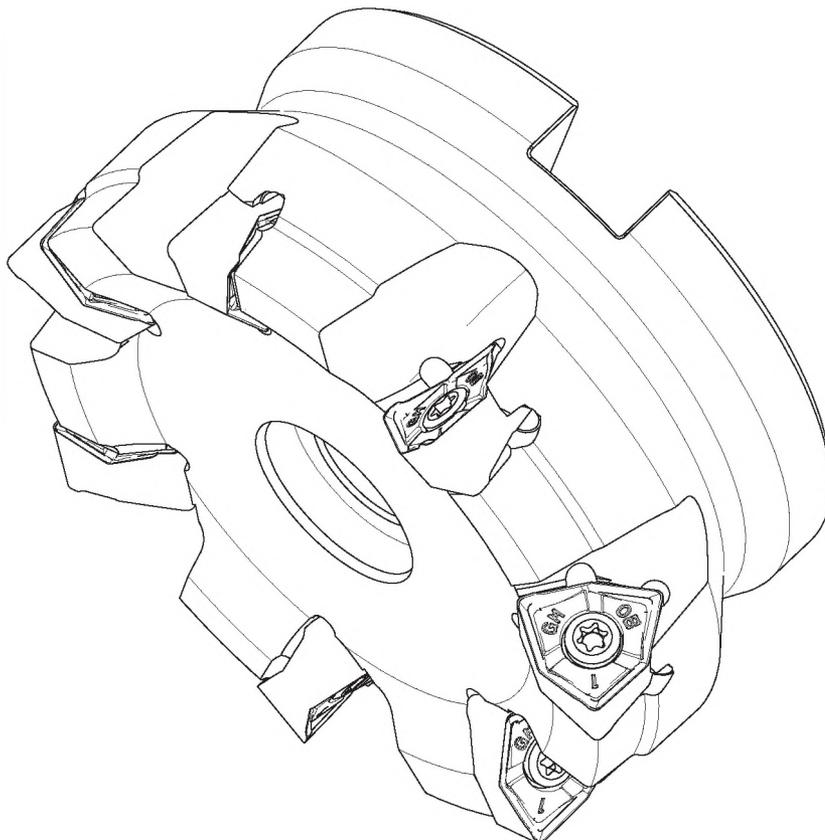
C

Short hole drills

Solid carbide drills

► Recommended cutting parameters

	Workpiece material	Hardness (HB)	Insert grade	Cutting data	
				Cutting speed $v_c$ (m/min)	Feed rate $f_z$ (mm/z)
<b>P</b>	Low-carbon steel, mild steel	≤180	HR5110	310(240-400)	0.2(0.1-0.3)
			HR5120	300(200-400)	
			HR5130	300(220-350)	
	High-carbon steel, alloy steel	180-280	HR5110	270(210-380)	0.2(0.1-0.3)
			HR5120	270(180-350)	
			HR5130	250(150-380)	
	Alloy tool steel	280-350	HR5110	250(180-350)	0.2(0.1-0.3)
			HR5120	250(160-330)	
			HR5130	210(150-280)	
<b>M</b>	Stainless steel	≤270	HR5110	200(110-300)	0.2(0.1-0.3)
			HR5120	180(150-300)	
			HR5130	180(150-300)	
<b>K</b>	Cast iron	180-250	HR5110	180(150-250)	0.2(0.1-0.3)
			HR5120	200(150-250)	
			HR5130	200(150-250)	



**A**

General turning

Parting and grooving

Threading

**B**

Indexable milling

Solid carbide end mills

**C**

Short hole drills

Solid carbide drills

A

General turning

Parting and grooving

Threading

B

Indexable milling

Solid carbide end mills

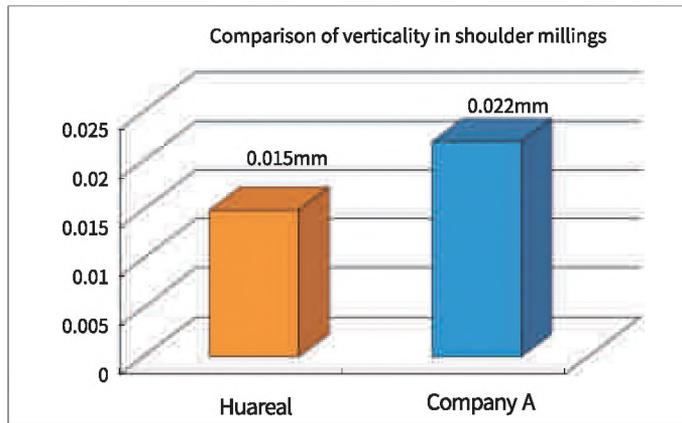
C

Short hole drills

Solid carbide drills

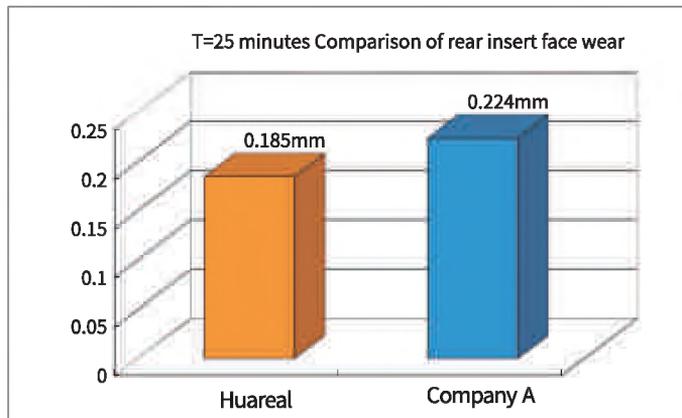
## Machining cases

- **Machining method** Square shoulder milling NAK80 (28-32HRC)
- **Workpiece material** ZNMU040308PNR-GM
- **Insert** SSM390-025G2502L-ZN04
- **Cutting tools**
- **Cutting parameter**  $v_c=220\text{m/min}$ ,  $f_z=0.2\text{mm/z}$ ,  $a_p=4\text{mm}$ ,  $a_e=0.5\text{mm}$
- **Cooling method** Air cooling



## Machining cases

- **Machining method** Face milling
- **Workpiece material** 45# steel (200-220HB)
- **Insert** ZNMU080608PNR-GM
- **Cutting tools** CSM390-080A2706-ZN08
- **Cutting parameter**  $v_c=280\text{m/min}$ ,  $f_z=0.2\text{mm/z}$ ,  $a_p=1\text{mm}$ ,  $a_e=65\text{mm}$
- **Cooling method** Air cooling



# *C/SSM390*

Square shoulder milling tool

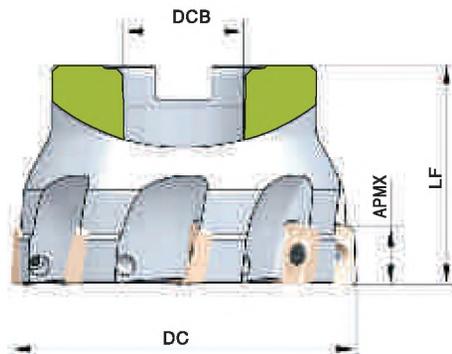


## Square shoulder milling

### CSM590 series



KAPR=90°



Tool specification	Number of edges	Inventory	Basic dimension (mm)			APMX (mm)	Interface form	Applicable inserts	Screw	Wrench
			DC	DCB	LF					
CSM590-050A2206-AP11	6	△	50	22	40	9.5	A	APMT11□□ APGT11□□	M2.5×6.5	WR08S
CSM590-063A2208-AP11	8	△	63	22	40	9.5				
CSM590-080A2708-AP11	8	▲	80	27	50	9.5				
CSM590-100B3210-AP11	10	△	100	32	50	9.5				
CSM590-050A2205-AP16	5	△	50	22	40	14.5	B	APMT16□□ APGT16□□	M4×10	WR15S
CSM590-063A2206-AP16	6	▲	63	22	40	14.5				
CSM590-080A2707-AP16	7	△	80	27	50	14.5				
CSM590-100B3208-AP16	8	△	100	32	50	14.5				
CSM590-125B4010-AP16	10	△	125	40	63	14.5				

▲Running stock    △Make-to-order

A

General turning

Parting and grooving

Threading

B

Indexable milling

Solid carbide end mills

C

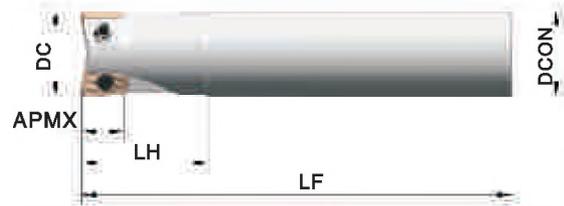
Short hole drills

Solid carbide drills

# Square shoulder milling

## SSM590 series

KAPR=90°



Tool specification	Number of edges	Inventory	Basic dimension (mm)				APMX (mm)	Applicable inserts	Screw	Wrench
			DC	DCON	LF	LH				
SSM590-016G1602-AP11	2	△	16	16	130	40	APMT11□□ APGT11□□	M2.5×6.5	WR08	
SSM590-016G1602L-AP11	2	△	16	16	160	50				
SSM590-020G2002-AP11	2	△	20	20	130	40				
SSM590-020G2002L-AP11	2	△	20	20	160	50				
SSM590-025G2503-AP11	3	▲	25	25	130	40				
SSM590-025G2503L-AP11	3	△	25	25	160	50				
SSM590-032G3204-AP11	4	▲	32	32	130	40				
SSM590-032G3204L-AP11	4	△	32	32	160	50				
SSM590-025G2502-AP16	2	▲	25	25	160	50	APMT16□□ APGT16□□	M4×10	WR15	
SSM590-025G2502L-AP16	2	△	25	25	200	75				
SSM590-032G3202-AP16	2	▲	32	32	160	50				
SSM590-032G3202L-AP16	2	△	32	32	200	80				
SSM590-040G3204-AP16	4	△	40	32	160	50				
SSM590-040G3204L-AP16	4	△	40	32	200	80				

▲Running stock    △Make-to-order

A

General turning

Parting and grooving

Threading

B

Indexable milling

Solid carbide end mills

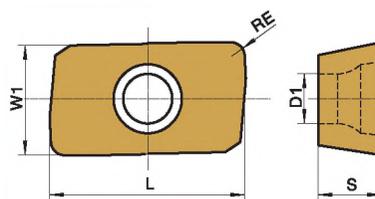
C

Short hole drills

Solid carbide drills

## Applicable inserts

AP □□



Working condition: ● Stable ● Average ✘ Tough

Applicable inserts	Workpiece material	Basic dimension (mm)						CVD		PVD		Cemented carbide	Cermet		
		L	W1	S	D1	RE	APMX (mm)	HR8140	HR5110	HR5120	HR5130	HR7130	HR7140	HRK10	HRC20
Applicable inserts	<b>P</b> Steel	✘	●	●	✘	✘	✘	●	●	✘	✘	✘	✘	●	●
	<b>M</b> Stainless steel	●	●	✘	✘	✘	✘	●	●	✘	✘	✘	✘	●	●
	<b>K</b> Cast iron	✘	●	●	✘	✘	✘	●	●	✘	✘	✘	✘	●	●
	<b>N</b> Non-ferrous metal	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	<b>S</b> Heat-resistant alloy, titanium alloy	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Type		L	W1	S	D1	RE	APMX (mm)	HR8140	HR5110	HR5120	HR5130	HR7130	HR7140	HRK10	HRC20
APMT1135PDER-HM		11.30	6.25	3.50	2.80	0.80	9.5			★	★				
APMT1605PDER-HM		17.25	9.25	5.22	4.40	0.80	14.5			★	★				
APGT1135PDFR-AK		11.30	6.25	3.50	2.80	0.80	9.5							★	
APGT1604PDFR-AK		17.25	9.25	4.76	4.40	0.80	14.5							★	

★ Recommended grade ☆ Available grade

### ▶ Recommended cutting parameters

Workpiece material	Hardness (HB)	Insert grade	Cutting data	
			Cutting speed $v_c$ (m/min)	Feed rate $f_z$ (mm/z)
<b>P</b> Low-carbon steel, mild steel	≤180	Hr5110	190(140-250)	0.2(0.04-0.15)
		HR5120	190(140-250)	
		HR5130	190(140-250)	
	180-280	HR5110	170(130-250)	0.2(0.04-0.15)
		HR5120	170(130-250)	
		HR5130	170(130-250)	
Alloy tool steel	280-350	HR5110	150(110-240)	0.2(0.04-0.15)
		HR5120	150(110-240)	
		HR5130	150(110-240)	
<b>M</b> Stainless steel	≤270	HR5110	120(80-190)	0.2(0.04-0.15)
		HR5120	120(80-190)	
		HR5130	120(80-190)	
<b>K</b> Cast iron	180-250	HR5110	120(80-210)	0.2(0.04-0.15)
		HR5120	120(80-210)	
		HR5130	120(80-210)	

## Machining cases

### Mold sidewall finish milling

- **Workpiece material** 45# steel
- **Machining method** Sidewall finish milling
- **Insert** AOKT113508PEER-VM HR5130
- **Cutting tools** SSM190-025G2503L-AO11
- **Machining parameters**  $V_c=220\text{m/min}$ ,  $a_p=1.5\text{mm}$ ,  $a_e=0.25\text{mm}$ ,  $f_z=0.36\text{mm/z}$
- **Machining quality** Verticality of the workpiece  $<0.012\text{mm}$ , which meets the needs of customers and is a good replacement of imported products.



### Cylinder side milling

- **Workpiece material** HT250
- **Machining method** Side milling machining
- **Insert** AOKT113508PEER-VM HR5130
- **Cutting tools** KH-2603-AOKT11-M12
- **Machining parameters**  $V_c=285\text{m/min}$ ,  $a_p=0.8\text{mm}$ ,  $a_e=0.15\text{mm}$ ,  $f_z=0.1\text{mm/z}$
- **Machining quality** Verticality of workpiece  $<0.008\text{mm}$ , a good replacement of high quality products of other brands.



### Groove milling

- **Workpiece material** Cr15
- **Machining method** Groove milling
- **Insert** AOKT113508PEER-VM HR5120
- **Cutting tools** SSM190-020G2002-AO11
- **Machining parameters**  $V_c=138\text{m/min}$ ,  $a_p=0.12\text{mm}$ ,  $a_e=5\text{mm}$ ,  $f_z=0.25\text{mm/z}$
- **Machining quality** Compared with a competitor, parts machined by Huareal products have better surface quality (no burrs on the sidewall).



A

General turning

Parting and grooving

Threading

## Machining cases

### Rough milling of bogies

- **Workpiece material** Cast steel
- **Insert** ZNMU080608PNR-GM HR5120
- **Cutting tools** CSM390-200C6012-ZN08
- **Machining parameters** N=300 rev/min, F=700 mm/min, ap=2~5 mm
- **Cooling method** No cooling
- **Service life** Huareal: 3 hours; A competitor: 2.5 hours
- **Machining quality** The workpiece processed by Huareal products has better surface quality and longer cutting life.



B

Indexable milling

Solid carbide end mills

### Face milling with leaf spring mounting

- **Workpiece material** 40CrMo (HB285-333)
- **Insert** ZNMU080608PNR-GM HR5120
- **Cutting tools** CSM390-063A2205-ZN08
- **Machining parameters** N=720 rev/min, F=540mm/min, ap=1.5-3mm
- **Cooling method** No cooling
- **Service life** Huareal: 27 pieces; A competitor: 12 pieces
- **Machining quality** The workpiece processed by Huareal products has better surface quality and longer cutting life. Thus, Huareal products are more cost-effective.



C

Short hole drills

Solid carbide drills

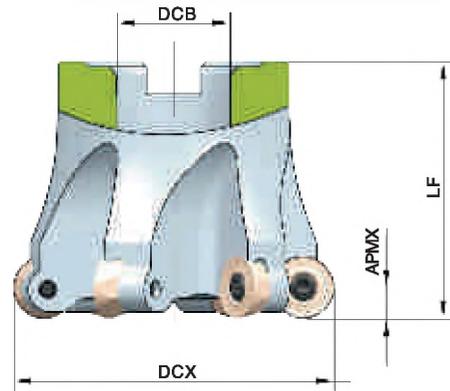
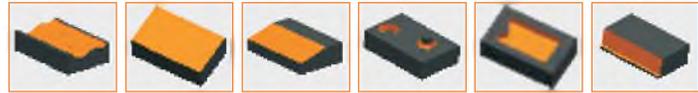
### Clean-up machining of mold frame

- **Workpiece material** 45# steel
- **Insert** ZNMU040308PNR-GM HR5130
- **Cutting tools** SSM390-021G2002L-ZN04
- **Machining parameters** N=2750 rev/min, F=2500mm/min, ap=0.5mm, ae=0.5~21mm
- **Previous insert** APMT1135
- **Previous machining parameters** N=2750rev/min, F=2500mm/min, ap=0.3mm, ae=0.5~21mm
- **Service life** Hardstone: 3 hours; A competitor: 2 hours
- **Machining quality** Huareal products are light and fast-cutting, with higher machining efficiency, good surface quality and high cost-effectiveness.



# Profile milling

## CPM100 series



Tool specification	Number of edges	Inventory	Basic dimension (mm)			APMX (mm)	Interface form	Applicable inserts	Screw	Wrench
			DCX	DCB	LF					
CPM100-063A2204-RC12	4	▲	63	22	50	6	A	RC12	M4×8.4	WR15S
CPM100-080B2705-RC16	5	▲	80	27	50	8	B	RC16	M5×13	WR20S
CPM100-100B3206-RC16	6	△	100	32	50	8		RC16	M5×13	WR20S
CPM100-125B4007-RC20	7	△	125	40	63	10		RC20	M6×16	WR20S
CPM100-160B4008-RC20	8	△	160	40	63	10		RC20	M6×16	WR20S

▲Running stock    △Make-to-order

A

General turning

Parting and grooving

Threading

B

Indexable milling

Solid carbide end mills

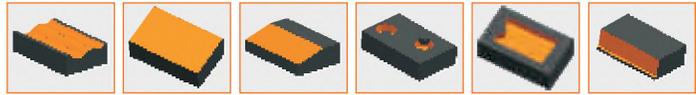
C

Short hole drills

Solid carbide drills

## Profile milling

### SPM100 series



Tool specification	Number of edges	Inventory	Basic dimension (mm)				APMX (mm)	Applicable inserts	Screw	Wrench
			DCX	DCON	LF	LH				
SPM100-025G2502-RC10	2	▲	25	25	100	30	5	RC10	M4×8.4	WR15
SPM100-032G3202-RC10	2	▲	32	32	120	35	5	RC10	M4×8.4	WR15
SPM100-040G4003-RC12	3	△	40	40	120	40	6	RC12	M4×8.4	WR15

▲Running stock    △Make-to-order

A

General turning

Parting and grooving

Threading

B

Indexable milling

Solid carbide end mills

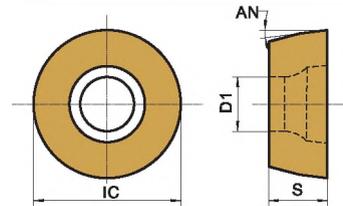
C

Short hole drills

Solid carbide drills

# Applicable inserts

## RC□□



Working condition: ● Stable ● Average ✚ Tough

Applicable inserts	Workpiece material	Working condition							
		P	M	K	N	S	Stable	Average	Tough
		Steel	Stainless steel	Cast iron	Non-ferrous metal	Heat-resistant alloy, titanium alloy	●	●	✚
		✚	●	●	✚	✚	✚	●	
			●	●	✚	✚			
		✚	●	●	✚				
								●	

Type	Basic dimension (mm)				APMX (mm)	CVD						Cemented carbide	
	IC	S	D1	AN		PVD			HR7140	HRK10	Cermec	Cermec	
						HR8140	HR5110	HR5120					HR5130
RCKT10T3MO-FM	10.00	3.97	4.40	7°	5		☆	★	★				
RCKT1204MO-FM	12.00	4.76	4.40	7°	6		☆	★	★				
RCKT1606MO-FM	16.00	6.35	5.50	7°	8		☆	★	★				
RCKT2006MO-FM	20.00	6.35	6.55	7°	10		☆	★	★				

★ Recommended grade ☆ Available grade

A

General turning

Parting and grooving

Threading

B

Indexable milling

Solid carbide end mills

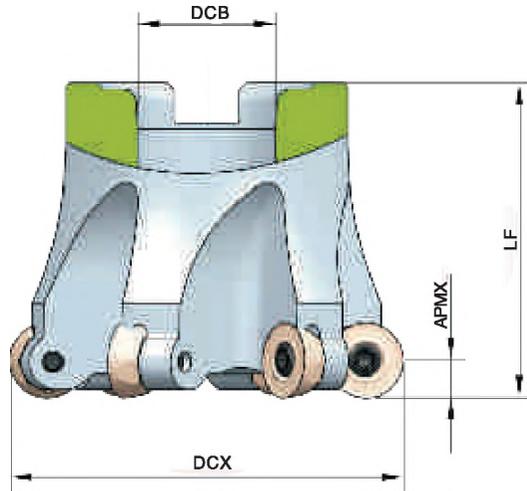
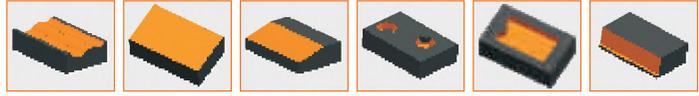
C

Short hole drills

Solid carbide drills

## Profile milling

### CPM200 series



Tool specification	Number of edges	Inventory	Basic dimension (mm)			APMX (mm)	Interface form	Applicable inserts	Screw	Wrench
			DCX	DCB	Lf					
CPM200-050A2203-RP12	3	△	50	22	40	6	A	RP12	M4×8.4	WR15S
CPM200-063A2204-RP12	4	▲	63	22	50	6	B			
CPM200-080B2706-RP12	6	▲	80	27	50	6	B	RP16	M5×13	WR20S
CPM200-063A2205-RP16	5	▲	63	22	40	8	A			
CPM200-080B2707-RP16	7	▲	80	27	50	8	B	RP16	M5×13	WR20S
CPM200-100B3208-RP16	8	△	100	32	50	8				
CPM200-125B4010-RP16	10	△	125	40	63	8				

▲Running stock    △Make-to-order

A

General turning

Parting and grooving

Threading

B

Indexable milling

Solid carbide end mills

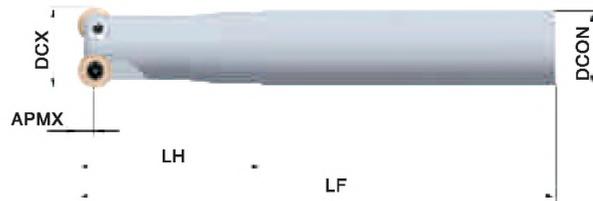
C

Short hole drills

Solid carbide drills

# Profile milling

## SPM200 series



Tool specification	Number of edges	Inventory	Basic dimension (mm)				APMX (mm)	Applicable inserts	Screw	Wrench
			DCX	DCON	LF	LH				
SPM200-025G2502-RP08	2	▲	25	25	100	30	4	RP08	M3×7	WR09
SPM200-032G3202-RP08	2	▲	32	32	120	35	4	RP08	M3×7	WR09
SPM200-025G2502-RP10	2	▲	25	25	100	30	5	RP10	M4×8.4	WR15
SPM200-032G3202-RP10	2	▲	32	32	120	35	5	RP10	M4×8.4	WR15
SPM200-040G3203-RP12	3	△	40	32	120	40	6	RP12	M5×13	WR20

▲Running stock    △Make-to-order

A

General turning

Parting and grooving

Threading

B

Indexable milling

Solid carbide end mills

C

Short hole drills

Solid carbide drills

A

General turning

Parting and grooving

Threading

B

Indexable milling

Solid carbide end mills

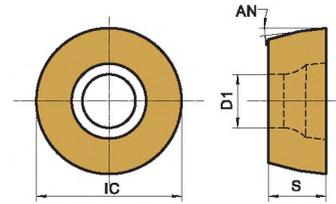
C

Short hole drills

Solid carbide drills

## Applicable inserts

RP□□



Working condition: ● Stable ● Average ⚡ Tough

Applicable inserts	Workpiece material	Working condition							
		P	M	K	N	S	Stable	Average	Tough
		●	●	●	●	●	●	●	●
Applicable inserts	P Steel	⚡	●	●	⚡	⚡	●	●	●
	M Stainless steel		●	●	⚡	⚡			
	K Cast iron	⚡	●	●	⚡				
	N Non-ferrous metal							●	
	S Heat-resistant alloy, titanium alloy								

Type	Basic dimension (mm)				APMX (mm)	CVD		PVD			Cemented carbide	Cermet
	IC	S	D1	AN		HR8140	HR5110	HR5120	HR5130	HR7130	HR7140	HRK10
RPMT08T2MO-HM	8.00	2.78	3.40	11°	4			★	★			
RPMT1003MO	10.00	3.18	4.50	11°	5			★	★			
RPMT1204MO-HM	12.00	4.76	4.40	11°	6			★	★			

★ Recommended grade ☆ Available grade

## Turbine blade milling

Working condition: ● Stable ● Average ⚡ Tough

Applicable inserts	Workpiece material	Working condition							
		P	M	K	N	S	Stable	Average	Tough
		●	●	●	●	●	●	●	●
Applicable inserts	P Steel	⚡	●	●	⚡	⚡	●	●	●
	M Stainless steel		●	●	⚡	⚡			
	K Cast iron	⚡	●	●	⚡				
	N Non-ferrous metal							●	
	S Heat-resistant alloy, titanium alloy								

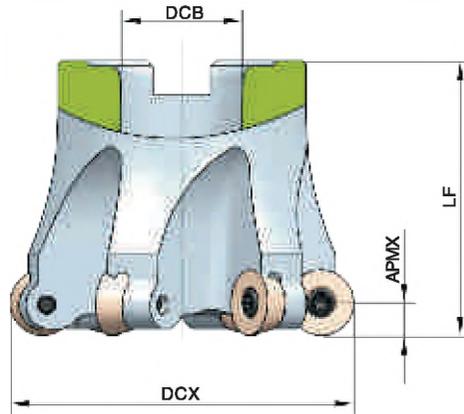
  

Type	Basic dimension (mm)				APMX (mm)	CVD		PVD			Cemented carbide	Cermet	
	IC	S	D1	AN		HR8140	HR5110	HR5120	HR5130	HR7130	HR7140	HR9140	HRK10
RPKT10T3MO-MS	10.00	3.97	3.40	11°	5					★	★		
RPKT1204MO-MS	12.00	4.76	4.40	11°	6					★	★		
RPKT1606MO-MS	16.00	6.35	5.50	11°	8	★				★	★		
RPMT10T3MO-SM	10.00	3.97	4.40	11°	5					★	★		
RPMT1204MO-SM	12.00	4.76	4.40	11°	6					★	★		
RPMT1606MO-SM	16.00	6.35	5.50	11°	8	★				★	★		

★ Recommended grade ☆ Available grade

# Profile milling

## CPM300 series



Tool specification	Number of edges	Inventory	Basic dimension (mm)			APMX (mm)	Interface form	Applicable inserts	Screw	Wrench
			DCX	DCB	Lf					
CPM300-050A2203-RD12	3	△	50	22	40	6	A	RD12	M4×8.4	WR15S
CPM300-063A2204-RD12	4	▲	63	22	50	6				
CPM300-080B2705-RD16	5	▲	80	27	50	8	B	RD16	M5×13	WR20S
CPM300-100B3206-RD16	6	△	100	32	50	8				
CPM300-125B4008-RD16	8	△	125	40	63	8				
CPM300-160B4010-RD16	10	△	160	40	63	8				

▲Running stock    △Make-to-order

A

General turning

Parting and grooving

Threading

B

Indexable milling

Solid carbide end mills

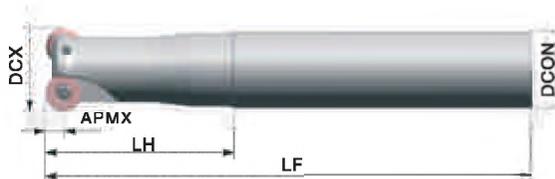
C

Short hole drills

Solid carbide drills

## Profile milling

### SPM300 series



Tool specification	Number of edges	Inventory	Basic dimension (mm)				APMX (mm)	Applicable inserts	Screw	Wrench
			DCX	DCON	LF	LH				
SPM300-020G2002-RD06	2	△	20	20	100	30	3	RD06	M2.2×6.5	WR07
SPM300-020G2002-RD08	2	△	20	20	100	30	4	RD08	M3×7	WR09
SPM300-025G2502-RD10	2	▲	25	25	100	30	5	RD10	M4×8.4	WR15
SPM300-032G3202-RD10	2	▲	32	32	120	35	5			
SPM300-040G3203-RD12	3	△	40	32	120	40	6	RD12	M4×8.4	WR15

▲Running stock    △Make-to-order

A

General turning

Parting and grooving

Threading

B

Indexable milling

Solid carbide end mills

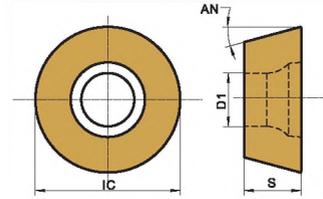
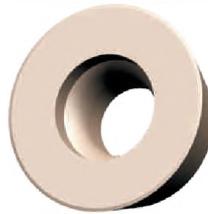
C

Short hole drills

Solid carbide drills

# Applicable inserts

RD □ □



Working condition: ● Stable ● Average ✚ Tough

Applicable inserts	Workpiece material	Working condition							
		P	M	K	N	S	Stable	Average	Tough
		Steel	Stainless steel	Cast iron	Non-ferrous metal	Heat-resistant alloy, titanium alloy	●	●	✚
		✚	●	●	✚	✚	✚	●	
			●	●	✚	✚			
		✚	●	●	✚				
								●	

Type	Basic dimension (mm)				APMX (mm)	CVD						PVD		Cemented carbide	Cermet
	IC	S	D1	AN		CVD						PVD		HRK10	HRC20
						HR8140	HR5110	HR5120	HR5130	HR7130	HR7140	HRK10	HRC20		
RDMW0602MO	6.00	2.38	2.50	15°	3		☆	★	★						
RDMW0802MO	8.00	2.38	3.40	15°	4		☆	★	★						
RDMW10T3MO	10.00	3.97	4.50	15°	5		☆	★	★						
RDMW1204MO	12.00	4.76	5.50	15°	6		☆	★	★						
RDMW1605MO	16.00	5.56	5.50	15°	8		☆	★	★						
RDKW10T3MO	10.00	3.97	4.50	15°	5		☆	★	★						
RDKW1204MO	12.00	4.76	4.40	15°	6		☆	★	★						
RDKW1604MO	16.00	4.76	5.50	15°	8		☆	★	★						

★ Recommended grade ☆ Available grade

A

General turning

Parting and grooving

Threading

B

Indexable milling

Solid carbide end mills

C

Short hole drills

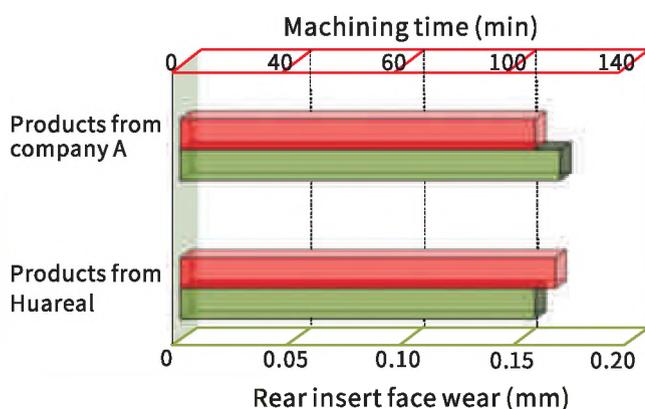
Solid carbide drills

## ▶ Recommended cutting parameters

Workpiece material	Hardness (HB)	Insert grade	Cutting data	Tool specification		
				Ø20	Ø25	Ø32
<p><b>P</b></p> <p>Low-carbon steel, mild steel</p> <p>High-carbon steel, alloy steel</p> <p>Alloy tool steel</p>	≤180	HR5110	vc(m/min)	100-200	100-200	100-200
		HR5120	fz(mm/z)	0.2-0.3	0.25-0.35	0.25-0.35
		HR5130	ap(mm)	1.25	1.5	2
		HR5130	ae(mm)	1.25	1.5	2
	180-280	HR5110	vc(m/min)	80-180	80-180	80-180
		HR5120	fz(mm/z)	0.2-0.3	0.25-0.35	0.25-0.35
		HR5130	ap(mm)	1.25	1.5	2
		HR5130	ae(mm)	1.25	1.5	2
	280-350	HR5110	vc(m/min)	60-150	60-150	60-150
		HR5120	fz(mm/z)	0.2-0.3	0.25-0.35	0.25-0.35
		HR5130	ap(mm)	1.25	1.5	2
		HR5130	ae(mm)	1.25	1.5	2
<p><b>M</b></p> <p>Stainless steel</p>	≤180	HR5110	vc(m/min)	70-150	70-150	70-150
		HR5120	fz(mm/z)	0.1-0.25	0.2-0.3	0.2-0.3
		HR5130	ap(mm)	1	1.25	1.5
		HR5130	ae(mm)	1	1.25	1.5
<p><b>K</b></p> <p>Cast iron</p>	180-250	HR5110	vc(m/min)	160-300	160-300	160-300
		HR5120	fz(mm/z)	0.25-0.35	0.3-0.4	0.3-0.4
		HR5130	ap(mm)	1.8	2	2.5
		HR5130	ae(mm)	1.8	2	2.5

## ▶ Machining cases

Workpiece material	NAK80(28-32HRC)
Machining method	Face milling without coolant
Insert	RCKT10T3M0-FM, HR5130
Cutting tools	SPM100-025G2502-RC10
Machining parameters	vc=150m/min, fz=0.35mm/z, ap=0.5mm



## ► Technical data of application of profile milling tools

◆ Conversion factor for feed rate (based on the benchmark of cutting depth)

Model	Maximum cutting depth ap	Conversion factor for feed rate							
		ap/(mm)							
		0.5mm	1mm	1.5mm	2mm	2.5mm	3mm	4mm	5mm
R□□08□□	4	1.7	1.3	1.1	1(Benchmark)	0.9	0.8	0.7	0.7
R□□10□□	5	1.9	1.4	1.2	1	1(Benchmark)	0.9	0.8	0.7
R□□12□□	6	2.1	1.5	1.3	1.1	1	1(Benchmark)	0.9	0.8
R□□16□□	8	2.4	1.7	1.4	1.3	1.1	1.1	1(Benchmark)	0.9
R□□20□□	10	2.5	1.8	1.5	1.4	1.2	1.1	1	1(Benchmark)

Calculation example:

The recommended feed rate for RCKT10T3MO-FM to process 45# steel is 0.2mm/r. When ap=1mm, the corresponding recommendation for feed rate is:

$$f=1.4*0.2\text{mm}/r=0.28\text{mm}/r$$

◆ Recommended machining parameters for ramp milling, helical milling, drill-milling, etc.

Tool specification			Ramp milling		Helical milling		Drill-milling	
Insert	Tool diameter (mm)	Cutting depth maximum (mm)	Ramping angle maximum	Cutting length (mm)	Machined hole diameter minimum (mm)	Machined hole diameter maximum (mm)	Machining depth maximum (mm)	Machining diameter minimum (mm)
R08	16	4	8°	28	20	30	0.7	9
	20		9°	25	26	38	1.4	13
	25		5°	45	36	48	1.4	18
R10	25	5	5°	28	33	48	0.6	16
	32		6°	47	47	62	1.9	23
	40		4°	71	63	78	1.9	31
	63		3°	95	109	124	1.9	54
R12	40	6	5°	68	59	78	2.4	29
	63		2°	171	105	124	2.4	52
	80		2°	171	139	158	2.4	69
	100		1°	171	179	198	2.4	89
R16	63	8	4°	114	97	124	3.4	48
	80		3°	152	131	158	3.4	65
	100		2°	229	171	198	3.4	85
	125		1°	458	221	248	3.4	110

A

General turning

Parting and grooving

Threading

B

Indexable milling

Solid carbide end mills

C

Short hole drills

Solid carbide drills

A

General turning

Parting and grooving

Threading

B

Indexable milling

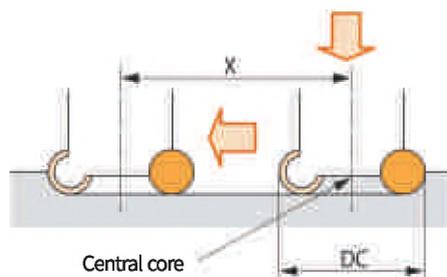
Solid carbide end mills

C

Short hole drills

Solid carbide drills

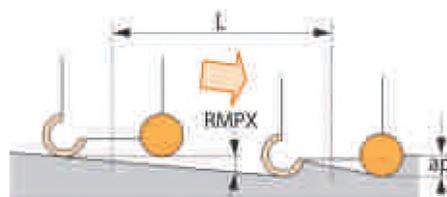
## ◆ Precautions for drill-milling



When transverse feed machining after drill-milling:

- ① The feed rate of the table should be reduced to that of half of the general horizontal machining until the central section is completely removed.
- ② The cutting length minimum  $X$  for flattening the bottom is shown in the table above.

## ◆ Precautions for ramp milling



Please set the angle of machining below RMPX.

Set the feed rate below 70% of the standard.

## ◆ Precautions for helical machining

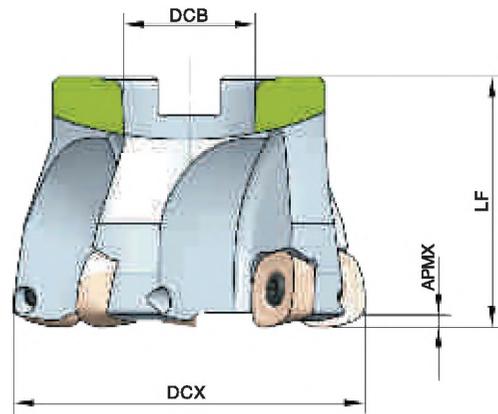
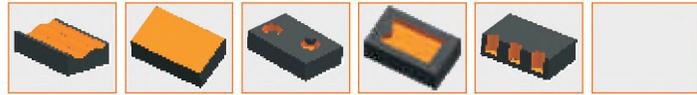
- ① Please set the feed rate per revolution of the helical machining below the cutting depth  $a_p$  maximum.
- ② The axial angle created by the trajectory of the tool center should not exceed the inclination angle RMPX maximum for machining.
- ③ Set the feed rate below 70% of the standard.

## ◆ Recommended maximum cutting depth ( $a_p$ ) and applicable teeth number

Teeth number of cutterhead	R08	R10	R12	R16	R20
$\leq 3$	$a_p=2.0-4.0\text{mm}$	$a_p=2.5-5.0\text{mm}$	$a_p=3.0-6.0\text{mm}$	$a_p=4.0-8.0\text{mm}$	$a_p=5.0-10.0\text{mm}$
$> 3$	$a_p<2.0\text{mm}$	$a_p<2.5\text{mm}$	$a_p<6.0\text{mm}$	$a_p<4.0\text{mm}$	$a_p<5.0\text{mm}$

# Millings with high feed

## CEM100 series



Tool specification	Number of edges	Inventory	Basic dimension (mm)			APMX (mm)	Interface form	Applicable inserts	Screw	Wrench
			DCX	DCB	LF					
CEM100-050A2204-SD12	4	△	50	22	40	2.3	A	SD12	M5×13	WR20S
CEM100-063A2705-SD12	5	▲	63	27	50	2.3				
CEM100-080A2706-SD12	6	▲	80	27	50	2.3				
CEM100-063A2704-SD15	4	▲	63	27	50	2.9	B	SD15	M5×13	WR20S
CEM100-080A3205-SD15	5	▲	80	32	50	2.9				
CEM100-100B3206-SD15	6	△	100	32	50	2.9				

▲Running stock    △Make-to-order

A

General turning

Parting and grooving

Threading

B

Indexable milling

Solid carbide end mills

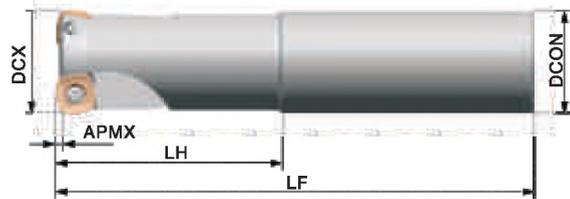
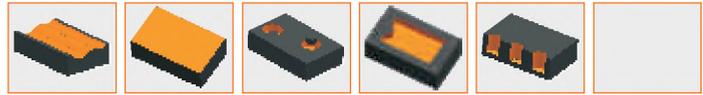
C

Short hole drills

Solid carbide drills

## Millings with high feed

### SEM100 series



Tool specification	Number of edges	Inventory	Basic dimension (mm)				APMX (mm)	Applicable inserts	Screw	Wrench
			DCX	DCBN	LF	LH				
SEM100-032G3202-SD12	2	▲	32	32	150	70	2.3	SD12	M4×13	WR20
SEM100-040G4003-SD12	3	△	40	40	150	70	2.3	SD12	M4×13	WR20
SEM100-040G4002-SD15	2	▲	40	40	200	70	2.9	SD15	M5×13	WR20

▲Running stock    △Make-to-order

A

General turning

Parting and grooving

Threading

B

Indexable milling

Solid carbide end mills

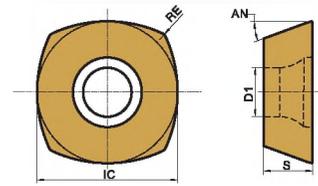
C

Short hole drills

Solid carbide drills

# Applicable inserts

SD □□



Working condition: ● Stable ● Average ✱ Tough

Applicable inserts	Workpiece material	Working condition							
		P	M	K	N	S	Stable	Average	Tough
		Steel	Stainless steel	Cast iron	Non-ferrous metal	Heat-resistant alloy, titanium alloy	●	●	✱

Type	Basic dimension (mm)					APMX (mm)	CVD		PVD		Cemented carbide	Cermet	
	IC	S	D1	AN	RE		HR8140	HR5110	HR5120	HR5130	HR7130	HR7140	HRK10
SDMT1205ZTN-FM	12.700	5.56	4.6	15°	3.00	2.3		☆	★	★			
SDMT1505ZTN-FM	15.875	5.56	5.5	15°	0.80	2.9		☆	★	★			
SDMW1205ZTN	12.700	5.56	4.6	15°	3.00	2.3		☆	★	★			
SDMW1505ZTN	15.875	5.56	5.5	15°	0.80	2.9		☆	★	★			

★ Recommended grade ☆ Available grade

## Recommended cutting parameters

Workpiece material	Hardness (HB)	Insert grade	Cutting speed vc (m/min)	Ø20 / Ø25		Ø30 / Ø35		Ø40	
				Axial cutting depth (mm)	Feed rate per tooth (mm)	Axial cutting depth (mm)	Feed rate per tooth (mm)	Axial cutting depth (mm)	Feed rate per tooth (mm)
P	Low-carbon steel, mild steel	≤ 180	200(120-220)	0.3-1.5	0.6-1.2	0.3-1.2	0.5-1.4	0.3-1.5	0.8-1.5
			200(120-220)	0.3-1.5	0.6-1.2	0.3-1.2	0.5-1.4	0.3-1.5	0.8-1.5
			200(120-220)	0.3-1.5	0.6-1.2	0.3-1.2	0.5-1.4	0.3-1.5	0.8-1.5
	High-carbon steel, alloy steel	180-280	160(80-180)	0.2-1.2	0.6-1.2	0.2-1.0	0.5-1.4	0.2-1.2	0.6-1.5
			160(80-180)	0.2-1.2	0.6-1.2	0.2-1.0	0.5-1.4	0.2-1.2	0.6-1.5
			160(80-180)	0.2-1.2	0.6-1.2	0.2-1.0	0.5-1.4	0.2-1.2	0.6-1.5
	Alloy tool steel	280-350	150(80-160)	0.2-1.0	0.5-1.0	0.2-1.0	0.5-1.0	0.2-1.0	0.5-1.0
			150(80-160)	0.2-1.0	0.5-1.0	0.2-1.0	0.5-1.0	0.2-1.0	0.5-1.0
			150(80-160)	0.2-1.0	0.5-1.0	0.2-1.0	0.5-1.0	0.2-1.0	0.5-1.0
M	Stainless steel	≤ 180	150(80-190)	0.3-1.0	0.6-1.0	0.3-1.2	0.6-1.2	0.3-1.2	0.5-1.6
			150(80-190)	0.3-1.0	0.6-1.0	0.3-1.2	0.6-1.2	0.3-1.2	0.5-1.6
			150(80-190)	0.3-1.0	0.6-1.0	0.3-1.2	0.6-1.2	0.3-1.2	0.5-1.6
K	Cast iron	180-250	180(80-190)	0.3-1.0	0.5-1.2	0.2-1.0	0.5-1.4	0.2-1.2	0.8-1.6
			180(80-190)	0.3-1.0	0.5-1.2	0.2-1.0	0.5-1.4	0.2-1.2	0.8-1.6
			180(80-190)	0.3-1.0	0.5-1.2	0.2-1.0	0.5-1.4	0.2-1.2	0.8-1.6

A

General turning

Parting and grooving

Threading

B

Indexable milling

Solid carbide end mills

C

Short hole drills

Solid carbide drills

## ► Technical information of application of high feed milling tools

### ◆ Ramp milling angle and cutting length

Type	Tool diameter mm	32	40	50	63	80	100
SD□□12□□	Maximum ramping angle (RMPX)	3.5°	2.8°	2.5°	1.7°	1°	
SD□□15□□	Maximum ramping angle (RMPX)		2.5°	2.2°	1.5°	0.8°	0.5°
	Cutting length (L)	ap / tanRMPX					

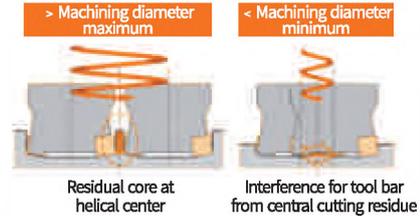


Please set the angle of ramping machining below RMPX.  
Set the feed rate below 70% of the standard.

Figure Illustration of ramp milling

### ◆ Precautions for helical machining

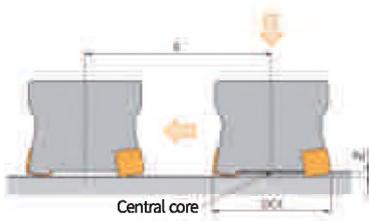
Please conduct helical machining within the range of maximum and minimum machining diameters.



Tool model	Machining diameter minimum	Machining diameter maximum
C/SEM100**12	2*DC-16	2*DC-2
C/SEM100**15	2*DC-26	2*DC-2

Notes: ① The sinking depth (h) per circle is lower than the longitudinal cutting depth maximum (APMX);  
② Set the table feed below 50% of the recommended value.

### ◆ Precautions for drill-milling

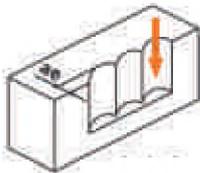


Tool model	Drilling depth maximum	Cutting length minimum for bottom flattening
C/SEM100**SD12	1.5mm	Tool diameterDc-16
C/SEM100**SD15	2mm	Tool diameterDc-25

Notes: When transverse feed machining after drilling:

- ① The feed rate should be reduced to that of half of the general horizontal machining until the core is completely removed.
- ② When drilling holes, set the axial feed rate per revolution below  $f=0.2$  (mm/rev).

### ◆ Sidewall drill-milling



Notes: The recommended feed of sidewall milling is below 0.2 mm/z.

Insert model	Crosscutting depth maximum (ae)
SD**12	10mm
SD**15	12mm

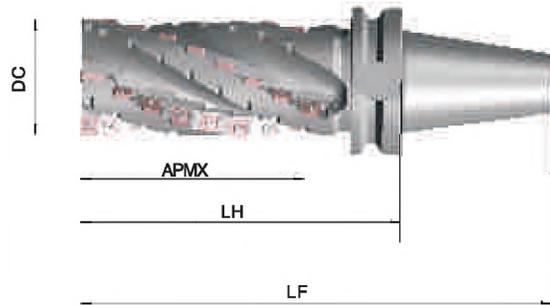
Setting approximate R angle—in writing program

Model	Cutting edge angle	Approximate R angle	Cutting residual amount (K/mm)	Inclination angle maximum during contour machining
C/SEM100**SD12	10°	3.0	0.85	90°
C/SEM100**SD15	10°	3.5	1.37	90°

# Helical end milling

## CHM190 series

KAPR=90°



Tool specification	Number of slots	Inventory	Basic dimension (mm)			APMX (mm)	Applicable inserts	Screw	Wrench
			DC	LH	LF				
CHM190-063JT5004-SP12	4	▲	63	165	266.75	104	SP□□12 AP□□15	M5×13	WR20S
CHM190-063JT50L04-SP12	4	△	63	195	296.75	134			
CHM190-080JT5004-SP12	4	▲	80	165	266.75	104			
CHM190-080JT50L04-SP12	4	△	80	205	306.75	144			
CHM190-063BT5004-SP12	4	▲	63	165	266.75	104			
CHM190-063BT50L04-SP12	4	△	63	195	296.75	134			
CHM190-080BT5004-SP12	4	▲	80	165	266.75	104			
CHM190-080BT50L04-SP12	4	△	80	205	306.75	144			

▲Running stock    △Make-to-order

A

General turning

Parting and grooving

Threading

B

Indexable milling

Solid carbide end mills

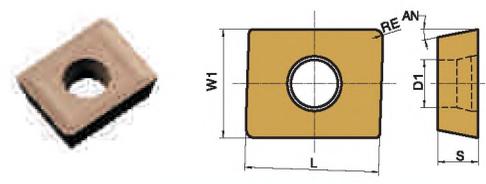
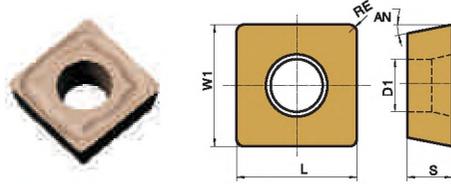
C

Short hole drills

Solid carbide drills

## Applicable inserts

SP □□  
AP □□



Working condition: ● Stable ● Average ✎ Tough

Applicable inserts	Workpiece material	Working condition																
		Stable	Average	Tough	Stable	Average	Tough	Stable	Average	Tough	Stable							
		●	●	✎	●	●	✎	●	●	✎	●							
Applicable inserts	<b>P</b> Steel	✎	●	●	✎	✎	✎	●										
	<b>M</b> Stainless steel		●	●	✎			✎										
	<b>K</b> Cast iron	✎	●	●	✎													
	<b>N</b> Non-ferrous metal												●					
	<b>S</b> Heat-resistant alloy, titanium alloy																	

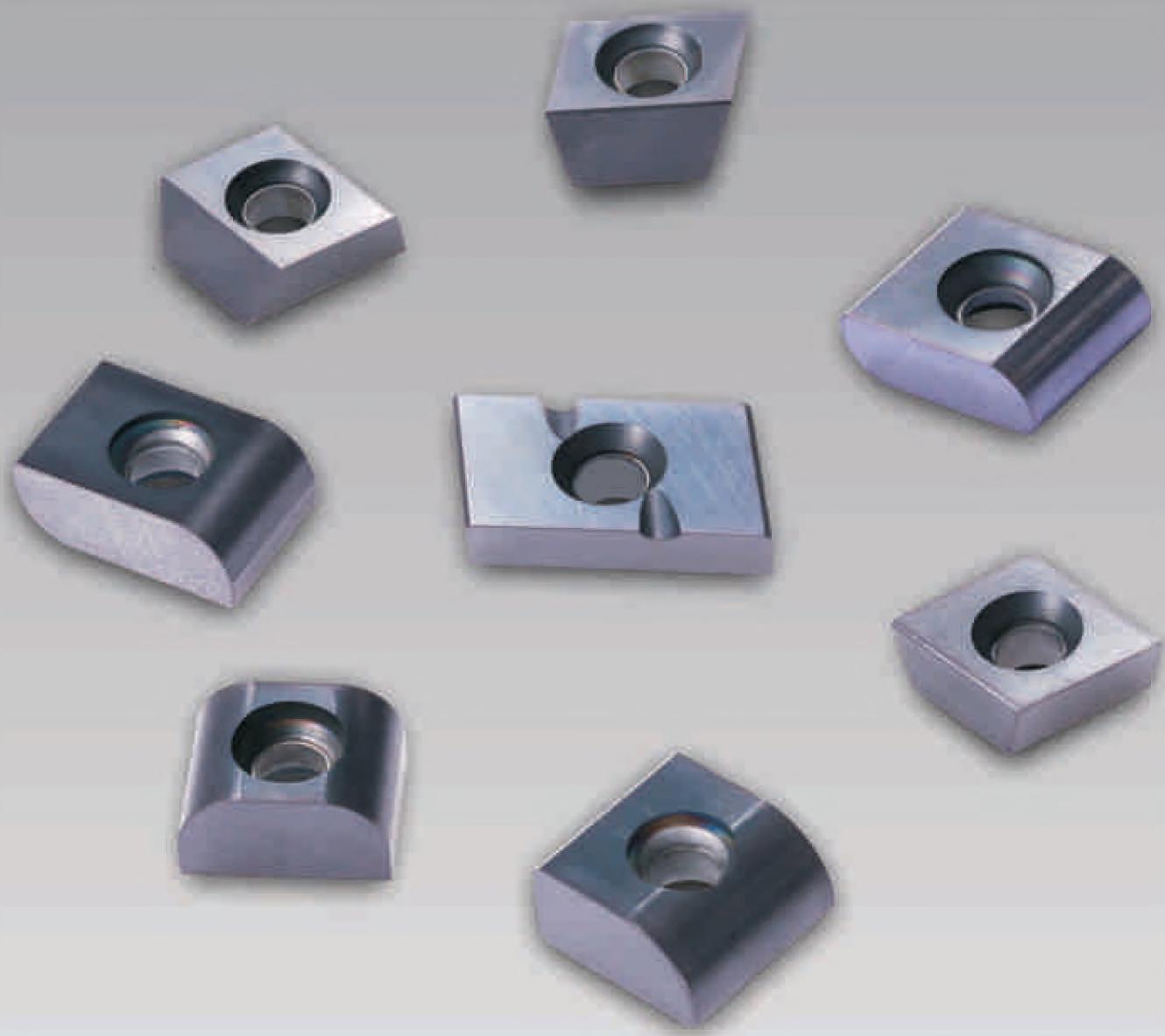
  

Type	Basic dimension (mm)						AN	CVD		PVD				Cemented carbide	Cermets	
	L	W1	S	D1	RE	HR8140		HR5110	HR5120	HR5130	HR7130	HR7140	HRK10			HRC20
SPMT120408-MM	12.700	12.70	4.76	5.50	0.80	11°			★	★						
APMT150412-MM	15.865	12.69	4.76	5.56	1.20	11°			★	★						
SPHX120408T21	12.700	12.70	4.76	5.50	0.80	11°			★	★						
APHX1504	15.875	12.70	4.76	5.70	0.40	11°			★	★						

★ Recommended grade ☆ Available grade

### Recommended cutting parameters

Workpiece material	Hardness (HB)	Insert grade	Cutting data	
			Cutting speed $v_c$ (m/min)	Feed rate $f_z$ (mm/z)
<b>P</b> Low-carbon steel, mild steel	≤180	HR5110	130(60-150)	0.25(0.1-0.35)
		HR5120	140(70-170)	0.3(0.15-0.4)
		HR5130	140(70-170)	0.3(0.15-0.4)
	180-280	HR5110	120(60-150)	0.2(0.1-0.35)
		HR5120	130(60-170)	0.25(0.15-0.35)
		HR5130	140(70-170)	0.25(0.15-0.35)
280-350	HR5110	100(60-150)	0.15(0.08-0.25)	
	HR5120	110(70-170)	0.2(0.1-0.35)	
	HR5130	120(70-170)	0.2(0.1-0.35)	
<b>M</b> Stainless steel	≤270	HR5110	140(110-200)	0.2(0.1-0.3)
		HR5120	120(100-200)	0.2(0.1-0.3)
		HR5130	120(100-200)	0.2(0.1-0.3)
<b>K</b> Cast iron	180-250	HR5110	170(90-200)	0.2(0.1-0.35)
		HR5120	130(90-200)	0.25(0.15-0.35)
		HR5130	130(100-210)	0.25(0.15-0.35)



A

General turning

Parting and grooving

Threading

## Code key of heavy milling inserts



B

Indexable milling

Solid carbide end mills

① Insert shape						
						Others Z
C	F	G	L	S	X	

② Clearance angle major			
			Others O
N	Q	T	

③ Tolerance class		
C: ± 0.013 ± 0.025	E: ± 0.025	R: Blank

C

Short hole drills

Solid carbide drills

④ Clamping form						⑤ Length
					Others (Special requirements such as different clamping forms or hole diameter) X	
						Integer of length

12 07 - 2R45

⑥                      ⑦                      ⑧

⑥ Width	⑦ Thickness	Corresponding sizes of the size codes of length, width and thickness												
		Code	03	03A	04	05	05A	05B	06	06A	06B	06C	06D	06E
		Size	3.80	3.97	4.76	5.00	5.95	5.80	6.35	6.00	6.94	6.84	6.55	6.70
		Code	07	07A	07B	07C	07D	07E	07F	07G	08	08A	09	09A
		Size	7.94	7.05	7.15	7.24	7.35	7.60	7.50	7.82	8.50	8.00	9.52	
Integer of width	Integer of thickness	Code	09B	10	11	11A	11B	11C	12	12A	12B	12C	13	13A
		Size	9.43	10.00	11.50	11.11	11.90	11.00	12.70	12.00	12.40	12.80	13.50	13.00
		Code	13B	13C	14	14A	14B	14C	15	15A	15B	15C	15D	15E
		Size	13.85	13.75	14.29	14.20	14.50	14.05	15.87	15.00	15.10	15.28	15.50	15.78
		Code	15F	15G	16	16A	16B	16C	17	17A	18	18A	18B	19
		Size	15.68	15.40	16.30	16.00	16.50	16.78	17.50	17.00	18.47	18.00	18.35	19.05
		Code	20	22	22A	23	25	26	28					
		Size	20.00	22.80	20.00	23.99	25.00	26.50	28.57					
Notes: Coding principle: Add zero before Single-digit integer and take the two-digit integer as code; for sizes that differ in decimal bits, letters A, B, C, etc. are added to distinguish them.														

⑧ Eigenvalue or code		
* "(L)" before the feature codes means that the eigenvalue is on the length side, "(S)" means that the eigenvalue is on the thickness side, and no letter means that the eigenvalue is on the width (W) side. * "(R)" after the feature code indicates the right knife, "(L)" indicates the left knife, and no letter indicates that there is no distinction between left and right. * Other feature codes may also be compiled according to other features of products.		

A

General turning

Parting and grooving

Threading

B

Indexable milling

Solid carbide end mills

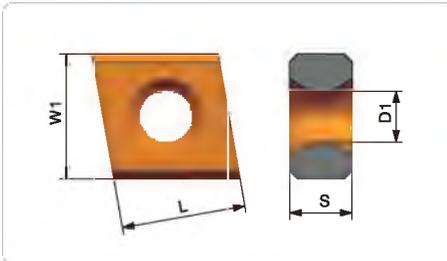
C

Short hole drills

Solid carbide drills

## Heavy milling inserts

Working condition: ● Stable ● Average ⚡ Tough

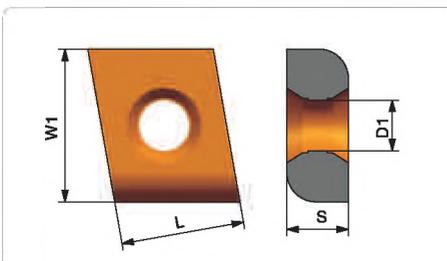


Workpiece material

<b>P</b> Steel	⚡	●	●	⚡	⚡	⚡	●
<b>M</b> Stainless steel		●	●	⚡		⚡	
<b>K</b> Cast iron	⚡	●	●	⚡			
<b>N</b> Non-ferrous metal							●
<b>S</b> Heat-resistant alloy Titanium alloy							

Insert shape	Type	Basic dimension (mm)				CVD	PVD					Cemented carbide	Cermets
		L	W1	S	D1		HR8140	HR5110	HR5120	HR5130	HR7130		
	CNEF121206-405	12.7	12.70	6.35	5.4	☆				★			
	CNEF121206-408	12.7	12.70	6.35	5.4	☆				★			
	CNEL161406-408	16.3	14.29	6.35	5.4	☆				★			

★ Recommended grade ☆ Available grade



Workpiece material

<b>P</b> Steel	⚡	●	●	⚡	⚡	⚡	●
<b>M</b> Stainless steel		●	●	⚡		⚡	
<b>K</b> Cast iron	⚡	●	●	⚡			
<b>N</b> Non-ferrous metal							●
<b>S</b> Heat-resistant alloy Titanium alloy							

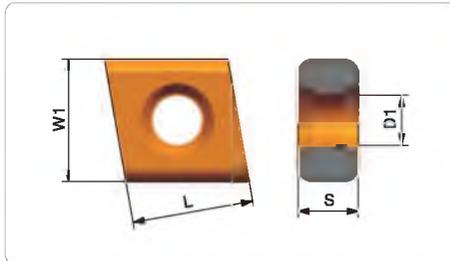
Working condition: ● Stable ● Average ⚡ Tough

Insert shape	Type	Basic dimension (mm)				CVD	PVD					Cemented carbide	Cermets
		L	W1	S	D1		HR8140	HR5110	HR5120	HR5130	HR7130		
	CNEF161406-2R30	16.3	14.29	6.35	5.4	☆				★			
	CNEF161406-2R50	16.3	14.29	6.35	5.4	☆				★			

★ Recommended grade ☆ Available grade

## Heavy milling inserts

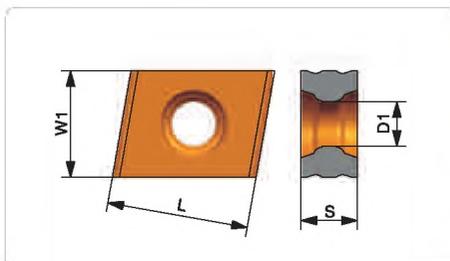
Working condition: ● Stable ● Average ⚡ Tough



Workpiece material	Working condition							
	●	●	●	●	●	●	●	●
<b>P</b> Steel	⚡	●	●	⚡	⚡	⚡	●	●
<b>M</b> Stainless steel		●	●	⚡		⚡		
<b>K</b> Cast iron	⚡	●	●	⚡				
<b>N</b> Non-ferrous metal							●	
<b>S</b> Heat-resistant alloy Titanium alloy								

Insert shape	Type	Basic dimension (mm)				CVD		PVD			Cemented carbide	Cermet
		L	W1	S	D1	HR8140	HR5110	HR5120	HR5130	HR7130	HR7140	HRK10
	CNEF161406-4R10	16.3	14.29	6.35	5.4	☆				★		
	CNEF161406-4R15	16.3	14.29	6.35	5.4	☆				★		
	CNEF161406-4R30	16.3	14.29	6.35	5.4	☆				★		

★ Recommended grade ☆ Available grade



Workpiece material	Working condition							
	●	●	●	●	●	●	●	●
<b>P</b> Steel	⚡	●	●	⚡	⚡	⚡	●	●
<b>M</b> Stainless steel		●	●	⚡		⚡		
<b>K</b> Cast iron	⚡	●	●	⚡				
<b>N</b> Non-ferrous metal							●	
<b>S</b> Heat-resistant alloy Titanium alloy								

Insert shape	Type	Basic dimension (mm)				CVD		PVD			Cemented carbide	Cermet
		L	W1	S	D1	HR8140	HR5110	HR5120	HR5130	HR7130	HR7140	HRK10
	CNER16A12A06-L2M	16.00	12.00	6.35	5.4	☆				★		
	CNEF161406-L2M	16.30	14.29	6.35	5.4	☆				★		

★ Recommended grade ☆ Available grade

A

General turning

Parting and grooving

Threading

B

Indexable milling

Solid carbide end mills

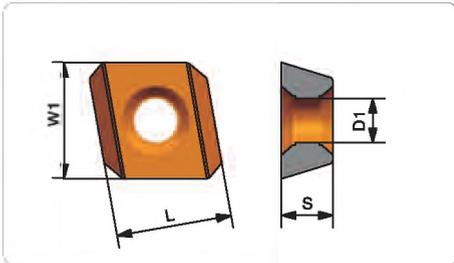
C

Short hole drills

Solid carbide drills

## Heavy milling inserts

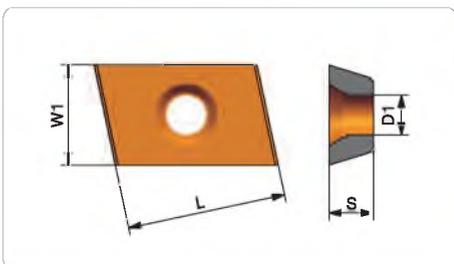
Working condition: ● Stable ● Average ⚡ Tough



Workpiece material	P	Steel	⚡	●	●	⚡	⚡	⚡	●
	M	Stainless steel		●	●	⚡		⚡	
	K	Cast iron	⚡	●	●	⚡			
	N	Non-ferrous metal							●
	S	Heat-resistant alloy Titanium alloy							

Insert shape	Type	Basic dimension (mm)				CVD		PVD				Cemented carbide	Cermet
		L	W1	S	D1	HR8140	HR5110	HR5120	HR5130	HR7130	HR7140	HRK10	HRC20
	CQEH141406--R02R	14.29	14.29	6.35	5.4	★				★			
	CQER11A11A04-R01R	11.10	11.10	4.76	5.4	★				★			

★ Recommended grade ☆ Available grade



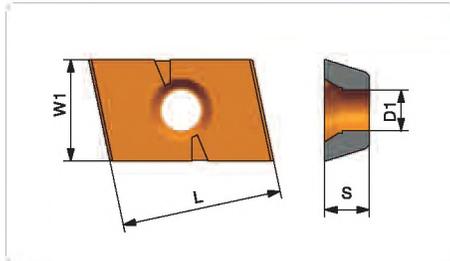
Workpiece material	P	Steel	⚡	●	●	⚡	⚡	⚡	●
	M	Stainless steel		●	●	⚡		⚡	
	K	Cast iron	⚡	●	●	⚡			
	N	Non-ferrous metal							●
	S	Heat-resistant alloy Titanium alloy							

Working condition: ● Stable ● Average ⚡ Tough

Insert shape	Type	Basic dimension (mm)				CVD		PVD				Cemented carbide	Cermet
		L	W1	S	D1	HR8140	HR5110	HR5120	HR5130	HR7130	HR7140	HRK10	HRC20
	FQES190906-2R30R	19.05	9.525	6.35	4.4	★				★			
	FQES190906-2R40R	19.05	9.525	6.35	4.4	★				★			
	FQES190906-2R45R	19.05	9.525	6.35	4.4	★				★			
	FQES190906-2R50R	19.05	9.525	6.35	4.4	★				★			

★ Recommended grade ☆ Available grade

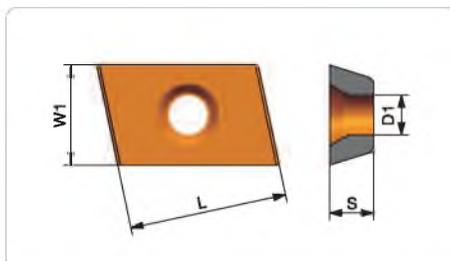
## Heavy milling inserts



Working condition: ● Stable ● Average ⚡ Tough

Insert shape	Type	Basic dimension (mm)				CVD		PVD			Cemented carbide	Cermet	
		L	W1	S	D1	HR8140	HR5110	HR5120	HR5130	HR7130	HR7140	HRK10	HRC20
	FQEW221406-R04R	22.8	14.29	6.35	5.4	☆				★			

★ Recommended grade ☆ Available grade



Working condition: ● Stable ● Average ⚡ Tough

Insert shape	Type	Basic dimension (mm)				CVD		PVD			Cemented carbide	Cermet	
		L	W1	S	D1	HR8140	HR5110	HR5120	HR5130	HR7130	HR7140	HRK10	HRC20
	FQEP120904-210L	12.70	9.525	4.76	4.4	☆				★			
	FQEP120904-210R	12.70	9.525	4.76	4.4	☆				★			
	FQEP120904-2R05L	12.70	9.525	4.76	4.4	☆				★			

★ Recommended grade ☆ Available grade

A

General turning

Parting and grooving

Threading

B

Indexable milling

Solid carbide end mills

C

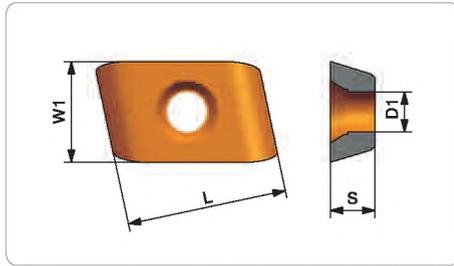
Short hole drills

Solid carbide drills

## Heavy milling inserts

**A**  
 General turning  
 Parting and grooving  
 Threading  
**B**  
 Indexable milling  
 Solid carbide end mills  
**C**  
 Short hole drills  
 Solid carbide drills

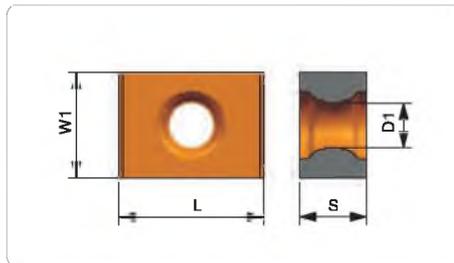
Working condition: ● Stable ● Average ⚡ Tough



Insert shape	Type	Basic dimension (mm)				CVD		PVD			Cemented carbide	Cermet	
		L	W1	S	D1	HR8140	HR5110	HR5120	HR5130	HR7130	HR7140	HRK10	HRC20
			FQES191906-4RXR	19.05	9.525	6.35	4.4	☆				★	

★ Recommended grade ☆ Available grade

Working condition: ● Stable ● Average ⚡ Tough

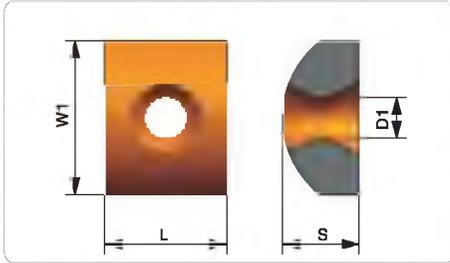


Insert shape	Type	Basic dimension (mm)				CVD		PVD			Cemented carbide	Cermet	
		L	W1	S	D1	HR8140	HR5110	HR5120	HR5130	HR7130	HR7140	HRK10	HRC20
			LNED150906-408	15.875	9.525	6.35	4.4	☆				★	
	LNED151207-404	15.875	12.70	7.94	5.5	☆				★			
	LNED151208B-408	15.875	12.70	7.82	5.5	☆				★			
	LNED151207-400	15.875	12.70	7.94	5.5	☆				★			
	LNED151207-408	15.875	12.70	7.94	5.5	☆				★			
	LNED191206-405	19.05	12.70	12.70	5.4	☆				★			
	LNED191207-400	19.05	12.70	7.94	5.4	☆				★			
	LNED191406-402	19.05	14.29	6.35	5.4	☆				★			
	LNED191406-400	19.05	14.29	6.35	5.4	☆				★			
	LNED191406-405	19.05	14.29	6.35	5.4	☆				★			
	LNED191406-408	19.05	14.29	6.35	5.5	☆				★			
	LNED191406-410	19.05	14.29	6.35	5.4	☆				★			
	LNED191407A-406	19.05	14.29	7.05	5.4	☆				★			

★ Recommended grade ☆ Available grade

# Heavy milling inserts

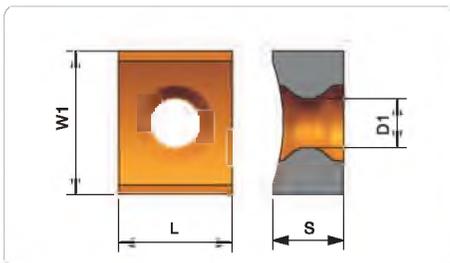
Working condition: ● Stable ● Average ✎ Tough



Workpiece material	<b>P</b> Steel	✎	●	●	✎	✎	✎	●
	<b>M</b> Stainless steel		●	●	✎		✎	
	<b>K</b> Cast iron	✎	●	●	✎			
	<b>N</b> Non-ferrous metal							●
	<b>S</b> Heat-resistant alloy Titanium alloy							

Insert shape	Type	Basic dimension (mm)				CVD	PVD					Cemented carbide	Cermets
		L	W1	S	D1		HR8140	HR5110	HR5120	HR5130	HR7130		
	LNER151207-DR100	15.875	12.70	7.94	5.4	☆				★			
	LNER151207-DR115	15.875	12.70	7.94	5.4	☆				★			
	LNER151207-DR130	15.875	12.70	7.94	5.4	☆				★			
	LNER151207-DR145	15.875	12.70	7.94	5.4	☆				★			
	LNER151207-DR160	15.875	12.70	7.94	5.4	☆				★			
	LNER151207-DR190	15.875	12.70	7.94	5.4	☆				★			
	LNER151207-DR200	15.875	12.70	7.94	5.4	☆				★			
	LNER151207-DR250	15.875	12.70	7.94	5.4	☆				★			
	LNER151207-DR400	15.875	12.70	7.94	5.4	☆				★			
LNER151207-DR800	15.875	12.70	7.94	5.4	☆				★				

★ Recommended grade ☆ Available grade



Workpiece material	<b>P</b> Steel	✎	●	●	✎	✎	✎	●
	<b>M</b> Stainless steel		●	●	✎		✎	
	<b>K</b> Cast iron	✎	●	●	✎			
	<b>N</b> Non-ferrous metal							●
	<b>S</b> Heat-resistant alloy Titanium alloy							

Insert shape	Type	Basic dimension (mm)				CVD	PVD					Cemented carbide	Cermets
		L	W1	S	D1		HR8140	HR5110	HR5120	HR5130	HR7130		
	LNER151207-NR100	15.875	12.70	7.94	5.4	☆				★			
	LNER151207-NR130	15.875	12.70	7.94	5.4	☆				★			
	LNER151207-NR140	15.875	12.70	7.94	5.4	☆				★			
	LNER151207-NR150	15.875	12.70	7.94	5.4	☆				★			
	LNER151207-NR190	15.875	12.70	7.94	5.4	☆				★			
	LNER151207-NR200	15.875	12.70	7.94	5.4	☆				★			
	LNER151207-NR800	15.875	12.70	7.94	5.4	☆				★			
	LNER151207-NR3000	15.875	12.70	7.94	5.4	☆				★			

★ Recommended grade ☆ Available grade

- A
- General turning
- Parting and grooving
- Threading
- B
- Indexable milling
- Solid carbide end mills
- C
- Short hole drills
- Solid carbide drills

## Heavy milling inserts

A

General turning

Parting and grooving

Threading

B

Indexable milling

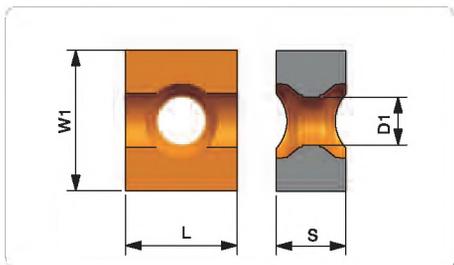
Solid carbide end mills

C

Short hole drills

Solid carbide drills

Working condition: ● Stable ● Average ✖ Tough

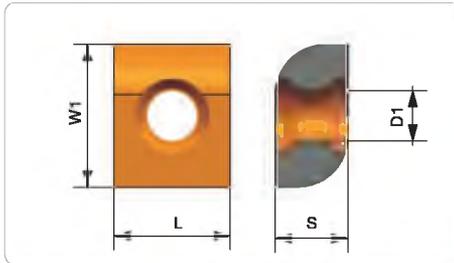


Workpiece material	Working condition							
	Stable	Average	Tough	Stable	Average	Tough	Stable	Average
<b>P</b> Steel	✖	●	●	✖	✖	✖	●	●
<b>M</b> Stainless steel		●	●	✖		✖		
<b>K</b> Cast iron	✖	●	●	✖				
<b>N</b> Non-ferrous metal							●	
<b>S</b> Heat-resistant alloy Titanium alloy								

Insert shape	Type	Basic dimension (mm)				CVD		PVD			Cemented carbide	Cermet
		L	W1	S	D1	HRB140	HR5110	HR5120	HR5130	HR7130	HR7140	HRK10
	LNEN151207-2NR100	15.875	12.70	7.94	5.4	☆				★		
	LNEN151207-2NR130	15.875	12.70	7.94	5.4	☆				★		
	LNEN151207-2NR140	15.875	12.70	7.94	5.4	☆				★		
	LNEN151207-2NR190	15.875	12.70	7.94	5.4	☆				★		

★ Recommended grade ☆ Available grade

# Heavy milling inserts



Working condition: ● Stable ● Average ✖ Tough

Workpiece material	Working condition							
	●	●	●	✖	✖	✖	✖	●
<b>P</b> Steel	✖	●	●	✖	✖	✖	✖	●
<b>M</b> Stainless steel		●	●	✖	✖	✖	✖	
<b>K</b> Cast iron	✖	●	●	✖	✖	✖	✖	
<b>N</b> Non-ferrous metal								●
<b>S</b> Heat-resistant alloy Titanium alloy								

Insert shape	Type	Basic dimension (mm)				CVD		PVD			Cemented carbide	Cermet
		L	W1	S	D1	HR8140	HR5110	HR5120	HR5130	HR7130	HR7140	HRK10
	LNER151207-2R20	15.875	12.70	7.94	5.4	☆				★		
	LNER151207-2R30	15.875	12.70	7.94	5.4	☆				★		
	LNER151207-2R35	15.875	12.70	7.94	5.4	☆				★		
	LNER151207-2R40	15.875	12.70	7.94	5.4	☆				★		
	LNER151207-2R45	15.875	12.70	7.94	5.4	☆				★		
	LNER151207-2R50	15.875	12.70	7.94	5.4	☆				★		
	LNER151207A-2R50	15.875	12.70	7.05	5.4	☆				★		
	LNER151207-2R55	15.875	12.70	7.94	5.4	☆				★		
	LNER15C1207-2R50	15.28	12.70	7.94	5.4	☆				★		
	LNER15F1207-2R50	15.68	12.70	7.94	5.4	☆				★		
	LNER191406-2R30	19.05	14.29	6.35	5.4	☆				★		
	LNER191406-2R35	19.05	14.29	6.35	5.4	☆				★		
	LNER190906-2R50	19.05	9.525	6.35	5.4	☆				★		
	LNER191407-2R60	19.05	14.29	7.94	5.4	☆				★		
	LNER191406-2R30M22	19.05	14.29	6.35	5.4	☆				★		
	LNER191406-2R46M15	19.05	14.29	6.35	5.4	☆				★		
	LNER191407-2R60M15	19.05	14.29	7.94	5.4	☆				★		
	LNER191407-2R70M20	19.05	14.29	7.94	5.4	☆				★		
LNER191408-2R70M20	19.05	14.29	8.50	5.4	☆				★			

★ Recommended grade ☆ Available grade

A

General turning

Parting and grooving

Threading

B

Indexable milling

Solid carbide end mills

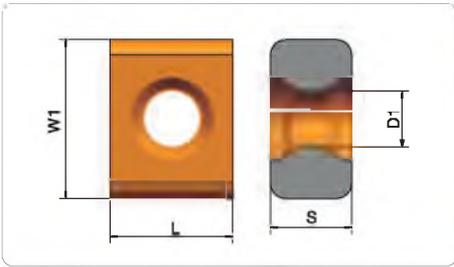
C

Short hole drills

Solid carbide drills

## Heavy milling inserts

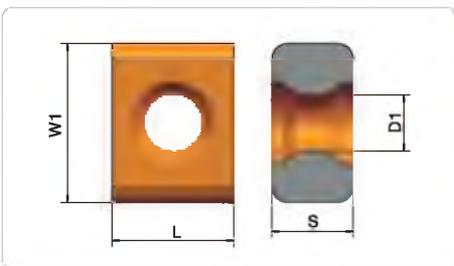
Working condition: ● Stable ● Average ⚡ Tough



Workpiece material	Working condition: ● Stable ● Average ⚡ Tough													
	P	M	K	N	S	HR8140	HR5110	HR5120	HR5130	HR7130	HR7140	HRK10	HRC20	
<b>P</b> Steel	⚡	●	●	⚡	⚡	⚡	●	●	●	●	●	●	●	
<b>M</b> Stainless steel		●	●	⚡	⚡									
<b>K</b> Cast iron	⚡	●	●	⚡	⚡									
<b>N</b> Non-ferrous metal												●		
<b>S</b> Heat-resistant alloy Titanium alloy														

Insert shape	Type	Basic dimension (mm)				CVD	PVD					Cemented carbide	Cermets
		L	W1	S	D1		HR8140	HR5110	HR5120	HR5130	HR7130		
	LNER151206-4R10	15.875	12.70	6.35	5.4	☆				★			
	LNER151206B-4R20	15.875	12.70	6.94	5.4	☆				★			
	LNER151207-4R10	15.875	12.70	7.94	5.5	☆				★			
	LNER151207-4R20	15.875	12.70	7.94	5.5	☆				★			
	LNER191406-4R02	19.05	14.29	6.35	5.4	☆				★			
	LNER191406-4R12	19.05	14.29	6.35	5.4	☆				★			
	LNER191406-4R20	19.05	14.29	6.35	5.4	☆				★			
	LNER191406-4R24	19.05	14.29	6.35	5.4	☆				★			

★ Recommended grade ☆ Available grade



Workpiece material	Working condition: ● Stable ● Average ⚡ Tough													
	P	M	K	N	S	HR8140	HR5110	HR5120	HR5130	HR7130	HR7140	HRK10	HRC20	
<b>P</b> Steel	⚡	●	●	⚡	⚡	⚡	●	●	●	●	●	●	●	
<b>M</b> Stainless steel		●	●	⚡	⚡									
<b>K</b> Cast iron	⚡	●	●	⚡	⚡									
<b>N</b> Non-ferrous metal												●		
<b>S</b> Heat-resistant alloy Titanium alloy														

Insert shape	Type	Basic dimension (mm)				CVD	PVD					Cemented carbide	Cermets
		L	W1	S	D1		HR8140	HR5110	HR5120	HR5130	HR7130		
	LNER151206-4R30	15.875	12.70	6.35	5.4	☆				★			
	LNER151206-4R40	15.875	12.70	6.35	5.4	☆				★			
	LNER151206-4R50	15.875	12.70	6.35	5.4	☆				★			
	LNER151206-4R55	15.875	12.70	6.35	5.4	☆				★			
	LNER151206-4R65	15.875	12.70	6.35	5.4	☆				★			
	LNER151207-4R40	15.875	12.70	7.94	5.4	☆				★			
	LNER151207-4R50	15.875	12.70	7.94	5.4	☆				★			

★ Recommended grade ☆ Available grade

A

General turning

Parting and grooving

Threading

B

Indexable milling

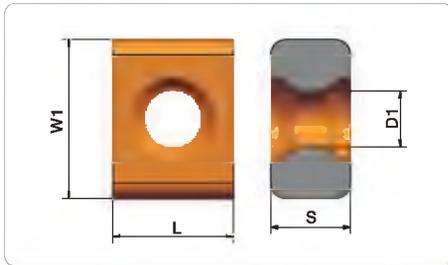
Solid carbide end mills

C

Short hole drills

Solid carbide drills

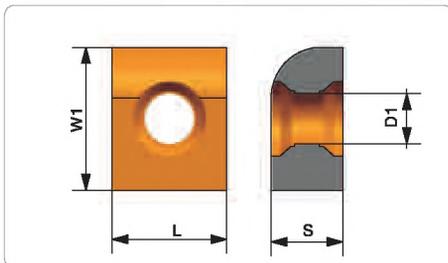
## Heavy milling inserts



Working condition: ● Stable ● Average ⚡ Tough

Insert shape	Type	Basic dimension (mm)				CVD						PVD		Cemented carbide	Cermet
		L	W1	S	D1	HR8140	HR5110	HR5120	HR5130	HR7130	HR7140	HRK10	HRC20		
	LNER150904-4R30H	15.875	9.525	4.76	4.4	☆				★					
	LNER151206-4R40H	15.875	12.70	6.35	5.4	☆				★					
	LNER151206-4R50H	15.875	12.70	6.35	5.4	☆				★					
	LNER151207-4R40H	15.875	12.70	7.94	5.4	☆				★					
	LNER151207-4R50H	15.875	12.70	7.94	5.4	☆				★					

★ Recommended grade ☆ Available grade



Working condition: ● Stable ● Average ⚡ Tough

Insert shape	Type	Basic dimension (mm)				CVD						PVD		Cemented carbide	Cermet
		L	W1	S	D1	HR8140	HR5110	HR5120	HR5130	HR7130	HR7140	HRK10	HRC20		
	LNER151207-1R30M20	15.875	12.70	7.94	5.4	☆				★					

★ Recommended grade ☆ Available grade

A

General turning

Parting and grooving

Threading

B

Indexable milling

Solid carbide end mills

C

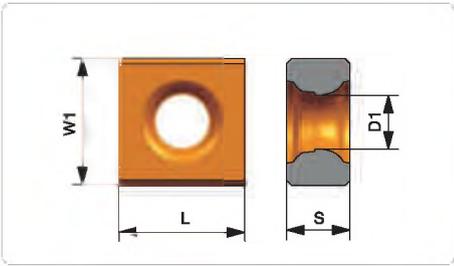
Short hole drills

Solid carbide drills

## Heavy milling inserts

**A**  
 General turning  
 Parting and grooving  
 Threading  
**B**  
 Indexable milling  
 Solid carbide end mills  
 Short hole drills  
 Solid carbide drills

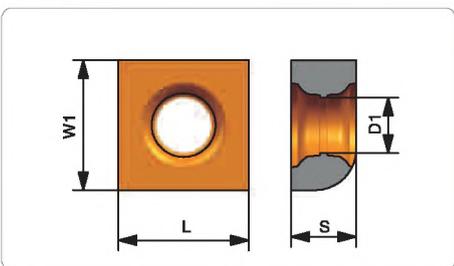
Working condition: ● Stable ● Average ⚡ Tough



Workpiece material	P	M	K	N	S
	Steel	⚡	●	●	⚡
Stainless steel		●	●	⚡	⚡
Cast iron	⚡	●	●	⚡	
Non-ferrous metal					●
Heat-resistant alloy Titanium alloy					

Insert shape	Type	Basic dimension (mm)				CVD	PVD					Cemented carbide	Cermets
		L	W1	S	D1		HR8140	HR5110	HR5120	HR5130	HR7130		
	SNED121206-408	12.70	12.70	6.35	5.5	☆				★			
	SNEN151507-400	15.875	15.875	7.94	5.4	☆				★			
	SNEN151507-408	15.875	15.875	7.94	5.4	☆				★			
	SNER151507-405	15.875	15.875	7.94	5.4	☆				★			

★ Recommended grade ☆ Available grade



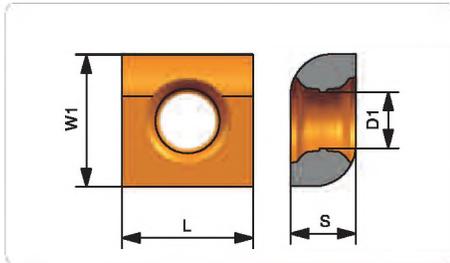
Workpiece material	P	M	K	N	S
	Steel	⚡	●	●	⚡
Stainless steel		●	●	⚡	⚡
Cast iron	⚡	●	●	⚡	
Non-ferrous metal					●
Heat-resistant alloy Titanium alloy					

Working condition: ● Stable ● Average ⚡ Tough

Insert shape	Type	Basic dimension (mm)				CVD	PVD					Cemented carbide	Cermets
		L	W1	S	D1		HR8140	HR5110	HR5120	HR5130	HR7130		
	SNER151507-1R70	15.875	15.875	7.94	5.4	☆				★			

★ Recommended grade ☆ Available grade

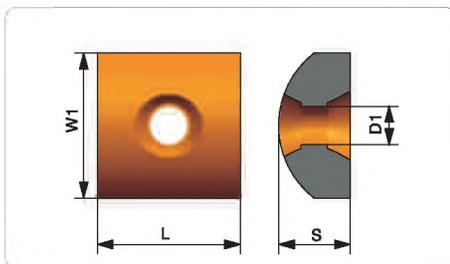
## Heavy milling inserts



Working condition: ● Stable ● Average ⚡ Tough

Insert shape	Type	Basic dimension (mm)				CVD		PVD			Cemented carbide	Cermet	
		L	W1	S	D1	HR8140	HR5110	HR5120	HR5130	HR7130	HR7140	HRK10	HRC20
	SNEB151507-2R40	15.875	15.875	7.94	5.4	☆				★			
	SNEH151507-2R20	15.875	15.875	7.94	5.4	☆				★			
	SNEH151507-2R50	15.875	15.875	7.94	5.4	☆				★			

★ Recommended grade ☆ Available grade



Working condition: ● Stable ● Average ⚡ Tough

Insert shape	Type	Basic dimension (mm)				CVD		PVD			Cemented carbide	Cermet	
		L	W1	S	D1	HR8140	HR5110	HR5120	HR5130	HR7130	HR7140	HRK10	HRC20
	SNEX121206-DR400	12.70	12.70	6.35	4.4	☆				★			
	SNEN151507-DR130	15.875	15.875	7.94	5.4	☆				★			
	SNEN151507G-DR140	15.875	15.875	7.82	5.4	☆				★			

★ Recommended grade ☆ Available grade

A

General turning

Parting and grooving

Threading

B

Indexable milling

Solid carbide end mills

C

Short hole drills

Solid carbide drills

## Heavy milling inserts

A

General turning

Parting and grooving

Threading

B

Indexable milling

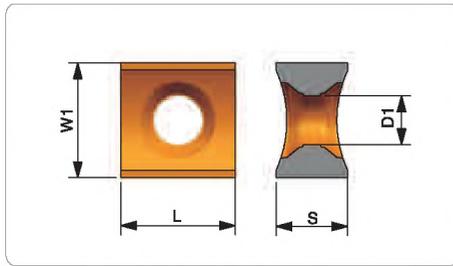
Solid carbide end mills

C

Short hole drills

Solid carbide drills

Working condition: ● Stable ● Average ⚡ Tough

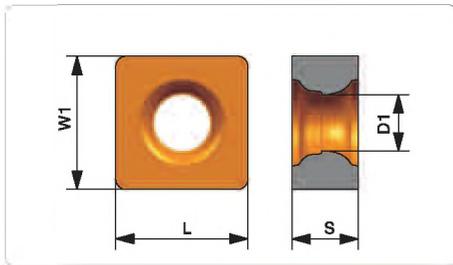


Workpiece material	P	M	K	N	S
	Steel	⚡	●	●	⚡
Stainless steel		●	●	⚡	⚡
Cast iron	⚡	●	●	⚡	
Non-ferrous metal					●
Heat-resistant alloy Titanium alloy					

Insert shape	Type	Basic dimension (mm)				CVD		PVD			Cemented carbide	Cermet
		L	W1	S	D1	HR8140	HR5110	HR5120	HR5130	HR7130	HR7140	HRK10
	SNER121207-2NR80	12.70	12.70	7.94	5.4	☆				★		

★ Recommended grade ☆ Available grade

Working condition: ● Stable ● Average ⚡ Tough



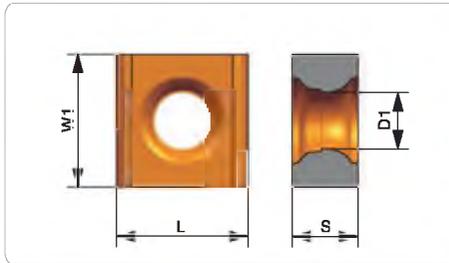
Workpiece material	P	M	K	N	S
	Steel	⚡	●	●	⚡
Stainless steel		●	●	⚡	⚡
Cast iron	⚡	●	●	⚡	
Non-ferrous metal					●
Heat-resistant alloy Titanium alloy					

Insert shape	Type	Basic dimension (mm)				CVD		PVD			Cemented carbide	Cermet
		L	W1	S	D1	HR8140	HR5110	HR5120	HR5130	HR7130	HR7140	HRK10
	SNED121206-S4R02	12.70	12.70	6.35	5.5							
	SNED121206-S4R08	12.70	12.70	6.35	5.5	☆				★		
	SNEY090904-S4R04	9.525	9.525	4.76	4.4							

★ Recommended grade ☆ Available grade

## Heavy milling inserts

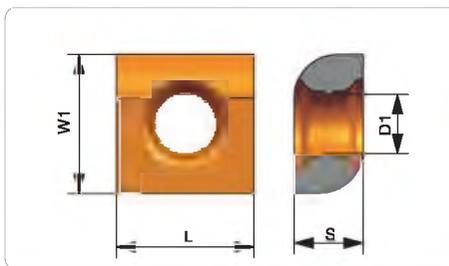
Working condition: ● Stable ● Average ⚡ Tough



Workpiece material	Working condition												
	P	M	K	N	S	HR8140	HR5110	HR5120	HR5130	HR7130	HR7140	HRK10	HRC20
<b>P</b> Steel	⚡	●	●	⚡	⚡	●							●
<b>M</b> Stainless steel		●	●	⚡	⚡						⚡		
<b>K</b> Cast iron	⚡	●	●	⚡									
<b>N</b> Non-ferrous metal												●	
<b>S</b> Heat-resistant alloy Titanium alloy													

Insert shape	Type	Basic dimension (mm)				CVD		PVD			Cemented carbide	Cermet	
		L	W1	S	D1	HR8140	HR5110	HR5120	HR5130	HR7130	HR7140	HRK10	HRC20
	SNED121206-4R20	12.70	12.70	6.35	5.5	☆				★			
	SNEH151507-4R20	15.875	15.875	7.94	5.4	☆				★			
	SNER121206-4R25	12.70	12.70	6.35	4.4	☆				★			
	SNEY090904-4R30H	9.525	9.525	4.76	4.4	☆				★			

★ Recommended grade ☆ Available grade



Workpiece material	Working condition												
	P	M	K	N	S	HR8140	HR5110	HR5120	HR5130	HR7130	HR7140	HRK10	HRC20
<b>P</b> Steel	⚡	●	●	⚡	⚡	●							●
<b>M</b> Stainless steel		●	●	⚡	⚡						⚡		
<b>K</b> Cast iron	⚡	●	●	⚡									
<b>N</b> Non-ferrous metal												●	
<b>S</b> Heat-resistant alloy Titanium alloy													

Insert shape	Type	Basic dimension (mm)				CVD		PVD			Cemented carbide	Cermet	
		L	W1	S	D1	HR8140	HR5110	HR5120	HR5130	HR7130	HR7140	HRK10	HRC20
	SNEN151507-2R20	15.875	15.875	7.94	5.4	☆				★			
	SNEN151507-2R30	15.875	15.875	7.94	5.4	☆				★			
	SNEN151507-2R40	15.875	15.875	7.94	5.4	☆				★			
	SNEN151507-2R50	15.875	15.875	7.94	5.4	☆				★			
	SNEN151507-2R60	15.875	15.875	7.94	5.4	☆				★			

★ Recommended grade ☆ Available grade

A

General turning

Parting and grooving

Threading

B

Indexable milling

Solid carbide end mills

C

Short hole drills

Solid carbide drills

# Comparison table of PVD milling grades

Type	Classification codes		HUAREAL	SANDVIK	KENNAMETAL	ISCAR	MITSUBISHI	TUNGALOY	KYOCERA	SUMITOMO	TEAGUTEC	ZCC.CT	
	IOS classification	Groups of materials											
PVD milling	P	P10	HR5110 HR5120	GC1010 GC1025 GC1030	KC5010M KC515M	IC807 IC903		AH120 AH725	PR830 PR1025 PR1225	ACP2500 ACP200	TT2510 TT7080	YBG252	
		P20	HR5110 HR5120 HR5130	GC1025 GC1030 GC2030	KC522M KC525M KCSM30 SP6519	IC807 IC808 IC810 IC380 IC330	MP6120 VP15TF	AH120 AH725 AH3135 AH9030 AH3225 AH9130	PR1525 PR830 PR1025 PR1225 PR1230	ACP3000 ACU2500 ACP200 ACP300	TT2510 TT7080 TT8020 TT9030 TT9080	YBG202 YBG205 YBG9320 YBG252	
		P30	HR5120 HR5130 HR7130	GC1030 GC1010 GC2030	KC525M KC530 KC725M KC735M KCPM40 KCSM30 X400	IC328 IC330 IC380 IC830 IC928	MP6120 VP15TF MP6130 VP30RT	AH120 AH725 AH3135 AH130 AH3225 AH9130	PR1230 PR1535	ACP3000 ACU2500 ACP200 ACP300	TT8020 TT8080 TT9030 TT9080	YBG302	
		P40	HR7130	GC1030 GC2030	KC725M KC735M KCPM40	IC830	VP30RT	AH120 AH725 AH645		ACP3000 ACU2500 ACP300	TT8020 TT8080 TT9030 TT9080	YBG302	
	M	M10	HR5110 HR5120	GC1010 GC1030	KC515M SP4019 SP6519	IC807 IC808 IC903 IC907 IC908		AH725	PR1025 PR1225	ACU2500 ACM100 ACK300 ACP300			YBG252
		M20	HR5110 HR5120 HR5130	GC1030 GC1040 GC2030 S30T	KC522M KC525M SP4019 SP6519 X700	IC330 IC808 IC830 IC840 IC882 IC908 IC928	VP15TF MP7130 MP7030 VP20RT	AH725 AH3135 AH130 AH6030 AH3225 AH9130	PR1525 PR1025 PR1225	ACU2500 ACK300 ACP300	TT9030 TT9080	YBG202 YBG205 YBG9320 YBG252	
		M30	HR5120 HR5130	GC1040 S30T GC2030	KC522M KC525M KC725M KC735M KCPM40 KCSM30 KCSM40 SC6525 X700	IC328 IC330 IC830 IC840 IC882	VP15TF MP7130 MP7030 VP20RT MP7140	AH3135 AH130 AH9130	PR1535	TT8020 TT8080 TT9030 TT9080	TT8020 TT8080 TT9020 TT9080	YBG302	
		M40	HR7130		KC725M KCPM40 KCSM40	IC830 IC928	MP7140 VP30RT	AH140		TT8020 TT8080 TT9030 TT9080	TT8020 TT8080 TT9020 TT9080	YBG302	

Type	Classification codes		HUAREAL	SANDVIK	KENNAMETAL	ISCAR	MITSUBISHI	TUNGALOY	KYOCERA	SUMITOMO	TEAGUTEC	ZCC.CT
	IOS classification	Groups of materials										
PVD milling	<b>K</b>	K10		GC1010 GC1020	KC514M KC515M KCK20 SP4019	IC810	MP8010	AH110 GH120	PR510 PR905 PR1210	ACK3000 ACU2500	TT6080	YBG102 YBG252
		K20	HR5120	GC1020	KC514M KC520M KC524M KCK20 SP6519	IC808 IC810 IC83	VP15TF VP20RT	AH120 AH9030 AH9130	PR905 PR1210	ACK3000 ACU2500 ACK300	TT6080	YBG152
		K30			KC522M KC524M SP6519	IC830 IC810 IC908 IC910 IC928 IC950	VP15TF VP20RT	AH120		ACK3000 ACU2500 ACK300		

- A
- General turning
- Parting and grooving
- Threading
- B
- Indexable milling
- Solid carbide end mills
- C
- Short hole drills
- Solid carbide drills

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