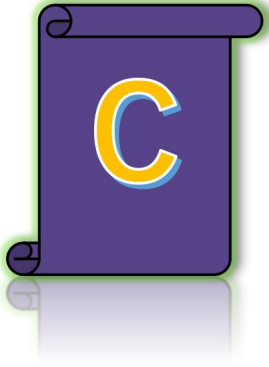


Milling Inserts



Xiamen Egret Tool Co., Ltd



Milling Tools

ISO identification rules for milling insert

Identification rules for milling holder

Milling grade introduction

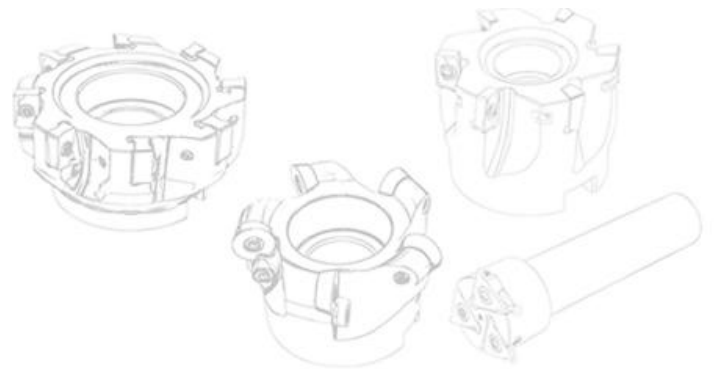
Application summary of milling grades

Series introduction of milling tools

Indexable Milling Cutter Pitch Application

Specification list of milling tools

Technical Information



ISO identification rules for milling insert

Symbol	Shape	Corner Angle
H	Hexagon	120°
O	Octagon	135°
P	Pentagon	108°
S	Square	90°
T	Triangle	60°
C	Rhombus	80°
D		55°
E		75°
F		50°
M		86°
V		35°
W		Hexagon
L	Rectangle	90°
A	Parallelogram	85°
B		82°
K		55°
R	Round	-

1.Shape Symbol

Symbol	Relief Angle
Other	
A	3°
B	5°
C	7°
D	15°
E	20°
F	25°
G	30°
N	0°
P	11°
O	Other

2.Relief Angle Symbol

Sym bol	Shape
W	Without Chipbreaker, with holes
T	Single-sided chipbreaker, with holes
F	Double-sided chipbreaker, no holes
N	Without Chipbreaker and holes
R	Single-sided chipbreaker, without holes
M	Single-sided chipbreaker, with holes
A	Without Chipbreaker, with holes

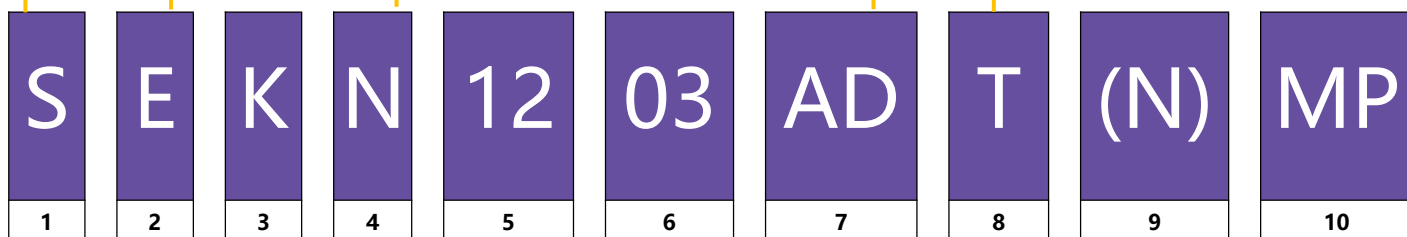
4.Hole/Chip-breaker Symbol

7.Wiper Angle or Nose Radius			
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
Symbol	Corner	Symbol	Corner
02	0.2	16	1.6
04	0.4	20	2.0
08	0.8	24	2.4
12	1.2	28	2.8

7.Wiper Angle or Nose Radius
mm

Symbol	Shape
F	Sharp Edge
E	R-Honed
T	Chamfer
S	Chamfer and R-Honed

8.Major Cut Edge



3.Tolerance Symbol				
Symbol	Tolerance (mm)			
	Corner Height	Thickness	I.C.Size	
A	±0.005	±0.025	±0.025	
F			±0.013	
C	±0.013		±0.025	
H		±0.013		
E	±0.025	±0.025	±0.025	
G				±0.13
J	±0.005	±0.025	±0.05	
K	±0.013			
L	±0.025			~±0.15
M	±0.08			
N	~±0.18	±0.025		
U	±0.08	±0.13	±0.08	
	~±0.18		~±0.25	

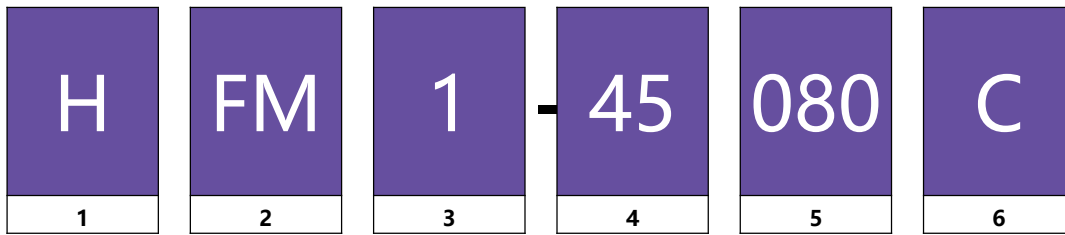
5.Cutting Edge Length Symbol	

6.Thickness Symbol	
Sym bol	Thickness (mm)
01	1.59
T1	1.98
02	2.38
T2	2.78
03	3.18
T3	3.97
04	4.76
05	5.56
06	6.35
07	7.94
09	9.525

9.Direction	
Sym bol	Direction
R	Right
L	Left
N	Neutral

10.Chipbreaker Symbol	
Indicates the cutting properties and chipbreaker	
M	L: Light-duty Processing
	M: Medium-duty Processing
	H: Heavy-duty Processing
	C: Customization

P	P: Steel
	M: Stainless Steel
	K: Cast Iron
	N: Nonferrous Metal
	S: HRSA
H: Hardened Material	



1.H——HONGJIANG

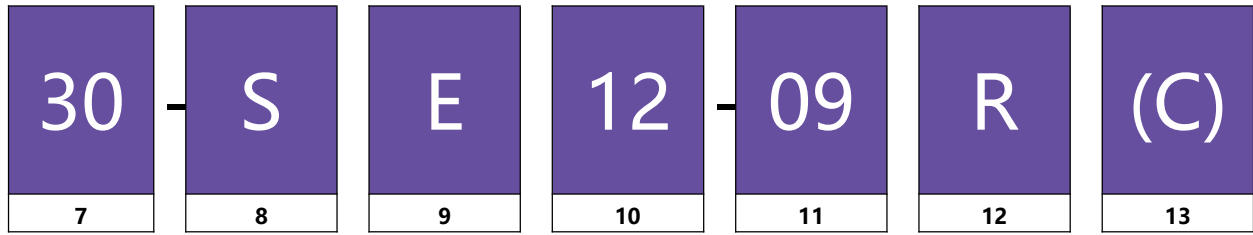
3. 1——Series Number

2.Process Way	
Face Milling	FM
Should Milling	SM
Profile Milling	PM
High Feed Milling	HM
Slot Milling	GM
Cbamfer Milling	CM

4.Lead Angle	
45	45°

5.Cutting Diameter	
080	80mm
三面刃: D×刃宽	

6.Type of Coupling	
A	A Type
B	B Type
C	C Type
D	D Type
M	Thread Interface
P	Straight Shank
W	Weldon Shank
BT	BT Type



7.Coupling Size

9.Insert Clearance Angle	
Symbol	Angle
N	0°
B	5°
C	7°
P	11°
D	15°
E	20°
F	25°

10.Cutting Edge Length	
12	12mm

11.No. of teeth	
09	9 teeth

12.Direction	
R	Right
L	Left

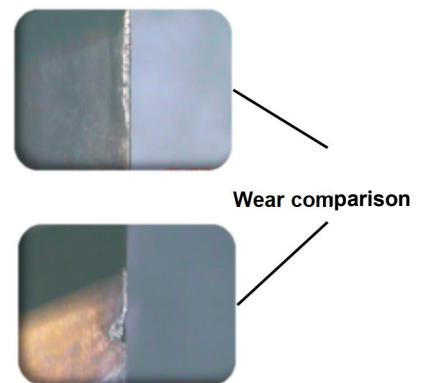
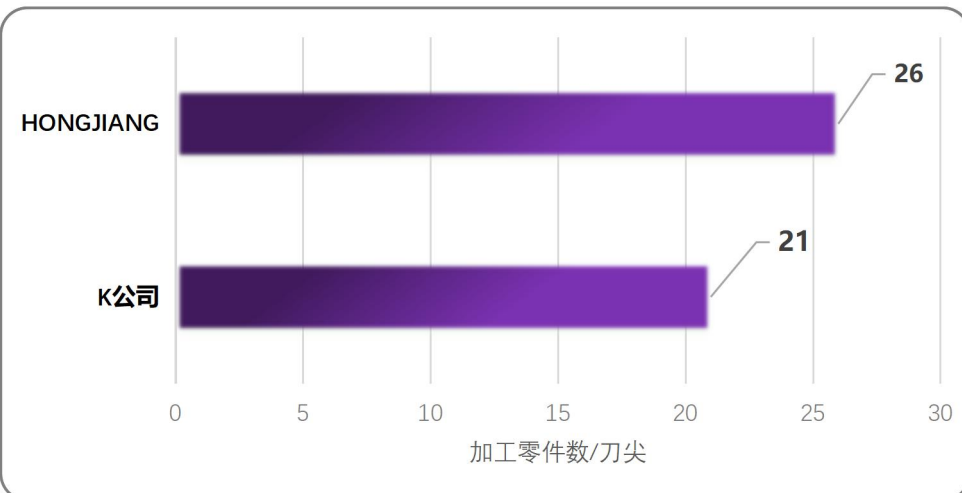
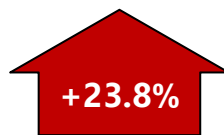
13.Inner cooling structure	
C	With
	Without

8.Insert Shape	
Symbol	Shape
V	35° Rhombic
D	55° Rhombic
C	80° Rhombic
S	Square
T	Triangle
L	Rectangle
H	Hexagon
O	Regular octagon
R	Round

Milling Grade Introduction

Grade	Type	Coated	Features
MP8120	Semi-finishing ~ rough machining General processing		General processing grade , whose hardness and toughness reach the best balance point owing to the application of atom rearrangement technology which realizes the perfect combination of high toughness substrate and multilayer TiAlN nano coating, so that the hardness and toughness reach the best balance point. The application of this technology not only improves the bonding strength between the coating and the substrate, but also makes the grade have excellent high temperature resistance.

Tool Dia.	Φ100
Specification	SNGX1205ANN-GM
Workpiece	316 (HRC30)
Cutting Data	S850r/min F550mm/min Ap0.3mm
Coolant	Gas
Cutting Result	Increase by 23.8% relative to K company



Application Summary of Milling Grades

Workpiece	ISO	Coated		Uncoated	Cermet	CBN
		CVD	PVD			
P Steel	01		MP8110			
	10					
	20		developing			
	30			MP8120		
	40			NEW		
	50					
M Stainless Steel	01		MM8110			
	10					
	20		developing			
	30			MM8120		
	40			NEW		
	50					
K Cast Iron	01					
	10	MK9110				
	20					
	30	developing	MK9120			
	40		NEW			
N Nonferrous Metal	01					
	10					
	20					
	30					
	40					
S HRSA	01					
	10					
	20					
	30					
	40					
H Hardened Material	01					
	10					
	20					
	30					

Series Introduction of Milling Tools

SN*X

Double-sided universal 45°/75°/88° face milling

SNG (M) X Insert + HFM145/175/188 Tool

- ◆ Negative 8-edge design with large rake angle structure of curved edge, light cutting, smooth chip removal, high strength and processing stability
- ◆ Rich geometries, GM takes into account both edge strength and sharpness, GL focuses on sharp edge, and GH focuses on edge strength
- ◆ It is mainly used for rough to semi-finish face milling of general materials



HN*X

Face milling inserts for cast iron processing

HNE (M) X Insert + HFM160 Tool

- ◆ High economical double-sided negative 12-blade design, cast iron processing blade with high strength
- ◆ Mainly used for rough to semi-finish face milling of cast iron materials

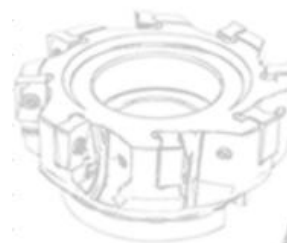


ON*U

Double-sided octagonal face milling insert

ONH(M)U Insert+HFM145*ON Tool

- ◆ Curve edge, large rake angle, double-sided negative 16-edge design, light cutting, smooth chip removal;
- ◆ Face milling inserts with high economy and high strength
- ◆ With the free-grinding model, it can cope with the occasions where the processing surface is not demanding, Economic.
- ◆ Mainly used for rough-finishing of general materials



WNHU

Double-sided six-Insert shoulder milling

WNHU Insert+HSM190 Tool

- ◆ Negative double-sided convex triangle structure design ensures that the cutting edge is sharp and has the strength of the blade
- ◆ Large cutting rake angle and large blade inclination, cutting briskly, smooth chip removal
- ◆ Mostly used for cavity machining and square shoulder milling, with strong tool functionality
- ◆ Widely used in general machinery, mold industry, aerospace, automotive industry and other fields



LNMU

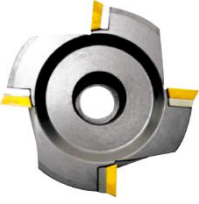


Double-sided four-edge fast feed milling

LNMU Insert + HHM190 Tool

- ◆ With large rake angle and open geometries, cutting is brisk and chip removal is smooth
- ◆ Small entering angle, suitable for fast feed, ramp milling, etc.
- ◆ Suitable for small diameter cutter body and multi-tooth cutter body, with strong functionality and obvious improvement in efficiency
- ◆ High versatility, high cost performance, suitable for fast-feed milling of steel and stainless steel

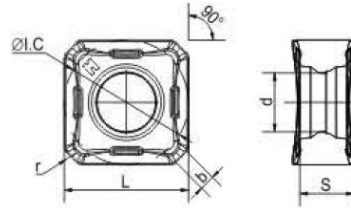



Indexable Milling Cutter Pitch Application

Operation Stability	L (Low)	Coarse Pitch		<ul style="list-style-type: none"> ◆ The cutter body has the best rigidity, which is most suitable for unstable conditions. ◆ Mainly used for high-feed, large-cut deep processing, with large processing chips. ◆ First choice for carbon steel, alloy steel and stainless steel cutting
	M (Medium)	Close Pitch		<ul style="list-style-type: none"> ◆ Combination of cutter body rigidity and machining efficiency, first choice for general cutting ◆ Mainly used for medium feed and deep-cut processing, with small processing chips ◆ It is also suitable for cutting high-hardness steel and heat-resistant alloys
	H (High)	Extra Close Pitch		<ul style="list-style-type: none"> ◆ High processing efficiency, most suitable for stable working conditions ◆ Mainly used for low-feed, small-cut deep processing, small processing chips ◆ First choice for easy-to-chip-breaking workpieces such as cast iron and high-efficiency cutting

SN*X

General Face Milling Inserts

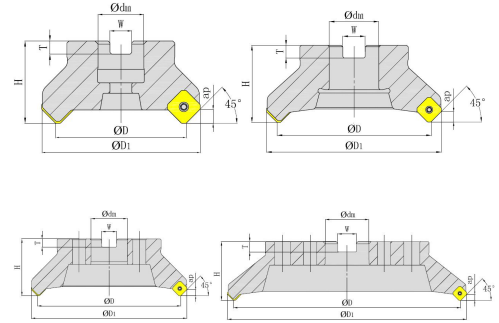


Insert Style	Specification/Item	Dimensions (mm)					Coated		
		L	φC	S	d	b	MP8110	MP8120	MM8120
	SNGX1205ANN-GM	12.7	12.7	5.56	6.0	2.2		●	
	SNGX1205ANN-GL	12.7	12.7	5.56	6.0	2.2		○	
	SNGX1205ANN-GH	12.7	12.7	5.56	6.0	2.2		○	
	SNGX1205ENN-GM	12.7	12.7	5.56	6.0	1.4		○	
	SNGX1205ENN-GL	12.7	12.7	5.56	6.0	1.4		○	
	SNGX1205ENN-GH	12.7	12.7	5.56	6.0	1.4		○	
	SNGX1205PNN-GM	12.7	12.7	5.56	6.0	1.1		●	
	SNGX1205PNN-GL	12.7	12.7	5.56	6.0	1.1		○	
	SNGX1205PNN-GH	12.7	12.7	5.56	6.0	1.1		○	
	SNMX1205ANN-GM	12.7	12.7	5.56	6.0	2.2		●	
	SNMX120512-GM	12.7	12.7	5.56	6.0	-		●	
	SNMX120512-GL	12.7	12.7	5.56	6.0	-		○	
	SNMX120512-GH	12.7	12.7	5.56	6.0	-		○	

Coarse Pitch

HFM145

Arbor

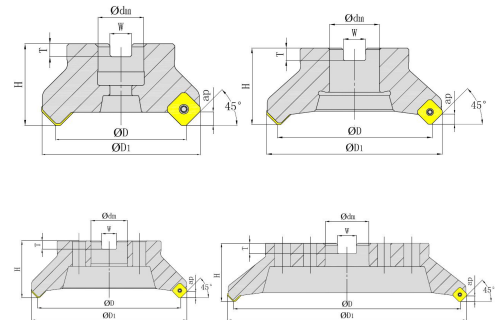


Arbor Type	Stock	Dimensions (mm)					Teeth	Gauge Insert
		ΦD	ΦD1	Φdm	H	a _p Max		
HFM145050A22SN1203RC	●	50	66	22	40	3	3	SN*X1205 AN
HFM145063A22SN1204RC	●	63	79	22	40	3	4	
HFM145080A27SN1205RC	○	80	96	27	50	3	5	
HFM145100B32SN1206RC	●	100	100	116	32	3	6	
HFM145125B40SN1207RC	○	125	125	141	40	3	7	
HFM145160C40SN1208RC	○	160	160	176	40	3	8	

Close Pitch

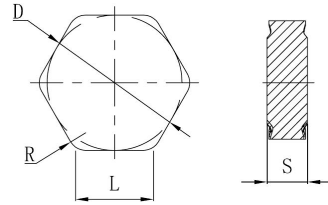
HFM145

Arbor




Arbor Type	Stock	Dimensions (mm)					Teeth	Gauge Insert
		ΦD	ΦD1	Φdm	H	a _p Max		
HFM145050A22SN1204RC	○	50	66	22	40	3	4	SN*X1205 AN
HFM145063A22SN1205RC	●	63	79	22	40	3	5	
HFM145080A27SN1207RC	●	80	96	27	50	3	7	
HFM145100B32SN1208RC	●	100	100	116	32	3	8	
HFM145125B40SN1210RC	●	125	125	141	40	3	10	
HFM145160C40SN1212RC	○	160	160	176	40	3	12	

HN*X

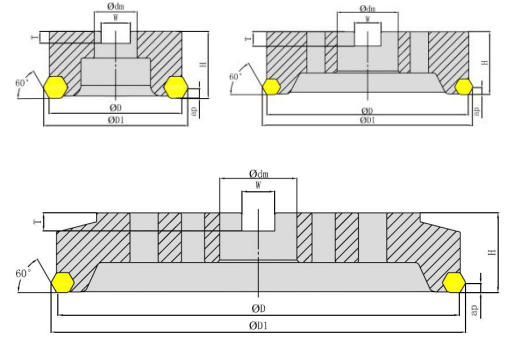


General Face Milling Inserts

Insert Style	Specification/Item	Dimensions (mm)				Coated		
		L	ϕ C	S	R	MP8110	MP8120	MM8120
	HNGX090520-KL	9.5	16.2	5.56	2.0		●	
	HNGX090520-KM	9.5	16.2	5.56	2.0		●	
	HNGX090530-KH	9.5	16.2	5.56	3.0		●	

HFM160


Arbor



Arbor Type	Stock	Dimensions (mm)					Teeth	Gauge Insert
		ΦD	$\Phi D1$	Φdm	H	a_p Max		
HFM160063A22HN0905R	●	63	66	22	40	3	5	HN*X0905
HFM160080A27HN0906R	●	80	66	22	40	3	6	
HFM160100B32HN0910R	●	100	79	22	40	3	10	
HFM160125B40HN0912R	●	125	96	27	50	3	12	
HFM160160B40HN0915R	●	160	100	116	32	3	15	
HFM160200C60HN0925R	○	200	125	141	40	3	25	
HFM160250C60HN0930R	○	250	160	176	40	3	30	

ON*U

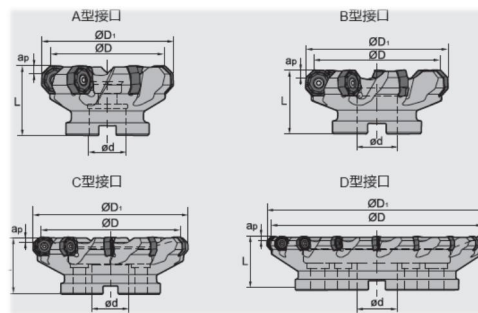
General Face Milling Inserts

Insert Style	Specification/Item	Dimensions (mm)					Coated		
		L	ϕ IC	S	d	r	MP8110	MP8120	MM8120
	ONMU060408ANN-GL	6.15	15.875	5.54	6.0	0.8		●	
	ONMU060408ANN-GM	6.15	15.875	5.54	6.0	0.8		●	
	ONHU060408ANN-GM	6.15	15.875	5.54	6.0	0.8		●	

Coarse Pitch

HFM145

Arbor

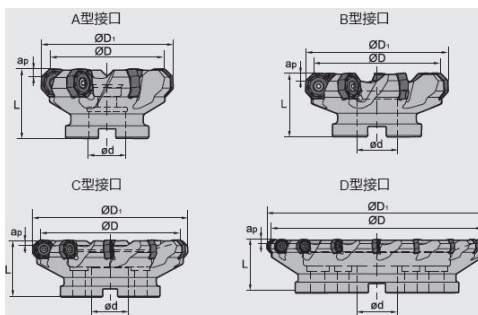


Arbor Type	Stock	Dimensions (mm)					Teeth	Gauge Insert
		ΦD	ΦD1	Φd	L	apMax		
HFM145050A220N0605RC	○	50	59	22	40	4.0	5	ON*U06 04
HFM145063A220N0606RC	○	63	72	27	50	4.0	6	
HFM145080A270N0607RC	○	80	90	27	50	4.0	7	
HFM145100A320N0608RC	○	100	110	32	50	4.0	8	
HFM145125B400N0609RC	○	125	135	40	63	4.0	9	
HFM145160C400N0610RC	○	160	170	40	63	4.0	10	

Close Pitch

HFM145

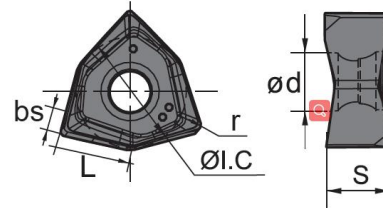
Arbor

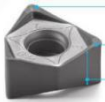


Arbor Type	Stock	Dimensions (mm)					Teeth	Gauge Insert
		ΦD	ΦD1	Φd	L	apMax		
HFM145050A220N0604RC	●	50	59	22	40	4.0	5	ON*U060 4
HFM145063A270N0605RC	●	63	72	27	50	4.0	7	
HFM145080A270N0606RC	●	80	90	27	50	4.0	9	
HFM145100A320N0608RC	●	100	110	32	50	4.0	11	
HFM145125B400N06210RC	●	125	135	40	63	4.0	14	
HFM145160C400N0612RC	●	160	170	40	63	4.0	18	

WNHU

Negative shoulder milling inserts

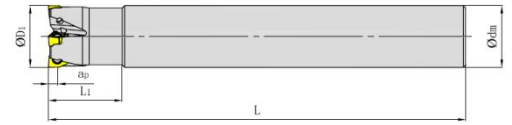


Insert Style	Specification/Item	Dimensions (mm)					Coated		
		L	ØI.C	d ₁	S	R	MP8110	MP8120	MM8120
	WNHU060408PNR-GM	5.7	9.525	3.5	4.0	0.8		●	
	WNHU080608PNR-GM	7.7	12.7	4.4	5.4	0.8		●	

Straight Shank

HSM190

Shoulder Milling Shank

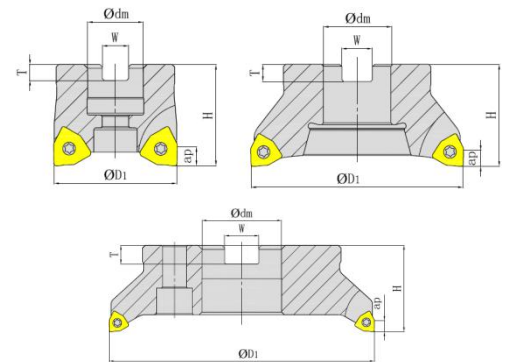


Shank Code	Stock	Dimensions (mm)					Teeth	Gauge Insert
		ΦD	Φd	L	L_1	a_p Max		
HSM190025C25WN0602RC	●	25	25	100	30	5.7	2	WN*U060 408
HSM190032C25WN0603RC	●	32	25	120	40	5.7	3	
HSM190040C32WN0604RC	○	40	32	140	40	5.7	4	
HSM190050C40WN0605RC	○	50	40	169	40	5.7	5	

Mandrel

HSM190

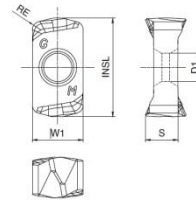
Shoulder Milling Arbor




Arbor Code	Stock	Dimensions (mm)				Teeth	Gauge Insert
		ΦD_1	Φdm	L	a_p Max		
HSM190050A22WN0804R	●	50	22	40	7.5	4	WN*U080608
HSM190063A22WN0806R	●	63	22	40	7.5	6	
HSM190080A27WN0807R	●	80	27	50	7.5	7	
HSM190100B32WN0808R	○	100	32	50	7.5	8	
HSM190125B40WN0811R	○	125	40	63	7.5	11	
HSM190160C40WN0812R	○	160	40	63	7.5	12	
HSM190200C60WN0816R	○	200	60	63	7.5	16	

LNMU

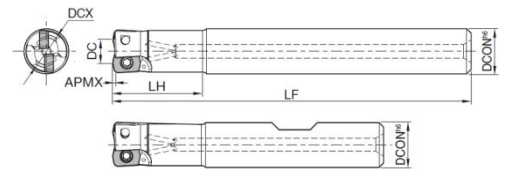
Negative High Feed Milling Insert



Insert Style	Specification/Item	Dimensions (mm)					Coated		
		W1	D1	S	L	RE	MP8110	MP8120	MM8120
	LNMU1106T3-GL	6.2	3.45	3.96	11.9	1.0		●	
	LNMU1106T3-GM	6.2	3.45	3.96	11.9	1.0		●	

HHM190

High Feed Milling Shank



Shank Code	Stock	Dimensions (mm)						Teeth	Gauge Insert
		DCX	DC	Dcon	LF	LH	a _p Max		
HHM190016S16LN1102R	○	16	8	16	100	30	1.0	2	LNMU11
HHM190020S20LN1103R	○	20	12	20	130	50	1.0	3	
HHM190025S25LN1104R	●	25	17	25	140	60	1.0	4	
HHM190032S32LN1105R	●	32	24	32	150	70	1.0	5	

Technical Information

◆ Cutting Speed

$$V_c = \frac{\pi \times D_c \times n}{1000} \quad (\text{m/min})$$

◆ Spindle Speed

$$n = \frac{1000 \times V_c}{\pi \times D_c} \quad (\text{rev/min})$$

◆ Table Feed Speed

$$V_f = f_z \times n \times z_n \quad (\text{mm/min})$$

◆ Feed Per Tooth

$$f_z = \frac{V_f}{n \times Z_n} \quad (\text{mm/z})$$

◆ Feed Per Revolution

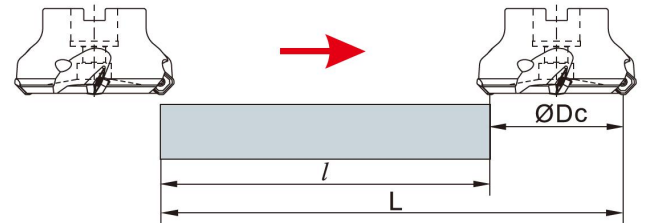
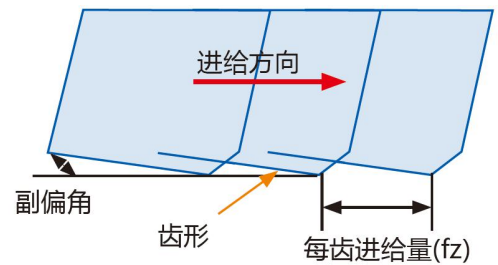
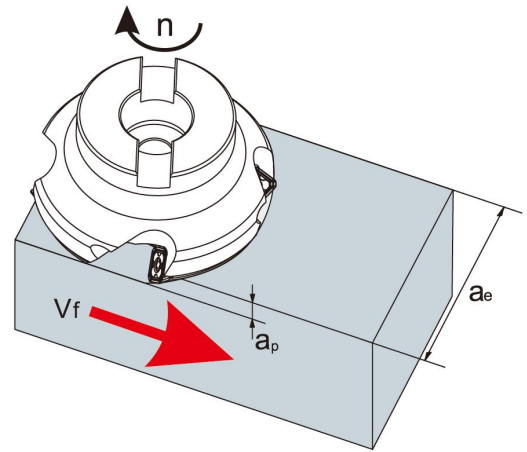
$$f_n = \frac{V_f}{n} \quad (\text{mm/rev})$$

◆ Processing Time

$$T_c = \frac{L}{V_f} \quad (\text{min})$$

◆ Metal Removal Rate

$$Q = \frac{a_p \times a_e \times V_f}{1000} \quad (\text{cm}^3/\text{min})$$



V_c : Cutting Speed (m/min)

f_z : Feed Per Tooth(mm/z)

z_n : Number of cutter teeth,

f_n : Feed Per Revolution(mm/rev)

V_f : Table Feed Speed(mm/min)

n : Spindle Speed (rev/min)

T_c : Processing Time(min)

L : Actual cutting distance(mm)

D_c : Cutter diameter,(mm)

π : $\pi \approx 3.14$

Q : Metal Removal Rate (cm³/min)



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