



INDEXABLE TOOLS

ENGLISH VERSION

COMPANY INTRODUCTION

AHNO

Founded by the returnee Dr. Ke Yashi, Suzhou AHNO Precision Cutting Tool Technology Co., Ltd. was established in 2002. With over 20 years of development, the company has become one of the most influential companies in the field of metal cutting tools in China. As of 2023, AHNO Group has more than 1300 employees, 6 tool factories and over 23 chain grinding and coating service centers.

AHNO has always been customer-centric and adhere to independent R & D and innovative practice. It is committed to providing domestic high-end CNC tools and services, and continues to help companies to achieve cost reduction and efficiency increase. The purpose is to provide international first-class competitiveness for high-end manufacturing industry in China.

In 2021, AHNO Group invested in the construction of AHNO Zhuzhou Inserts Industrial Park in Zhuzhou. It's planned to build a total of 5,4000 square meters of workshop in the first and second phases of the project, with an annual production capacity of about 72 million pieces. Relying on Zhuzhou's complete supporting facilities and bringing in foreign advanced equipment and manufacturing technology, it is to produce high-quality carbide and ceramic inserts.



National layout

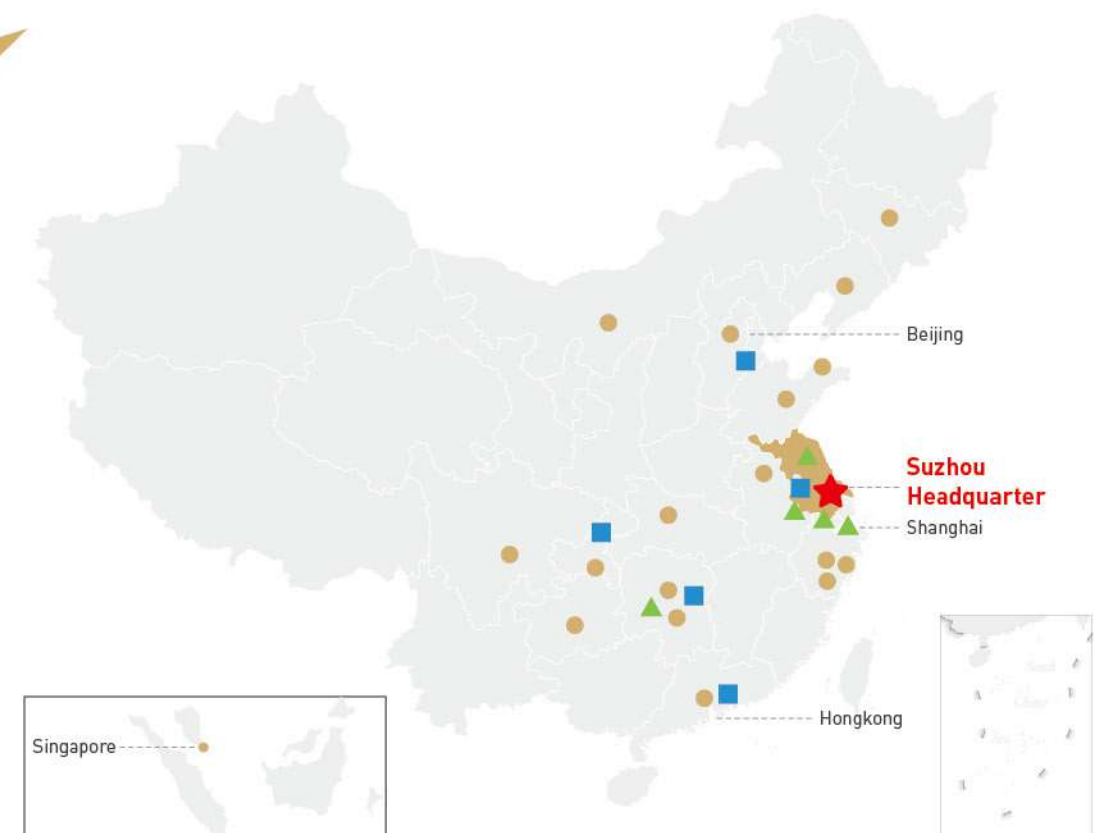
6⁺

National Factories

23⁺

National Grinding and
coating Service Center

- ★ Headquarter
- ▲ Factory
- Coating Center X18
- Coating Center X 5



CONTENTS

	Contents	Page
A	Turning Series	5
	Name Code System-ISO Turning Inserts	6
	Turning Materials Overview	10
	Turning Chipbreakers Overview	14
	ISO Indexable Inserts-Negative	22
	ISO Indexable Inserts-Positive	42
	Finishing Inserts Series	53
	Ceramic Inserts Series	56
	Grooving Insert series	58
	Grooving Insert Names	58
	rooving Insert Materials Overview	60
	Grooving Insert Chipbreakers Overview	62
	Grooving Insert Names	63
	Grooving Holder	64
	Grooving Insert	65
B	Milling Series	67
	Name Code System-Milling Inserts	68
	Milling Cutter Names	72
	Milling Materials Overview	74
	Milling Catalog	78
	Face Milling Cutter	84
	Square Milling Cutter	104
	Corn Milling Cutter	124
	High Feed Inserts	128
	Chamfer Series	138
	Ceramic Series	142
	Cutting Parameter	152
C	Drilling Series	155
	Drilling Insert Names	156
	Drilling Holder Names	158
	Drilling Materials Overview	159
	Drill Insert Series	162
	Indexable Insert	164
	Indexable Insert Drill	166
D	Cutting Parameter	178
	Technical Information	180
	Insert Failure Forms and Analysis	181
	Calculation Formula	182
	AHNO Milling Cutter Technology Application	187
	Application Information	196



TURNING

ISO Turning

Insert ISO Code System

Turning Inserts
according to ISO 1832 Standard Code System

Example 1:

C	N	M	G	12	04	08	-	P	M	A
1	2	3	4	5	6	7		12	13	14

1. Insert shape

Symbol	Shape	Symbol	Shape
A		M	
B		O	
C		P	
D		R	
E		S	
H		T	
K		V	
L		W	

3. Tolerance

Tolerance(mm)	d	m	s
	A	± 0,025	± 0,005
	C	± 0,025	± 0,013
	E	± 0,025	± 0,025
	F	± 0,013	± 0,005
	G	± 0,025	± 0,025
	H	± 0,013	± 0,013
	J ¹	± 0,05-0,15 ²	± 0,005
	K ¹	± 0,05-0,15 ²	± 0,013
	L ¹	± 0,05-0,15 ²	± 0,025
	M	± 0,05-0,15 ²	± 0,08-0,20 ²
	N	± 0,05-0,15 ²	± 0,08-0,20 ²
	U	± 0,08-0,25 ²	± 0,13-0,38 ²

¹ The insert has finishing minor cutting edge.² Tolerance is different by insert size. Please see ISO 1832.

2. Relief Angle

Symbol	Shape	Symbol	Shape
A		N	
B		P	
C			
D			
E			
F			
G			

4. Insert Machining and Figure

Symbol	Shape	Symbol	Shape	Symbol	Shape
A		H		R	
B		J		T	
C		M		U	
F		N		W	
G		Q		X	Indexable insert drawing or detailed description is needed

Insert ISO Code System

ISO Turning

Example 2:

C	C	G	T	06	02	04	E	L
1	2	3	4	5	6	7	8	9

5. Cutting Edge Length

Insert Shape											
IC Diameter d		C		D		R		S		T	
mm	Inch	Size	l	Size	l	Size	l	Size	l	Size	l
3,97	5/32									06	6,9
5	0,197					05				09	9
5,56	7/32					06					
6	0,236					07					
6,35	2/8	06	6,4	07	7,7	08				11	11
8	0,315					09				16	16,5
9,525	3/8	09	9,6	11	11,6	12				16	16,5
10	0,394					13					
12	0,472					14					
12,7	4/8	12	12,9	15	15,5	16				22	22,1
15,875	5/8	16	16,1			17				27	27
16	0,63					18					
17,46	11/16					19					
19,05	6/8	19	19,3			20					
20	0,787					21					
25	0,984					22					
25,4	8/8	25	25,8			23					
32	1,26					24					

¹ Inch[00]

6. Insert Thickness

Figure	Thickness s(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	9,52

7. Corner Radius

Shape	Radius r (mm)	
	01	0,1
	02	0,2
	04	0,4
	08	0,8
	12	1,2
	16	1,6
	24	2,4
	M0	Metric (Diameter unit is mm)
	00	Inch (Inch converts to mm)

8. Cutting Edge Figure

Symbol	Figure
F	
E	
T	
S	

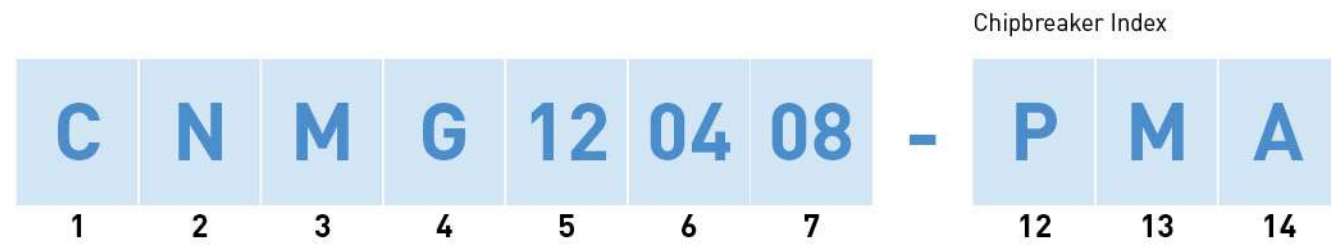
9. Cutting Direction

Figure

ISO Turning

Insert ISO Code System

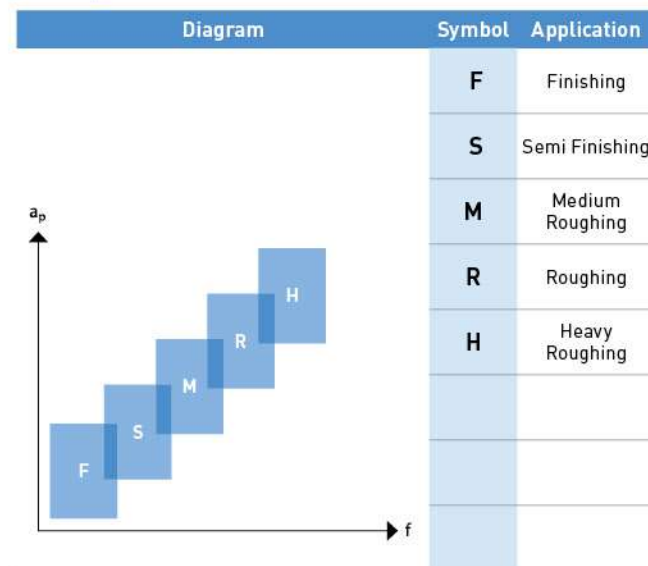
Carbide Cutting Tool Material Name Code



12. Main Materials

Symbol	Material
P	Steel
M	Stainless Steel
K	Cast Iron
N	Nonferrous Metals
S	Hard-to-machine Materials
H	Hard Materials
U	General

13. Chip Area



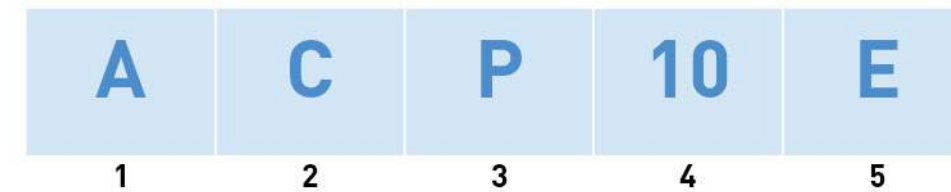
14. Application

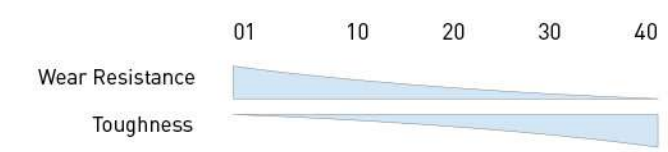
Symbol	Recommendation
A	1 st choice
B	2 nd choice
C	3 rd choice
X	Chip First
W	Wiper

ISO Turning

Insert ISO Code System

Example:



Function No.	Description	Details			
1	AHNO				
2	Basic Materials & Coating Code	C	Carbide +CVD	V	Cermet +PVD
		P	Carbide + PVD	I	Sialon Ceramics
		B	CBN	W	Whisker Ceramics
		D	PCD	N	Carbide
		T	Cermet		
3	First Recommended Application	P	Steel	N	Nonferrous Metals
		M	Stainless Steel	S	Hard-to-machine Materials
		K	Cast Iron	H	Hard Materials
4	ISO Application Range				
5	Generation Code				

ISO Turning

Insert ISO Code System

Turning Materials Overview

Turning Materials Application																						
AHNO Turning Materials Code	ISO Group	Coating Technology	Workpiece Material Group						Application Range											Technology Description		
			P	M	K	S	N	H	01	05	10	15	20	25	30	35	40	45	50			
ACP10E	P10	CVD																				First choice for continuous machining of steels and Nodular Cast Iron. New Al2O3 coating and post-treatment technology increases the wear resistance of the material with stable working conditions.
	K20																					
ACP10B	P10	CVD																				The upgraded material of continuous processing of steel parts and ductile iron adopts a newly developed new generation of continuous processing coating of steel parts. The choice of stable working conditions and high efficiency.
	K20																					
ACP10D	P10	CVD																				Upgraded materials for continuous processing of steel parts and ductile iron, the new directional grain technology improves the efficiency and life, optimizes the stability of the matrix material, and can also be applied to slight intermittent occasions when finishing.
	K20																					
ACP20E	P20	CVD																				First choice for general machining of steels. Excellent universal performance is suitable for most conditions. In stable machining conditions, it can range from finishing to roughing, and can also be used for interrupted turning.
	K30																					
ACP20B	P20	CVD																				AHNO new generation of steel parts with universal materials, the new coating achieves excellent versatility, can meet most scenarios, while improving cutting efficiency and cutting durability.
	K30																					
ACP20D	P20	CVD																				The new universal material for steel parts turning processing, directional grain technology improves the efficiency and life, improves the strength and toughness of the matrix, and improves the processing stability under continuous and intermittent conditions.
	K30																					
ACP30E	P30	CVD																				Recommended material for interrupted machining of steels and stainless steel, and heavy cut. It meets the requirements of processing safety in rough machining and harsh working conditions.
	M30																					
ACP30B	P30	CVD																				Recommended material for steel parts and stainless steel turning in intermittent processing and heavy cutting conditions. Newly developed new material improves matrix toughness.
	M30																					
ACK05E	K05	CVD																				The latest recommended material for continuous and efficient processing of cast iron, with the best wear resistance, is also suitable for the processing of hardened materials.
	H20																					
ACK10E	K10	CVD																				First choice for continuous machining of cast iron, with good wear resistance. It is particularly suitable for the machining of grey cast iron.
	H30																					
ACK20E	K20	CVD																				First choice for the machining of cast iron. Excellent material stability and great overall performance. It's also suitable for general interrupted.
	P05																					

● 1st choice ● 2nd choice

ISO Turning

Insert ISO Code System

Turning Materials Overview

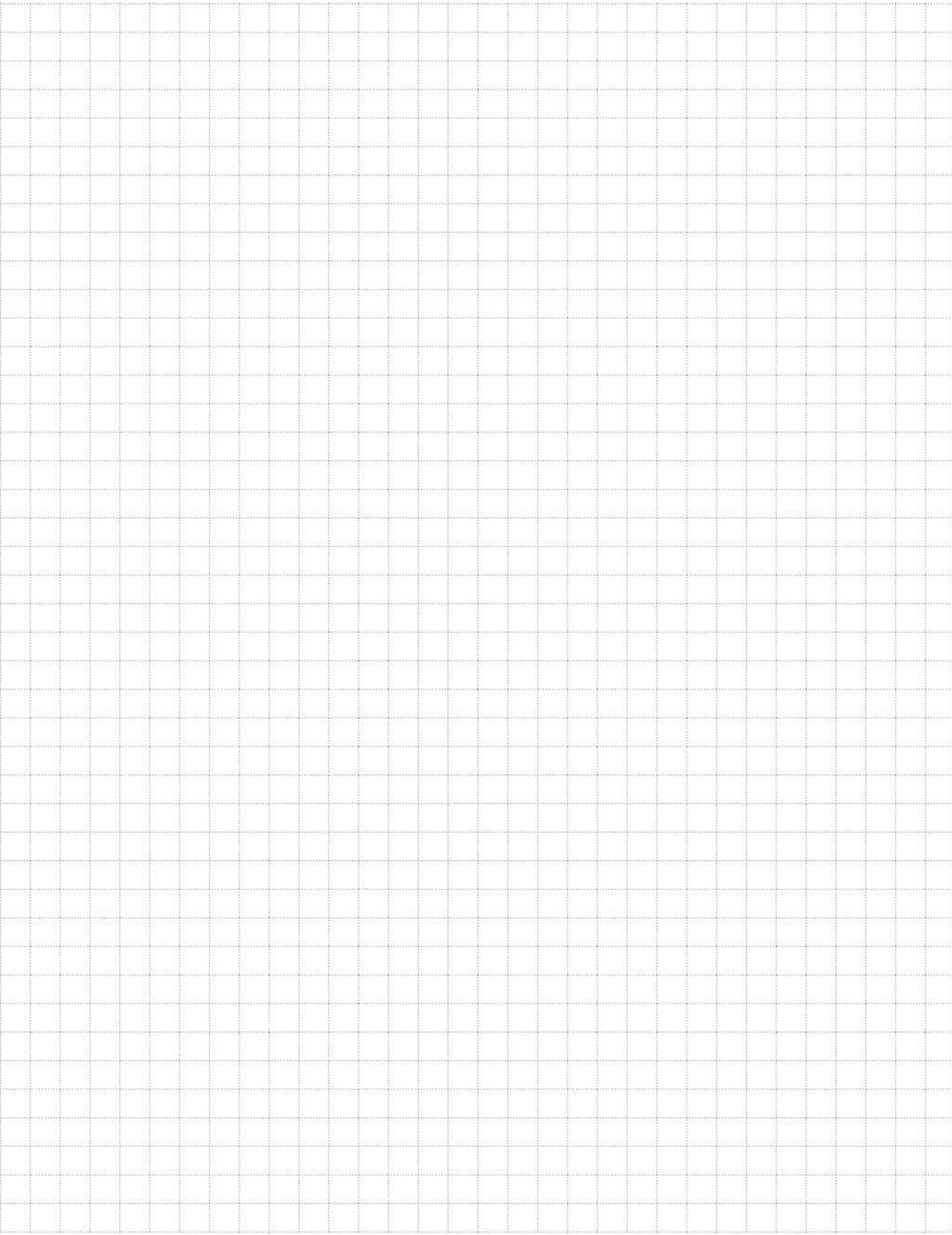
Turning Materials Application																							
AHNO Turning Materials Code	ISO Group	Coating Technology	Workpiece Material Group						Application Range											Technology Description			
			P	M	K	S	N	H	01	05	10	15	20	25	30	35	40	45	50				
ACK30E	K30	CVD			●																	The recommended material for the intermittent processing of cast iron is mainly for the intermittent processing conditions of cast iron, with excellent comprehensive performance.	
	P10		◐																				
APS10C	S10	PVD				●																The preferred material for superalloy turning, with excellent wear resistance, high temperature resistance, smooth coating structure and high hardness matrix. Can also be used for stainless steel processing.	
	M10		●																				
APM10C	M10	PVD		●																		The preferred material for stainless steel turning under continuous and stable conditions, the coating structure with high smoothness and high density is equipped with a high hard matrix for the finishing to semi-finishing of stainless steel.	
	S10				◐																		
APM20B	M20	PVD		●																		Recommended material for continuous processing of stainless steel and superalloy, excellent wear resistance with high silicon coating, excellent performance in general purpose processing and small parts processing.	
	S20				◐																		
APS20C	S20	PVD				●																A universal material for superalloy turning, with strong wear resistance, high temperature resistance, smooth coating structure and stable matrix. Can also be used for stainless steel processing.	
	M20		●																				
APM20C	M20	PVD		●																		The preferred material for stainless steel turning, smooth and dense coating structure and high matrix toughness, suitable for semi-precision to rough processing of stainless steel under continuous and intermittent working conditions.	
	S20				◐																		
APM20E	M20	PVD		●																		Stainless steel general processing of the general material, suitable for stainless steel continuous, intermittent cutting conditions of semi-finishing to rough processing.	
	S20				◐																		
APU20B	M20	PVD		●																		The newly developed universal machining material with smooth surface combined with high silicon coating is suitable for small parts machining of stainless steel and steel parts.	
	P20		◐																				
ATP20	P20	-	●																			The new ceramic material, the combination of fine dispersed hard phase particles, bonding phase strengthening and ring phase structure control, makes it show good cutting toughness, excellent red hardness and anti-crescent wear performance, suitable for continuous working conditions of steel cast iron parts, to achieve long life processing.	
	K20				◐																		
AVP20B	P20	PVD	●																			Ceramic metal material, combined with new coating technology, to achieve efficient processing requirements.	
	K20				◐																		
AWS30	S10	-				●																The new generation of high-toughness whisker ceramic materials for superalloys greatly improves processing stability and tool life.	

● 1st choice ● 2nd choice

Turning Materials Overview

Work Material Group		Tool Material	Coating Class	Application Category				
				01	10	20	30	40
P	Unalloyed Steel / Alloy Steel	Cemented Carbide	CVD		ACP10E/B			
		Cemented Carbide	CVD		ACP10D			
		Cemented Carbide	CVD			ACP20E/B		
		Cemented Carbide	CVD			ACP20D		
		Cemented Carbide	CVD				ACP30E/B	
		Cermet	Uncoated			ATP20		
			PVD		AVP20B			
M	Stainless Steel	Cemented Carbide	PVD	APS10C				
		Cemented Carbide	PVD	APM10C				
		Cemented Carbide	PVD		APM20B			
		Cemented Carbide	PVD			APS20C		
		Cemented Carbide	PVD			APM20C		
		Cemented Carbide	PVD			APM20E		
		Cemented Carbide	PVD			APU20B		
K	Cast Iron	Cemented Carbide	CVD	ACK05E				
		Cemented Carbide	CVD		ACK10E			
		Cemented Carbide	CVD			ACK20E		
		Cemented Carbide	CVD				ACK30E	
S	Superalloys / Titanium Alloys	Cemented Carbide	PVD	APS10C				
		Cemented Carbide	PVD			APS20C		
		Ceramic	无涂层		AWS30			

Turning Materials Overview



ISO Turning

Insert ISO Code System

Negative Turning Insert Chipbreaker Overview

Negative Inserts

Appli- cation	Type	Chipbreaker	Chipbreaker Range Diagram	Chipbreaker Section	CN	DN	SN	TN	VN	WN
Finishing	-MFA				CNMG-MFA	DNMG-MFA	SNMG-MFA	TNMG-MFA	VNMG-MFA	WNMG-MFA
					P.26	P.30	P.34	P.37	P.38	P.41
Semi Finishing	-PSX				CNMG-PSX			TNMG-PSX		WNMG-PSX
					P.22			P.35		P.39
	-SSA				CNMG-SSA					
					P.27					
	-PMA				CNMG-PMA	DNMG-PMA	SNMG-PMA	TNMG-PMA	VNMG-PMA	WNMG-PMA
					P.22	P.28	P.31	P.35	P.38	P.39
Medium Machining	-PMB				CNMG-PMB	DNMG-PMB			VNMG-PMB	WNMG-PMB
					P.22	P.28			P.38	P.39
	-PMD				CNMG-PMD	DNMG-PMD	SNMG-PMD	TNMG-PMD	VNMG-PMD	WNMG-PMD
					P.23	P.28	P.31	P.35	P.38	P.39

ISO Turning

Insert ISO Code System

Negative Turning Insert Chipbreaker Overview

Negative Inserts

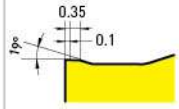
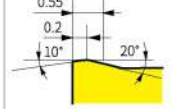
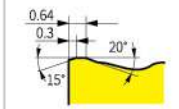
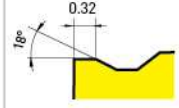
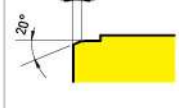
Appli- cation	Type	Chipbreaker	Chipbreaker Range Diagram	Chipbreaker Section	CN	DN	SN	TN	VN	WN
	-MMA				CNMG-MMA	DNMG-MMA	SNMG-MMA	TNMG-MMA	VNMG-MMA	WNMG-MMA
					P.26	P.30	P.34	P.37	P.38	P.41
	-MMD				CNMG-MMD		SNMG-MMD	TNMG-MMD		WNMG-MMD
					P.26		P.34	P.37		P.41
Medium Machining	-MME				CNMG-MME		SNMG-MME	TNMG-MME	VNMG-MME	WNMG-MME
					P.26		P.34	P.37	P.38	P.41
	-KMA				CNMG-KMA	DNMG-KMA	SNMG-KMA	TNMG-KMA	VNMG-KMA	WNMG-KMA
					P.24	P.29	P.33	P.36	P.38	P.39
	-SMA				CNMG-SMA					
					P.27					

ISO Turning

Insert ISO Code System

Negative Turning Insert Chipbreaker Overview

Negative Inserts

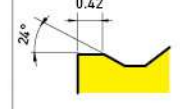
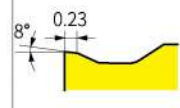
Appli- cation	Type	Chipbreaker	Chipbreaker Range Diagram	Chipbreaker Section	CN	DN	SN	TN	VN	WN
Roughing	-PRA		 ap [mm] vs f [mm/r]		CNMG-PRA	DNMG-PRA	SNMG-PRA	TNMG-PRA		WNMG-PRA
					P.23	P.28	P.31	P.35		P.39
	-PRB		 ap [mm] vs f [mm/r]		CNMG-PRB		SNMG-PRB			
					P.24		P.31			
	-PHA		 ap [mm] vs f [mm/r]		CNMG-PHA		SNMG-PHA			
					P.24		P.32			
Roughing	-KRA		 ap [mm] vs f [mm/r]		CNMG-KRA	DNMG-KRA	SNMG-KRA	TNMG-KRA		WNMG-KRA
					P.24	P.29	P.33	P.36		P.40
	-KRB		 ap [mm] vs f [mm/r]		CNMA-KRB	DNMA-KRB	SNMA-KRB	TNMA-KRB	VNMA-KRB	WNMA-KRB
					P.25	P.29	P.33	P.36	P.38	P.40
	-KRC		 ap [mm] vs f [mm/r]		CNMA-KRC		SNMA-KRC			WNMA-KRC
					P.25		P.33			P.40

Insert ISO Code System

ISO Turning

Negative Turning Insert Chipbreaker Overview

Negative Inserts

Appli- cation	Type	Chipbreaker	Chipbreaker Range Diagram	Chipbreaker Section	CN	DN	SN	TN	VN	WN
Roughing	-KRD		 ap [mm] vs f [mm/r]		CNMG-KRD	DNMG-KRD		TNMG-KRD		WNMG-KRD
					P.25	P.29		P.37		P.40
Roughing	-SRA		 ap [mm] vs f [mm/r]		CNMG-SRA					
					P.27					

ISO Turning

Insert ISO Code System

Positive Turning Insert Chipbreaker Overview

Positive Inserts

Appli- cation	Type	Chipbreaker	Chipbreaker Range Diagram	Chipbreaker Section	CC	DC	SC	TC	VB
Finishing	-MFA				CCMT-MFA	DCMT-MFA	SCMT-MFA	TCMT-MFA	VBMT-MFA
					P.43	P.46	P.48	P.50	P.52
	-PFA				CCMT-PFA	DCMT-PFA			VBMT-PFA
					P.42	P.45			P.51
Semi Finishing	-PSA				CCMT-PSA	DCMT-PSA	SCMT-PSA	TCMT-PSA	VBMT-PSA
					P.42	P.45	P.47	P.49	P.51
	-MSA					DCMT-MSA			VBMT-MSA
						P.46			P.52
Medium Machining	-UMA				CCMT-UMA	DCMT-UMA	SCMT-UMA	TCMT-UMA	
					P.44	P.46	P.48	P.50	
	-PMA				CCMT-PMA	DCMT-PMA	SCMT-PMA	TCMT-PMA	VBMT-PMA
					P.42	P.45	P.47	P.49	P.51

ISO Turning

Insert ISO Code System

Positive Turning Insert Chipbreaker Overview

Positive Inserts

Appli- cation	Type	Chipbreaker	Chipbreaker Range Diagram	Chipbreaker Section	CC	DC	SC	TC	VB
Medium Machining	-MMA				CCMT-MMA	DCMT-MMA	SCMT-MMA	TCMT-MMA	
					P.44	P.46	P.48	P.50	
	-KMA				CCMT-KMA	DCMT-KMA	SCMT-KMA	TCMT-KMA	
					P.43	P.46	P.48	P.50	
Roughing	-PRA				CCMT-PRA	DCMT-PRA	SCMT-PRA	TCMT-PRA	
					P.42	P.45	P.47	P.49	

ISO Turning

Insert ISO Code System

Finishing Insert Overview

Finishing Insert

Appli- cation	Type	Picture	Chipbreaker Range Diagram	Chipbreaker Section	DC	VB/VC
Finishing	-SFA				DCGT-SFA	VBGT-SFA/VCGT-SFA
					P.53	P.54
	-SMD				DCGT-SMD	VBGT-SMD/VCGT-SMD
					P.53	P.54

Insert ISO Code System

ISO Turning

Cermet/Ceramics Insert Overview

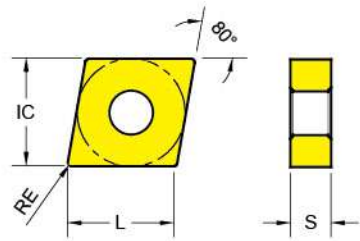
Cermet/Ceramics Insert

Appli- cation	Type	Picture	Chipbreaker Range Diagram	Chipbreaker Section	Specification
Finishing	-FF				TN6G-FF
					P.55
	-FF				TP6H-FF
					P.55

Appli- cation	Picture	Chipbreaker Range Diagram	Chipbreaker Section	Specification
Roughing				RC6X
				P.56
				RP6X
				P.56
				RN6N
				P.56

Negative Insert CN Series

CNMG / CNMA (80° Negative)



Series	L	IC	S
CN** 1204	12.9	12.7	4.76
CN** 1606	16.1	15.875	6.35
CN** 1906	19.3	19.05	6.35

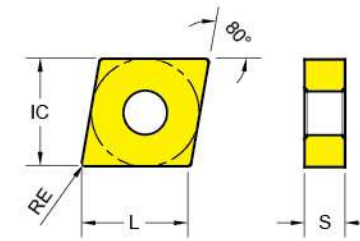
CNMG/CNMA	Type	RE	Fn (mm/rev.)	Ap (mm)	P						M				K				S	
					ACP10E	ACP20E	ACP30E	ACP10B	ACP20B	ACP30B	ACP10D	ACP20D	APM10C	APM20C	APM30C	ACK10E	ACK20E	ACK30E	AP510C	AP520C
-PSX  Semi Finishing	CNMG120404-PSX	0.4	0.06-0.18	0.3-3.5	●	●					●	○								
	CNMG120408-PSX	0.8	0.12-0.36	0.6-3.5	●	●			○		●	○								
	CNMG120412-PSX	1.2	0.18-0.54	0.9-3.5	●	●			○		●	○								
-PMA  Medium Machining	CNMG120404-PMA	0.4	0.08-0.22	0.4-4.3	●	●			○		○									
	CNMG120408-PMA	0.8	0.15-0.44	0.8-4.3	●	●	●		○		●	●								
	CNMG120412-PMA	1.2	0.23-0.66	1.2-4.3	●	●			○		●	●								
	CNMG160608-PMA	0.8	0.15-0.44	0.8-5.3	○	○	○													
	CNMG160612-PMA	1.2	0.23-0.66	1.2-5.3	○	○					○									
	CNMG160616-PMA	1.6	0.33-0.66	1.6-5.3	○	○														
-PMB  Medium Machining	CNMG190608-PMA	0.8	0.15-0.44	0.8-6.3	●	●	●													
	CNMG190612-PMA	1.2	0.23-0.66	1.2-6.3	●	●	●					○								
	CNMG120408-PMB	0.8	0.15-0.44	0.8-4.3	●	●					●	●								
	CNMG120412-PMB	1.2	0.23-0.66	1.2-4.3	●	●					●	●								

● Standing stock ○ Optional stock

Cutting Parameters				Vc(m/min.)																					
ISO	Material Group	Tensile Strength (N/mm²)	HB	ACP10		ACP20		ACP30		APM10		APM20		APS10		APS20		ACK05		ACK10		ACK20		ACK30	
				Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
P	Low Carbon Steel Carbon Steel	←600	←180	250	490	160	365	110	280																
		←950	←280	150	335	100	245	75	160																
	Low-alloyed Steel	700-950	200-280	120	230	90	215	70	145																
		950-1200	280-355	90	210	75	180	65	140																
	High-alloyed Steel	1200-1400	355-415	70	175	55	135	45	90																
M	Austenitic	675	200							125	240	100	225	125	240	100	225								
	Duplex Stainless Steel	778	230							100	160	90	150	100	160	90	150								
	PH Stainless Steel	1013	300							90	150	80	125	90	150	80	125								
K	Grey Cast Iron	700	220	150	380	110	340											190	500	170	480	150	350	130	280
	Nodular Cast Iron	880	260	90	280	90	210											170	280	150	260	90	220	80	180
	Malleable Cast Iron	800	250	120	300	90	220											140	320	120	300	90	240	80	200
S	Cobalt Base Alloy Nickel Base Alloy	1100	250-320							32	48	30	45	32	48	30	45								
	Titanium Alloy	1260	370							36	50	32	48	36	50	32	48								
N	Aluminum	260	75																						
	Aluminium Alloy	447	130																						
H	Hardened Steel	-	50-60HRC															45	55						
	Hardened Cast Iron	-	55HRC															45	55						

Negative Insert CN Series

CNMG / CNMA (80° Negative)



Series	L	IC	S
CN** 1204	12.9	12.7	4.76
CN** 1606	16.1	15.875	6.35
CN** 1906	19.3	19.05	6.35

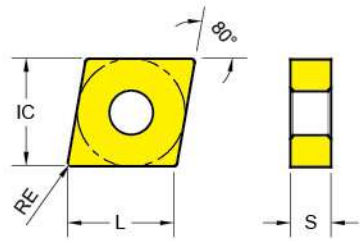
CNMG/CNMA	Type	RE	Fn (mm/rev.)	Ap (mm)	P						M				K				S	
					ACP10E	ACP20E	ACP30E	ACP10B	ACP20B	ACP30B	ACP10D	ACP20D	APM10C	APM20C	APM30C	ACK10E	ACK20E	ACK30E	AP510C	AP520C
-PMD  Medium Machining	CNMG120404-PMD	0.4	0.12-0.36	0.4-4.8	○			●												
	CNMG120408-PMD	0.8	0.15-0.40	0.8-4.8	○			●		○	●									
	CNMG120412-PMD	1.2	0.15-0.40	1.0-4.8	○			●		○	●									
	CNMG160608-PMD	0.8	0.20-0.48	1.5-7.0	○			●												
	CNMG160612-PMD	1.2	0.23-0.48	1.5-7.0	○			●												
	CNMG190608-PMD	0.8	0.25-0.60	2.0-8.0	○		○													
-PRA  Roughing	CNMG190612-PMD	1.2	0.30-0.60	2.0-8.0	○		●													
	CNMG190616-PMD	1.6	0.35-0.70	2.0-8.0	○		●													
	CNMG120408-PRA	0.8	0.20-0.50	0.7-7.0	○		○	●	●		●						●	●	○	
	CNMG120412-PRA	1.2	0.25-0.70	1.0-7.0	○		●	●	●		●						○	●	○	
	CNMG160608-PRA	0.8	0.20-0.50	0.7-8.0	○		●										●	○		
	CNMG160612-PRA	1.2	0.25-0.70	1.0-8.0	○		○	●			○						●	○		
	CNMG160616-PRA	1.6	0.30-0.80	1.5-9.5	○		●	●			○						●	○		
	CNMG190612-PRA	1.2	0.25-0.70	1.0-10.0	○		●				○						●	○		
	CNMG190616-PRA	1.6	0.30-0.80	1.5-10.0	○		●	○	○		○						●	○		

● Standing stock ○ Optional stock

Cutting Parameters				Vc(m/min.)																						
ISO	Material Group	Tensile Strength (N/mm²)	HB	ACP10		ACP20		ACP30		APM10		APM20		APS10		APS20		ACK05		ACK10		ACK20		ACK30		
				Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	
P	Low Carbon Steel	←600	←180	250	490	160	365	110	280																	
	Carbon Steel	←950	←280	150	335	100	245	75	160																	
	Low-alloyed Steel	700-950	200-280	120	230	90	215	70	145																	
	High-alloyed Steel	950-1200	280-355	90	210	75	180	65	140																	
		1200-1400	355-415	70	175	55	135	45	90																	
M	Austenitic	675	200							125	240	100	225	125	240	100	225									
	Duplex Stainless Steel	778	230							100	160	90	150	100	160	90	150									
	PH Stainless Steel	1013	300							90	150	80	125	90	150	80	125									
K	Grey Cast Iron	700	220	150	380	110	340											190	500	170	480	150	350	130	280	
	Nodular Cast Iron	880	260	90	280	90	210											170	280	150	260	90	220	80	180	
	Malleable Cast Iron	800	250	120	300	90	220											140	320	120	300	90	240	80	200	
S	Cobalt Base Alloy	1100	250-320							32	48	30	45	32	48	30	45									
	Nickel Base Alloy	1260	370							36	50	32	48	36	50	32	48									
N	Aluminum	260	75																							
	Aluminium Alloy	447	130																							
H	Hardened Steel	-	50-60HRC															45	55							
	Hardened Cast Iron	-	55HRC															45	55							

Negative Insert CN Series

CNMG / CNMM (80° Negative)



Series	L	IC	S
CN** 1204	12.9	12.7	4.76
CN** 1606	16.1	15.875	6.35
CN** 1906	19.3	19.05	6.35
CN** 2509	25.8	25.4	9.52

CNMG/CNMA					P								M				K				S	
Type	RE	Fn (mm/rev.)	Ap (mm)	ACP10E	ACP20E	ACP30E	ACP10B	ACP20B	ACP30B	ACP10D	ACP20D	APM10C	APM20B	APM20C	APM20E	ACK05E	ACK10E	ACK20E	ACK30E	APS10C	APS20C	
-PRB  Roughing	CNMG190612-PRB	1.2	0.4-0.7	4.0-8.0			●															
	CNMG190616-PRB	1.6	0.4-0.8	4.0-9.0			●															
	CNMG190624-PRB	2.4	0.4-1.0	4.0-10.0			●															
	CNMG250924-PRB	2.4	0.4-1.0	4.0-10.0			●															
-PHA  Recutting	CNMM190616-PHA	1.6	0.5-1.1	4.0-8.0			●															
	CNMM190624-PHA	2.4	0.5-1.2	4.0-9.0			●															
	CNMM250924-PHA	2.4	0.5-1.3	4.0-12.0			●															
-KMA  Medium Machining	CNMG120404-KMA	0.4	0.08-0.22	0.4-4.3												◎	●	●	◎			
	CNMG120408-KMA	0.8	0.15-0.44	0.6-5.0													●	●	●	●		
	CNMG120412-KMA	1.2	0.23-0.66	1.2-4.3													◎	●	●	●		
	CNMG160608-KMA	0.8	0.15-0.44	0.5-7.0															●	◎		
	CNMG160612-KMA	1.2	0.23-0.66	0.8-7.0															●	◎		
	CNMG190608-KMA	0.8	0.15-0.44	0.5-8.5															●	◎		
	CNMG190612-KMA	1.2	0.23-0.66	0.6-8.5															●	◎		
	CNMG190616-KMA	1.6	0.25-0.80	1.0-8.5															●	◎		
-KRA  Roughing	CNMG120408-KRA	0.8	0.8	0.8													●	●	●			
	CNMG120412-KRA	1.2	0.26-0.72	1.2-5.2														●	●	●		

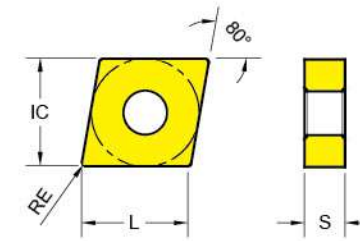
● Standing stock ◎ Optional stock

● Standing stock ◎ Optional stock

Cutting Parameters				Vc(m/min.)													
ISO	Material Group	Tensile Strength (N/mm²)	HB	ACP10	ACP20	ACP30	APM10	APM20	APS10	APS20	ACK05	ACK10	ACK20	ACK30			
P	Low Carbon Steel	≤600	≤180	250 490	160 365	110 280											
	Carbon Steel	≤950	≤280	150 335	100 245	75 160											
	Low-alloyed Steel	700-950	200-280	120 230	90 215	70 145											
	High-alloyed Steel	950-1200	280-355	90 210	75 180	65 140											
M	Austenitic	675	200				125 240	100 225	125 240	100 225							
	Duplex Stainless Steel	778	230				100 160	90 150	100 160	90 150							
	PH Stainless Steel	1013	300				90 150	80 125	90 150	80 125							
K	Grey Cast Iron	700	220	150 380	110 340						190 500	170 480	150 350	130 280			
	Nodular Cast Iron	880	260	90 280	90 210						170 280	150 260	90 220	80 180			
	Malleable Cast Iron	800	250	120 300	90 220						140 320	120 300	90 240	80 200			
S	Cobalt Base Alloy	1100	250-320				32 48	30 45	32 48	30 45							
	Nickel Base Alloy	1260	370				36 50	32 48	36 50	32 48							
N	Aluminum	260	75														
	Aluminum Alloy	447	130														
H	Hardened Steel	-	50-60HRC								45 55						
	Hardened Cast Iron	-	55HRC								45 55						

Negative Insert CN Series

CNMG / CNMA (80° Negative)



Series	L	IC	S
CN** 1204	12.9	12.7	4.76

CNMG/CNMA					P								M				K				S		
Type	RE	Fn (mm/rev.)	Ap (mm)		ACP10E	ACP20E	ACP30E	ACP10B	ACP20B	ACP30B	ACP10D	ACP20D	APM10C	APM20B	APM20C	APM20E	ACK05E	ACK10E	ACK20E	ACK30E	AP510C	AP520C	
-KRB  Roughing	CNMA120404-KRB	0.4	0.10-0.30	0.6-6.3														●	●	◎			
	CNMA120408-KRB	0.8	0.20-0.60	1.2-6.3														◎	●	●	◎		
	CNMA120412-KRB	1.2	0.30-0.90	1.8-6.3														◎	●	●	●		
-KRC  Roughing	CNMA120408-KRC	0.8	0.20-0.50	0.6-6.3													◎	◎	◎				
	CNMA120412-KRC	1.2	0.25-0.50	1.2-6.3														◎	◎	◎			
	CNMA120416-KRC	1.6	0.30-0.70	1.8-6.3														◎	◎	◎			
-KRD  Roughing	CNMG120408-KRD	0.8	0.20-0.45	1.0-4.0															●	◎			
	CNMG120412-KRD	1.2	0.20-0.60	1.2-4.0																●	◎		

●

 Standing stock

◎

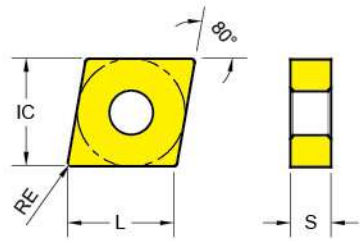
 Optional stock

● Standing stock ◎ Optional stock

Cutting Parameters				Vc(m/min.)													
ISO	Material Group	Tensile Strength (N/mm²)	HB	ACP10	ACP20	ACP30	APM10	APM20	APS10	APS20	ACK05	ACK10	ACK20	ACK30			
P	Low Carbon Steel	≤600	≤180	250 490	160 365	110 280											
	Carbon Steel	≤950	≤280	150 335	100 245	75 160											
	Low-alloyed Steel	700-950	200-280	120 230	90 215	70 145											
	High-alloyed Steel	950-1200	280-355	90 210	75 180	65 140											
M	Austenitic	675	200				125 240	100 225	125 240	100 225							
	Duplex Stainless Steel	778	230				100 160	90 150	100 160	90 150							
	PH Stainless Steel	1013	300				90 150	80 125	90 150	80 125							
K	Grey Cast Iron	700	220	150 380	110 340						190 500	170 480	150 350	130 280			
	Nodular Cast Iron	880	260	90 280	90 210						170 280	150 260	90 220	80 180			
	Malleable Cast Iron	800	250	120 300	90 220						140 320	120 300	90 240	80 200			
S	Cobalt Base Alloy	1100	250-320				32 48	30 45	32 48	30 45							
	Nickel Base Alloy	1260	370				36 50	32 48	36 50	32 48							
N	Aluminum	260	75														
	Aluminum Alloy	447	130														
H	Hardened Steel	-	50-60HRC								45 55						
	Hardened Cast Iron	-	55HRC								45 55						

Negative Insert CN Series

CNMG / CNMA (80° Negative)



Series	L	IC	S
CN** 1204	12.9	12.7	4.76

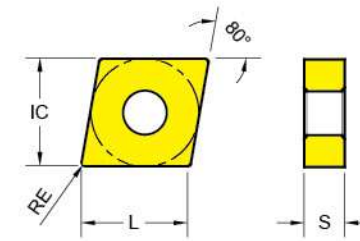
CNMG/CNMA	Type	RE	Fn (mm/rev.)	Ap (mm)	P								M			K			S	
					ACP10E	ACP20E	ACP30E	ACP10B	ACP20B	ACP30B	ACP10D	ACP20D	APM10C	APM20C	APM30C	ACK10E	ACK20E	ACK30E	AP510C	AP520C
-MFA  Finishing	CNMG120404-MFA	0.4	0.05-0.20	0.5-2.5									●	●	●					◎
	CNMG120408-MFA	0.8	0.05-0.25	0.5-2.5									●	●	●					◎
	CNMG120412-MFA	1.2	0.05-0.35	0.5-2.5									●	●	●					
-MMA  Medium Machining	CNMG120404-MMA	0.4	0.08-0.22	0.30-5.5									◎	●	●					
	CNMG120408-MMA	0.8	0.15-0.42	0.60-5.5									●	●	●					
	CNMG120412-MMA	1.2	0.22-0.65	0.90-5.5									◎	●	●					
-MMD  Medium Machining	CNMG120404-MMD	0.4	0.08-0.22	0.30-5.5									●	●	●					
	CNMG120408-MMD	0.8	0.15-0.42	0.60-5.5									●	●	●					
	CNMG120412-MMD	1.2	0.22-0.65	0.90-5.5									●	●	●					
-MME  Medium Machining	CNMG120404-MME	0.4	0.08-0.22	0.30-5.5									◎	●	●					◎
	CNMG120408-MME	0.8	0.15-0.42	0.60-5.5									◎	●	●					◎

● Standing stock ◎ Optional stock

Cutting Parameters				Vc(m/min.)																					
ISO	Material Group	Tensile Strength (N/mm²)	HB	ACP10		ACP20		ACP30		APM10		APM20		APS10		APS20		ACK05		ACK10		ACK20		ACK30	
				Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
P	Low Carbon Steel	≤600	≤180	250	490	160	365	110	280																
	Carbon Steel	≤950	≤280	150	335	100	245	75	160																
	Low-alloyed Steel	700-950	200-280	120	230	90	215	70	145																
	High-alloyed Steel	950-1200	280-355	90	210	75	180	65	140																
		1200-1400	355-415	70	175	55	135	45	90																
M	Austenitic	675	200							125	240	100	225	125	240	100	225								
	Duplex Stainless Steel	778	230							100	160	90	150	100	160	90	150								
	PH Stainless Steel	1013	300							90	150	80	125	90	150	80	125								
K	Grey Cast Iron	700	220	150	380	110	340											190	500	170	480	150	350	130	280
	Nodular Cast Iron	880	260	90	280	90	210											170	280	150	260	90	220	80	180
	Malleable Cast Iron	800	250	120	300	90	220											140	320	120	300	90	240	80	200
S	Cobalt Base Alloy	1100	250-320							32	48	30	45	32	48	30	45								
	Nickel Base Alloy	1260	370							36	50	32	48	36	50	32	48								
N	Aluminum	260	75																						
	Aluminium Alloy	447	130																						
H	Hardened Steel	-	50-60HRC															45	55						
	Hardened Cast Iron	-	55HRC															45	55						

CNMG / CNMA (80° Negative)

Negative Insert CN Series



Series	L	IC	S
CN** 1204	12.9	12.7	4.76

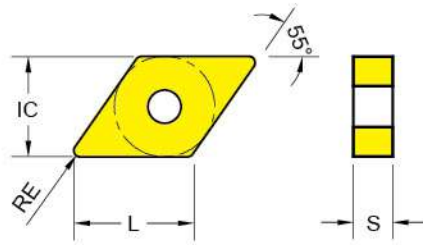
CNMG/CNMA	Type	RE	Fn (mm/rev.)	Ap (mm)	P								M			S			S	
					ACP10E	ACP20E	ACP30E	ACP10B	ACP20B	ACP30B	ACP10D	ACP20D	APM10C	APM20C	APM30C	ACK10E	ACK20E	ACK30E	AP510C	AP520C
-SSA  Semi Finishing	CNMG120404-SSA	0.4	0.1-0.22	0.4-2.5									●	●	●					●
	CNMG120408-SSA	0.8	0.1-0.22	0.8-2.5									●	●	●					●
-SMA  Medium Machining	CNMG120408-SMA	0.8	0.15-0.3	0.8-3.0									◎	●	●					◎
	CNMG120412-SMA	1.2	0.15-0.3	1.0-3.0									◎	●	●					◎
-SRA  Roughing	CNMG120408-SRA	0.8	0.2-0.3	0.8-3.5									◎	●	●					◎
	CNMG120412-SRA	1.2	0.2-0.3	1.0-3.5									◎	●	●					◎

● Standing stock ◎ Optional stock

Cutting Parameters				Vc(m/min.)									
ISO	Material Group	Tensile Strength (N/mm²)	HB	APS10					APS20				
P	Low Carbon Steel	≤600	≤180	Min					Min				
	Carbon Steel	≤950	≤280	Max					Max				
	Low-alloyed Steel	700-950	200-280										
	High-alloyed Steel	950-1200	280-355										
M	Austenitic	675	200										
	Duplex Stainless Steel	778	230										
	PH Stainless Steel	1013	300										
	Grey Cast Iron	700	220										
K	Nodular Cast Iron	880	260										
	Malleable Cast Iron	800	250										
	Cobalt Base Alloy	1100	250-320										
S	Nickel Base Alloy	1100	250-320										
	Titanium Alloy	1260	370										
N	Aluminum	260	75										
	Aluminium Alloy	447	130										
H	Hardened Steel	-	50-60HRC										
	Hardened Cast Iron	-	55HRC										

Negative Insert DN Series

DNMG / DNMA (55° Negative)



Series	L	IC	S
DN** 1104	11.6	9.525	4.76
DN** 1504	15.5	12.7	4.76
DN** 1506	15.5	12.7	6.35

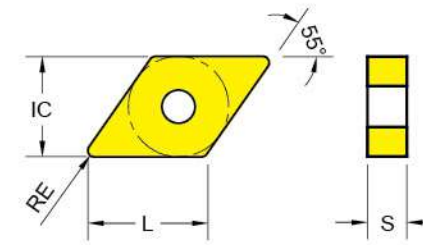
DNMG/DNMA					P								M				K				S	
Type	RE	Fn (mm/rev.)	Ap (mm)	ACP10E	ACP20E	ACP30E	ACP10B	ACP20B	ACP30B	ACP10D	ACP20D	APM10C	APM20B	APM20C	APM20E	ACK05E	ACK10E	ACK20E	ACK30E	APS10C	APS20C	
-PMA  Medium Machining	DNMG110404-PMA	0.4	0.08-0.22	0.4-2.9	●	●																
	DNMG110408-PMA	0.8	0.15-0.44	0.8-2.9	●	●			◎		◎	●										
	DNMG150404-PMA	0.4	0.08-0.22	0.4-3.9	◎	●			◎													
	DNMG150408-PMA	0.8	0.15-0.44	0.8-3.9	●	●	◎		◎		◎	●										
	DNMG150412-PMA	1.2	0.23-0.66	1.2-3.9	●	●					◎	●										
	DNMG150604-PMA	0.4	0.08-0.22	0.4-3.9	●	●	●		◎													
	DNMG150608-PMA	0.8	0.15-0.44	0.8-3.9	●	●	◎		◎													
	DNMG150612-PMA	1.2	0.23-0.66	1.2-3.9	●	●																
-PMB  Medium Machining	DNMG150408-PMB	0.8	0.15-0.44	0.8-3.9	●	●																
	DNMG150412-PMB	1.2	0.23-0.66	1.2-3.9		●																
	DNMG150604-PMB	0.4	0.08-0.22	0.4-3.9	●	●					●	●										
	DNMG150608-PMB	0.8	0.15-0.44	0.8-3.9	●	●					●	●										
	DNMG150612-PMB	1.2	0.23-0.66	1.2-3.9		●																
-PMD  Medium Machining	DNMG150404-PMD	0.4	0.12-0.36	0.5-5.3					◎													
	DNMG150408-PMD	0.8	0.18-0.40	0.9-5.3					◎													
	DNMG150412-PMD	1.2	0.20-0.50	1.3-5.3					◎													
-PRA  Roughing	DNMG150608-PRA	0.8	0.20-0.50	1.0-6.0				◎	●		●							◎				
	DNMG150612-PRA	1.2	0.25-0.70	1.0-6.0				●	●		●							●	◎			

● Standing stock ◎ Optional stock

● Standing stock ◎ Optional stock

Cutting Parameters				Vc(m/min.)													
ISO	Material Group	Tensile Strength (N/mm²)	HB	ACP10	ACP20	ACP30	APM10	APM20	APS10	APS20	ACK05	ACK10	ACK20	ACK30			
P	Low Carbon Steel	≤600	≤180	250 490	160 365	110 280											
	Carbon Steel	≤950	≤280	150 335	100 245	75 160											
	Low-alloyed Steel	700-950	200-280	120 230	90 215	70 145											
	High-alloyed Steel	950-1200	280-355	90 210	75 180	65 140											
M	Austenitic	675	200				125 240	100 225	125 240	100 225							
	Duplex Stainless Steel	778	230				100 160	90 150	100 160	90 150							
	PH Stainless Steel	1013	300				90 150	80 125	90 150	80 125							
K	Grey Cast Iron	700	220	150 380	110 340						190 500	170 480	150 350	130 280			
	Nodular Cast Iron	880	260	90 280	90 210						170 280	150 260	90 220	80 180			
	Malleable Cast Iron	800	250	120 300	90 220						140 320	120 300	90 240	80 200			
S	Cobalt Base Alloy	1100	250-320				32 48	30 45	32 48	30 45							
	Nickel Base Alloy	1260	370				36 50	32 48	36 50	32 48							
N	Aluminum	260	75														
	Aluminum Alloy	447	130														
H	Hardened Steel	-	50-60HRC								45 55						
	Hardened Cast Iron	-	55HRC								45 55						

DNMG / DNMA (55° Negative)



Negative Insert DN Series

Series	L	IC	S
DN** 1504	15.5	12.7	4.76
DN** 1506	15.5	12.7	6.35

DNMG/DNMA					P								M				K				S	
Type	RE	Fn (mm/rev.)	Ap (mm)	ACP10E	ACP20E	ACP30E	ACP10B	ACP20B	ACP30B	ACP10D	ACP20D	APM10C	APM20B	APM20C	APM20E	ACK05E	ACK10E	ACK20E	ACK30E	AP510C	AP520C	
-KMA  Medium Machining	DNMG150404-KMA	0.4	0.08-0.22	0.4-3.9												●	●	●				
	DNMG150408-KMA	0.8	0.15-0.44	0.8-3.9													●	●	●	◎		
	DNMG150412-KMA	1.2	0.23-0.66	1.2-3.9														●	●	◎		
	DNMG150608-KMA	0.8	0.15-0.44	0.8-4.0														●	●	◎		
	DNMG150612-KMA	1.2	0.23-0.66	1.2-4.0														●	●	◎		
-KRA  Roughing	DNMG150608-KRA	0.8	0.18-0.48	0.8-4.6													●	●	◎			
	DNMG150612-KRA	1.2	0.26-0.72	1.2-4.6															◎	◎		
-KRB  Roughing	DNMA150404-KRB	0.4	0.10-0.30	0.6-5.3													●	◎				
	DNMA150408-KRB	0.8	0.20-0.60	1.2-5.3													◎	●	●	◎		
	DNMA150412-KRB	1.2	0.30-0.90	1.8-5.3														◎	●	◎		
	DNMA150608-KRB	0.8	0.20-0.60	1.2-5.3														●	●	◎		
-KRD  Roughing	DNMG150608-KRD	0.8	0.20-0.45	1.0-4.0														●	◎			

●

 Standing stock

◎

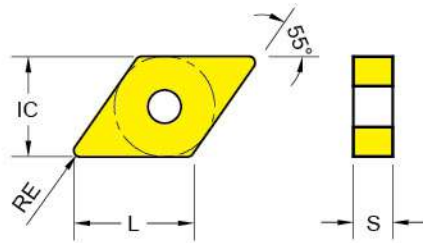
 Optional stock

● Standing stock ◎ Optional stock

Cutting Parameters				Vc(m/min.)													
ISO	Material Group	Tensile Strength (N/mm²)	HB	ACP10	ACP20	ACP30	APM10	APM20	APS10	APS20	ACK05	ACK10	ACK20	ACK30			
P	Low Carbon Steel	≤600	≤180	250 490	160 365	110 280											
	Carbon Steel	≤950	≤280	150 335	100 245	75 160											
	Low-alloyed Steel	700-950	200-280	120 230	90 215	70 145											
	High-alloyed Steel	950-1200	280-355	90 210	75 180	65 140											
M	Austenitic	675	200				125 240	100 225	125 240	100 225							
	Duplex Stainless Steel	778	230				100 160	90 150	100 160	90 150							
	PH Stainless Steel	1013	300				90 150	80 125	90 150	80 125							
K	Grey Cast Iron	700	220	150 380	110 340						190 500	170 480	150 350	130 280			
	Nodular Cast Iron	880	260	90 280	90 210						170 280	150 260	90 220	80 180			
	Malleable Cast Iron	800	250	120 300	90 220						140 320	120 300	90 240	80 200			
S	Cobalt Base Alloy	1100	250-320				32 48	30 45	32 48	30 45							
	Nickel Base Alloy	1260	370				36 50	32 48	36 50	32 48							
N	Aluminum	260	75														
	Aluminum Alloy	447	130														
H	Hardened Steel	-	50-60HRC								45 55						
	Hardened Cast Iron	-	55HRC								45 55						

Negative Insert DN Series

DNMG / DNMA (55° Negative)



Series	L	IC	S
DN** 1504	15.5	12.7	4.76
DN** 1506	15.5	12.7	6.35

					P								M				K				S		
DNMG/DNMA	Type	RE	Fn (mm/rev.)	Ap (mm)	ACP10E	ACP20E	ACP30E	ACP10B	ACP20B	ACP30B	ACP10D	ACP20D	APM10C	APM20B	APM20C	APM20E	ACK05E	ACK10E	ACK20E	ACK30E	AP510C	AP520C	
-MFA  Finishing	DNMG150404-MFA	0.4	0.05-0.20	0.1-1.5									●	●	●	●							
	DNMG150408-MFA	0.8	0.05-0.25	0.1-1.5											●	●	●						
	DNMG150604-MFA	0.4	0.05-0.20	0.1-1.5										●	●	●	●						
	DNMG150608-MFA	0.8	0.05-0.25	0.1-1.5											●	●	●						
-MMA  Medium Machining	DNMG150404-MMA	0.4	0.08-0.22	0.30-2.9											◎	◎							
	DNMG150408-MMA	0.8	0.15-0.42	0.60-2.9												◎	◎						
	DNMG150412-MMA	1.2	0.22-0.65	0.90-2.9												◎	◎						
	DNMG150604-MMA	0.4	0.08-0.22	0.30-3.9										◎	●	●							
	DNMG150608-MMA	0.8	0.15-0.42	0.60-3.9										●	●	●							
	DNMG150612-MMA	1.2	0.22-0.65	0.90-3.9											●	●							

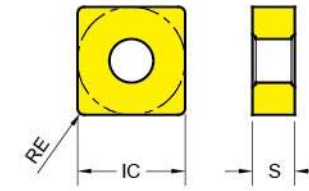
● Standing stock

◎ Optional stock

● Standing stock ◎ Optional stock

Cutting Parameters				Vc[m/min.]																					
ISO	Material Group	Tensile Strength (N/mm²)	HB	ACP10		ACP20		ACP30		APM10		APM20		APS10		APS20		ACK05		ACK10		ACK20		ACK30	
				Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
P	Low Carbon Steel Carbon Steel	← 600	← 180	250	490	160	365	110	280																
		← 950	← 280	150	335	100	245	75	160																
	Low-alloyed Steel	700-950	200-280	120	230	90	215	70	145																
		950-1200	280-355	90	210	75	180	65	140																
	High-alloyed Steel	1200-1400	355-415	70	175	55	135	45	90																
M	Austenitic	675	200							125	240	100	225	125	240	100	225								
	Duplex Stainless Steel	778	230							100	160	90	150	100	160	90	150								
	PH Stainless Steel	1013	300							90	150	80	125	90	150	80	125								
K	Grey Cast Iron	700	220	150	380	110	340											190	500	170	480	150	350	130	280
	Nodular Cast Iron	880	260	90	280	90	210											170	280	150	260	90	220	80	180
	Malleable Cast Iron	800	250	120	300	90	220											140	320	120	300	90	240	80	200
S	Cobalt Base Alloy Nickel Base Alloy	1100	250-320							32	48	30	45	32	48	30	45								
	Titanium Alloy	1260	370							36	50	32	48	36	50	32	48								
N	Aluminum	260	75																						
	Aluminium Alloy	447	130																						
H	Hardened Steel	-	50-60HRC															45	55						
	Hardened Cast Iron	-	55HRC															45	55						

SNMG / SNMA (90° Negative)



Negative Insert SN Series

Series	IC	S
SN** 1204	12.7	4.76
SN** 1506	15.875	6.35
SN** 1906	19.05	6.35
SN** 2509	25.4	9.52

SNMG/SNMA					P								M				K				S	
Type	RE	Fn (mm/rev.)	Ap (mm)	ACP10E	ACP20E	ACP30E	ACP10B	ACP20B	ACP30B	ACP10D	ACP20D	APM10C	APM20B	APM20C	APM20E	ACK05E	ACK10E	ACK20E	ACK30E	APS10C	APS20C	
-PMA  Medium Machining	SNMG120404-PMA	0.4	0.08-0.22	0.4-4.2	●	●				◎												
	SNMG120408-PMA	0.8	0.15-0.44	0.8-4.2	●	●	●			◎												
	SNMG120412-PMA	1.2	0.23-0.66	1.2-4.2	●	●				◎	●											
	SNMG150608-PMA	0.8	0.15-0.44	0.8-5.2	◎	●	◎			◎												
	SNMG150612-PMA	1.2	0.23-0.66	1.2-5.2	◎	●				◎	●											
-PMD  Medium Machining	SNMG120404-PMD	0.4	0.12-0.36	0.5-5.0				◎		◎												
	SNMG120408-PMD	0.8	0.18-0.40	0.8-5.0				●		◎												
	SNMG120412-PMD	1.2	0.20-0.50	1.0-5.0				●		◎												
-PRA  Roughing	SNMG120408-PRA	0.8	0.20-0.50	0.7-7.0				◎	●	●						◎	●	◎				
	SNMG150612-PRA	1.2	0.25-0.70	1.0-8.0				●	●		●									◎		
	SNMG150616-PRA	1.6	0.30-0.80	1.5-8.0					●	●	●							◎	◎			
	SNMG190612-PRA	1.2	0.25-0.70	1.0-10.0					●		◎									◎		
	SNMG190616-PRA	1.6	0.30-0.80	1.5-10.0					●	●	◎									◎		
	SNMG190624-PRA	2.4	0.32-0.90	2.0-10.0					●	●	◎										◎	
-PRB  Roughing	SNMG190612-PRB	1.2	0.4-0.7	4.0-8.0		●																
	SNMG190616-PRB	1.6	0.4-0.8	4.0-9.0		●																
	SNMG190624-PRB	2.4	0.4-1.0	4.0-10.0		●																
	SNMG250924-PRB	2.4	0.4-1.0	4.0-10.0		●																

● Standing stock ◎ Optional stock

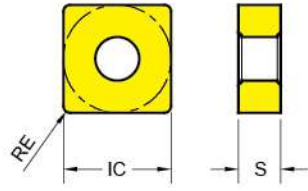
● Standing stock ◎ Optional stock

Cutting Parameters				Vc(m/min.)																						
ISO	Material Group	Tensile Strength (N/mm²)	HB	ACP10		ACP20		ACP30		APM10		APM20		APS10		APS20		ACK05		ACK10		ACK20		ACK30		
				Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
P	Low Carbon Steel	Carbon Steel	≤600	≤180	250	490	160	365	110	280																
			≤950	≤280	150	335	100	245	75	160																
	Low-alloyed Steel		700-950	200-280	120	230	90	215	70	145																
		High-alloyed Steel		950-1200	280-355	90	210	75	180	65	140															
			1200-1400	355-415	70	175	55	135	45	90																
M	Austenitic		675	200							125	240	100	225	125	240	100	225								
	Duplex Stainless Steel		778	230							100	160	90	150	100	160	90	150								
	PH Stainless Steel		1013	300							90	150	80	125	90	150	80	125								
K	Grey Cast Iron		700	220	150	380	110	340											190	500	170	480	150	350	130	280
	Nodular Cast Iron		880	260	90	280	90	210											170	280	150	260	90	220	80	180
	Malleable Cast Iron		800	250	120	300	90	220											140	320	120	300	90	240	80	200
S	Cobalt Base Alloy		1100	250-320							32	48	30	45	32	48	30	45								
	Nickel Base Alloy																									
	Titanium Alloy		1260	370							36	50	32	48	36	50	32	48								
N	Aluminum		260	75																						
	Aluminium Alloy		447	130																						
H	Hardened Steel		-	50-60HRC															45	55						
	Hardened Cast Iron		-	55HRC															45	55						

Negative Insert SN Series

SNMG / SNMM (90° Negative)

Series	IC	S
SN** 1906	19.05	6.35
SN** 2507	25.4	7.94
SN** 2509	25.4	9.525



					P								M				K				S	
SNMG/SNMA	Type	RE	Fn (mm/rev.)	Ap (mm)	ACP10E	ACP20E	ACP30E	ACP10B	ACP20B	ACP30B	ACP10D	ACP20D	APM10C	APM20B	APM20C	APM20E	ACK05E	ACK10E	ACK20E	ACK30E	AP510C	AP520C
-PHA  Recutting	SNMM190612-PHA	1.2	0.5-1.0	4.0-8.0			●															
	SNMM190616-PHA	1.6	0.5-1.1	4.0-8.0			●															
	SNMM190624-PHA	2.4	0.5-1.2	4.0-9.0			●															
	SNMM250724-PHA	2.4	0.5-1.3	4.0-12.0			●															
	SNMM250924-PHA	2.4	0.5-1.3	4.0-12.0			●															

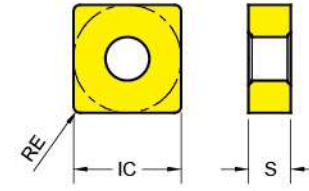
● Standing stock

◎ Optional stock

● Standing stock ◎ Optional stock

Negative Insert SN Series

Series	IC	S
SN** 1204	12.7	4.76
SN** 1506	15.875	6.35
SN** 1906	19.05	6.35



SNMG/SNMA					P								M				K				S		
Type	RE	Fn (mm/rev.)	Ap (mm)		ACP10E	ACP20E	ACP30E	ACP10B	ACP20B	ACP30B	ACP10D	ACP20D	APM10C	APM20B	APM20C	APM20E	ACK05E	ACK10E	ACK20E	ACK30E	AP510C	AP520C	
-KMA  Medium Machining	SNMG120404-KMA	0.4	0.08-0.22	0.4-4.2													◎	●	●	◎			
	SNMG120408-KMA	0.8	0.15-0.44	0.8-4.2														●	●	●	◎		
	SNMG120412-KMA	1.2	0.23-0.66	1.2-4.2														◎	●	●	◎		
	SNMG150612-KMA	1.2	0.18-0.60	0.8-7.50																●	◎		
	SNMG190608-KMA	0.8	0.15-0.44	0.6-9.0																●	◎		
	SNMG190612-KMA	1.2	0.18-0.60	0.80-9.0																●	◎		
	SNMG190616-KMA	1.6	0.23-0.66	1.0-9.0															●	◎			
-KRA  Roughing	SNMG120408-KRA	0.8	0.18-0.48	0.8-5.0														●	●	●			
	SNMG120412-KRA	1.2	0.26-0.72	1.2-5.0															●	●	●		
-KRB  Roughing	SNMA120404-KRB	0.4	0.1-0.3	0.6-6.3															●	◎	◎		
	SNMA120408-KRB	0.8	0.2-0.6	1.2-6.3															●	●	◎		
	SNMA120412-KRB	1.2	0.3-0.9	1.8-6.3															●	●	◎		
-KRC  Roughing	SNMA120408-KRC	0.8	0.20-0.50	0.8-5.0														●	◎	◎			
	SNMA120412-KRC	1.2	0.25-0.60	1.2-5.0															●	◎	◎		
	SNMA120416-KRC	1.6	0.30-0.70	1.5-5.0															●	◎	◎		

● Standing stock ◎ Optional stock

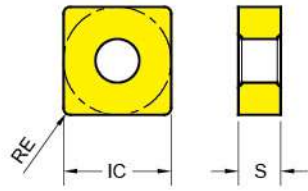
● Standing stock ◎ Optional stock

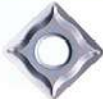
Cutting Parameters				Vc(m/min.)																					
ISO	Material Group	Tensile Strength (N/mm²)	HB	ACP10		ACP20		ACP30		APM10		APM20		APS10		APS20		ACK05		ACK10		ACK20		ACK30	
				Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
P	Low Carbon Steel	Carbon Steel	≤600	≤180	250	490	160	365	110	280															
			≤950	≤280	150	335	100	245	75	160															
	Low-alloyed Steel		700-950	200-280	120	230	90	215	70	145															
			950-1200	280-355	90	210	75	180	65	140															
M	High-alloyed Steel		1200-1400	355-415	70	175	55	135	45	90															
		Austenitic	675	200							125	240	100	225	125	240	100	225							
		Duplex Stainless Steel	778	230							100	160	90	150	100	160	90	150							
		PH Stainless Steel	1013	300							90	150	80	125	90	150	80	125							
K	Grey Cast Iron	700	220	150	380	110	340											190	500	170	480	150	350	130	280
	Nodular Cast Iron	880	260	90	280	90	210											170	280	150	260	90	220	80	180
	Malleable Cast Iron	800	250	120	300	90	220											140	320	120	300	90	240	80	200
S	Cobalt Base Alloy	1100	250-320							32	48	30	45	32	48	30	45								
	Nickel Base Alloy	1260	370							36	50	32	48	36	50	32	48								
N	Aluminum	260	75																						
	Aluminium Alloy	447	130																						
H	Hardened Steel	-	50-60HRC															45	55						
	Hardened Cast Iron	-	55HRC															45	55						

Cutting Parameters				Vc(m/min.)																					
ISO	Material Group	Tensile Strength (N/mm²)	HB	ACP10		ACP20		ACP30		APM10		APM20		APS10		APS20		ACK05		ACK10		ACK20		ACK30	
				Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
P	Low Carbon Steel	←600	←180	250	490	160	365	110	280																
	Carbon Steel	←950	←280	150	335	100	245	75	160																
	Low-alloyed Steel	700-950	200-280	120	230	90	215	70	145																
	High-alloyed Steel	950-1200	280-355	90	210	75	180	65	140																
		1200-1400	355-415	70	175	55	135	45	90																
M	Austenitic	675	200							125	240	100	225	125	240	100	225								
	Duplex Stainless Steel	778	230							100	160	90	150	100	160	90	150								
	PH Stainless Steel	1013	300							90	150	80	125	90	150	80	125								
K	Grey Cast Iron	700	220	150	380	110	340											190	500	170	480	150	350	130	280
	Nodular Cast Iron	880	260	90	280	90	210											170	280	150	260	90	220	80	180
	Malleable Cast Iron	800	250	120	300	90	220											140	320	120	300	90	240	80	200
S	Cobalt Base Alloy	1100	250-320							32	48	30	45	32	48	30	45								
	Nickel Base Alloy	1260	370							36	50	32	48	36	50	32	48								
N	Aluminum	260	75																						
	Aluminium Alloy	447	130																						
H	Hardened Steel	-	50-60HRC															45	55						
	Hardened Cast Iron	-	55HRC															45	55						

Negative Insert SN Series

SNMG / SNMA (90° Negative)



					P							M				K				S		
SNMG/SNMA	Type	RE	Fn (mm/rev.)	Ap (mm)	ACP10E	ACP20E	ACP30E	ACP10B	ACP20B	ACP30B	ACP10D	ACP20D	APM10C	APM20B	APM20C	APM20E	ACK05E	ACK10E	ACK20E	ACK30E	APS10C	APS20C
-MFA  Finishing	SNMG120404-MFA	0.4	0.05-0.30	0.8-3.0									◎	●	●							
	SNMG120408-MFA	0.8	0.10-0.40	0.8-3.0									◎	●	●	●						
	SNMG120412-MFA	1.2	0.15-0.40	0.8-3.0									◎	●	●	◎						
-MMA  Medium Machining	SNMG120404-MMA	0.4	0.08-0.22	0.30-4.2									◎	●	●							
	SNMG120408-MMA	0.8	0.15-0.42	0.60-4.2									◎	●	●							
	SNMG120412-MMA	1.2	0.22-0.65	0.90-4.2											●	●						
-MMD  Medium Machining	SNMG120404-MMD	0.4	0.08-0.22	0.30-4.2									◎	●	◎							
	SNMG120408-MMD	0.8	0.15-0.42	0.60-4.2										●	●	◎						
	SNMG120412-MMD	1.2	0.22-0.65	0.90-4.2										●	●	◎						
-MME  Medium Machining	SNMG120408-MME	0.8	0.15-0.42	0.60-4.2											●	◎						
	SNMG120412-MME	1.2	0.22-0.65	0.90-4.2											●	◎						

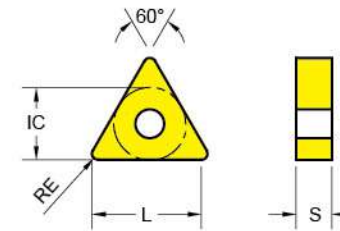
● Standing stock ◎ Optional stock

● Standing stock ◎ Optional stock

Cutting Parameters				Vc(m/min.)													
ISO	Material Group	Tensile Strength (N/mm²)	HB	ACP10	ACP20	ACP30	APM10	APM20	APS10	APS20	ACK05	ACK10	ACK20	ACK30			
P	Low Carbon Steel	≤600	≤180	250 490	160 365	110 280											
	Carbon Steel	≤950	≤280	150 335	100 245	75 160											
	Low-alloyed Steel	700-950	200-280	120 230	90 215	70 145											
	High-alloyed Steel	950-1200	280-355	90 210	75 180	65 140											
M	Austenitic	675	200				125 240	100 225	125 240	100 225							
	Duplex Stainless Steel	778	230				100 160	90 150	100 160	90 150							
	PH Stainless Steel	1013	300				90 150	80 125	90 150	80 125							
K	Grey Cast Iron	700	220	150 380	110 340						190 500	170 480	150 350	130 280			
	Nodular Cast Iron	880	260	90 280	90 210						170 280	150 260	90 220	80 180			
	Malleable Cast Iron	800	250	120 300	90 220						140 320	120 300	90 240	80 200			
S	Cobalt Base Alloy	1100	250-320				32 48	30 45	32 48	30 45							
	Nickel Base Alloy	1260	370				36 50	32 48	36 50	32 48							
N	Aluminum	260	75														
	Aluminum Alloy	447	130														
H	Hardened Steel	-	50-60HRC								45 55						
	Hardened Cast Iron	-	55HRC								45 55						

TNMG / TNMA (60° Negative)

Negative Insert TN Series



TNMG/TNMA					P								M				K			S	
Type	RE	Fn (mm/rev.)	Ap (mm)	ACP10E	ACP20E	ACP30E	ACP10B	ACP20B	ACP30B	ACP10D	ACP20D	APM10C	APM20B	APM20C	APM20E	ACK05E	ACK10E	ACK20E	ACK30E	APS10C	APS20C
-PSX  Semi Finishing	TNMG160404-PSX	0.4	0.06-0.18	0.3-3.3	●	●			◎		◎	●									
	TNMG160408-PSX	0.8	0.12-0.36	0.6-3.3	●	●		◎	◎		◎	●									
	TNMG160412-PSX	1.2	0.18-0.54	0.9-3.3	●	●			◎		◎	◎									
-PMA  Medium Machining	TNMG160404-PMA	0.4	0.08-0.22	0.4-4.1	●	●					◎	◎									
	TNMG160408-PMA	0.8	0.15-0.44	0.8-4.1	●	●	●		◎		◎	●									
	TNMG160412-PMA	1.2	0.23-0.66	1.2-4.1	●	●			◎		◎	●									
	TNMG220408-PMA	0.8	0.15-0.44	0.8-4.9	◎	●	●				◎	◎									
	TNMG220412-PMA	1.2	0.23-0.66	1.2-4.9	●	●					◎	◎									
-PMD  Medium Machining	TNMG160404-PMD	0.4	0.10-0.36	0.4-3.5					◎		◎										
	TNMG160408-PMD	0.8	0.10-0.40	0.8-3.5					●		◎										
	TNMG160412-PMD	1.2	0.15-0.40	1.0-3.5					●		◎										
-PRA  Roughing	TNMG160408-PRA	0.8	0.20-0.55	0.7-6.0				◎	◎		◎							◎	◎		
	TNMG160412-PRA	1.2	0.25-0.65	1.0-6.0					●		◎								◎	◎	

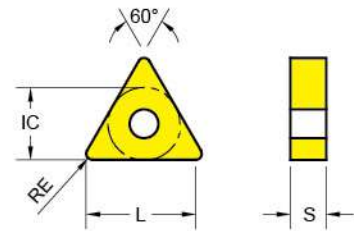
● Standing stock ◎ Optional stock

● Standing stock ◎ Optional stock

Cutting Parameters				Vc(m/min.)													
ISO	Material Group	Tensile Strength (N/mm²)	HB	ACP10	ACP20	ACP30	APM10	APM20	APS10	APS20	ACK05	ACK10	ACK20	ACK30			
P	Low Carbon Steel	≤600	≤180	250 490	160 365	110 280											
	Carbon Steel	≤950	≤280	150 335	100 245	75 160											
	Low-alloyed Steel	700-950	200-280	120 230	90 215	70 145											
	High-alloyed Steel	950-1200	280-355	90 210	75 180	65 140											
M	Austenitic	675	200				125 240	100 225	125 240	100 225							
	Duplex Stainless Steel	778	230				100 160	90 150	100 160	90 150							
	PH Stainless Steel	1013	300				90 150	80 125	90 150	80 125							
K	Grey Cast Iron	700	220	150 380	110 340						190 500	170 480	150 350	130 280			
	Nodular Cast Iron	880	260	90 280	90 210						170 280	150 260	90 220	80 180			
	Malleable Cast Iron	800	250	120 300	90 220						140 320	120 300	90 240	80 200			
S	Cobalt Base Alloy	1100	250-320				32 48	30 45	32 48	30 45							
	Nickel Base Alloy	1260	370				36 50	32 48	36 50	32 48							
N	Aluminum	260	75														
	Aluminum Alloy	447	130														
H	Hardened Steel	-	50-60HRC								45 55						
	Hardened Cast Iron	-	55HRC								45 55						

Negative Insert TN Series

TNMG / TNMA (60° Negative)



Series	L	IC	S
TN** 1604	16.5	9.525	4.76
TN** 2204	22	12.7	4.76

TNMG/TNMA					P								M				K				S		
Type	RE	Fn (mm/rev.)	Ap (mm)		ACP10E	ACP20E	ACP30E	ACP10B	ACP20B	ACP30B	ACP10D	ACP20D	APM10C	APM20B	APM20C	APM20E	ACKX05E	ACK10E	ACK20E	ACK30E	APS10C	APS20C	
-KMA  Medium Machining	TNMG160404-KMA	0.4	0.08-0.22	0.4-4.1													◎	●	●	◎			
	TNMG160408-KMA	0.8	0.15-0.44	0.8-4.1														◎	●	●	◎		
	TNMG160412-KMA	1.2	0.23-0.66	1.2-4.1															●	●	◎		
-KRA  Roughing	TNMG160408-KRA	0.8	0.18-0.48	0.8-4.8															●	◎			
	TNMG160412-KRA	1.2	0.26-0.72	1.2-4.8																●	◎		
	TNMG220404-KRA	0.4	0.09-0.24	0.4-6.0																●	◎		
	TNMG220408-KRA	0.8	0.18-0.48	0.8-6.0																●	◎		
	TNMG220412-KRA	1.2	0.26-0.72	1.2-6.0																●	◎		
	TNMG220416-KRA	1.6	0.35-0.96	1.6-6.0																●	◎		
-KRB  Roughing	TNMA160404-KRB	0.4	0.1-0.3	0.6-5.8														●	●	◎			
	TNMA160408-KRB	0.8	0.2-0.6	1.2-5.8															●	●	◎		
	TNMA160412-KRB	1.2	0.3-0.9	1.8-5.8															●	●	◎		

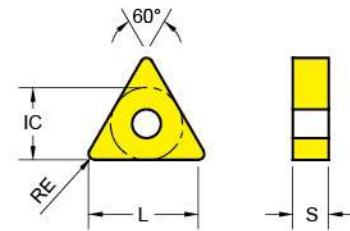
● Standing stock

◎ Optional stock

● Standing stock ○ Optional stock

Cutting Parameters				Vc[m/min.]																					
ISO	Material Group	Tensile Strength (N/mm²)	HB	ACP10		ACP20		ACP30		APM10		APM20		APS10		APS20		ACK05		ACK10		ACK20		ACK30	
				Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
P	Low Carbon Steel	Carbon Steel	≤600	≤180	250	490	160	365	110	280															
			≤950	≤280	150	335	100	245	75	160															
	Low-alloyed Steel		700-950	200-280	120	230	90	215	70	145															
			950-1200	280-355	90	210	75	180	65	140															
	High-alloyed Steel		1200-1400	355-415	70	175	55	135	45	90															
M	Austenitic		675	200						125	240	100	225	125	240	100	225								
	Duplex Stainless Steel		778	230						100	160	90	150	100	160	90	150								
	PH Stainless Steel		1013	300						90	150	80	125	90	150	80	125								
K	Grey Cast Iron		700	220	150	380	110	340										190	500	170	480	150	350	130	280
	Nodular Cast Iron		880	260	90	280	90	210										170	280	150	260	90	220	80	180
	Malleable Cast Iron		800	250	120	300	90	220										140	320	120	300	90	240	80	200
S	Cobalt Base Alloy		1100	250-320						32	48	30	45	32	48	30	45								
	Nickel Base Alloy		1260	370						36	50	32	48	36	50	32	48								
N	Aluminum		260	75																					
	Aluminium Alloy		447	130																					
H	Hardened Steel		-	50-60HRC														45	55						
	Hardened Cast Iron		-	55HRC														45	55						

TNMG / TNMA (60° Negative)



Negative Insert TN Series

Series	L	IC	S
TN** 1604	16.5	9.525	4.76
TN** 2204	22	12.7	4.76

TNMG/TNMA	Type	RE	Fn (mm/rev.)	Ap (mm)	P								M				K				S	
					ACP10E	ACP20E	ACP30E	ACP10B	ACP20B	ACP30B	ACP10D	ACP20D	APM10C	APM20B	APM20C	APM20E	ACK05E	ACK10E	ACK20E	ACK30E	APS10C	APS20C
-KRD  Roughing	TNMG160408-KRD	0.8	0.18-0.40	1.0-4.0													●	◎				
	TNMG160412-KRD	1.2	0.18-0.45	1.0-4.0													●	◎				
-MFA  Finishing	TNMG160404-MFA	0.4	0.05-0.20	0.15-1.5									●	●	●							
	TNMG160408-MFA	0.8	0.05-0.25	0.15-1.5									●	●	●	◎						
	TNMG220404-MFA	0.4	0.05-0.25	0.5-2.5										●								
	TNMG220408-MFA	0.8	0.10-0.30	0.5-2.5										●								
-MMA  Medium Machining	TNMG160404-MMA	0.4	0.08-0.22	0.30-4.1									◎	●		●						
	TNMG160408-MMA	0.8	0.15-0.42	0.60-4.1									◎	●	●	●						
	TNMG160412-MMA	1.2	0.22-0.65	0.90-4.1										◎		●	●					
-MMD  Medium Machining	TNMG160404-MMD	0.4	0.08-0.22	0.30-4.1										●	●							
	TNMG160408-MMD	0.8	0.15-0.42	0.60-4.1											●	●						
-MME  Medium Machining	TNMG160408-MME	0.8	0.15-0.42	0.60-4.1										●	●							

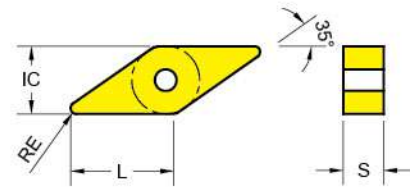
● Standing stock ◎ Optional stock

● Standing stock ○ Optional stock

Cutting Parameters				Vc(m/min.)																					
ISO	Material Group	Tensile Strength (N/mm²)	HB	ACP10		ACP20		ACP30		APM10		APM20		APS10		APS20		ACK05		ACK10		ACK20		ACK30	
				Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
P	Low Carbon Steel	≤600	≤180	250	490	160	365	110	280																
	Carbon Steel	≤950	≤280	150	335	100	245	75	160																
	Low-alloyed Steel	700-950	200-280	120	230	90	215	70	145																
	High-alloyed Steel	950-1200	280-355	90	210	75	180	65	140																
		1200-1400	355-415	70	175	55	135	45	90																
M	Austenitic	675	200							125	240	100	225	125	240	100	225								
	Duplex Stainless Steel	778	230							100	160	90	150	100	160	90	150								
	PH Stainless Steel	1013	300							90	150	80	125	90	150	80	125								
K	Grey Cast Iron	700	220	150	380	110	340											190	500	170	480	150	350	130	280
	Nodular Cast Iron	880	260	90	280	90	210											170	280	150	260	90	220	80	180
	Malleable Cast Iron	800	250	120	300	90	220											140	320	120	300	90	240	80	200
S	Cobalt Base Alloy	1100	250-320							32	48	30	45	32	48	30	45								
	Nickel Base Alloy	1260	370							36	50	32	48	36	50	32	48								
N	Aluminum	260	75																						
	Aluminium Alloy	447	130																						
H	Hardened Steel	-	50-60HRC															45	55						
	Hardened Cast Iron	-	55HRC															45	55						

Negative Insert VN Series

VNMG / VNMA (35° Negative)



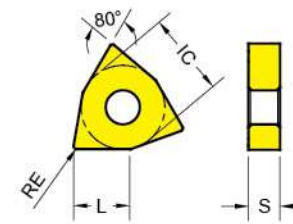
Series	L	IC	S
VN** 1604	16.5	9.525	4.76

VNMG/VNMA	Type	RE	Fn (mm/rev.)	Ap (mm)	P					M			K			S	
					ACP10E	ACP20E	ACP30E	ACP10B	ACP20B	ACP30B	ACP10D	ACP20D	APM10C	APM20C	APM30C	APM10C	APM20C
-PMA Medium Machining	VNMG160404-PMA	0.4	0.08-0.22	0.4-3.3	●	●	○	○	○	○	○	○	○	○	○	○	○
	VNMG160408-PMA	0.8	0.15-0.44	0.8-3.3	●	●	○	○	○	○	○	○	○	○	○	○	○
	VNMG160412-PMA	1.2	0.23-0.66	1.2-3.3	○	○	○	○	○	○	○	○	○	○	○	○	○
-PMB Medium Machining	VNMG160404-PMB	0.4	0.08-0.22	0.4-3.3	●	●	○	○	○	○	○	○	○	○	○	○	○
	VNMG160408-PMB	0.8	0.15-0.44	0.8-3.3	●	●	○	○	○	○	○	○	○	○	○	○	○
-PMD Medium Machining	VNMG160404-PMD	0.4	0.10-0.36	0.4-3.0	○	○	○	○	○	○	○	○	○	○	○	○	○
	VNMG160408-PMD	0.8	0.10-0.40	0.8-3.0	○	○	○	○	○	○	○	○	○	○	○	○	○
-KMA Medium Machining	VNMG160404-KMA	0.4	0.08-0.22	0.4-3.3	○	○	○	○	○	○	○	○	○	○	○	○	○
	VNMG160408-KMA	0.8	0.15-0.44	0.8-3.3	○	○	○	○	○	○	○	○	○	○	○	○	○
	VNMG160412-KMA	1.2	0.23-0.66	1.2-3.3	○	○	○	○	○	○	○	○	○	○	○	○	○
-KRB Roughing	VNMA160404-KRB	0.4	0.1-0.3	0.6-3.3	○	○	○	○	○	○	○	○	○	○	○	○	○
	VNMA160408-KRB	0.8	0.2-0.6	1.2-3.3	○	○	○	○	○	○	○	○	○	○	○	○	○
	VNMA160412-KRB	1.2	0.3-0.9	1.8-3.3	○	○	○	○	○	○	○	○	○	○	○	○	○
-MFA Finishing	VNMG160404-MFA	0.4	0.05-0.25	0.1-1.5	○	○	○	○	○	○	○	○	○	○	○	○	○
	VNMG160408-MFA	0.8	0.08-0.30	0.2-1.5	○	○	○	○	○	○	○	○	○	○	○	○	○
-MMA Medium Machining	VNMG160404-MMA	0.4	0.08-0.22	0.30-4.1	○	○	○	○	○	○	○	○	○	○	○	○	○
	VNMG160408-MMA	0.8	0.15-0.42	0.60-4.1	○	○	○	○	○	○	○	○	○	○	○	○	○
-MME Medium Machining	VNMG160404-MME	0.4	0.08-0.22	0.30-4.1	○	○	○	○	○	○	○	○	○	○	○	○	○
	VNMG160408-MME	0.8	0.15-0.42	0.60-4.1	○	○	○	○	○	○	○	○	○	○	○	○	○

● Standing stock ○ Optional stock

Cutting Parameters				Vc(m/min.)													
ISO	Material Group	Tensile Strength (N/mm²)	HB	ACP10	ACP20	ACP30	APM10	APM20	APS10	APS20	ACK05	ACK10	ACK20	ACK30			
P	Low Carbon Steel	≤600	≤180	250 490	160 365	110 280											
	Carbon Steel	≤950	≤280	150 335	100 245	75 160											
	Low-alloyed Steel	700-950	200-280	120 230	90 215	70 145											
	High-alloyed Steel	950-1200	280-355	90 210	75 180	65 140											
M	Austenitic	675	200				125 240	100 225	125 240	100 225							
	Duplex Stainless Steel	778	230				100 160	90 150	100 160	90 150							
	PH Stainless Steel	1013	300				90 150	80 125	90 150	80 125							
K	Grey Cast Iron	700	220	150 380	110 340						190 500	170 480	150 350	130 280			
	Nodular Cast Iron	880	260	90 280	90 210						170 280	150 260	90 220	80 180			
	Malleable Cast Iron	800	250	120 300	90 220						140 320	120 300	90 240	80 200			
S	Cobalt Base Alloy	1100	250-320				32 48	30 45	32 48	30 45							
	Nickel Base Alloy	1260	370				36 50	32 48	36 50	32 48							
N	Aluminum	260	75														
	Aluminum Alloy	447	130														
H	Hardened Steel	-	50-60HRC								45 55						
	Hardened Cast Iron	-	55HRC								45 55						

WNMG / WNMA (80° Trigonal Negative)



Negative Insert WN Series

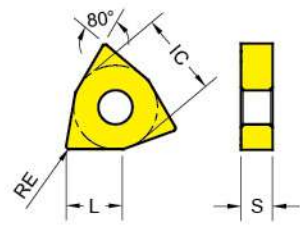
Series	L	IC	S
WN** 0804	8.69	12.7	4.76

WNMG/WNMA	Type	RE	Fn (mm/rev.)	Ap (mm)	P					M			K			S	
					ACP10E	ACP20E	ACP30E	ACP10B	ACP20B	ACP30B	ACP10D	ACP20D	APM10C	APM20C	APM30C	APM10C	APM20C
-PSX Semi Finishing	WNMG080404-PSX	0.4	0.06-0.18	0.3-2.3	●	●	○	○	○	○	○	○	○	○	○	○	○
	WNMG080408-PSX	0.8	0.12-0.36	0.6-2.3	●	●	○	○	○	○	○	○	○	○	○	○	○
	WNMG080412-PSX	1.2	0.18-0.54	0.9-2.3	○	○	○	○	○	○	○	○	○	○	○	○	○
-PMA Medium Machining	WNMG080404-PMA	0.4	0.08-0.22	0.4-2.9	●	●	○	○	○	○	○	○	○	○	○	○	○
	WNMG080408-PMA	0.8	0.15-0.44	0.8-2.9	●	●	○	○	○	○	○	○	○	○	○	○	○
	WNMG080412-PMA	1.2	0.23-0.66	1.2-2.9	○	○	○	○	○	○	○	○	○	○	○	○	○
-PMB Medium Machining	WNMG080408-PMB	0.8	0.15-0.44	0.8-2.9	○	○	○	○	○	○	○	○	○	○	○	○	○
	WNMG080412-PMB	1.2	0.23-0.66	1.2-2.9	○	○	○	○	○	○	○	○	○	○	○	○	○
-PMD Medium Machining	WNMG080404-PMD	0.4	0.10-0.36	0.4-3.0	○	○	○	○	○	○	○	○	○	○	○	○	○
	WNMG080408-PMD	0.8	0.10-0.40	0.8-3.0	○	○	○	○	○	○	○	○	○	○	○	○	○
	WNMG080412-PMD	1.2	0.15-0.45	1.0-3.0	○	○	○	○	○	○	○	○	○	○	○	○	○
-PRA Roughing	WNMG080408-PRA	0.8	0.20-0.55	0.7-5.0	○	○	○	○	○	○	○	○	○	○	○	○	○
	WNMG080412-PRA	1.2	0.25-0.70	1.0-5.0	○	○	○	○	○	○	○	○	○	○	○	○	○
	WNMG080416-PRA	1.6	0.3-0.75	1.6-6.0	○	○	○	○	○	○	○	○	○	○	○	○	○
-KMA Medium Machining	WNMG080404-KMA	0.4	0.08-0.22	0.4-2.9	○	○	○	○	○	○	○	○	○	○	○	○	○
	WNMG080408-KMA	0.8	0.15-0.44	0.8-2.9	○	○	○	○	○	○	○	○	○	○	○	○	○
	WNMG080412-KMA	1.2	0.23-0.66	1.2-2.9	○	○	○	○	○	○	○	○	○	○	○	○	○

● Standing stock ○ Optional stock

Cutting Parameters				Vc(m/min.)													
ISO	Material Group	Tensile Strength (N/mm²)	HB	ACP10	ACP20	ACP30	APM10	APM20	APS10	APS20	ACK05	ACK10	ACK20	ACK30			
P	Low Carbon Steel	≤600	≤180	250 490	160 365	110 280											
	Carbon Steel	≤950	≤280	150 335	100 245	75 160											
	Low-alloyed Steel	700-950	200-280	120 230	90 215	70 145											
	High-alloyed Steel	950-1200	280-355	90 210	75 180	65 140											
M	Austenitic	675	200				125 240	100 225	125 240	100 225							
	Duplex Stainless Steel	778	230				100 160	90 150	100 160	90 150							
	PH Stainless Steel	1013	300				90 150	80 125	90 150	80 125							
K	Grey Cast Iron	700	220	150 380	110 340						190 500	170 480	150 350	130 280			
	Nodular Cast Iron	880	260	90 280	90 210						170 280	150 260	90 220	80 180			
	Malleable Cast Iron	800	250	120 300	90 220						140 320	120 300	90 240	80 200			
S	Cobalt Base Alloy	1100	250-320				32 48	30 45	32 48	30 45							
	Nickel Base Alloy	1260	370				36 50	32 48	36 50	32 48							
N	Aluminum	260	75														
	Aluminum Alloy	447	130														
H	Hardened Steel	-	50-60HRC								45 55						
	Hardened Cast Iron	-	55HRC								45 55						

Negative Insert WN Series



WNMG / WNMA (80° Trigonal Negative)

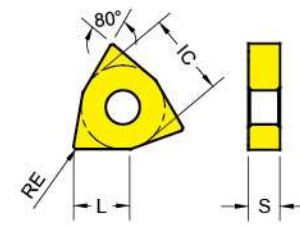
Series	L	IC	S
WN** 0804	8.69	12.7	4.76

WNMG/WNMA	Type	RE	Fn (mm/rev.)	Ap (mm)	P						M			K			S	
					ACP10E	ACP20E	ACP30E	ACP10B	ACP20B	ACP30B	ACP10D	ACP20D	ACP30D	ACK05E	ACK10E	ACK20E	AP510C	AP520C
-KRA  Roughing	WNMG080408-KRA	0.8	0.18-0.48	0.8-3.5											●	●	●	
	WNMG080412-KRA	1.2	0.26-0.72	1.2-3.5											●	●	●	
-KRB  Roughing	WNMA080404-KRB	0.4	0.1-0.3	0.6-4.3											●	●	◎	
	WNMA080408-KRB	0.8	0.2-0.6	1.2-4.3											●	●	●	
	WNMA080412-KRB	1.2	0.3-0.9	1.8-4.3											●	●	●	
-KRC  Roughing	WNMA080408-KRC	0.8	0.20-0.45	0.8-4.5										●	◎	◎		
	WNMA080412-KRC	1.2	0.22-0.50	1.2-4.5										●	◎	◎		
	WNMA080416-KRC	1.6	0.25-0.60	1.5-4.5										●	◎	◎		
-KRD  Roughing	WNMG080408-KRD	0.8	0.20-0.45	1.0-4.0										◎	●	◎		
	WNMG080412-KRD	1.2	0.20-0.60	1.2-4.0										●	●	◎		

● Standing stock ◎ Optional stock

Cutting Parameters				Vc[m/min.]																					
ISO	Material Group	Tensile Strength [N/mm²]	HB	ACP10		ACP20		ACP30		APM10		APM20		APS10		APS20		ACK05		ACK10		ACK20		ACK30	
				Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
P	Low Carbon Steel Carbon Steel	≤600	←180	250	490	160	365	110	280																
		≤950	←280	150	335	100	245	75	160																
	Low-alloyed Steel	700-950	200-280	120	230	90	215	70	145																
		High-alloyed Steel	950-1200	280-355	90	210	75	180	65	140															
	1200-1400		355-415	70	175	55	135	45	90																
M	Austenitic	675	200							125	240	100	225	125	240	100	225								
	Duplex Stainless Steel	778	230							100	160	90	150	100	160	90	150								
	PH Stainless Steel	1013	300							90	150	80	125	90	150	80	125								
K	Grey Cast Iron	700	220	150	380	110	340											190	500	170	480	150	350	130	280
	Nodular Cast Iron	880	260	90	280	90	210											170	280	150	260	90	220	80	180
	Malleable Cast Iron	800	250	120	300	90	220											140	320	120	300	90	240	80	200
S	Cobalt Base Alloy	1100	250-320							32	48	30	45	32	48	30	45								
	Nickel Base Alloy	1260	370							36	50	32	48	36	50	32	48								
N	Aluminum	260	75																						
	Aluminium Alloy	447	130																						
H	Hardened Steel	-	50-60HRC															45	55						
	Hardened Cast Iron	-	55HRC															45	55						

Negative Insert WN Series



WNMG / WNMA (80° Trigonal Negative)

Series	L	IC	S
WN** 0604	6.5	9.525	4.76
WN** 0804	8.69	12.7	4.76

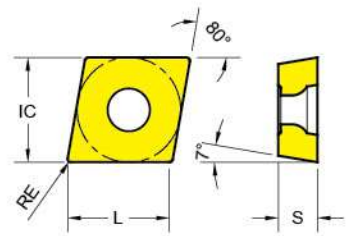
WNMG/WNMA	Type	RE	Fn (mm/rev.)	Ap (mm)	P						M			K			S	
					ACP10E	ACP20E	ACP30E	ACP10B	ACP20B	ACP30B	ACP10D	ACP20D	ACP30D	ACK05E	ACK10E	ACK20E	AP510C	AP520C
-MFA  Finishing	WNMG060404-MFA	0.4	0.05-0.20	0.1-1.5										●	●	◎		
	WNMG060408-MFA	0.8	0.05-0.25	0.1-1.5										●	●	◎		
	WNMG080404-MFA	0.4	0.05-0.20	0.1-2.0										●	●	●		
	WNMG080408-MFA	0.8	0.05-0.25	0.1-2.0										●	●	●		
-MMA  Medium Machining	WNMG060408-MMA	0.8	0.15-0.42	0.60-2.1										●	●			
	WNMG080404-MMA	0.4	0.08-0.22	0.30-3.0										●	●	●		
	WNMG080408-MMA	0.8	0.15-0.42	0.60-3.0										●	●	●		
	WNMG080412-MMA	1.2	0.22-0.65	0.90-3.0										●	●			
-MMD  Medium Machining	WNMG080404-MMD	0.4	0.08-0.22	0.30-3.0										●	●			
	WNMG080408-MMD	0.8	0.15-0.42	0.60-3.0										●	●			
	WNMG080412-MMD	1.2	0.22-0.65	0.90-3.0										●	●			
-MME  Medium Machining	WNMG080404-MME	0.4	0.08-0.22	0.30-3.0										●	●			◎
	WNMG080408-MME	0.8	0.15-0.42	0.60-3.0										●	●			◎

● Standing stock ◎ Optional stock

Cutting Parameters				Vc(m/min.)																					
ISO	Material Group	Tensile Strength (N/mm²)	HB	ACP10		ACP20		ACP30		APM10		APM20		APS10		APS20		ACK05		ACK10		ACK20		ACK30	
				Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
P	Low Carbon Steel	Carbon Steel	≤600	≤180	250	490	160	365	110	280															
			≤950	≤280	150	335	100	245	75	160															
	Low-alloyed Steel		700-950	200-280	120	230	90	215	70	145															
			950-1200	280-355	90	210	75	180	65	140															
M	High-alloyed Steel		1200-1400	355-415	70	175	55	135	45	90															
	Austenitic		675	200							125	240	100	225	125	240	100	225							
		Duplex Stainless Steel		778	230							100	160	90	150	100	160	90	150						
PH Stainless Steel			1013	300							90	150	80	125	90	150	80	125							
K	Grey Cast Iron		700	220	150	380	110	340										190	500	170	480	150	350	130	280
	Nodular Cast Iron		880	260	90	280	90	210										170	280	150	260	90	220	80	180
	Malleable Cast Iron		800	250	120	300	90	220										140	320	120	300	90	240	80	200
S	Cobalt Base Alloy		1100	250-320						32	48	30	45	32	48	30	45								
	Nickel Base Alloy		1260	370						36	50	32	48	36	50	32	48								
N	Titanium Alloy																								
	Aluminum		260	75																					
H	Aluminium Alloy		447	130																					
	Hardened Steel	-	50-60HRC															45	55						
	Hardened Cast Iron	-	55HRC															45	55						

Positive Insert CC Series

CCMT (80° Positive)



Series	L	IC	S
CC** 0602	6.45	6.35	2.38
CC** 09T3	9.67	9.525	3.97
CC** 1204	12.9	12.7	4.76

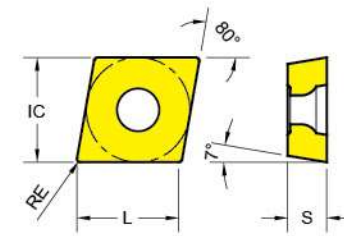
CCMT	Type	RE	Fn (mm/rev.)	Ap (mm)	P								M				K				S		
					ACP10E	ACP20E	ACP30E	ACP10B	ACP20B	ACP30B	ACP10D	ACP20D	APM10C	APM20B	APM20C	APM20E	ACK05E	ACK10E	ACK20E	ACK30E	AP510C	AP520C	
-PFA  Finishing	CCMT060204-PFA	0.4	0.06-0.17	0.2-1.5	●	●						●	◎	●	●	●						◎	◎
	CCMT09T304-PFA	0.4	0.05-0.3	0.1-2.0	●	●						●	◎	●	●	●							
-PSA  Semi Finishing	CCMT060204-PSA	0.4	0.06-0.17	0.2-2.4				◎	●						●								
	CCMT060208-PSA	0.8	0.08-0.20	0.2-3.0				◎	●			●			◎								
	CCMT09T304-PSA	0.4	0.08-0.23	0.25-3.0				●	●						◎								
	CCMT09T308-PSA	0.8	0.10-0.30	0.5-3.0				●	●			●			●								
	CCMT120404-PSA	0.4	0.09-0.27	0.3-3.6				◎	●						◎								
	CCMT120408-PSA	0.8	0.12-0.36	0.6-3.6				◎	●			●			●								
-PMA  Medium Machining	CCMT060204-PMA	0.4	0.07-0.20	0.5-2.0	●	●																	
	CCMT060208-PMA	0.8	0.13-0.30	0.8-2.0	◎	●						◎	●										
	CCMT09T304-PMA	0.4	0.10-0.25	0.7-3.0	◎	●																	
	CCMT09T308-PMA	0.8	0.13-0.30	1.0-3.0	●	●						◎	●										
	CCMT120404-PMA	0.4	0.10-0.25	1.0-4.0	◎	◎																	
	CCMT120408-PMA	0.8	0.13-0.30	1.3-4.0	●	●						◎	●										
-PRA  Roughing	CCMT09T304-PRA	0.4	0.10-0.30	0.8-4.0					●														
	CCMT09T308-PRA	0.8	0.12-0.35	1.0-4.0	◎	●			●		◎	●						●					
	CCMT120408-PRA	0.8	0.14-0.42	1.2-4.8	◎	●			●		◎	●						●					

● Standing stock ◎ Optional stock

● Standing stock ◎ Optional stock

Cutting Parameters				Vc(m/min.)																					
ISO	Material Group	Tensile Strength (N/mm²)	HB	ACP10		ACP20		ACP30		APM10		APM20		APS10		APS20		ACK05		ACK10		ACK20		ACK30	
				Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
P	Low Carbon Steel Carbon Steel	←600	←180	250	490	160	365	110	280																
		←950	←280	150	335	100	245	75	160																
	Low-alloyed Steel	700-950	200-280	120	230	90	215	70	145																
		950-1200	280-355	90	210	75	180	65	140																
	High-alloyed Steel	1200-1400	355-415	70	175	55	135	45	90																
M	Austenitic	675	200							125	240	100	225	125	240	100	225								
	Duplex Stainless Steel	778	230							100	160	90	150	100	160	90	150								
	PH Stainless Steel	1013	300							90	150	80	125	90	150	80	125								
K	Grey Cast Iron	700	220	150	380	110	340											190	500	170	480	150	350	130	280
	Nodular Cast Iron	880	260	90	280	90	210											170	280	150	260	90	220	80	180
	Malleable Cast Iron	800	250	120	300	90	220											140	320	120	300	90	240	80	200
S	Cobalt Base Alloy Nickel Base Alloy	1100	250-320							32	48	30	45	32	48	30	45								
	Titanium Alloy	1260	370							36	50	32	48	36	50	32	48								
N	Aluminum	260	75																						
	Aluminium Alloy	447	130																						
H	Hardened Steel	-	50-60HRC															45	55						
	Hardened Cast Iron	-	55HRC															45	55						

CCMT (80° Positive)



Positive Insert CC Series

Series	L	IC	S
CC** 0602	6.45	6.35	2.38
CC** 09T3	9.67	9.525	3.97
CC** 1204	12.9	12.7	4.76

CCMT	Type	RE	Fn (mm/rev.)	Ap (mm)	P								M				K				S	
					ACP10E	ACP20E	ACP30E	ACP10B	ACP20B	ACP30B	ACP10D	ACP20D	APM10C	APM20B	APM20C	APM20E	ACK05E	ACK10E	ACK20E	ACK30E	AP510C	AP520C
-KMA  Medium Machining	CCMT060204-KMA	0.4	0.08-0.20	0.4-2.0												◎	●	●	◎			
	CCMT060208-KMA	0.8	0.12-0.25	0.8-2.0														●	●	◎		
	CCMT09T304-KMA	0.4	0.08-0.25	0.4-3.0													◎	●	●	◎		
	CCMT09T308-KMA	0.8	0.12-0.32	0.8-3.0														●	●	●		
	CCMT120404-KMA	0.4	0.10-0.25	0.5-3.5													◎	●	●	◎		
	CCMT120408-KMA	0.8	0.12-0.32	0.8-3.5														●	●	●		
-MFA  Finishing	CCMT060202-MFA	0.2	0.03-0.11	0.06-1.7								◎	◎	◎								
	CCMT060204-MFA	0.4	0.05-0.17	0.1-1.7									●	●	●							
	CCMT060208-MFA	0.8	0.08-0.25	0.1-1.7									◎	◎	◎							
	CCMT09T302-MFA	0.2	0.04-0.15	0.08-2.0									◎	◎	◎							
	CCMT09T304-MFA	0.4	0.06-0.23	0.11-2.0									●	●	●							
	CCMT09T308-MFA	0.8	0.08-0.3	0.15-2.0									◎	●	◎							
	CCMT120404-MFA	0.4	0.07-0.27	0.14-2.4									●	●	●							
	CCMT120408-MFA	0.8	0.1-0.3	0.2-2.4									◎	●	◎							

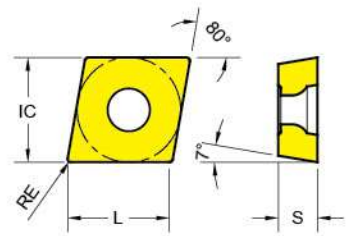
● Standing stock ◎ Optional stock

● Standing stock ◎ Optional stock

Cutting Parameters				Vc[m/min.]																						
ISO	Material Group	Tensile Strength (N/mm²)	HB	ACP10		ACP20		ACP30		APM10		APM20		APS10		APS20		ACK05		ACK10		ACK20		ACK30		
				Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	
P	Low Carbon Steel	≤ 600	≤ 180	250	490	160	365	110	280																	
		≤ 950	≤ 280	150	335	100	245	75	160																	
	Low-alloyed Steel	700-950	200-280	120	230	90	215	70	145																	
		High-alloyed Steel	950-1200	280-355	90	210	75	180	65	140																
	1200-1400		355-415	70	175	55	135	45	90																	
M	Austenitic	675	200							125	240	100	225	125	240	100	225									
	Duplex Stainless Steel	778	230							100	160	90	150	100	160	90	150									
	PH Stainless Steel	1013	300							90	150	80	125	90	150	80	125									
K	Grey Cast Iron	700	220	150	380	110	340											190	500	170	480	150	350	130	280	
	Nodular Cast Iron	880	260	90	280	90	210											170	280	150	260	90	220	80	180	
	Malleable Cast Iron	800	250	120	300	90	220											140	320	120	300	90	240	80	200	
S	Cobalt Base Alloy	1100	250-320							32	48	30	45	32	48	30	45									
	Nickel Base Alloy									36	50	32	48	36	50	32	48									
N	Titanium Alloy	1260	370																							
	Aluminum	260	75																							
	Aluminium Alloy	447	130																							
H	Hardened Steel	-	50-60HRC															45	55							
	Hardened Cast Iron	-	55HRC															45	55							

Positive Insert CC Series

CCMT (80° Positive)



Series	L	IC	S
CC** 0602	6.45	6.35	2.38
CC** 09T3	9.67	9.525	3.97
CC** 1204	12.9	12.7	4.76

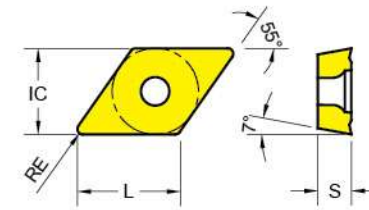
CCMT	Type	RE	Fn (mm/rev.)	Ap (mm)	P				M				K				S	
					ACP10E	ACP20E	ACP30E	ACP10B	ACP20B	ACP30B	ACP10C	ACP20C	ACP30C	ACP10D	ACP20D	ACP30D	AP510C	AP520C
 -MMA Medium Machining	CCMT09T304-MMA	0.4	0.06-0.23	0.3-2.5							◎	●	●					
	CCMT09T308-MMA	0.8	0.08-0.3	0.6-2.5							●	●	●					
	CCMT120404-MMA	0.4	0.08-0.2	0.3-3.5							◎	●	●					
	CCMT120408-MMA	0.8	0.15-0.32	0.6-3.5							●	●	●					
 -UMA Medium Machining	CCMT060204-UMA	0.4	0.06-0.18	0.4-2.1			●	●			◎	●	◎	●	●			
	CCMT060208-UMA	0.8	0.10-0.35	0.8-2.1			●	●			●	●	●	●	●			
	CCMT09T304-UMA	0.4	0.06-0.18	0.4-3.2			●	●			◎	●	◎	●	●			
	CCMT09T308-UMA	0.8	0.10-0.35	0.8-3.2			●	●			●	●	●	●	●			
	CCMT120404-UMA	0.4	0.06-0.18	0.4-4.3			●	●			◎	●	◎	●	●			
	CCMT120408-UMA	0.8	0.10-0.35	0.8-4.3			●	●			◎	●	◎	●	●			
	CCMT120412-UMA	1.2	0.15-0.50	1.2-4.3			●	●			◎	●	◎	●	●			

● Standing stock ◎ Optional stock

Cutting Parameters				Vc(m/min.)															
ISO	Material Group	Tensile Strength (N/mm²)	HB	ACP10		ACP20		ACP30		APM10		APM20		APU20		APS10		APS20	
				Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
P	Low Carbon Steel	≤600	≤180	250	490	160	365	110	280					110	280				
	Carbon Steel	≤950	≤280	150	335	100	245	75	160					75	160				
	Low-alloyed Steel	700-950	200-280	120	230	90	215	70	145					70	145				
	High-alloyed Steel	950-1200	280-355	90	210	75	180	65	140					65	140				
		1200-1400	355-415	70	175	55	135	45	90					45	90				
M	Austenitic	675	200							125	240	100	225	100	225	125	240	100	225
	Duplex Stainless Steel	778	230							100	160	90	150	90	150	100	160	90	150
	PH Stainless Steel	1013	300							90	150	80	125	80	125	90	150	80	125
K	Grey Cast Iron	700	220	150	380	110	340												
	Nodular Cast Iron	880	260	90	280	90	210												
	Malleable Cast Iron	800	250	120	300	90	220												
S	Cobalt Base Alloy	1100	250-320							32	48	30	45	30	45	32	48	30	45
	Nickel Base Alloy	1260	370							36	50	32	48	32	48	36	50	32	48
N	Aluminum	260	75																
	Aluminium Alloy	447	130																
H	Hardened Steel	-	50-60HRC																
	Hardened Cast Iron	-	55HRC																

Positive Insert DC Series

DCMT (55° Positive)



Series	L	IC	S
DC** 0702	7.75	6.35	2.38
DC** 11T3	11.63	9.525	3.97

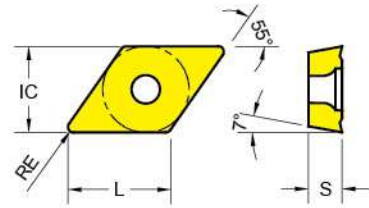
DCMT	Type	RE	Fn (mm/rev.)	Ap (mm)	P				M				K				S	
					ACP10E	ACP20E	ACP30E	ACP10B	ACP20B	ACP30B	ACP10C	ACP20C	ACP30C	ACP10D	ACP20D	ACP30D	AP510C	AP520C
 -PFA Finishing	DCMT070204-PFA	0.4	0.05-0.3	0.1-2.0	●	●					●	◎	●	●	●			
	DCMT11T304-PFA	0.4	0.05-0.3	0.1-2.0	●	●					●	◎	●	●	●			
 -PSA Semi Finishing	DCMT070204-PSA	0.4	0.06-0.17	0.19-2.25				●	●									
	DCMT070208-PSA	0.8	0.08-0.23	0.38-2.25				◎	●			●						
	DCMT11T304-PSA	0.4	0.08-0.23	0.25-3.0				●	●									
	DCMT11T308-PSA	0.8	0.10-0.30	0.5-3.0				◎	●			●						
 -PMA Medium Machining	DCMT070204-PMA	0.4	0.07-0.15	0.4-1.5	●	●												
	DCMT070208-PMA	0.8	0.12-0.30	0.8-2.0	●	●						◎	●					
	DCMT11T304-PMA	0.4	0.10-0.25	0.7-3.0	●	●												
	DCMT11T308-PMA	0.8	0.13-0.30	1.0-3.0	●	●						◎	●					
 -PRA Roughing	DCMT11T312-PMA	1.2	0.17-0.35	1.5-3.0	◎	●					◎	●						
	DCMT11T304-PRA	0.4	0.10-0.30	0.8-4.0				◎									◎	
	DCMT11T308-PRA	0.8	0.12-0.35	1.0-4.0				●	◎	●							●	

● Standing stock ◎ Optional stock

Cutting Parameters				Vc(m/min.)																						
ISO	Material Group	Tensile Strength (N/mm²)	HB	ACP10		ACP20		ACP30		APM10		APM20		APS10		APS20		ACK05		ACK10		ACK20		ACK30		
				Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	
P	Low Carbon Steel	≤600	≤180	250	490	160	365	110	280																	
	Carbon Steel	≤950	≤280	150	335	100	245	75	160																	
	Low-alloyed Steel	700-950	200-280	120	230	90	215	70	145																	
	High-alloyed Steel	950-1200	280-355	90	210	75	180	65	140																	
		1200-1400	355-415	70	175	55	135	45	90																	
M	Austenitic	675	200							125	240	100	225	125	240	100	225									
	Duplex Stainless Steel	778	230							100	160	90	150	100	160	90	150									
	PH Stainless Steel	1013	300							90	150	80	125	90	150	80	125									
K	Grey Cast Iron	700	220	150	380	110	340											190	500	170	480	150	350	130	280	
	Nodular Cast Iron	880	260	90	280	90	210											170	280	150	260	90	220	80	180	
	Malleable Cast Iron	800	250	120	300	90	220											140	320	120	300	90	240	80	200	
S	Cobalt Base Alloy	1100	250-320							32	48	30	45	32	48	30	45									
	Nickel Base Alloy	1260	370							36	50	32	48	36	50	32	48									
N	Aluminum	260	75																							
	Aluminium Alloy	447	130																							
H	Hardened Steel	-	50-60HRC															45	55							
	Hardened Cast Iron	-	55HRC															45	55							

Positive Insert DC Series

DCMT (55° Positive)



Series	L	IC	S
DC** 0702	7.75	6.35	2.38
DC** 11T3	11.63	9.525	3.97

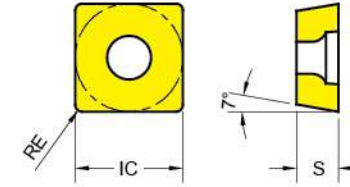
DCMT	Type	RE	Fn (mm/rev.)	Ap (mm)	P				M				K				S	
					ACP10E	ACP20E	ACP30E	ACP10B	ACP20B	ACP30B	APM10C	APM20C	APM30C	ACK05E	ACK10E	ACK20E	AP510C	AP520C
-KMA  Medium Machining	DCMT070204-KMA	0.4	0.08-0.20	0.4-2.0										◎	◎	●	◎	
	DCMT070208-KMA	0.8	0.12-0.25	0.5-2.0										◎	◎	●	◎	
	DCMT11T304-KMA	0.4	0.08-0.25	0.4-3.0										◎	●	●	◎	
	DCMT11T308-KMA	0.8	0.12-0.32	0.8-3.0										●	●	●		
-MFA  Finishing	DCMT070202-MFA	0.2	0.03-0.11	0.06-1.5							◎	●	◎					
	DCMT070204-MFA	0.4	0.05-0.17	0.08-1.5							●	●	●					
	DCMT11T302-MFA	0.2	0.04-0.15	0.08-2.0							◎	◎	◎					
	DCMT11T304-MFA	0.4	0.06-0.23	0.11-2.0							●	●	●					
	DCMT11T308-MFA	0.8	0.08-0.3	0.15-2.0							◎	●	●					
-MSA  Semi Finishing	DCMT11T304-MSA	0.4	0.08-0.3	0.5-2.0							◎	◎	◎					
	DCMT11T308-MSA	0.8	0.08-0.3	0.6-2.0							◎	◎	◎					
-MMA  Medium Machining	DCMT11T304-MMA	0.4	0.08-0.25	0.4-3.0							◎	◎	◎					
	DCMT11T308-MMA	0.8	0.12-0.32	0.8-3.0							◎	◎	◎					◎
-UMA  Medium Machining	DCMT070204-UMA	0.4	0.06-0.18	0.4-2.3			◎	◎			◎	●	●	●	●			
	DCMT070208-UMA	0.8	0.10-0.35	0.8-2.3	◎	◎	◎	●			◎	●	●	●	●			
	DCMT11T304-UMA	0.4	0.06-0.18	0.4-3.5			◎	◎			◎	●	●	●	●			
	DCMT11T308-UMA	0.8	0.10-0.35	0.8-3.5	◎	◎	●	●			◎	●	●	●	●			

● Standing stock ◎ Optional stock

Cutting Parameters				Vc(m/min.)																						
ISO	Material Group	Tensile Strength (N/mm²)	HB	ACP10		ACP20		ACP30		APM10		APM20		AP510		AP520		ACK05		ACK10		ACK20		ACK30		
				Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	
P	Low Carbon Steel	Carbon Steel	≤600	≤180	250	490	160	365	110	280																
			≤950	≤280	150	335	100	245	75	160																
	Low-alloyed Steel		700-950	200-280	120	230	90	215	70	145																
			950-1200	280-355	90	210	75	180	65	140																
	High-alloyed Steel		1200-1400	355-415	70	175	55	135	45	90																
M	Austenitic		675	200							125	240	100	225	125	240	100	225								
	Duplex Stainless Steel		778	230							100	160	90	150	100	160	90	150								
	PH Stainless Steel		1013	300							90	150	80	125	90	150	80	125								
K	Grey Cast Iron		700	220	150	380	110	340											190	500	170	480	150	350	130	280
	Nodular Cast Iron		880	260	90	280	90	210											170	280	150	260	90	220	80	180
	Malleable Cast Iron		800	250	120	300	90	220											140	320	120	300	90	240	80	200
S	Cobalt Base Alloy		1100	250-320							32	48	30	45	32	48	30	45								
	Nickel Base Alloy		1260	370							36	50	32	48	36	50	32	48								
N	Aluminum		260	75																						
	Aluminium Alloy		447	130																						
H	Hardened Steel		-	50-60HRC															45	55						
	Hardened Cast Iron		-	55HRC															45	55						

SCMT (Square Positive)

Positive Insert SC Series



Series	IC	S
SC** 09T3	9.525	3.97
SC** 1204	12.7	4.76

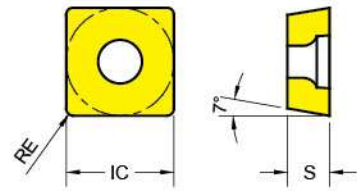
SCMT	Type	RE	Fn (mm/rev.)	Ap (mm)	P				M				K				S	
					ACP10E	ACP20E	ACP30E	ACP10B	ACP20B	ACP30B	APM10C	APM20C	APM30C	ACK05E	ACK10E	ACK20E	AP510C	AP520C
-PSA  Semi Finishing	SCMT09T304-PSA	0.4	0.08-0.23	0.25-3.0				●	●									
	SCMT09T308-PSA	0.8	0.10-0.30	0.5-3.0				●	●									
	SCMT120404-PSA	0.4	0.09-0.27	0.3-3.6				◎	●									
	SCMT120408-PSA	0.8	0.12-0.36	0.6-3.6				◎	●									
-PMA  Medium Machining	SCMT09T304-PMA	0.4	0.10-0.25	0.7-3.5	◎	●												
	SCMT09T308-PMA	0.8	0.13-0.30	1.0-3.5	●	●												
	SCMT120404-PMA	0.4	0.10-0.25	1.0-5.0	◎	●												
	SCMT120408-PMA	0.8	0.13-0.30	1.0-5.0	●	●												
-PRA  Roughing	SCMT09T308-PRA	0.8	0.12-0.36	1.0-4.0				●	◎	●						●		
	SCMT120404-PRA	0.4	0.10-0.30	0.5-4.0				●										
	SCMT120408-PRA	0.8	0.14-0.42	1.2-4.8				●	◎	●						◎		
	SCMT120412-PRA	1.2	0.18-0.52	1.4-4.8				●	◎	●								

● Standing stock ◎ Optional stock

Cutting Parameters				Vc[m/min.]																					
ISO	Material Group	Tensile Strength (N/mm²)	HB	ACP10		ACP20		ACP30		APM10		APM20		APS10		APS20		ACK05		ACK10		ACK20		ACK30	
				Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
P	Low Carbon Steel Carbon Steel	≤ 600	≤ 180	250	490	160	365	110	280																
		≤ 950	≤ 280	150	335	100	245	75	160																
	Low-alloyed Steel	700-950	200-280	120	230	90	215	70	145																
		950-1200	280-355	90	210	75	180	65	140																
	High-alloyed Steel	1200-1400	355-415	70	175	55	135	45	90																
M	Austenitic	675	200							125	240	100	225	125	240	100	225								
	Duplex Stainless Steel	778	230							100	160	90	150	100	160	90	150								
	PH Stainless Steel	1013	300							90	150	80	125	90	150	80	125								
K	Grey Cast Iron	700	220	150	380	110	340											190	500	170	480	150	350	130	280
	Nodular Cast Iron	880	260	90	280	90	210											170	280	150	260	90	220	80	180
	Malleable Cast Iron	800	250	120	300	90	220											140	320	120	300	90	240	80	200
S	Cobalt Base Alloy Nickel Base Alloy	1100	250-320							32	48	30	45	32	48	30	45								
	Titanium Alloy	1260	370							36	50	32	48	36	50	32	48								
N	Aluminum	260	75																						
	Aluminium Alloy	447	130																						
H	Hardened Steel	-	50-60HRC															45	55						
	Hardened Cast Iron	-	55HRC															45	55						

Positive Insert SC Series

SCMT (Square Positive)



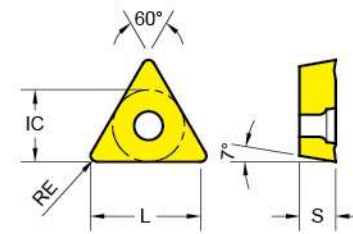
Series	IC	S
SC** 09T3	9.525	3.97
SC** 1204	12.7	4.76

SCMT	Type	RE	Fn (mm/rev.)	Ap (mm)	P								M				K				S	
					ACP10E	ACP20E	ACP30E	ACP10B	ACP20B	ACP30B	ACP10D	ACP20D	APM10C	APM20C	APM30C	APM10E	ACK05E	ACK10E	ACK20E	ACK30E	AP510C	AP520C
-KMA  Medium Machining	SCMT09T304-KMA	0.4	0.08-0.25	0.4-3.0														●	●	○		
	SCMT09T308-KMA	0.8	0.12-0.32	0.5-3.0														●	●	○		
	SCMT120404-KMA	0.4	0.08-0.25	0.5-3.0														●	●	○		
	SCMT120408-KMA	0.8	0.12-0.32	0.8-3.5														●	●	○		
-MFA  Finishing	SCMT09T304-MFA	0.4	0.06-0.23	0.06-0.23									○	●	●							
	SCMT09T308-MFA	0.8	0.06-0.23	0.15-2.0									○	●	●							
-MMA  Medium Machining	SCMT120404-MMA	0.4	0.08-0.25	0.5-3.0									○	●	○							
	SCMT120408-MMA	0.8	0.12-0.32	0.8-3.5									○	●	○							
-UMA  Medium Machining	SCMT09T304-UMA	0.4	0.06-0.18	0.4-3.1			○	○	○				●	●	●							
	SCMT09T308-UMA	0.8	0.10-0.35	0.8-3.1			●	●		○			●	●	●							
	SCMT120404-UMA	0.4	0.06-0.18	0.4-4.2			○	○					●	●	●							
	SCMT120408-UMA	0.8	0.10-0.35	0.8-4.2			●	●		○			●	●	●							

● Standing stock ○ Optional stock

Cutting Parameters				Vc(m/min.)																					
ISO	Material Group	Tensile Strength (N/mm²)	HB	ACP10		ACP20		ACP30		APM10		APM20		APS10		APS20		ACK05		ACK10		ACK20		ACK30	
				Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
P	Low Carbon Steel Carbon Steel	←600	←180	250	490	160	365	110	280																
		←950	←280	150	335	100	245	75	160																
	Low-alloyed Steel	700-950	200-280	120	230	90	215	70	145																
		950-1200	280-355	90	210	75	180	65	140																
M	High-alloyed Steel	1200-1400	355-415	70	175	55	135	45	90																
	Austenitic	675	200							125	240	100	225	125	240	100	225								
	Duplex Stainless Steel	778	230							100	160	90	150	100	160	90	150								
K	PH Stainless Steel	1013	300							90	150	80	125	90	150	80	125								
	Grey Cast Iron	700	220	150	380	110	340											190	500	170	480	150	350	130	280
	Nodular Cast Iron	880	260	90	280	90	210											170	280	150	260	90	220	80	180
	Malleable Cast Iron	800	250	120	300	90	220											140	320	120	300	90	240	80	200
S	Cobalt Base Alloy	1100	250-320							32	48	30	45	32	48	30	45								
	Nickel Base Alloy																								
N	Titanium Alloy	1260	370							36	50	32	48	36	50	32	48								
	Aluminum	260	75																						
H	Aluminium Alloy	447	130																						
	Hardened Steel	-	50-60HRC															45	55						
H	Hardened Cast Iron	-	55HRC															45	55						

TCMT (60°Triangle Positive)



Positive Insert TC Series

Series	L	IC	S
TC** 0902	9.0	5.56	2.38
TC** 1102	11.0	6.35	2.38
TC** 16T3	16.5	9.525	3.97
TC** 2204	22	12.7	4.76

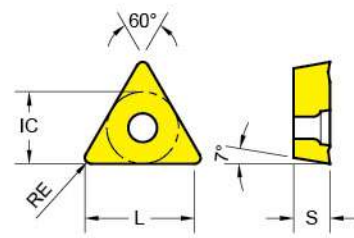
					P								M				K				S		
TCMT	Type	RE	Fn (mm/rev.)	Ap (mm)	ACP10E	ACP20E	ACP30E	ACP10B	ACP20B	ACP30B	ACP10D	ACP20D	APM10C	APM20B	APM20C	APM20E	ACK05E	ACK10E	ACK20E	ACK30E	APS10C	APS20C	
-PSA  Semi Finishing	TCMT090204-PSA	0.4	0.06-0.17	0.19-2.25				●	●														
	TCMT110204-PSA	0.4	0.07-0.20	0.2-2.7				●	●			●											
	TCMT110208-PSA	0.8	0.07-0.20	0.2-2.7				◎	●			●											
	TCMT16T304-PSA	0.4	0.08-0.23	0.25-3.0				●	●														
	TCMT16T308-PSA	0.8	0.10-0.30	0.5-3.0				◎	●				●										
-PMA  Medium Machining	TCMT090204-PMA	0.4	0.10-0.25	0.6-2.0	●	●																	
	TCMT090208-PMA	0.8	0.13-0.30	0.8-2.0	●	●																	
	TCMT110204-PMA	0.4	0.10-0.25	0.6-3.0	●	●																	
	TCMT110208-PMA	0.8	0.13-0.30	0.8-3.0	●	●						●											
	TCMT16T304-PMA	0.4	0.10-0.25	1.0-5.0	●	●																	
	TCMT16T308-PMA	0.8	0.10-0.30	1.5-5.0	●	●							●										
-PRA  Roughing	TCMT16T304-PRA	0.4	0.10-0.30	0.8-4.0				●	●														
	TCMT16T308-PRA	0.8	0.12-0.35	1.0-4.0					●			●											
	TCMT220408-PRA	0.8	0.14-0.42	1.2-4.8				◎															

● Standing stock ○ Optional stock

Cutting Parameters				Vc(m/min.)																					
ISO	Material Group	Tensile Strength (N/mm²)	HB	ACP10		ACP20		ACP30		APM10		APM20		APS10		APS20		ACK05		ACK10		ACK20		ACK30	
				Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
P	Low Carbon Steel	≤600	≤180	250	490	160	365	110	280																
	Carbon Steel	≤950	≤280	150	335	100	245	75	160																
	Low-alloyed Steel	700-950	200-280	120	230	90	215	70	145																
	High-alloyed Steel	950-1200	280-355	90	210	75	180	65	140																
		1200-1400	355-415	70	175	55	135	45	90																
M	Austenitic	675	200							125	240	100	225	125	240	100	225								
	Duplex Stainless Steel	778	230							100	160	90	150	100	160	90	150								
	PH Stainless Steel	1013	300							90	150	80	125	90	150	80	125								
K	Grey Cast Iron	700	220	150	380	110	340											190	500	170	480	150	350	130	280
	Nodular Cast Iron	880	260	90	280	90	210											170	280	150	260	90	220	80	180
	Malleable Cast Iron	800	250	120	300	90	220											140	320	120	300	90	240	80	200
S	Cobalt Base Alloy	1100	250-320							32	48	30	45	32	48	30	45								
	Nickel Base Alloy																								
	Titanium Alloy	1260	370							36	50	32	48	36	50	32	48								
N	Aluminum	260	75																						
	Aluminium Alloy	447	130																						
H	Hardened Steel	-	50-60HRC															45	55						
	Hardened Cast Iron	-	55HRC															45	55						

Positive Insert TC Series

TCMT (60°Triangle Positive)



Series	L	IC	S
TC** 1102	11.0	6.35	2.38
TC** 16T3	16.5	9.525	3.97

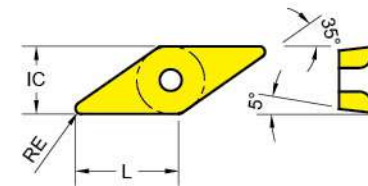
TCMT	Type	RE	Fn (mm/rev.)	Ap (mm)	P								M				K				S	
					ACP10E	ACP20E	ACP30E	ACP10B	ACP20B	ACP30B	ACP10D	ACP20D	APM10C	APM20B	APM20C	APM20E	APU20B	ACK05E	ACK10E	ACK20E	ACK30E	APS10C
-KMA  Medium Machining	TCMT110204-KMA	0.4	0.08-0.20	0.4-2.0													◎	●	◎			
	TCMT110208-KMA	0.8	0.12-0.30	0.5-2.0														◎	●	◎		
	TCMT16T304-KMA	0.4	0.08-0.25	0.5-3.0														●	●	◎		
	TCMT16T308-KMA	0.8	0.12-0.32	0.8-3.5														●	●	◎		
	TCMT16T312-KMA	1.2	0.15-0.44	1.2-3.5														●	●	◎		
-MFA  Finishing	TCMT110202-MFA	0.2	0.03-0.13	0.06-1.7								◎	◎	◎							◎	
	TCMT110204-MFA	0.4	0.05-0.19	0.1-1.7									●	●	●							
	TCMT16T304-MFA	0.4	0.03-0.13	0.2-2.0									●	●	●							
	TCMT16T308-MFA	0.8	0.05-0.20	0.2-2.0									◎	●	●	●						
-MMA  Medium Machining	TCMT110204-MMA	0.4	0.08-0.20	0.4-2.0								◎	◎	●	◎							
	TCMT110208-MMA	0.8	0.12-0.30	0.5-2.0									◎	◎	●	◎						
	TCMT16T304-MMA	0.4	0.08-0.25	0.5-3.0									◎	◎	●	◎						
	TCMT16T308-MMA	0.8	0.12-0.32	0.8-3.5									●	●	●	◎						
-UMA  Medium Machining	TCMT110204-UMA	0.4	0.06-0.18	0.4-3.3				◎	◎			◎	●	●	●	●						
	TCMT110208-UMA	0.8	0.10-0.35	0.8-3.3				◎	●			●	●	●	●	●						
	TCMT16T304-UMA	0.4	0.06-0.18	0.4-4.9				◎	◎			◎	●	●	●							
	TCMT16T308-UMA	0.8	0.10-0.35	0.8-4.9				●	●			●	●	●	●							

● Standing stock ◎ Optional stock

● Standing stock ◎ Optional stock

Cutting Parameters				Vc(m/min.)															
ISO	Material Group	Tensile Strength (N/mm²)	HB	ACP10	ACP20	ACP30	APM10	APM20	APS10	APS20	ACK05	ACK10	ACK20	ACK30					
P	Low Carbon Steel	≤600	≤180	250 490	160 365	110 280													
	Carbon Steel	≤950	≤280	150 335	100 245	75 160													
	Low-alloyed Steel	700-950	200-280	120 230	90 215	70 145													
	High-alloyed Steel	950-1200	280-355	90 210	75 180	65 140													
M	Austenitic	675	200				125 240	100 225	125 240	100 225									
	Duplex Stainless Steel	778	230				100 160	90 150	100 160	90 150									
	PH Stainless Steel	1013	300				90 150	80 125	90 150	80 125									
	Grey Cast Iron	700	220	150 380	110 340						190 500	170 480	150 350	130 280					
K	Nodular Cast Iron	880	260	90 280	90 210						170 280	150 260	90 220	80 180					
	Malleable Cast Iron	800	250	120 300	90 220						140 320	120 300	90 240	80 200					
S	Cobalt Base Alloy	1100	250-320				32 48	30 45	32 48	30 45									
	Nickel Base Alloy	1260	370				36 50	32 48	36 50	32 48									
N	Aluminum	260	75																
	Aluminum Alloy	447	130																
H	Hardened Steel	-	50-60HRC								45 55								
	Hardened Cast Iron	-	55HRC								45 55								

VBMT (35° Positive)



Positive Insert VB Series

Series	L	IC	S
VB** 1103	11	6.35	3.18
VB** 1604	16.6	9.525	4.76

VBMT	Type	RE	Fn (mm/rev.)	Ap (mm)	P								M				K				S	
					ACP10E	ACP20E	ACP30E	ACP10B	ACP20B	ACP30B	ACP10D	ACP20D	APM10C	APM20B	APM20C	APM20E	ACK05E	ACK10E	ACK20E	ACK30E	APS10C	APS20C
-PFA  Finishing	VBMT110304-PFA	0.4	0.05-0.3	0.1-2.0	●	●						●	◎	●		●						
	VBMT160404-PFA	0.4	0.05-0.3	0.1-2.0	●	●						●	◎	●		●						
-PSA  Semi Finishing	VBMT160404-PSA	0.4	0.07-0.20	0.23-2.7					●	●		◎	●		●		●	●				
	VBMT160408-PSA	0.8	0.09-0.27	0.45-2.7					●	●	◎	◎	●		●			●	●			
-PMA  Medium Machining	VBMT160404-PMA	0.4	0.10-0.25	0.6-3.0	●	●						◎	●									
	VBMT160408-PMA	0.8	0.13-0.30	0.9-3.0	●	●						◎	●									

● Standing stock

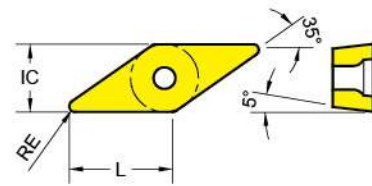
◎ Optional stock

● Standing stock ◎ Optional stock

Cutting Parameters				Vc(m/min.)															
ISO	Material Group	Tensile Strength (N/mm²)	HB	ACP10	ACP20	ACP30	APM10	APM20	APS10	APS20	ACK05	ACK10	ACK20	ACK30					
P	Low Carbon Steel	≤600	≤180	250 490	160 365	110 280													
	Carbon Steel	≤950	≤280	150 335	100 245	75 160													
	Low-alloyed Steel	700-950	200-280	120 230	90 215	70 145													
	High-alloyed Steel	950-1200	280-355	90 210	75 180	65 140													
M	Austenitic	675	200				125 240	100 225	125 240	100 225									
	Duplex Stainless Steel	778	230				100 160	90 150	100 160	90 150									
	PH Stainless Steel	1013	300				90 150	80 125	90 150	80 125									
	Grey Cast Iron	700	220	150 380	110 340						190 500	170 480	150 350	130 280					
K	Nodular Cast Iron	880	260	90 280	90 210						170 280	150 260	90 220	80 180					
	Malleable Cast Iron	800	250	120 300	90 220						140 320	120 300	90 240	80 200					
S	Cobalt Base Alloy	1100	250-320				32 48	30 45	32 48	30 45									
	Nickel Base Alloy	1260	370				36 50	32 48	36 50	32 48									
N	Aluminum	260	75																
	Aluminum Alloy	447	130																
H	Hardened Steel	-	50-60HRC								45 55								
	Hardened Cast Iron	-	55HRC								45 55								

Positive Insert VB Series

VBMT (35° Positive)



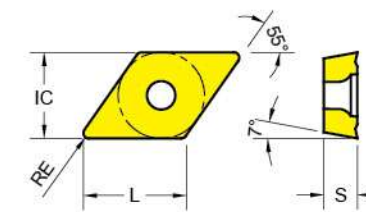
Series	L	IC	S
VB** 1103	11	6.35	3.18
VB** 1604	16.6	9.525	4.76

					P								M				K				S		
VBMT	Type	RE	Fn (mm/rev.)	Ap (mm)	ACP10E	ACP20E	ACP30E	ACP10B	ACP20B	ACP30B	ACP10D	ACP20D	APM10C	APM20B	APM20C	APM20E	ACK05E	ACK10E	ACK20E	ACK30E	AP510C	AP520C	
-MFA  Finishing	VBMT110302-MFA	0.2	0.03-0.13	0.06-1.7									●	●	●							◎	
	VBMT110304-MFA	0.4	0.05-0.19	0.1-1.7										●	●	●	◎						
	VBMT160402-MFA	0.2	0.03-0.13	0.08-1.8										●	●	●							
	VBMT160404-MFA	0.4	0.05-0.2	0.1-1.8										●	●	●	●						
	VBMT160408-MFA	0.8	0.07-2.7	0.14-1.8											●	●	●						
-MSA  Semi Finishing	VBMT110304-MSA	0.4	0.08-0.3	0.5-2.0									◎	●	●								
	VBMT160404-MSA	0.4	0.08-0.3	0.5-2.0										◎	●	●							

● Standing stock ◎ Optional stock

DCGT

Finishing Insert Series



Series	L	IC	S
DC** 11T3	11.6	9.525	3.97

					P								M				K				S	
DCGT	Type	RE	Fn (mm/rev.)	Ap (mm)	ACP10E	ACP20E	ACP30E	ACP10B	ACP20B	ACP30B	ACP10D	ACP20D	APM10C	APM20B	APM20C	APM20E	ACK05E	ACK10E	ACK20E	ACK30E	AP510C	AP520C
-SFA 	DCGT11T302-SFA	0.18	0.04-0.15	0.2-2.0									●		●						●	●
	DCGT11T304-SFA	0.38	0.05-0.2	0.3-2.0									●		●						●	●
-SMD 	DCGT11T302-SMD	0.18	0.06-0.2	0.4-1.5									●		●						●	●
	DCGT11T304-SMD	0.38	0.06-0.2	0.5-2.0									●		●						●	●

● Standing stock

◎ Optional stock

Cutting Parameters

Vc(m/min.)

ISO	Material Group	Tensile Strength (N/mm²)	HB	Vc(m/min.)																	
				ACP10	ACP20	ACP30	APM10	APM20	APS10	APS20	ACK05	ACK10	ACK20	ACK30							
P	Low Carbon Steel	≤600	≤180	250 490	160 365	110 280															
	Carbon Steel	≤950	≤280	150 335	100 245	75 160															
	Low-alloyed Steel	700-950	200-280	120 230	90 215	70 145															
	High-alloyed Steel	950-1200	280-355	90 210	75 180	65 140															
M	Austenitic	675	200				125 240	100 225	125 240	100 225											
	Duplex Stainless Steel	778	230				100 160	90 150	100 160	90 150											
	PH Stainless Steel	1013	300				90 150	80 125	90 150	80 125											
K	Grey Cast Iron	700	220	150 380	110 340						190 500	170 480	150 350	130 280							
	Nodular Cast Iron	880	260	90 280	90 210						170 280	150 260	90 220	80 180							
	Malleable Cast Iron	800	250	120 300	90 220						140 320	120 300	90 240	80 200							
S	Cobalt Base Alloy	1100	250-320				32 48	30 45	32 48	30 45											
	Nickel Base Alloy	1260	370				36 50	32 48	36 50	32 48											
N	Aluminum	260	75																		
	Aluminum Alloy	447	130																		
H	Hardened Steel	-	50-60HRC								45 55										
	Hardened Cast Iron	-	55HRC								45 55										

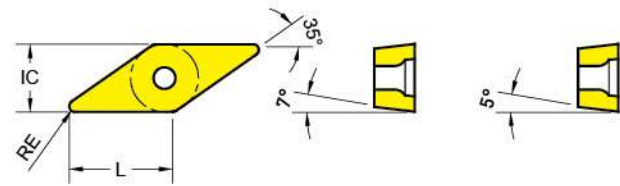
Cutting Parameters

Vc(m/min.)

ISO	Material Group	Tensile Strength (N/mm²)	HB	Vc(m/min.)																	
				ACP10	ACP20	ACP30	APM10	APM20	APS10	APS20	ACK05	ACK10	ACK20	ACK30							
P	Low Carbon Steel	≤600	≤180	250 490	160 365	110 280															
	Carbon Steel	≤950	≤280	150 335	100 245	75 160															
	Low-alloyed Steel	700-950	200-280	120 230	90 215	70 145															
	High-alloyed Steel	950-1200	280-355	90 210	75 180	65 140															
M	Austenitic	675	200				125 240	100 225	125 240	100 225											
	Duplex Stainless Steel	778	230				100 160	90 150	100 160	90 150											
	PH Stainless Steel	1013	300				90 150	80 125	90 150	80 125											
K	Grey Cast Iron	700	220	150 380	110 340						190 500	170 480	150 350	130 280							
	Nodular Cast Iron	880	260	90 280	90 210						170 280	150 260	90 220	80 180							
	Malleable Cast Iron	800	250	120 300	90 220						140 320	120 300	90 240	80 200							
S	Cobalt Base Alloy	1100	250-320				32 48	30 45	32 48	30 45											
	Nickel Base Alloy	1260	370				36 50	32 48	36 50	32 48											
N	Aluminum	260	75																		
	Aluminum Alloy	447	130																		
H	Hardened Steel	-	50-60HRC								45 55										
	Hardened Cast Iron	-	55HRC								45 55										

Finishing Insert Series

VBGT/VCGT



Series	L	IC	S
VC** 1103	11	6.35	3.18
VB** 1103	11	6.35	3.18

					P								M				K				S	
VBGT/VCGT	Type	RE	Fn (mm/rev.)	Ap (mm)	ACP10E	ACP20E	ACP30E	ACP10B	ACP20B	ACP30B	ACP10D	ACP20D	APM10C	APM20B	APM20C	APM20E	ACK05E	ACK10E	ACK20E	ACK30E	AP510C	AP520C
-SFA 	VCGT110302-SFA	0.18	0.04-0.15	0.2-2.0									●	●							●	●
	VCGT110304-SFA	0.38	0.05-0.2	0.3-2.0									●	●							●	●
	VBGT110302-SFA	0.18	0.04-0.15	0.2-2.0									●	●							●	●
	VBGT110304-SFA	0.38	0.05-0.2	0.3-2.0									●	●							●	●
-SMD 	VCGT110302-SMD	0.18	0.06-0.2	0.4-1.5									●	●							●	●
	VCGT110304-SMD	0.38	0.06-0.2	0.5-2.0									●	●							●	●
	VBGT110302-SMD	0.18	0.06-0.2	0.4-1.5									●	●							●	●
	VBGT110304-SMD	0.38	0.06-0.2	0.5-2.0									●	●							●	●

● Standing stock

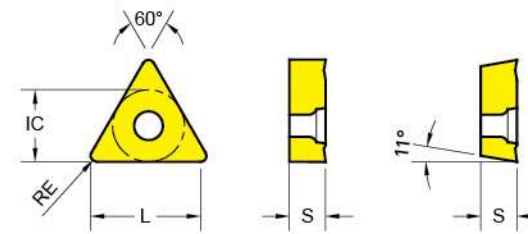
◎ Optional stock

● Standing stock ◎ Optional stock

Cutting Parameters				Vc(m/min.)																					
ISO	Material Group	Tensile Strength (N/mm²)	HB	ACP10		ACP20		ACP30		APM10		APM20		AP510		AP520		ACK05		ACK10		ACK20		ACK30	
		Min		Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
P	Low Carbon Steel Carbon Steel	≤600	≤180	250	490	160	365	110	280																
		≤950	≤280	150	335	100	245	75	160																
	Low-alloyed Steel	700-950	200-280	120	230	90	215	70	145																
		950-1200	280-355	90	210	75	180	65	140																
	High-alloyed Steel	1200-1400	355-415	70	175	55	135	45	90																
M	Austenitic	675	200							125	240	100	225	125	240	100	225								
	Duplex Stainless Steel	778	230							100	160	90	150	100	160	90	150								
	PH Stainless Steel	1013	300							90	150	80	125	90	150	80	125								
K	Grey Cast Iron	700	220	150	380	110	340											190	500	170	480	150	350	130	280
	Nodular Cast Iron	880	260	90	280	90	210											170	280	150	260	90	220	80	180
	Malleable Cast Iron	800	250	120	300	90	220											140	320	120	300	90	240	80	200
S	Cobalt Base Alloy Nickel Base Alloy	1100	250-320							32	48	30	45	32	48	30	45								
	Titanium Alloy	1260	370							36	50	32	48	36	50	32	48								
N	Aluminum	260	75																						
	Aluminium Alloy	447	130																						
H	Hardened Steel	-	50-60HRC															45	55						
	Hardened Cast Iron	-	55HRC															45	55						

TNGG/TPGH

Finishing Insert Series



Series	IC	S
TN** 1604	9.525	4.76
TP** 0601	3.97	1.59
TP** 0802	4.76	2.38
TP** 0902	5.56	2.38
TP** 1103	6.35	3.18

TNGG/TPGH	Type	RE	Fn (mm/rev.)	Ap (mm)	P		M
					ATP20	AVP20B	
-FF	TNGG160402R-FF	0.2	0.08-0.2	0.2-2.25	●	◎	●
	TNGG160404R-FF	0.4	0.08-0.2	0.4-2.25	●	◎	●
-FF	TPGH060102L-FF	0.2	0.015-0.1	0.2-0.6	●		◎
	TPGH060104L-FF	0.4	0.02-0.1	0.4-0.6	●		◎
	TPGH080202L-FF	0.2	0.015-0.1	0.2-0.75	●		◎
	TPGH080204L-FF	0.4	0.02-0.1	0.4-0.75	●		●
	TPGH090202L-FF	0.2	0.015-0.1	0.2-0.75	●		●
	TPGH090204L-FF	0.4	0.02-0.1	0.4-0.75	●		●
	TPGH110302L-FF	0.2	0.015-0.12	0.2-0.8	●		◎
	TPGH110304L-FF	0.4	0.02-0.12	0.4-0.8	●		◎

● Standing stock ◎ Optional stock

Cutting Parameters				Vc(m/min.)							
ISO	Material Group	Tensile Strength (N/mm²)	HB	ATP20		AVP20B		APM20B			
P	Unalloyed steel	430	125	Min	Max	Min	Max	Min	Max		
	Low-alloyed Steel	640-1010	190-300	200	240	200	300				
	High-alloyed Steel	700-950	200-280	150	180	150	225				
		950-1200	280-355	100	160	100	200				
M	Duplex Stainless Steel	780	230					80	125		
	Austenitic Steel	680	200					100	200		
	PH Stainless Steel	1010	300					75	120		
	Grey Cast Iron	200-350	180-245								
K	Nodular Cast Iron	400-700	155-265								
	Vermicular graphite Cast iron	400	230								
S	Cobalt Base Alloy	840-1180	250-350					40	60		
	Nickel Base Alloy	1260-1400	375-410					30	50		
	Titanium Alloy	260-450	75-130								
N	Aluminium Alloy	-	-								
	Hardened Steel	-	HRC 50-60								
H	Hardened Cast Iron	-	HRC 55								

Ceramic Insert Series

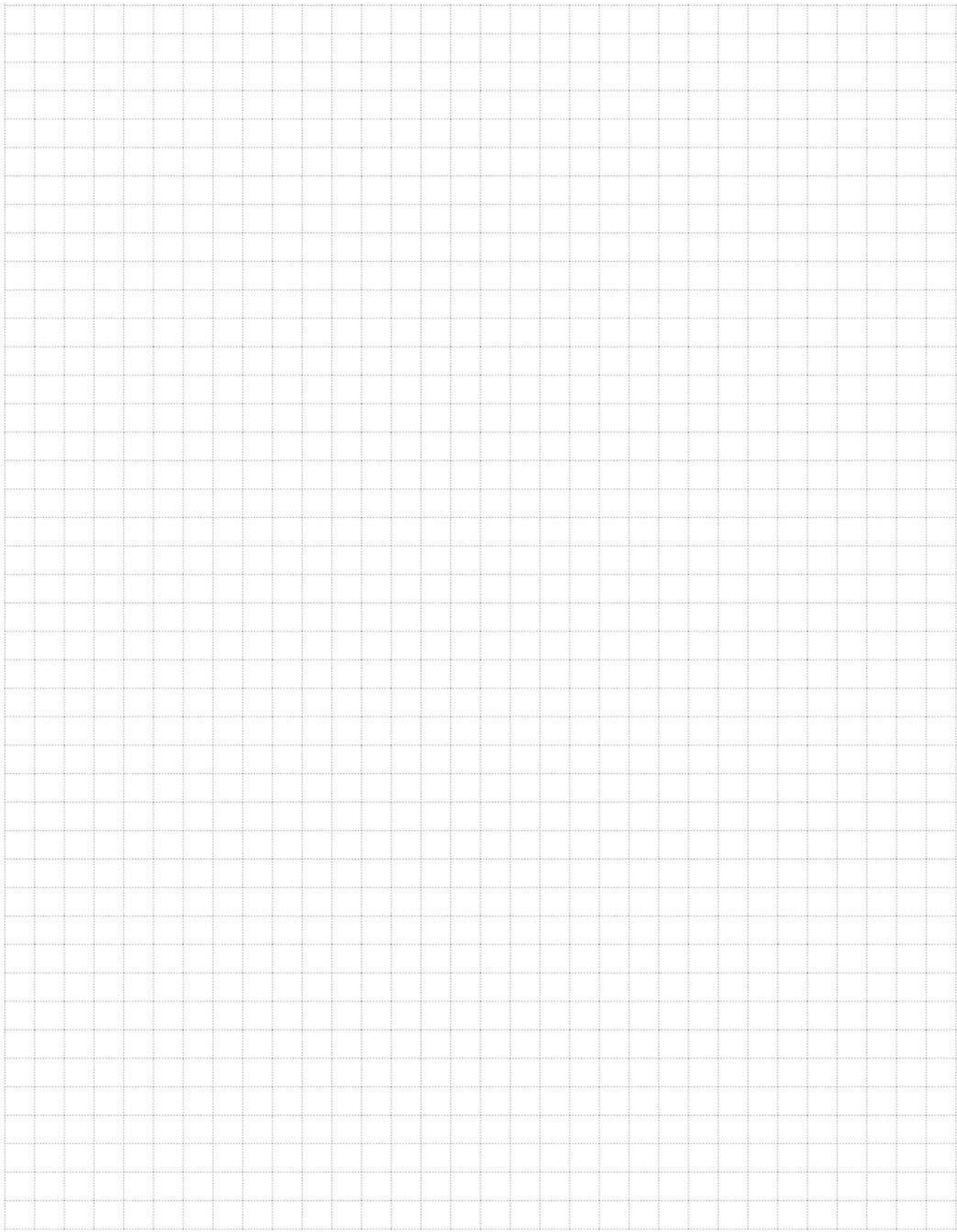
RCGX/RPGX/RNGN

Series	IC	S
RC** 0606	6.35	6.35
RC** 0907	9.525	7.94
RP** 0907	9.525	7.94
RP** 1207	12.7	7.94
RN** 1207	12.7	7.94

RCGX/RPGX/RNGN	Type	RE	Fn (mm/rev.)	Ap (mm)	S AWS30
	RCGX060600T01020	-	0.1-0.2	0.2-1.8	●
	RCGX090700T01020	-	0.1-0.25	0.2-2.4	●
	RPGX090700T01020	-	0.1-0.2	0.2-2.4	●
	RPGX120700T01020	-	0.1-0.3	0.2-3.6	●
	RNGN120700T01020	-	0.2-0.32	0.2-3.6	●

● Standing stock ◎ Optional stock

Cutting Parameters				Vc(m/min.)	
ISO	Material Group	Tensile Strength (N/mm²)	HB	AWS30	
				Min	Max
P	Unalloyed steel	430	125		
		640~1010	190~300		
	Low-alloyed Steel	700~950	200~280		
		950~1200	280~355		
M	High-alloyed Steel	1200~1400	355~415		
	Duplex Stainless Steel	780	230		
	Austenitic Steel	680	200		
K	PH Stainless Steel	1010	300		
	Grey Cast Iron	200~350	180~245		
	Nodular Cast Iron	400~700	155~265		
	Vermicular graphite cast iron	400	230		
S	Cobalt Base/Nickel Base Alloy	840~1180	250~350	200	400
	Titanium Alloy	1260~1400	375~410		
N	Aluminium Alloy	260~450	75~130		
H	Hardened Steel	-	HRC 50~60		
	Hardened Cast Iron	-	HRC 55		



Grooving Insert Name Code

Groove-Code System

Example 1:

G	P	18	-	D	300	M	02	R	6	-	C	M	A
1	2			3	4	5	6	7	8		9	10	11

1. Processing Type

Symbol	Type
GP	Slot machining

2. Insert Length

Symbol	Type
18	Length 18mm

3. Insert Shape

Symbol	Shape
D	double-end
S	Single end

4. Insert Width

Symbol	Width
300	3.0mm
400	4.0mm
425	4.25mm

5. Precision Class

Symbol	Recommendation
M	Suppress Insert
G	Finishing Insert

6. Knife Tip Rounded Corners

Symbol	Fillet corner
02	0.2mm
03	0.3mm
04	0.4mm

7. Insert Direction

Symbol	Direction	Shape
R	Right Hand	
L	Left Hand	
无	Neutral	

8. Cutting Edge Shape

Shape	Angle
	6°
	15°

9. Type

Symbol	Application
C	Sever
R	Profiling
G	Fluting
T	General

10. Cutting Edge Shape

Symbol	Application	Shape
F	Light Cut	
M	Medium Machining	
R	Roughing	

11. Application Recommendation

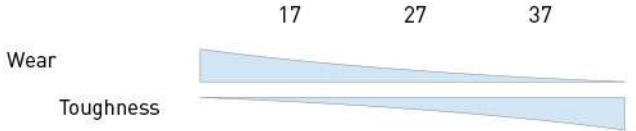
Symbol	Recommendation
A	1st
B	2nd
C	3rd

Groove-Code System

Grooving Insert Name Code

Example:

A	P	M	27	C
1	2	3	4	5

Function No.	Description	Details			
1	AHNO				
2	Basic Materials & Coating Code	C	Carbide + CVD	V	Cermet + PVD
		P	Carbide + PVD	I	Sialon Ceramics
		B	CBN	W	Whisker Ceramics
		D	PCD	N	Carbide
		T	Cermet		
3	First Recommended Application	P	Steel	N	Nonferrous Metals
		M	Stainless Steel	S	Hard-to-machine Materials
		K	Cast Iron	H	Hard Materials
4	ISO Application Range				
5	Generation Code				

Grooving Insert

Grooving Insert Materials Overview

槽刀材料应用																								
AHNO Turning Materials Code	ISO Group	Coating Technology	Workpiece Material Group						Application Range											Technology Description				
			P	M	K	S	N	H	01	05	10	15	20	25	30	35	40	45	50					
APM17C	P10	PVD	●																	Universal material, suitable for steel parts, stainless steel, cast iron and difficult materials and other parts, the best wear resistance can meet the continuous and stable conditions of grooving, grooving and copying machining.				
	M10			●																				
	K10				●																			
	S20					●																		
APM27C	P10	PVD	●																	Universal material, suitable for steel, stainless steel, cast iron and other parts, comprehensive stable wear resistance and toughness suitable for continuous and intermittent working conditions of various groove processing types.				
	M10			●																				
	K10				●																			
APM37E	P10	PVD	●																	Universal material, suitable for steel, stainless steel, cast iron and other parts, the best matrix toughness is especially suitable for various groove processing types under intermittent unstable conditions.				
	M10			●																				
	K10				●																			
ACP27D	K20	CVD			●															Suitable for cast iron and steel parts, Al2O3 composite coating structure is equipped with stable matrix material, providing excellent wear resistance and toughness strength, to meet the continuous and intermittent working conditions of various groove processing types.				
	P10		●																					

● 2nd

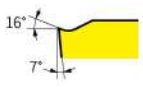
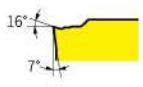
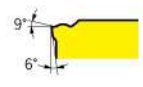
Grooving Insert

Grooving Insert Materials Overview

Workpiece Material Group	Insert Material	Coating Technology	Application Category				
			01	10	20	30	40
P	Non alloy steel/alloy steel	Carbide PVD		APM17C			
		Carbide CVD		ACP27D			
		Carbide PVD			APM27C		
		Carbide PVD				APM37E	
M	Stainless Steel	Carbide PVD		APM17C			
		Carbide PVD			APM27C		
		Carbide PVD				APM37E	
K	Cast Iron	Carbide CVD		ACP27D			
		Carbide PVD		APM17C			
		Carbide PVD			APM27C		
		Carbide PVD				APM37E	
S	High Temperature Alloy/Titanium Alloy	Carbide PVD		APM17C			
		Carbide PVD			APM27C		

Grooving Insert

Insert Type Overview

Application	Type	Main cutting edge view	Peculiarity	Peculiarity	S (mm)	ap (mm)	f (mm/r)
Sever	-CMA			* Positive front Angle groove, low cutting force * Low to moderate feed * Grooving and cutting machining	2	—	0.06-0.12
					3	—	0.09-0.18
					4	—	0.10-0.20
General	-TMA			* Multi-purpose machining groove type, to meet the radial and axial cutting groove * Stable cutting edge, medium feed	2	0.2-1.5	0.08-0.12
					3	0.3-2.0	0.09-0.18
					4	0.5-2.5	0.10-0.20
Profiling	-RMA			* Stable groove and copying performance * Positive front Angle groove, good chip control	2	0.2-1.5	0.08-0.25
					3	0.5-1.5	0.10-0.35
					4	0.5-2.0	0.15-0.45

Groove-Code System

Grooving Insert Name Code

Example 1:

G	1	1	0	0	-	GP18	-	20	20	R/L	-	3	T10	-	60	-	P
1	2	3	4			5		6	7	8		9	10		11		12

1. Machining Type

Code	Type
G	Tank turning

2. Machining Position

Code	Position
1	Cylindrical machining
2	Inner hole machining
3	Face finishing

3. Generation

Code	

4. Tool Holder Shape

Code	Shape	Figure
00	0° Angular form	
90	90° Angular form	
45	45° Angular form	

5. Insert Type

Code	Figure
GP18	

6. Tool Holder Height

Code	Altitude
20	20.00mm
25	25.00mm
32	32.00mm

7. Tool holder Width/
Diameter

Code	Width/Diameter
20	20.00mm
25	25.00mm
32	32.00mm

8. Tool Holder Direction

Code	Direction	Figure
L	Left Hand	
R	Right Hand	

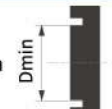
9. Insert Width

Code	Width
2	2.00mm
3	3.00mm
4	4.00mm

10. Profound

Code	Profundity
T10	10.00mm
T16	16.00mm

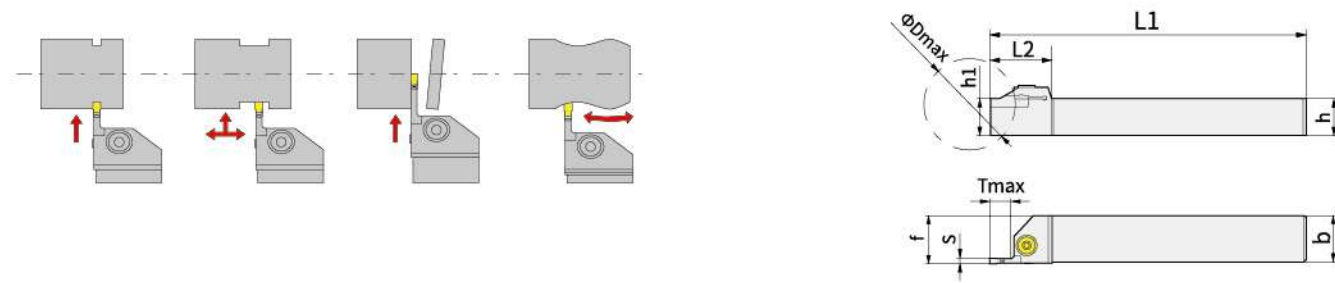
11. Minimum Machining
Diameter

Code	Diameter	Figure
60	60.00mm	

12. Cooling Mode

Code	Application
P	Precision internal cooling

Radial Grooving holder

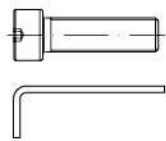


Unit: mm

Type	S	Tmax	Dmax	h(=h1)	b	f	L1	L2	刀片
G1100-GP18-2020R/L-2T10	2	10		20	20	21	125	22.4	GP18-D200
G1100-GP18-2020R/L-2T16	2	16	42	20	20	21	125	41	GP18-D200
G1100-GP18-2525R/L-2T10	2	10		25	25	26	150	22.4	GP18-D200
G1100-GP18-2525R/L-2T16	2	16	42	25	25	26	150	41	GP18-D200
G1100-GP18-3225R/L-2T10	2	10		32	25	26	170	30	GP18-D200
G1100-GP18-3225R/L-2T16	2	16	42	32	25	26	170	41	GP18-D200
G1100-GP18-2020R/L-3T10	3	10		20	20	21	125	22.4	GP18-D300
G1100-GP18-2020R/L-3T16	3	16	45	20	20	21	125	41	GP18-D300
G1100-GP18-2525R/L-3T10	3	10		25	25	26	150	22.4	GP18-D300
G1100-GP18-2525R/L-3T16	3	16	45	25	25	26	150	41	GP18-D300
G1100-GP18-3225R/L-3T10	3	10		32	25	26	170	30	GP18-D300
G1100-GP18-3225R/L-3T16	3	16	45	32	25	26	170	41	GP18-D300
G1100-GP18-2020R/L-4T10	4	10		20	20	21	125	22.4	GP18-D400
G1100-GP18-2020R/L-4T16	4	16	50	20	20	21	125	41	GP18-D400
G1100-GP18-2525R/L-4T10	4	10		25	25	26	150	22.4	GP18-D400
G1100-GP18-2525R/L-4T16	4	16	50	25	25	26	150	41	GP18-D400
G1100-GP18-3225R/L-4T10	4	10		32	25	26	170	30	GP18-D400
G1100-GP18-3225R/L-4T16	4	16	50	32	25	26	170	41	GP18-D400

Radial

Attachment



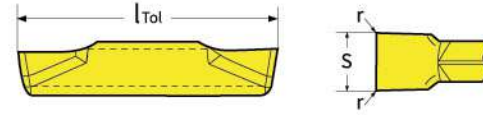
Insert with Screw

AF1017

Insert with Wrench

AF2017

Grooving Insert



Series	S	r	l
GP18-D200M02	2	0.2	18
GP18-D300M03	3	0.3	18
GP18-D400M04	4	0.4	18

									P				M		K			N	S			
	Type	s mm	r mm	l mm	ap mm	f mm/r	S _{Tol} mm	l _{Tol} mm	APM17C	ACP27D	APM27C	APM37E	APM17C	APM27C	APM37E	ACP27D	APM27C	APM37E	ANN17	APM17C	APM27C	APM37E
-CMA	GP18-D200M02-CMA	2	0.2	18	-	0.06-0.12	±0.05	±0.15	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	GP18-D300M03-CMA	3	0.3	18	-	0.09-0.18	±0.05	±0.15	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	GP18-D400M04-CMA	4	0.4	18	-	0.10-0.20	±0.05	±0.15	●	●	●	●	●	●	●	●	●	●	●	●	●	●
-TMA	GP18-D200M02-TMA	2	0.2	18	0.2-1.5	0.08-0.12	±0.05	±0.15	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	GP18-D300M03-TMA	3	0.3	18	0.3-2.0	0.09-0.18	±0.05	±0.15	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	GP18-D400M04-TMA	4	0.4	18	0.5-2.5	0.10-0.20	±0.05	±0.15	●	●	●	●	●	●	●	●	●	●	●	●	●	●
-RMA	GP18-D200M02-RMA	2	0.2	18	0.2-1.5	0.08-0.25	±0.05	±0.15	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	GP18-D300M03-RMA	3	0.3	18	0.5-1.5	0.10-0.35	±0.05	±0.15	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	GP18-D400M04-RMA	4	0.4	18	0.5-2.0	0.15-0.45	±0.05	±0.15	●	●	●	●	●	●	●	●	●	●	●	●	●	●

S_{Tol}-Width Tolerance, l_{Tol}-Length Tolerance

● Standing stock ◎ Optional stock

Cutting Parameters

ISO	Material Group	Tensile Strength (N/mm²)	布氏硬度 (HB)	APM17		APM27		APM37		ACP27		ANN17	
				Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
P	Low Carbon Steel	< 600	< 180	125	200	115	190	105	180	120	195		
	Carbon Steel	< 950	< 280	100	180	90	170	80	160	95	175		
	Low-alloyed Steel	700-950	200-280	80	160	70	150	60	140	75	155		
	High-alloyed Steel	950-1200	280-355	70	140	60	130	50	120	65	135		
		1200-1400	355-415	60	120	50	110	40	100	55	115		
M	Austenitic	675	200	100	180	90	170	80	160				
	Duplex Stainless Steel	778	230	90	170	80	160	70	150				
	PH Stainless Steel	1013	300	50	120	40	110	40	100				
K	Gray Cast Iron	700	220	150	230	140	220	130	210	180	310		
	Nodular Cast Iron	880	260	130	220	130	210	120	200	150	260		
	Malleable Cast Iron	800	250	110	190	100	180	70	150	100	160		
S	Cobalt Base Alloy	1100	320-250	45	80	40	70	35	60				
	Nickel Base Alloy	1260	370	35	45	30	40	25	35				
	Titanium Alloy	1260	370	35	45	30	40	25	35				
N	Aluminum	260	75									200	450
	Aluminium Alloy	447	130									180	350

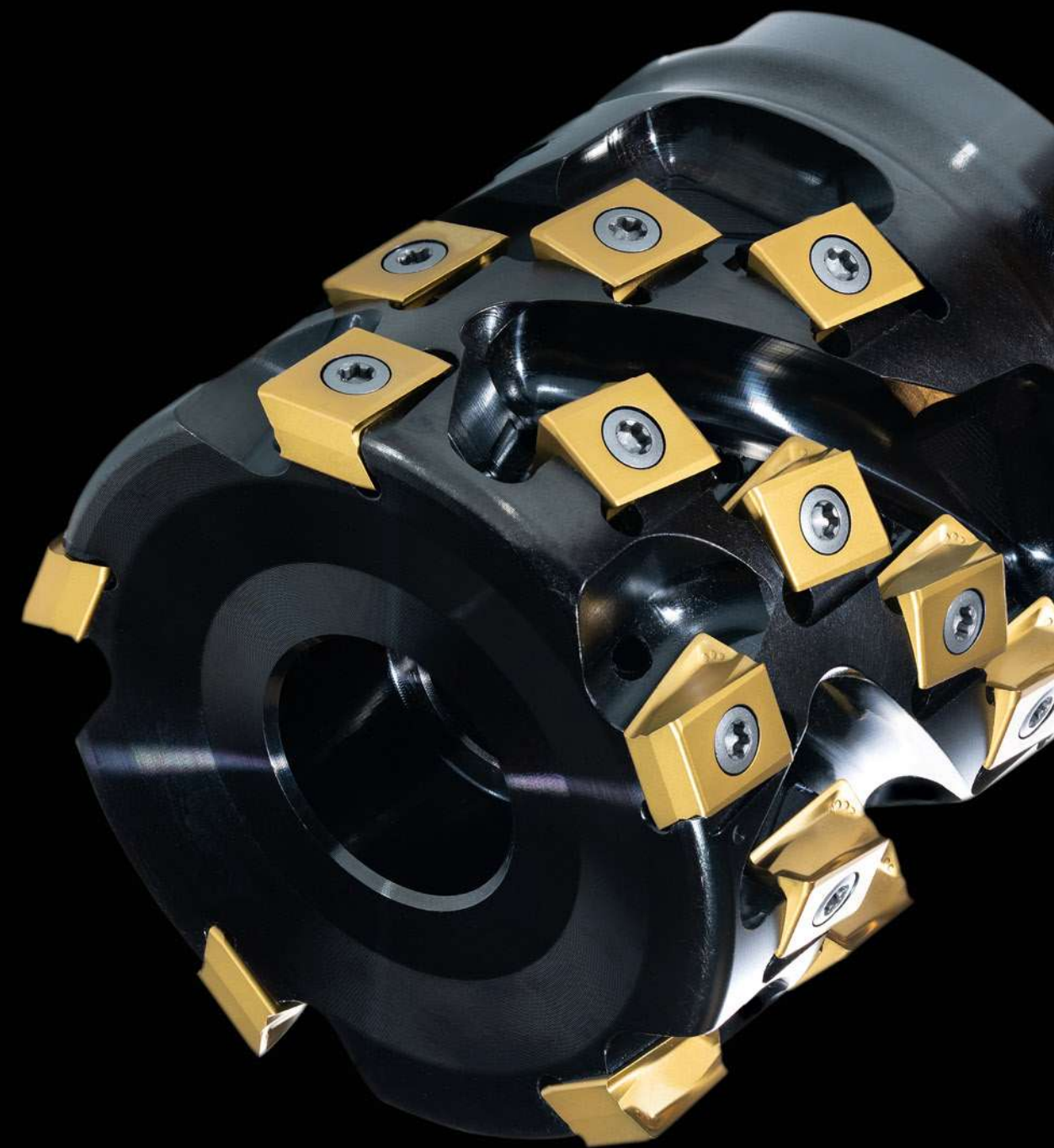
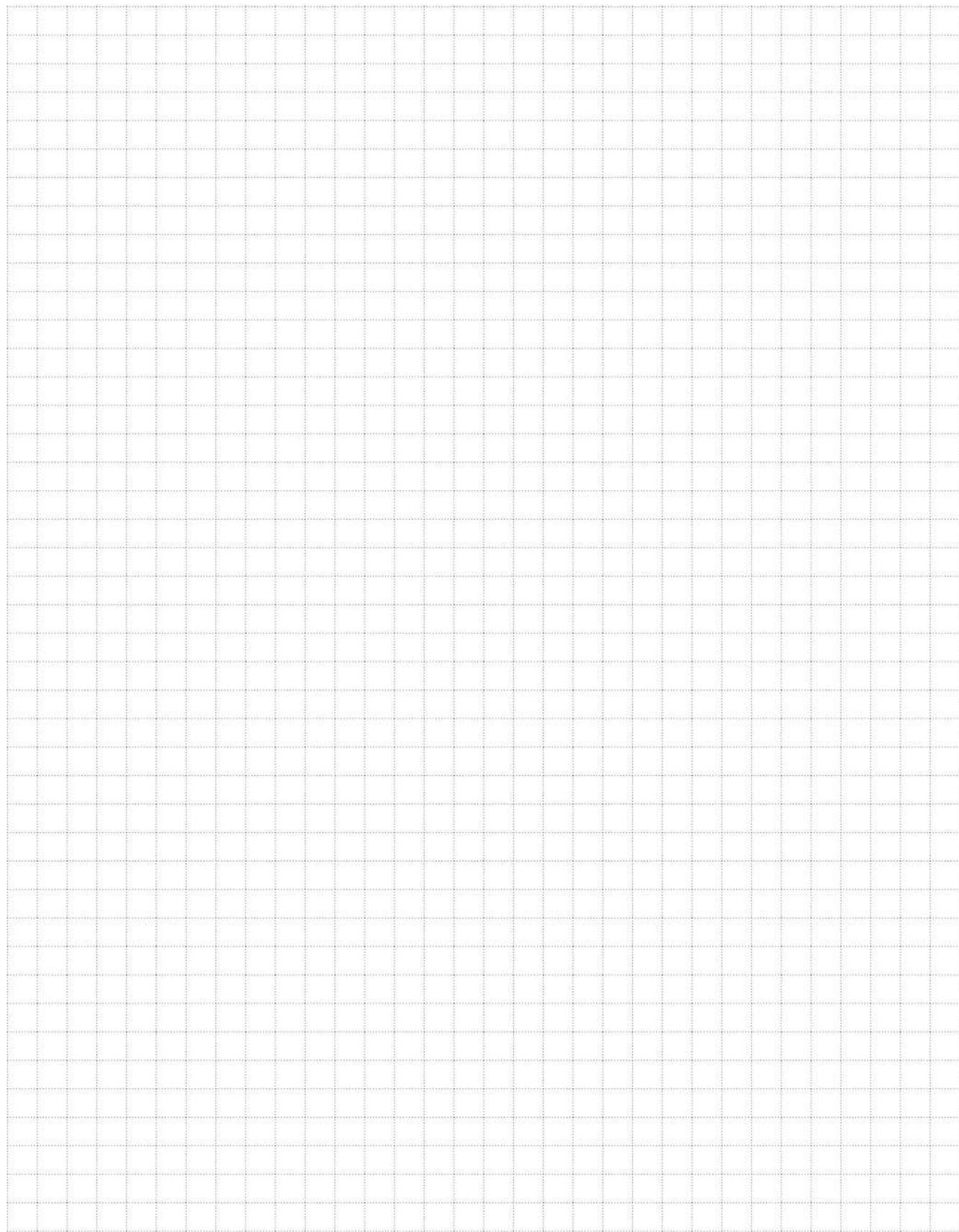
Grooving insert series

TURNING

MILLING

DRILLING

TECHNICAL INFO



MILLING

Milling Insert Name Code

Milling-Code System

Milling inserts
according to ISO 1832 Standard Code System

Example 1:

T	P	E	X	10	04	08
1	2	3	4	5	6	7

1. Insert shape

Symbol	Shape	Symbol	Shape
A		M	
B		O	
C		P	
D		R	
E		S	
H		T	
K		V	
L		W	

3. Tolerance

Tolerance(mm)	d	m	s	
	A	± 0,025	± 0,005	± 0,025
	C	± 0,025	± 0,013	± 0,025
	E	± 0,025	± 0,025	± 0,025
	F	± 0,013	± 0,005	± 0,025
	G	± 0,025	± 0,025	± 0,130
	H	± 0,013	± 0,013	± 0,025
	J ¹	± 0,05–0,15 ²	± 0,005	± 0,025
	K ¹	± 0,05–0,15 ²	± 0,013	± 0,025
	L ¹	± 0,05–0,15 ²	± 0,025	± 0,025
	M	± 0,05–0,15 ²	± 0,08–0,20 ²	± 0,130
	N	± 0,05–0,15 ²	± 0,08–0,20 ²	± 0,025
	U	± 0,08–0,25 ²	± 0,13–0,38 ²	± 0,130

¹ The insert has finishing minor cutting edge. ² Tolerance is different by insert size. Please see ISO 1832.

2. Relief Angle

Symbol	Shape	Symbol	Shape
A		N	
B		P	
C			
D			
E			
F			
G			

4. Insert Machining and Figure

Symbol	Shape	Symbol	Shape	Symbol	Shape
A		H		R	
B		J		T	
C		M		U	
F		N		W	
G		Q		X	Indexable insert drawing or detailed description is needed

Milling-Code System

Milling Insert Name Code

(PDTR) - M5
8 12

5. Cutting Edge Length

Insert Shape															
IC Diameter d															
mm	Inch	Size	l	Size	l	Size	l	Size	l	Size	l	Size	l	Size	l
3,97	5/32									06	6,9				
5	0,197					05								03	3,8
5,56	7/32									09	9				
6	0,236					06									
6,35	2/8	06	6,4	07	7,7	06 ¹				11	11	11	11	04	4,3
8	0,315					08								05	5,2
9,525	3/8	09	9,6	11	11,6	09 ¹	09	9,5	16	16,5	16	16,5	16	06	6,5
10	0,394					10									
12	0,472					12									
12,7	4/8	12	12,9	15	15,5	12 ¹	12	12,7	22	22	22	22,1	08	8,7	
15,875	5/8	16	16,1				15	15,8	27	27			10	10,8	
16	0,63					16									
17,46	11/16													12	11,6
19,05	6/8	19	19,3			19 ¹	19	19,0							
20	0,787					20									
25	0,984					25									
25,4	8/8	25	25,8			25 ¹	25	25,4							
32	1,26					32									

1 Inch[00]

¹ Inch(00)

6. Insert Thickness

Figure	Thickness s(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	9,52

7. Corner Radius

Shape	Radius r(mm)
01	0,1
02	0,2
04	0,4
08	0,8
12	1,2
16	1,6
24	2,4
M0	For metric diameter
00	For inch diameter converted to mm

8. Cutting Edge Figure

Parameter Description			
P	D	T	R
8-1	8-2	8-3	8-4

8-1. Cutting Edge Angle		8-2. Wiper Edge Relief Angle		8-3. Cutting Edge Shape		8-4. Feed Direction	
Symbol	Angle	Symbol	Angle	Symbol	Figure	Symbol	Figure
P	90°	N	0°	F		R	
A	45°	P	11°	E		L	
D	60°	D	15°	T		N	
E	75°	E	20°				
F	85°	F	25°				
Z	Other Cutting Edge Angles	Z	Relief Angle	S			

Milling Insert Name Code

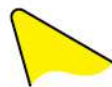
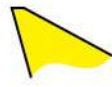
Milling-Code System

Chipbreaker Introduction

Example:

M5	M	5
12	12-1	12-2

12. Type Index

Milling Chipbreaker	Edge Geometry	Chipbreaker Description	Milling Chipbreaker	Edge Geometry	Chipbreaker Description
-F2		Light Cutting Grooves	-M6		Cutting Edge Rounding Type
-F5		Roughness First	-R5		Universal High Strength Machining Groove Type
-M4		Low Resistance	-R6		Cutting Edge Negative Chamfered Groove
-M5		General Medium Machining	-M7		General Medium And High Strength Machining

12-1. Chipbreaker Code

Code	Application
F	Finishing
	Light Machining/Machining Strength First
S	Semi Finishing
M	Medium Machining
R	Roughing
	Service Life First
H	Heavy Machining
W	Wiper Edge

12-2. Function Code

Code
2
4
5
6
7

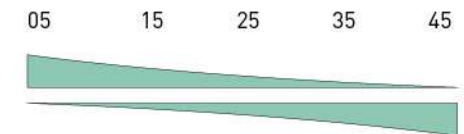
Milling Insert Name Code

Milling-Code System

Example:

A	P	M	25	E
1	2	3	4	5

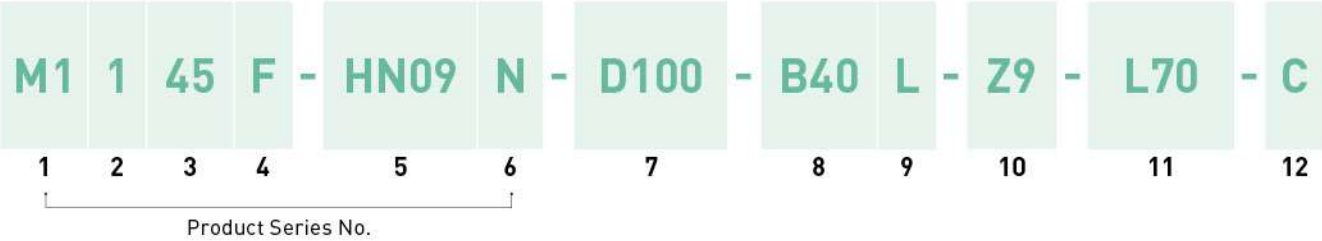
Function No.	Description	Details			
1	AHNO				
2	Basic Materials & Coating Code	C	Carbide +CVD	V	Cermet +PVD
		P	Carbide + PVD	I	Sialon Ceramics
		B	CBN	W	Whisker Ceramics
		D	PCD	N	Cemented Carbide Uncoated
		T	Cermet		
3	First Recommended Application	P	Steel	S	Hard-to-machine Materials
		M	Stainless Steel	H	Hard Materials
		K	Cast Iron	U	General
		N	Nonferrous Metals		
4	ISO Application Range	Wear Resistance Toughness			
5	Generation Code				



Milling Name Code

Milling-Code System

Example:



1. Product Series

Code	Cutting Method	Series Number
MF	Face Milling	M1
MS	Shoulder Milling	M2
MH	High Feed	M3
MP	Profiling	M4
MD	Three-side Edge	M5
MT	Tread Milling	M6
MC	Chamfer	M7
PE	Corn Milling	M9

2. Generation

Series Generation

3. Cutting Edge Angle (Kr)

Value	Angle
90	90
88	88
75	75
60	60
.	.
.	.
15	15
00	Circular Insert

4. Cutting Edge Type

Code	Micro Adjusting Edge
F	With Micro Adjusting Edge

5. Insert

Insert Type

6. Cutter Head Type

Code	Wedge Cutter Head
N	With Wedge Cutter Head

7. Diameter

Cutter Diameter

8. Interface

Code	Connection Method
B	Arbor
W	Weldon
A	Cylindrical
M	Treading Interface

9. Cutting Direction

Code	Rotation Direction
R	Right-hand (Default)
L	Left-hand

10. Number of Teeth

Cutter Number of Teeth

11. Length

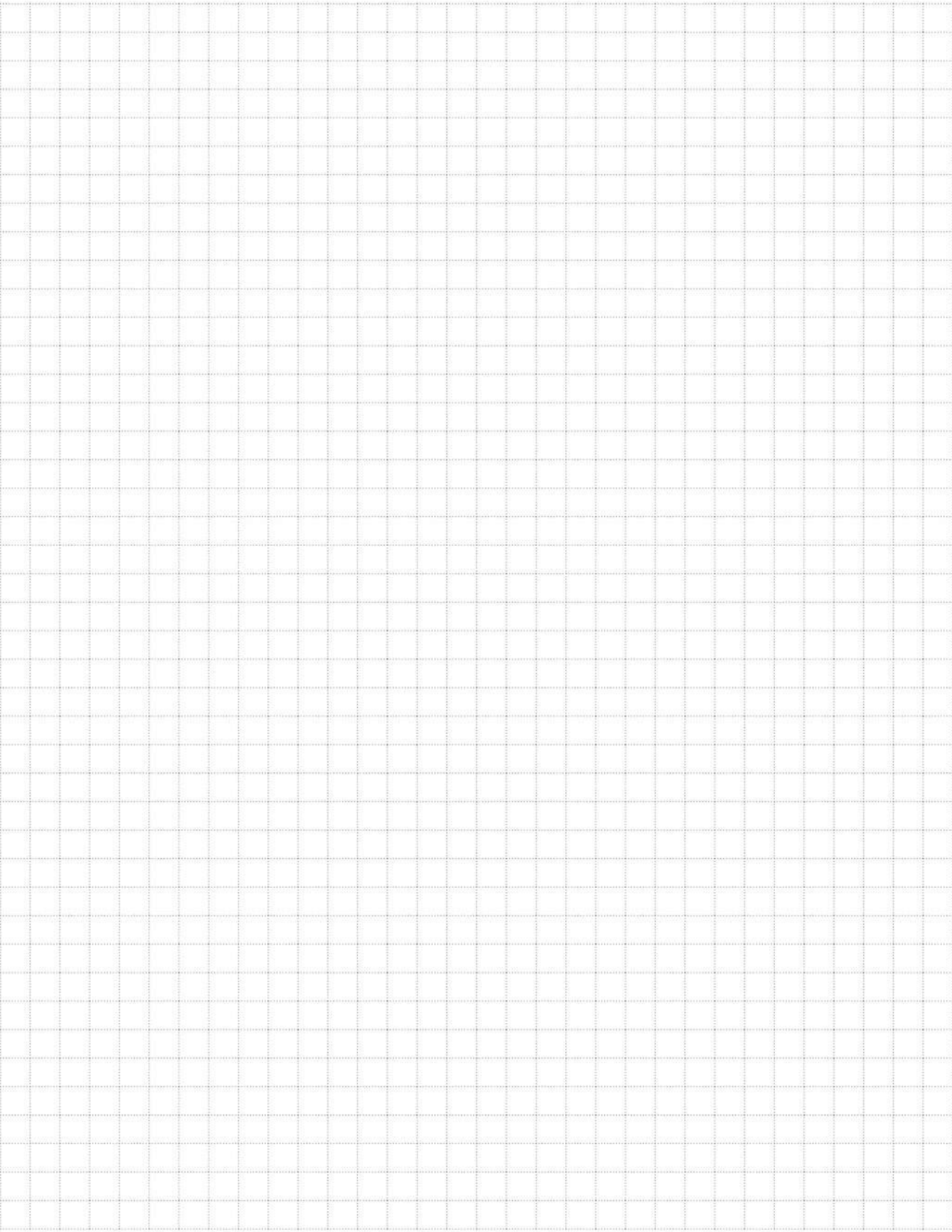
Special Length

12. Other

Code	Type
C	With internal cooling
Unmarked	Without internal cooling

Milling Name Code

Milling-Code System



Milling Materials

Milling Grades

Milling Materials Overview

Turning Materials Application															
AHNO Turning Materials Code	ISO Group	Coating Technology	Workpiece Material Group						Application Range					Technology Description	
			P	M	K	S	N	H	05	15	25	35	45		
APU25E/B	P25	PVD	●											Multifunctional material for milling, the use of excellent toughness matrix, with balanced bending strength, universal PVD coating to achieve good thermal stability, suitable for steel, stainless steel and cast iron materials.	
	M25		●	●											
	K25				●										
ACP35E	P35	CVD	●											Milled multifunctional material, high strength substrate with MT-CVD coating, even at high linear speeds still take into account the wear resistance, suitable for steel and cast iron roughing.	
	K35				●										
APP45E	P45	PVD	●											Milling special material, excellent toughness is especially suitable for low linear speed or harsh processing conditions, in the face of high strength steel and stainless steel can maintain good reliability.	
	M45			●											
APM25C	M25	PVD		●										Multi-functional material for milling, the high-strength substrate is equipped with the new PVD coating technology for excellent wear resistance, especially for stainless steel machining, as well as for cast iron milling in some working conditions and difficult materials milling.	
	K25				●										
	S25					●									
APM25E/B	M25	PVD		●										Multifunctional material for milling, high strength matrix with universal PVD coating, with good thermal shock resistance, especially suitable for stainless steel and titanium alloy processing, as well as some steel milling.	
	P25		●												
	S25					●									
APM35C	M35	PVD		●										Suitable for stainless steel processing, the high toughness matrix and the new PVD coating technology achieve optimal reliability, also covering parts of steel and difficult materials milling.	
	P35		●												
	S35					●									
APM35E/B	M35	PVD		●										Suitable for stainless steel processing, the high toughness matrix and the new PVD coating technology achieve optimal reliability, also covering parts of steel and difficult materials milling.	
	P35		●												
	S35					●									
APH25E	H25	PVD						●						Suitable for the milling of hardened materials, the use of ultra-fine particles of cemented carbide matrix, with high hardness, high wear resistance characteristics, cast iron finishing is another application of this material.	
	K25				●										
AWK05	K05	-			●									Silicon nitride ceramic material, with excellent high temperature resistance and red hardness, is particularly suitable for high-speed processing. Low friction coefficient and anti-bonding ability to resist chip nodules for optimal surface quality.	

Milling Materials

Milling Grades

Milling Materials Overview

Turning Materials Application															
AHNO Turning Materials Code	ISO Group	Coating Technology	Workpiece Material Group						Application Range					Technology Description	
			P	M	K	S	N	H	05	15	25	35	45		
APK15E/B	K15	PVD			●									Special milling material for cast iron, very wear-resistant matrix, equipped with high-performance PVD coating, widely used in all kinds of cast iron processing.	
ACK15E	K15	CVD			●									Special milling material for cast iron, extremely wear-resistant matrix with MT-CVD coating for high linear speed applications.	
ACK25E	K25	CVD			●									Medium milling of cast iron, with a new generation of substrates and MT-CVD coating, effectively covers the cast iron from semi-finishing to rough machining.	
ACK35E	K35	CVD			●									Cast iron rough milling material, with high strength ductile matrix and MT-CVD coating, has good reliability, is the best choice to deal with harsh working conditions.	
APN15E	N15	PVD					●							Aluminum alloy special material, submicron matrix with diamond-like coating, with low friction coefficient, high hardness, high wear resistance and other characteristics.	
ANN15	N15	-					●							Aluminum alloy special material, submicron matrix, no coating design, also suitable for titanium alloy processing.	
	S15					●									
APS25C	S25	PVD				●								Special material for difficult to process materials, using a new generation of PVD coating technology, with good wear resistance and thermal stability, but also suitable for stainless steel and some cast iron processing.	
	M25			●											
APS35C	K25	PVD			●									Special material for difficult to process materials, using a new generation of PVD coating technology, with good toughness and thermal stability, also can cover the processing of stainless steel.	
	S35					●									
APS35C	M35	PVD		●											

Milling Material Overview

Work Material Group		Tool Material	Coating Class	Application Category				
				05	10	20	30	40
P	Carbon Steel / Alloyed Steel	Cemented Carbide	PVD		APU25E/B			
		Cemented Carbide	CVD			ACP35E		
		Cemented Carbide	PVD				APP45E	
M	Stainless Steel	Cemented Carbide	PVD		APM25C			
		Cemented Carbide	PVD		APM25E/B			
		Cemented Carbide	-			APM35C		
		Cemented Carbide	PVD				APM35E/B	
		Cemented Carbide	PVD				APP45E	
K	Cast Iron	Ceramic	-	AWK05				
		Cemented Carbide	PVD	APK15E/B				
		Cemented Carbide	CVD		ACK15E			
		Cemented Carbide	CVD		ACK25E			
		Cemented Carbide	CVD			ACK35E		
N	Aluminium Alloy	Cemented Carbide	PVD		APN15			
		Cemented Carbide	-		ANN15			
S	Superalloys / Titanium Alloys	Cemented Carbide	PVD		APS25C			
		Cemented Carbide	PVD			APS35C		
		Cemented Carbide	-		ANN15			
H	Hard Materials	Cemented Carbide	PVD		APH25E			

Milling Grades

Milling Material Overview

Milling Catalog

Milling Contents

Alloy Insert Series

Series			M1145-HN07	M1145-HN09	M1145-QN07	M1150-QN09	M1145-OD05	M1145-ON05	M1145-ON06	M1145-ON08
										
Page			P.84	P.86	P.88	P.90	P.92	P.94	P.96	P.98
Cutting Edge Angle			45°	45°	45°	50°	43°	42°	45°	45°
Maximum Cutting Depth			3.0	4.5	4.0	6.0	3.0	3.0	4.0	5.0
Diameter Range			32~125	50~315	50~125	63~160	42~125	50~125	50~160	63~200
Insert										
			HN0704	HN0905	QN0705	QN0906	OD0504	ON0504	ON0604	ON08T5
Application	Face Milling		✓	✓	✓	✓	✓	✓	✓	✓
	Shoulder Milling									
	Slot Milling									
	Slope Milling						✓			
	Spiral Interpolation Milling						✓			
	Insert Milling									
	Profiling Milling									
	Chamfer Milling		✓	✓	✓				✓	✓
	Cavity Milling						✓			

Milling Catalog

Milling Contents

Alloy Insert Series

Series			M1145-SN12	M1188-SN12	M2190-LN15	M2190-LN13	M2190-WN06	M2290-WN08	M2190-XO06	M2190-XO12
										
Page			P.100	P.102	P.104	P.106	P.108	P.110	P.112	P.114
Cutting Edge Angle			45°	88°	90°	90°	90°	90°	90°	90°
Maximum Cutting Depth			6.0	10.0	14	12.0	5.0	7.5	5.0	10.0
Diameter Range			50~160	50~160	50~160	40~125	25~100	50~160	10~25	25~80
Insert										
			SN12T5	SN12T5	LN1506	LN1306	WN0604	WN0806	XO0602	XO1204
Application	Face Milling		✓	✓	✓	✓	✓	✓	✓	✓
	Shoulder Milling			✓	✓	✓	✓	✓	✓	✓
	Slot Milling				✓	✓	✓	✓	✓	✓
	Slope Milling								✓	✓
	Spiral Interpolation Milling								✓	✓
	Insert Milling									
	Profiling Milling									
	Chamfer Milling		✓							
	Cavity Milling								✓	✓

Milling Catalog

Milling Contents

Alloy Insert Series

Series			M2190-TP10	M2190-TP15	M2290-S009	M2290-S012	M9190-LN13	M9190-X012	M7145-S009	M7145-S012
										
Page			P.116	P.118	P.120	P.122	P.124	P.126	P.138	P.140
Cutting Edge Angle			90°	90°	90°	90°	90°	90°	45°	45
Maximum Cutting Depth			6.0	10.0	7.5	10.0	32-54	40-50	5.0	7.5
Diameter Range			20-63	50-125	32-80	40-125	40-80	32-63	12-32	25-40
Insert										
			TP1004	TP1505	S009T3	S01204	LN1306	X01204	S009T3	S01204
Application	Face Milling		✓	✓	✓	✓	✓	✓		
	Shoulder Milling		✓	✓	✓	✓	✓	✓		
	Slot Milling		✓	✓	✓	✓	✓	✓		
	Slope Milling		✓	✓				✓		
	Spiral Interpolation Milling		✓	✓				✓		
	Insert Milling									
	Profiling Milling									
	Chamfer Milling								✓	✓
	Cavity Milling		✓	✓				✓		

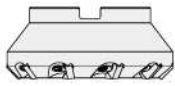
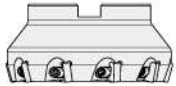
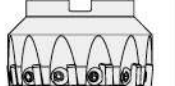
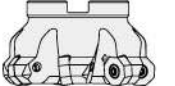
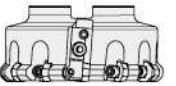
Milling Catalog

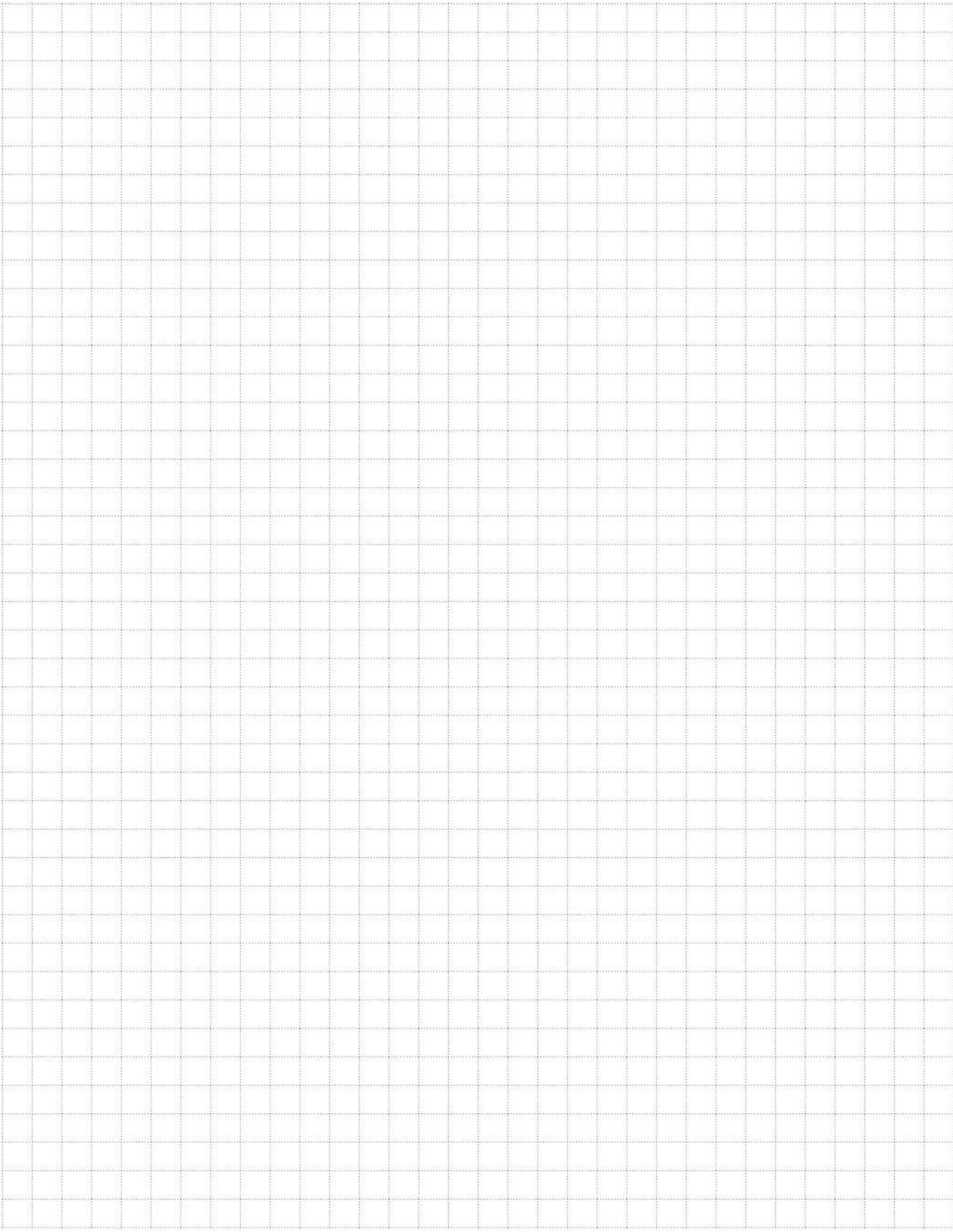
Milling Contents

Alloy Insert Series

Series			M3115-HN09	M3120-LN06	M3120-LN09	M3215-S009	M3215-S012			
										
Page			P.128	P.130	P.132	P.134	P.136			
Cutting Edge Angle			15°	20°	20°	12.5°	12.5°			
Maximum Cutting Depth			2.0	1.0	1.5	1.0	1.5			
Diameter Range			50-125	16-63	40-80	32-63	32-80			
Insert										
			HN0905	LN0603	LN0904	S009T3	S01204			
Application	Face Milling		✓	✓	✓	✓	✓			
	Shoulder Milling									
	Slot Milling									
	Slope Milling			✓	✓	✓	✓			
	Spiral Interpolation Milling			✓	✓	✓	✓			
	Insert Milling			✓	✓	✓	✓			
	Profiling Milling			✓	✓	✓	✓			
	Chamfer Milling									
	Cavity Milling			✓	✓	✓	✓			

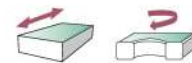
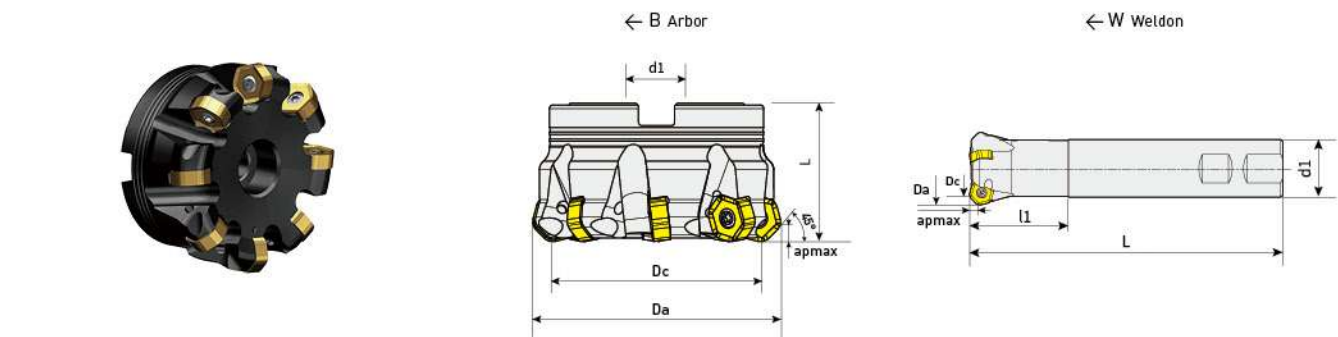
Ceramic Inserts Series

Series			M1145-SN12N	M1175-SN12N	M1188-SN12N	M1143-ON0606	M1143F-OP05N
							
Page			P.142	P.144	P.146	P.148	P.150
Cutting Edge Angle			45°	75°	88°	43°	43°
Maximum Cutting Depth			6.0	8.0	10.0	4.0	3.0
Diameter Range			50~160	50~315	50~315	63~160	80~315
Insert							
			SN1204	SN1204	SN1204	ON0606	OP0504
Application	Face Milling		✓	✓	✓	✓	✓
	Shoulder Milling				✓		
	Slot Milling						
	Slope Milling						
	Spiral Interpolation Milling						
	Insert Milling						
	Profiling Milling						
	Chamfer Milling						
	Cavity Milling						



45°Cutting Edge Angle Face Milling Cutter

M1145-HN07 Series



Unit: mm

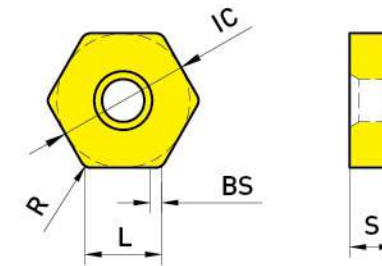
Series W	Type	Dc	Da	d1	L	l1	apmax	Inner Cooling	Z
HN** 0704	M1145-HN07-D032-W32-Z3-C	32	40.7	32	125	64	3.0	yes	3
	M1145-HN07-D032-W32-Z4-C	32	40.7	32	125	64	3.0	yes	4
	M1145-HN07-D040-W40-Z4-C	40	48.7	40	150	79	3.0	yes	4
	M1145-HN07-D040-W40-Z5-C	40	48.7	40	150	79	3.0	yes	5

Series B	Type	Dc	Da	d1	L	l1	apmax	Inner Cooling	Z
HN** 0704	M1145-HN07-D050-B22-Z5-C	50	58.7	22	40	-	3.0	yes	5
	M1145-HN07-D050-B22-Z6-C	50	58.7	22	40	-	3.0	yes	6
	M1145-HN07-D063-B22-Z6-C	63	71.7	22	40	-	3.0	yes	6
	M1145-HN07-D063-B22-Z8-C	63	71.7	22	40	-	3.0	yes	8
	M1145-HN07-D080-B27-Z8-C	80	88.7	27	50	-	3.0	yes	8
	M1145-HN07-D080-B27-Z10-C	80	88.7	27	50	-	3.0	yes	10
	M1145-HN07-D100-B32-Z9-C	100	108.7	32	50	-	3.0	yes	9
	M1145-HN07-D100-B32-Z12-C	100	108.7	32	50	-	3.0	yes	12
	M1145-HN07-D125-B40-Z10-C	125	133.7	40	63	-	3.0	yes	10
	M1145-HN07-D125-B40-Z14-C	125	133.7	40	63	-	3.0	yes	14

Attachment		
	Insert with Screw	AF1052
	Insert Screw Driver	AF2031

M1145-HN07 Series

45°Cutting Edge Angle Face Milling Cutter



	IC	L	S
HN**0704**	12.7	6.80	4.45

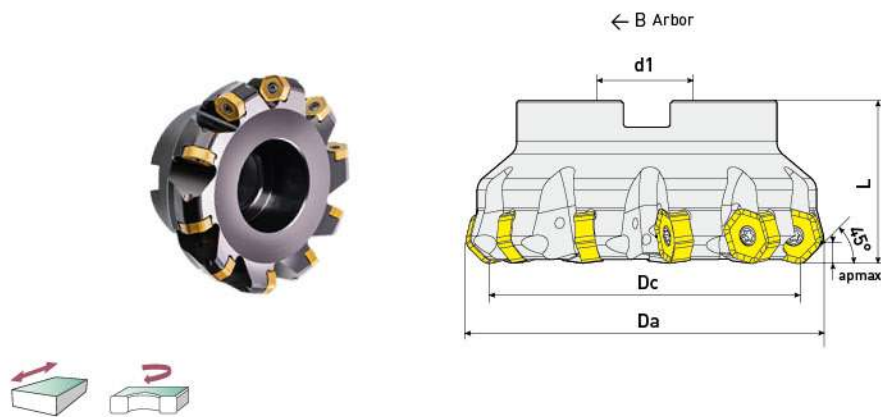
Series	Type	R	BS	P				M				K				S	
				APM2SE	APU2SE	ACP3SE	APP4SE	APM2SE	APM3SE	APP4SE	ACK1SE	APK1SE	ACK2SE	APM2SE	ACK3SE	APP2SE	APP3SE
-M5	HNEX0704ANSN-M5	1.2	1.25	●	●		◎	●	●	◎		●	●	●		●	

● Standing stock ◎ Optional stock

Feed Parameter				ap(mm)		fz(mm/t)	
ISO	Material Group	Tensile Strength [N/mm²]	HB	Min	Max	Min	Max
P	Unalloyed steel	430	125	0.5	3.0	0.15	0.36
		640-1010	190-300	0.5	3.0	0.12	0.32
	Low-alloyed Steel	700-950	200-280	0.5	3.0	0.12	0.32
		950-1200	280-355	0.5	3.0	0.1	0.3
M	Duplex Stainless Steel	1200-1400	355-415	0.5	3.0	0.1	0.3
		780	230	0.5	3.0	0.1	0.3
	Austenitic Steel	680	200	0.5	3.0	0.1	0.3
		1010	300	0.5	3.0	0.08	0.25
K	Grey Cast Iron	200-350	180-245	0.5	3.0	0.16	0.4
		400-700	155-265	0.5	3.0	0.15	0.36
	Vermicular graphite cast iron	400	230	0.5	3.0	0.12	0.32
S	Cobalt Base/Nickel Base Alloy	840-1180	250-350	0.5	3.0	0.06	0.2
		1260-1400	375-410	0.5	3.0	0.06	0.2
N	Aluminium Alloy	260-450	75-130				
H	Hardened Steel	-	HRC50-60				
	Hardened Cast Iron	-	HRC55				

45°Cutting Edge Angle Face Milling Cutter

M1145-HN09 Series



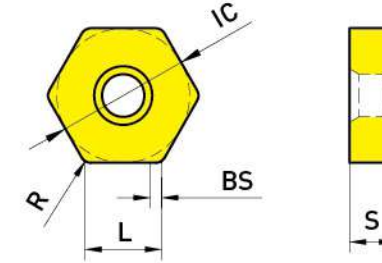
Unit: mm

Series B	Type	Dc	Da	d1	L	apmax	Inner Cooling	Z
HN** 0905	M1145-HN09-D050-B22-Z4-C	50	61	22	40	4.5	yes	4
	M1145-HN09-D050-B22-Z5-C	50	61	22	40	4.5	yes	5
	M1145-HN09-D063-B22-Z6-C	63	74	22	40	4.5	yes	6
	M1145-HN09-D063-B22-Z7-C	63	74	22	40	4.5	yes	7
	M1145-HN09-D080-B27-Z6-C	80	91	27	50	4.5	yes	6
	M1145-HN09-D080-B27-Z9-C	80	91	27	50	4.5	yes	9
	M1145-HN09-D100-B32-Z8-C	100	111	32	50	4.5	yes	8
	M1145-HN09-D100-B32-Z11-C	100	111	32	50	4.5	yes	11
	M1145-HN09-D125-B40-Z10	125	136	40	63	4.5	no	10
	M1145-HN09-D125-B40-Z14	125	136	40	63	4.5	no	14
	M1145-HN09-D160-B40-Z12	160	171	40	63	4.5	no	12
	M1145-HN09-D200-B60-Z16	200	211	60	63	4.5	no	16
	M1145-HN09-D250-B60-Z20	250	261	60	63	4.5	no	20
	M1145-HN09-D315-B60-Z24	315	326	60	80	4.5	no	24

Attachment		
	Insert with Screw	AF1031
	Insert Screw Driver	AF2031

M1145-HN09 Series

45°Cutting Edge Angle Face Milling Cutter



	IC	L	S
HN**0905**	15.88	8.58	5.56
XN**0905**	15.88	9.6	5.51

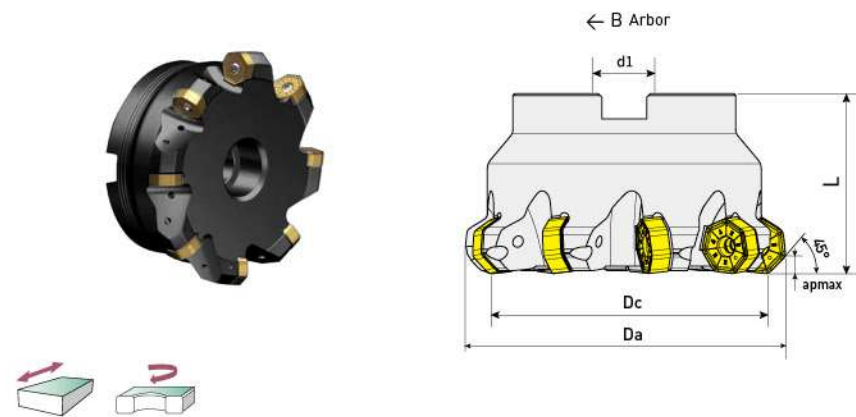
				P				M				K					S				
Series		Type	R	BS	APM2SE	APU2SE	ACP3SE	APP4SE	APM2SC	APM2SE	APM3SC	APP4SE	AWK05	ACK1SE	APK1SE	ACK2SE	APM2SC	ACK3SE	APS2SC	APS3SC	
-M4		HNEX0905ANSN-M4	1.2	1.8	●	○			●	●						○	●		●		
-M5		HNEX0905ANSN-M5	1.2	1.8	●	●	○	●	●	●	●	●		○	●	●	●	○	●	●	
-M7		HNEX0905ANSN-M7	1.2	1.6		●	●								○	●		○			
-W4		XNGX0905ANSN-W4	1.6	6					●					●			●				
-R6		HNEX090512-R6	1.2	-									●								
		HNEX090516-R6	1.6	-										●							
		HNEX0905ANSN-R6	1.2	1.95										●							

● Standing stock ○ Optional stock

Feed Parameter				ap(mm)				fz(mm/t)							
ISO	Material Group	Tensile Strength (N/mm²)	HB	ap		M4		M5		M7		R6			
				Min	Max	Min	Max	Min	Max	Min	Max	Min	Max		
P	Unalloyed steel	430	125	0.5	4.5	0.15	0.36	0.16	0.4	0.18	0.45				
		640-1010	190-300	0.5	4.5	0.12	0.32	0.15	0.36	0.16	0.4				
	Low-alloyed Steel	700-950	200-280	0.5	4.5	0.12	0.32	0.15	0.36	0.16	0.4				
		950-1200	280-355	0.5	4.5	0.1	0.3	0.12	0.32	0.15	0.36				
M	High-alloyed Steel	1200-1400	355-415	0.5	4.5	0.1	0.3	0.12	0.32	0.15	0.36				
	Duplex Stainless Steel	780	230	0.5	4.5	0.1	0.3	0.12	0.32						
	Austenitic Steel	680	200	0.5	4.5	0.1	0.3	0.12	0.32						
K	PH Stainless Steel	1010	300	0.5	4.5	0.08	0.25	0.1	0.3						
	Grey Cast Iron	200-350	180-245	0.5	4.5	0.16	0.4	0.18	0.45	0.2	0.5	0.2	0.5		
	Nodular Cast Iron	400-700	155-265	0.5	4.5	0.15	0.36	0.16	0.4	0.18	0.45	0.18	0.45		
	Vermicular graphite cast iron	400	230	0.5	4.5	0.12	0.32	0.15	0.36	0.16	0.4	0.16	0.4		
S	Cobalt Base/ Nickel Base Alloy	840-1180	250-350	0.5	4.5	0.06	0.2	0.08	0.25						
	Titanium Alloy	1260-1400	375-410	0.5	4.5	0.06	0.2	0.08	0.25						
N	Aluminium Alloy	260-450	75-130												
H	Hardened Steel	-	HRC50-60												
	Hardened Cast Iron	-	HRC55												

45°Cutting Edge Angle Face Milling Cutter

M1145-QN07 Series



Unit: mm

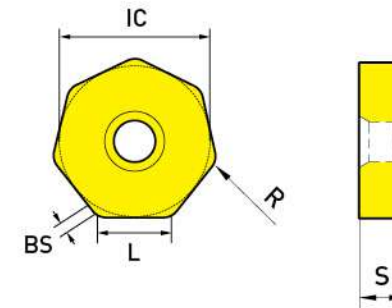
Series B	Type	Dc	Da	d1	L	apmax	Inner Cooling	Z
QN** 0705	M1145-QN07-D050-B22-Z4-C	50	60	22	40	4.0	yes	4
	M1145-QN07-D050-B22-Z5-C	50	60	22	40	4.0	yes	5
	M1145-QN07-D063-B22-Z5-C	63	73	22	40	4.0	yes	5
	M1145-QN07-D063-B22-Z6-C	63	73	22	40	4.0	yes	6
	M1145-QN07-D080-B27-Z6-C	80	90	27	50	4.0	yes	6
	M1145-QN07-D080-B27-Z7-C	80	90	27	50	4.0	yes	7
	M1145-QN07-D100-B32-Z7-C	100	110	32	50	4.0	yes	7
	M1145-QN07-D100-B32-Z8-C	100	110	32	50	4.0	yes	8
	M1145-QN07-D125-B40-Z8-C	125	135	40	63	4.0	yes	8
	M1145-QN07-D125-B40-Z10-C	125	135	40	63	4.0	yes	10

Customizable milling cutters with alloy inserts

Attachment		
	Insert with Screw	AF1061
	Insert Screw Driver	AF2062

M1145-QN07 Series

45°Cutting Edge Angle Face Milling Cutter



	IC	L	S
QN**0705**	14.5	6.98	5.4

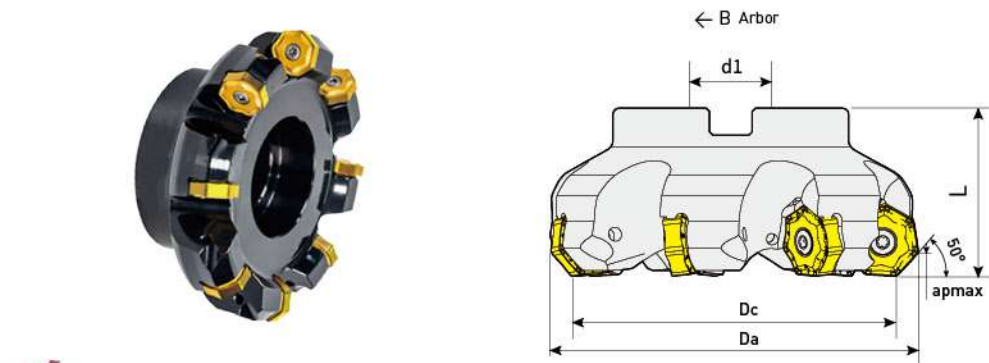
Series	Type	R	BS	P		M		K		S	
				AP25B	AP35E	APM25B	APM35E	APK25B	APK35E	APM25B	APM35E
-M5	QNMX070508-M5	0.8	-	⊙	●	●	⊙	⊙	⊙	●	⊙
	QNEX0705ANN-M5	0.8	1.0	●	⊙	●	⊙	⊙	⊙	●	⊙

● Standing stock ⊙ Optional stock

Feed Parameter				ap(mm)		fz(mm/t)	
ISO	Material Group	Tensile Strength (N/mm²)	HB	ap		M5	
P	Unalloyed steel	430	125	0.5	4.0	0.15	0.36
		640-1010	190-300	0.5	4.0	0.12	0.32
	Low-alloyed Steel	700-950	200-280	0.5	4.0	0.12	0.32
		950-1200	280-355	0.5	4.0	0.1	0.3
M	High-alloyed Steel	1200-1400	355-415	0.5	4.0	0.1	0.3
	Duplex Stainless Steel	780	230	0.5	4.0	0.1	0.3
	Austenitic Steel	680	200	0.5	4.0	0.1	0.3
K	PH Stainless Steel	1010	300	0.5	4.0	0.08	0.25
	Grey Cast Iron	200-350	180-245	0.5	4.0	0.16	0.4
	Nodular Cast Iron	400-700	155-265	0.5	4.0	0.15	0.36
	Vermicular graphite cast iron	400	230	0.5	4.0	0.12	0.32
S	Cobalt Base/Nickel Base Alloy	840-1180	250-350	0.5	4.0	0.06	0.2
	Titanium Alloy	1260-1400	375-410	0.5	4.0	0.06	0.2
N	Aluminium Alloy	260-450	75-130				
H	Hardened Steel	-	HRC50-60				
	Hardened Cast Iron	-	HRC55				

50°Cutting Edge Angle Face Milling Cutter

M1150-QN09 Series



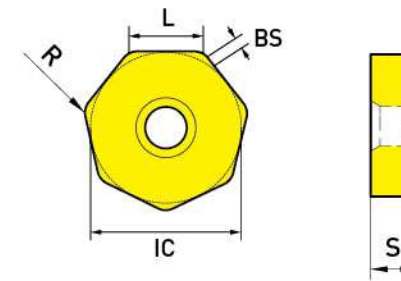
Unit: mm

Series B	Type	Dc	Da	d1	L	apmax	Inner Cooling	Z
QN** 0906	M1150-QN09-D063-B22-Z4-C	63	75.55	22	40	6.0	yes	4
	M1150-QN09-D063-B22-Z5-C	63	75.55	22	40	6.0	yes	5
	M1150-QN09-D080-B27-Z5-C	80	92.55	27	50	6.0	yes	5
	M1150-QN09-D080-B27-Z6-C	80	92.55	27	50	6.0	yes	6
	M1150-QN09-D100-B32-Z6-C	100	112.55	32	50	6.0	yes	6
	M1150-QN09-D100-B32-Z7-C	100	112.55	32	50	6.0	yes	7
	M1150-QN09-D125-B40-Z7-C	125	137.55	40	63	6.0	yes	7
	M1150-QN09-D125-B40-Z8-C	125	137.55	40	63	6.0	yes	8
	M1150-QN09-D160-B40-Z8	160	172.55	40	63	6.0	no	8
	M1150-QN09-D160-B40-Z10	160	172.55	40	63	6.0	no	10

Attachment		
	Insert with Screw	AF1102
	Insert Screw Driver	AF2072

M1150-QN09 Series

50°Cutting Edge Angle Face Milling Cutter



	IC	L	S
QN**0906**	20	9.63	6.55

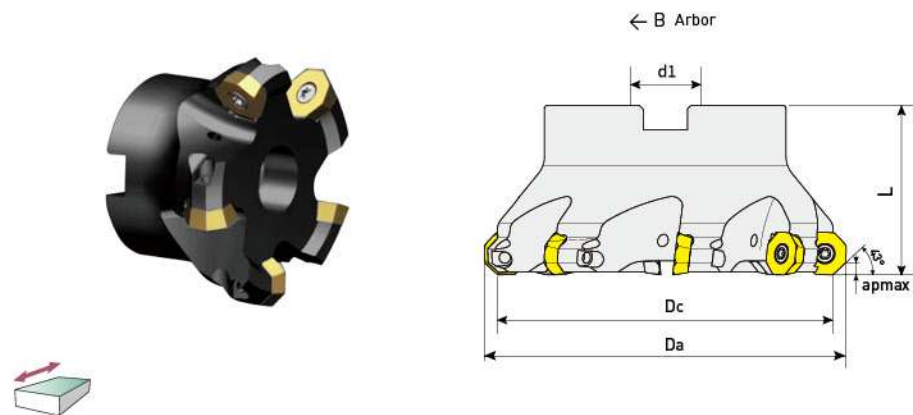
				P				M				K				S			
Series		Type	R	BS	APM2SE	APU2SE	ACP3SE	APP4SE	APM25C	APM2SE	APM35C	APP4SE	ACK1SE	APK1SE	ACK2SE	APM25C	ACK3SE	APS25C	APS35C
-M7		QNMX090608ZEN-M7	0.8	1.0									⊙	●	●		⊙		
-R5		QNMX090608ZEN-R5	0.8	1.0									⊙	⊙	●		●		

● Standing stock ◎ Optional stock

ISO	Material Group	Feed Parameter		ap(mm)						fz(mm/t)			
		Tensile Strength (N/mm ²)	HB	ap		M7		R5		Min	Max	Min	Max
				Min	Max	Min	Max	Min	Max				
P	Unalloyed steel	430	125	0.5	6.0	0.16	0.4	0.18	0.45				
		640-1010	190-300	0.5	6.0	0.15	0.36	0.16	0.4				
	Low-alloyed Steel	700-950	200-280	0.5	6.0	0.15	0.36	0.16	0.4				
		950-1200	280-355	0.5	6.0	0.12	0.32	0.15	0.36				
	High-alloyed Steel	1200-1400	355-415	0.5	6.0	0.12	0.32	0.15	0.36				
M	Duplex Stainless Steel	780	230										
	Austenitic Steel	680	200										
	PH Stainless Steel	1010	300										
K	Grey Cast Iron	200-350	180-245	0.5	6.0	0.18	0.45	0.2	0.5				
	Nodular Cast Iron	400-700	155-265	0.5	6.0	0.16	0.4	0.18	0.45				
	Vermicular graphite cast iron	400	230	0.5	6.0	0.15	0.36	0.16	0.4				
S	Cobalt Base/ Nickel Base Alloy	840-1180	250-350										
	Titanium Alloy	1260-1400	375-410										
N	Aluminium Alloy	260-450	75-130										
H	Hardened Steel	-	HRC50-60										
	Hardened Cast Iron	-	HRC55										

43°Cutting Edge Angle Face Milling Cutter

M1145-OD05 Series



Unit: mm

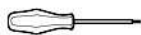
Series B	Type	Dc	Da	d1	L	apmax	Inner Cooling	Z
OD** 0504	M1145-OD05-D050-B16-Z4-C	42	50	16	40	3.0	yes	4
	M1145-OD05-D058-B16-Z4-C	50	58	16	40	3.0	yes	4
	M1145-OD05-D063-B22-Z5-C	55	63	22	40	3.0	yes	5
	M1145-OD05-D071-B22-Z6-C	63	71	22	40	3.0	yes	6
	M1145-OD05-D080-B27-Z6-C	72	80	27	50	3.0	yes	6
	M1145-OD05-D088-B27-Z7-C	80	88	27	50	3.0	yes	7
	M1145-OD05-D100-B32-Z8-C	92	100	32	50	3.0	yes	8
	M1145-OD05-D108-B32-Z8-C	100	108	32	50	3.0	yes	8
	M1145-OD05-D125-B40-Z10-C	117	125	40	63	3.0	yes	10
	M1145-OD05-D133-B40-Z10-C	125	133	40	63	3.0	yes	10

配件 Attachment



Insert with Screw

AF1071

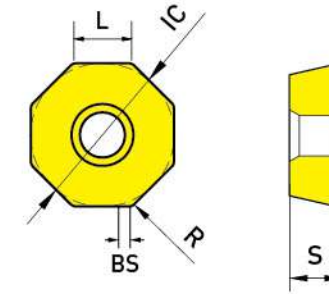


Insert Screw Driver

AF2031

M1145-OD05 Series

43°Cutting Edge Angle Face Milling Cutter



	IC	L	S
OD**0504**	12.7	5.26	4.76

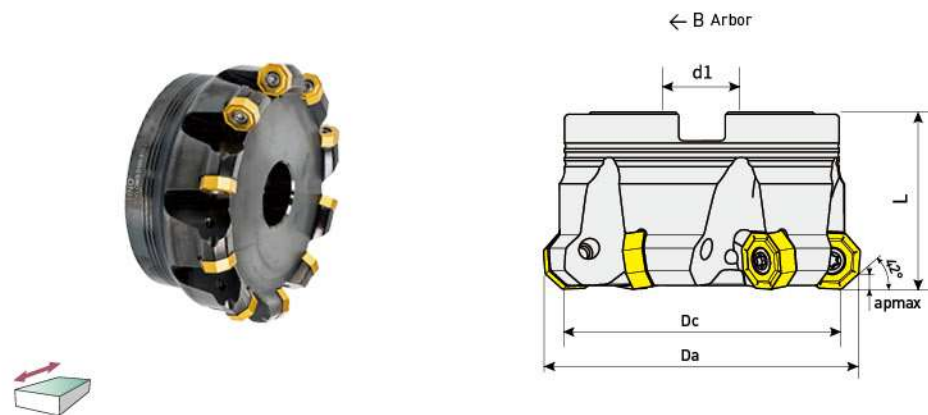
Series	Type	R	BS	P				M				K				S	
				APM2SE	APU2SE	ACP3SE	APP4SE	APM2SC	APM3SC	APP4SE	ACK1SE	APK1SE	ACK2SE	APM2SC	ACK3SE	AP52SC	AP53SC
-M5	ODET050408-M5	0.8	-	◎	●			●	◎					●		◎	
	ODET0504ZZN-M5	0.8	1.2	●	●			●	●					●		●	

● Standing stock ◎ Optional stock

ISO	Material Group	Feed Parameter		ap(mm)		fz(mm/t)	
		Tensile Strength (N/mm²)	HB				
				Min	Max	Min	Max
P	Unalloyed steel	430	125	0.5	3.0	0.12	0.32
		640-1010	190-300	0.5	3.0	0.1	0.3
	Low-alloyed Steel	700-950	200-280	0.5	3.0	0.1	0.3
		950-1200	280-355	0.5	3.0	0.08	0.24
M	High-alloyed Steel	1200-1400	355-415	0.5	3.0	0.08	0.24
	Duplex Stainless Steel	780	230	0.5	3.0	0.08	0.24
	Austenitic Steel	680	200	0.5	3.0	0.08	0.24
K	PH Stainless Steel	1010	300	0.5	3.0	0.06	0.2
	Grey Cast Iron	200-350	180-245	0.5	3.0	0.15	0.32
	Nodular Cast Iron	400-700	155-265	0.5	3.0	0.12	0.3
	Vermicular graphite cast iron	400	230	0.5	3.0	0.1	0.24
S	Cobalt Base/Nickel Base Alloy	840-1180	250-350	0.5	3.0	0.05	0.15
	Titanium Alloy	1260-1400	375-410	0.5	3.0	0.05	0.15
N	Aluminium Alloy	260-450	75-130				
H	Hardened Steel	-	HRC50-60				
	Hardened Cast Iron	-	HRC55				

42°Cutting Edge Angle Face Milling Cutter

M1145-ON05 Series



Unit: mm

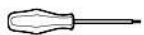
Series B	Type	Dc	Da	d1	L	apmax	Inner Cooling	Z
ON** 0504	M1145-ON05-D050-B22-Z5-C	50	56.2	22	40	3.0	yes	5
	M1145-ON05-D050-B22-Z6-C	50	56.2	22	40	3.0	yes	6
	M1145-ON05-D063-B22-Z6-C	63	69.2	22	40	3.0	yes	6
	M1145-ON05-D063-B22-Z8-C	63	69.2	22	40	3.0	yes	8
	M1145-ON05-D080-B27-Z6-C	80	86.2	27	50	3.0	yes	6
	M1145-ON05-D080-B27-Z9-C	80	86.2	27	50	3.0	yes	9
	M1145-ON05-D100-B32-Z8-C	100	106.2	32	50	3.0	yes	8
	M1145-ON05-D100-B32-Z10-C	100	106.2	32	50	3.0	yes	10
	M1145-ON05-D125-B40-Z9-C	125	131.2	40	63	3.0	yes	9
	M1145-ON05-D125-B40-Z12-C	125	131.2	40	63	3.0	yes	12

Attachment



Insert with Screw

AF1032

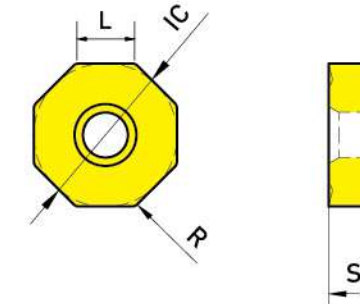


Insert Screw Driver

AF2062

M1145-ON05 Series

42°Cutting Edge Angle Face Milling Cutter



	IC	L	S
ON**0504**	12.7	5.26	4.76

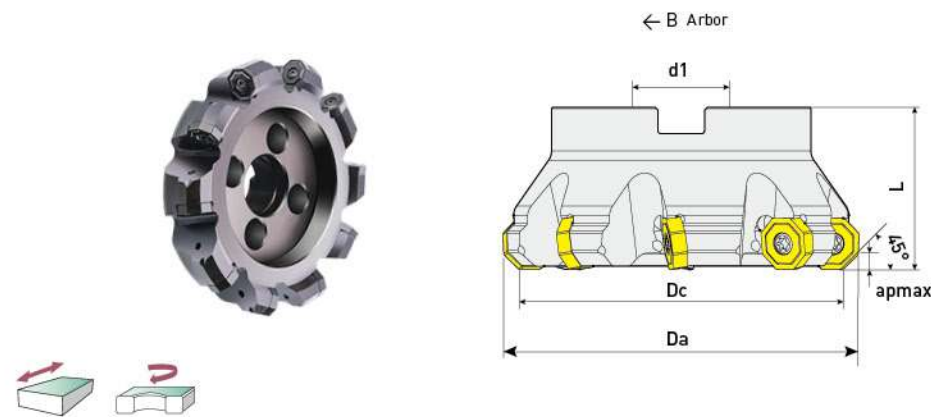
Series	Type	R	BS	P					M					K					S	
				APM25E	APU25E	APP25B	APP55E	APP45E	APM25C	APM25E	APM25B	APM35E	APP45E	ACK15E	APK15E	APM25C	APK25B	APK35E	AP525C	AP535C
-M5	ONMU050408-M5	0.8	-	●	●			◎	●	●			◎	◎	●	●			●	
	ONEU050408ZNN-M5	0.8	1.6			●	◎				●	◎					●	◎		

● Standing stock ◎ Optional stock

ISO	Material Group	Feed Parameter		ap(mm)		fz(mm/t)	
		Tensile Strength (N/mm²)	HB	ap		M5	
				Min	Max	Min	Max
P	Unalloyed steel	430	125	0.5	3.0	0.15	0.36
		640-1010	190-300	0.5	3.0	0.12	0.32
	Low-alloyed Steel	700-950	200-280	0.5	3.0	0.12	0.32
	High-alloyed Steel	950-1200	280-355	0.5	3.0	0.1	0.3
		1200-1400	355-415	0.5	3.0	0.1	0.3
M	Duplex Stainless Steel	780	230	0.5	3.0	0.1	0.3
	Austenitic Steel	680	200	0.5	3.0	0.1	0.3
	PH Stainless Steel	1010	300	0.5	3.0	0.08	0.25
K	Grey Cast Iron	200-350	180-245	0.5	3.0	0.16	0.4
	Nodular Cast Iron	400-700	155-265	0.5	3.0	0.15	0.36
	Vermicular graphite cast iron	400	230	0.5	3.0	0.12	0.32
S	Cobalt Base/Nickel Base Alloy	840-1180	250-350	0.5	3.0	0.06	0.2
	Titanium Alloy	1260-1400	375-410	0.5	3.0	0.06	0.2
N	Aluminium Alloy	260-450	75-130				
H	Hardened Steel	-	HRC50-60				
	Hardened Cast Iron	-	HRC55				

45°Cutting Edge Angle Face Milling Cutter

M1145-ON06 Series



Unit: mm

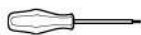
Series B	Type	Dc	Da	d1	L	apmax	Inner Cooling	Z
ON** 0604	M1145-ON06-D050-B22-Z5-C	50	62	22	40	4.0	yes	5
	M1145-ON06-D063-B22-Z6-C	63	75	22	40	4.0	yes	6
	M1145-ON06-D080-B27-Z7-C	80	92	27	50	4.0	yes	7
	M1145-ON06-D100-B32-Z8-C	100	112	32	50	4.0	yes	8
	M1145-ON06-D125-B40-Z9-C	125	137	40	63	4.0	yes	9
	M1145-ON06-D160-B40-Z11	160	172	40	63	4.0	no	11

Attachment



Insert with Screw

AF1062

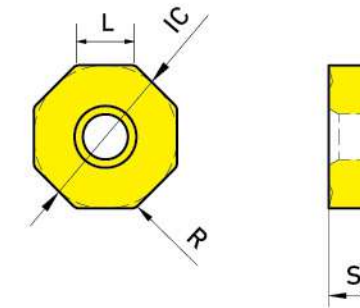


Insert Screw Driver

AF2062

M1145-ON06 Series

45°Cutting Edge Angle Face Milling Cutter



	IC	L	S
ON**0604	15.875	6.58	4.76

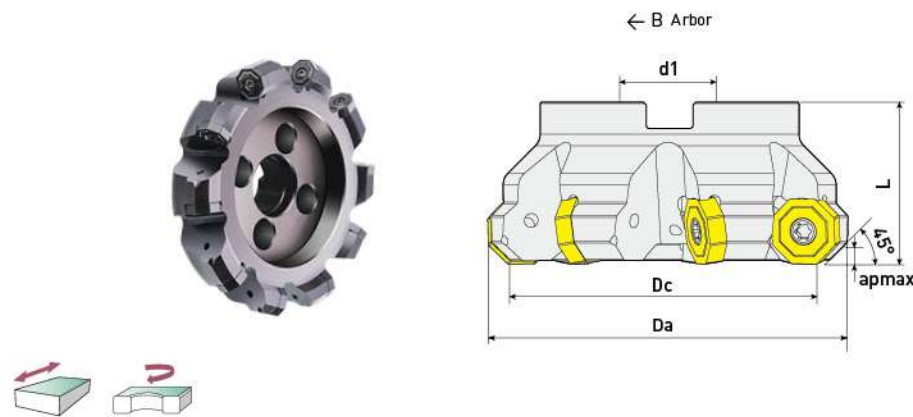
Series	Type	R	BS	P				M				K				S	
				APM25E	APU25B	ACP35E	ACP45E	APM25C	APM35C	APM45E	ACK15E	APK15E	ACK25E	APM25C	ACK35E	AP525C	AP535C
-F5	ONMX060408-F5	0.8	-	●				●	●	○	○	○		●		○	
-M5	ONMX060408-M5	0.8	-	○	●	●	○	○	○		○	●	●	○	○		

● Standing stock ○ Optional stock

ISO	Material Group	Feed Parameter		ap(mm)		fz(mm/t)			
		Tensile Strength (N/mm ²)	HB	ap		F5		M5	
				Min	Max	Min	Max	Min	Max
P	Unalloyed steel	430	125	0.5	4.0	0.12	0.32	0.15	0.36
		640-1010	190-300	0.5	4.0	0.1	0.3	0.12	0.32
	Low-alloyed Steel	700-950	200-280	0.5	4.0	0.1	0.3	0.12	0.32
		950-1200	280-355	0.5	4.0	0.08	0.25	0.1	0.3
M	High-alloyed Steel	1200-1400	355-415	0.5	4.0	0.08	0.25	0.1	0.3
	Duplex Stainless Steel	780	230	0.5	4.0	0.08	0.25	0.1	0.3
	Austenitic Steel	680	200	0.5	4.0	0.08	0.25	0.1	0.3
K	PH Stainless Steel	1010	300	0.5	4.0	0.06	0.2	0.08	0.25
	Grey Cast Iron	200-350	180-245	0.5	4.0	0.15	0.36	0.16	0.4
	Nodular Cast Iron	400-700	155-265	0.5	4.0	0.12	0.32	0.15	0.36
	Vermicular graphite cast iron	400	230	0.5	4.0	0.1	0.3	0.12	0.32
S	Cobalt Base	840-1180	250-350	0.5	4.0	0.05	0.18	0.06	0.2
	Nickel Base Alloy	1260-1400	375-410	0.5	4.0	0.05	0.18	0.06	0.2
	Titanium Alloy								
N	Aluminium Alloy	260-450	75-130						
H	Hardened Steel	-	HRC50-60						
	Hardened Cast Iron	-	HRC55						

45°Cutting Edge Angle Face Milling Cutter

M1145-ON08 Series



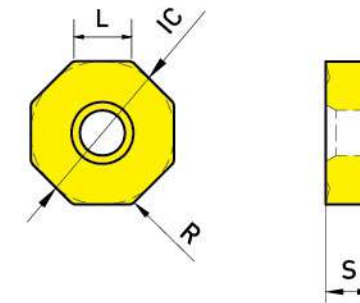
Unit: mm

Series B	Type	Dc	Da	d1	L	apmax	Inner Cooling	Z
ON** 08T5	M1145-ON08-D063-B22-Z5-C	63	78	22	40	5.0	yes	5
	M1145-ON08-D080-B27-Z6-C	80	95	27	50	5.0	yes	6
	M1145-ON08-D100-B32-Z7-C	100	115	32	50	5.0	yes	7
	M1145-ON08-D125-B40-Z8-C	125	140	40	63	5.0	yes	8
	M1145-ON08-D160-B40-Z10	160	175	40	63	5.0	no	10
	M1145-ON08-D200-B60-Z12	200	215	60	63	5.0	no	12

Attachment		
	Insert with Screw	AF1072
	Insert Screw Driver	AF2072

M1145-ON08 Series

45°Cutting Edge Angle Face Milling Cutter



	IC	L	S
ON**08T5	20.2	8.37	5.77

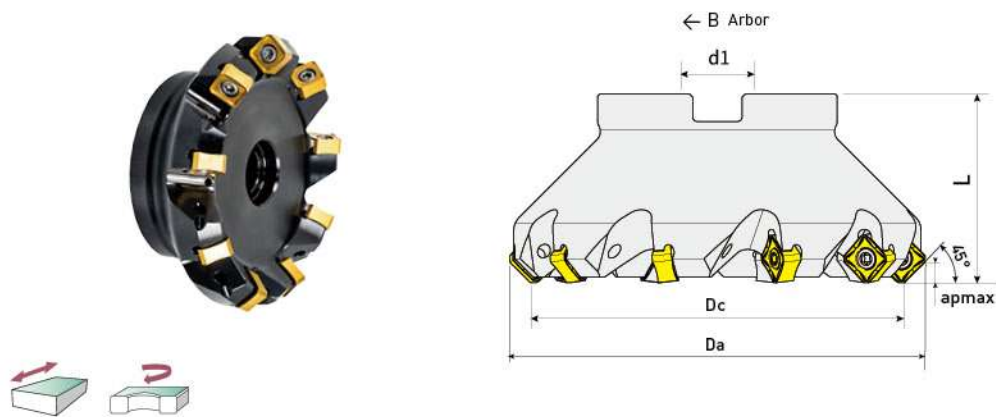
Series	Type	R	BS	P				M				K				S	
				APM25E	APU25B	ACP35E	ACP45E	APM25C	APM35C	APM45E	ACK15E	ACK15E	ACK25E	APM25C	ACK35E	APM25C	APM35C
-F5	ONMX08T508-F5	0.8	-	●				●	●	○	○	○	○	○	○	○	○
-M5	ONMX08T508-M5	0.8	-	○	●	●	○	○	○		○	●	●	○	○		

● Standing stock ○ Optional stock

ISO	Material Group	Feed Parameter		ap(mm)						fz(mm/t)			
		Tensile Strength (N/mm ²)	HB	ap		F5		M5		Min	Max	Min	Max
				Min	Max	Min	Max	Min	Max				
P	Unalloyed steel	430	125	0.5	5.0	0.12	0.32	0.15	0.36				
		640-1010	190-300	0.5	5.0	0.1	0.3	0.12	0.32				
	Low-alloyed Steel	700-950	200-280	0.5	5.0	0.1	0.3	0.12	0.32				
		950-1200	280-355	0.5	5.0	0.08	0.25	0.1	0.3				
M	Duplex Stainless Steel	1200-1400	355-415	0.5	5.0	0.08	0.25	0.1	0.3				
		780	230	0.5	5.0	0.08	0.25	0.1	0.3				
	Austenitic Steel	680	200	0.5	5.0	0.08	0.25	0.1	0.3				
		1010	300	0.5	5.0	0.06	0.2	0.08	0.25				
K	Grey Cast Iron	200-350	180-245	0.5	5.0	0.15	0.36	0.16	0.4				
		400-700	155-265	0.5	5.0	0.12	0.32	0.15	0.36				
	Vermicular graphite cast iron	400	230	0.5	5.0	0.1	0.3	0.12	0.32				
		840-1180	250-350	0.5	5.0	0.05	0.18	0.06	0.2				
S	Cobalt Base Nickel Base Alloy	1260-1400	375-410	0.5	5.0	0.05	0.18	0.06	0.2				
		260-450	75-130										
N	Aluminium Alloy												
H	Hardened Steel	-	HRC50-60										
		-	HRC55										

45°Cutting Edge Angle Face Milling Cutter

M1145-SN12 Series



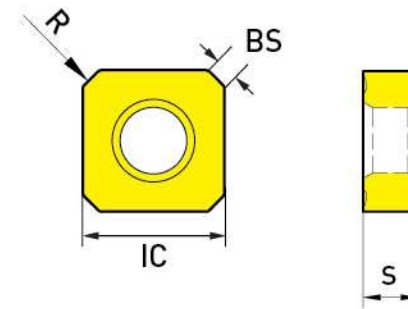
Unit: mm

Series B	Type	Dc	Da	d1	L	apmax	内冷	Z
SN** 12T5	M1145-SN12-D050-B22-Z04-C	50	63.9	22	40	6.0	有	4
	M1145-SN12-D050-B22-Z06-C	50	63.9	22	40	6.0	有	6
	M1145-SN12-D063-B22-Z05-C	63	76.9	22	40	6.0	有	5
	M1145-SN12-D063-B22-Z07-C	63	76.9	22	40	6.0	有	7
	M1145-SN12-D080-B27-Z06-C	80	93.9	27	50	6.0	有	6
	M1145-SN12-D080-B27-Z08-C	80	93.9	27	50	6.0	有	8
	M1145-SN12-D100-B32-Z08-C	100	113.9	32	50	6.0	有	8
	M1145-SN12-D100-B32-Z10-C	100	113.9	32	50	6.0	有	10
	M1145-SN12-D125-B40-Z10-C	125	138.9	40	63	6.0	有	10
	M1145-SN12-D125-B40-Z12-C	125	138.9	40	63	6.0	有	12
	M1145-SN12-D160-B40-Z12	160	173.9	40	63	6.0	无	12
	M1145-SN12-D160-B40-Z15	160	173.9	40	63	6.0	无	15

Attachment		
	Insert with Screw	AF1021
	Insert Screw Driver	AF2072

M1145-SN12 Series

45°Cutting Edge Angle Face Milling Cutter



	IC	S
SN**12T5**	12.7	5.95

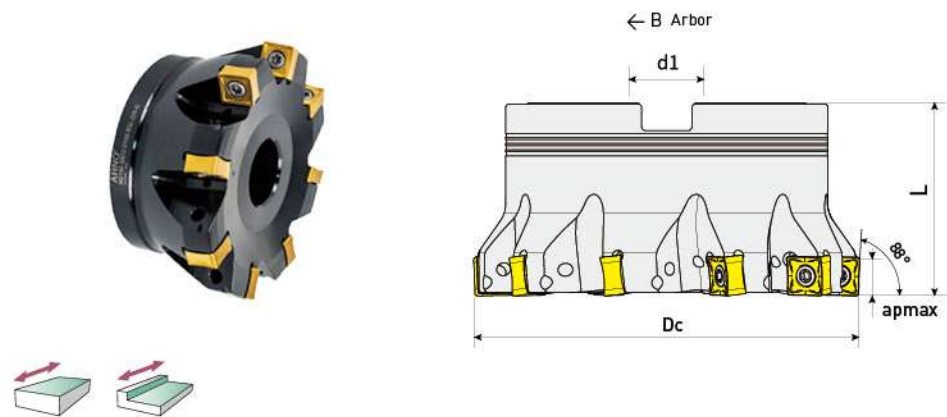
				P				M				K				S			
Series		Type	R	BS	APM2SE	APU2SE	ACP3SE	APP4SE	APM25C	APM2SE	APM35C	APP4SE	ACK1SE	APK1SE	ACK2SE	APM25C	ACK3SE	APS25C	APS35C
-M5		SNMX12T512-M5	1.2	-	●	●	●		●	●					●	●	●		
-M5		SNMX12T5ANN-M5	-	1.5	●	●			●	●			◎	●		●	◎		

● Standing stock ◎ Optional stock

Feed Parameter				ap(mm)		fz(mm/t)	
ISO	Material Group	Tensile Strength (N/mm²)	HB	ap		M5	
P	Unalloyed steel	430	125	0.5	6.0	0.16	0.4
		640-1010	190-300	0.5	6.0	0.15	0.36
	Low-alloyed Steel	700-950	200-280	0.5	6.0	0.15	0.36
		950-1200	280-355	0.5	6.0	0.12	0.32
M	High-alloyed Steel	1200-1400	355-415	0.5	6.0	0.12	0.32
	Duplex Stainless Steel	780	230				
	Austenitic Steel	680	200				
K	PH Stainless Steel	1010	300				
	Grey Cast Iron	200-350	180-245	0.5	6.0	0.18	0.45
	Nodular Cast Iron	400-700	155-265	0.5	6.0	0.16	0.4
	Vermicular graphite cast iron	400	230	0.5	6.0	0.15	0.36
S	Cobalt Base/Nickel Base Alloy	840-1180	250-350				
	Titanium Alloy	1260-1400	375-410				
N	Aluminium Alloy	260-450	75-130				
H	Hardened Steel	-	HRC50-60				
	Hardened Cast Iron	-	HRC55				

88°Cutting Edge Angle Face Milling Cutter

M1188-SN12 Series



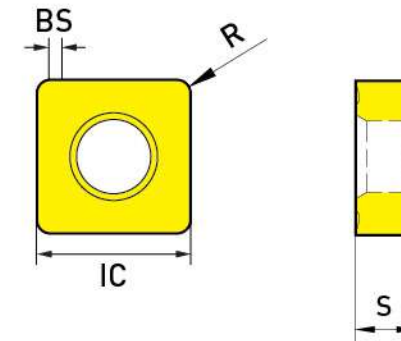
Unit: mm

Series B	Type	Dc	d1	L	apmax	Inner Cooling	Z
SN** 12T5	M1188-SN12-D050-B22-Z04-C	50	22	40	10.0	yes	4
	M1188-SN12-D063-B22-Z05-C	63	22	40	10.0	yes	5
	M1188-SN12-D063-B22-Z06-C	63	22	40	10.0	yes	6
	M1188-SN12-D080-B27-Z06-C	80	27	50	10.0	yes	6
	M1188-SN12-D080-B27-Z07-C	80	27	50	10.0	yes	7
	M1188-SN12-D100-B32-Z08-C	100	32	50	10.0	yes	8
	M1188-SN12-D100-B32-Z10-C	100	32	50	10.0	yes	10
	M1188-SN12-D125-B40-Z10-C	125	40	63	10.0	yes	10
	M1188-SN12-D125-B40-Z12-C	125	40	63	10.0	yes	12
	M1188-SN12-D160-B40-Z12	160	40	63	10.0	no	12
	M1188-SN12-D160-B40-Z14	160	40	63	10.0	no	14

Attachment		
	Insert with Screw	AF1021
	Insert Screw Driver	AF2072

M1188-SN12 Series

88°Cutting Edge Angle Face Milling Cutter



	IC	S
SN**12T5**	12.7	5.95

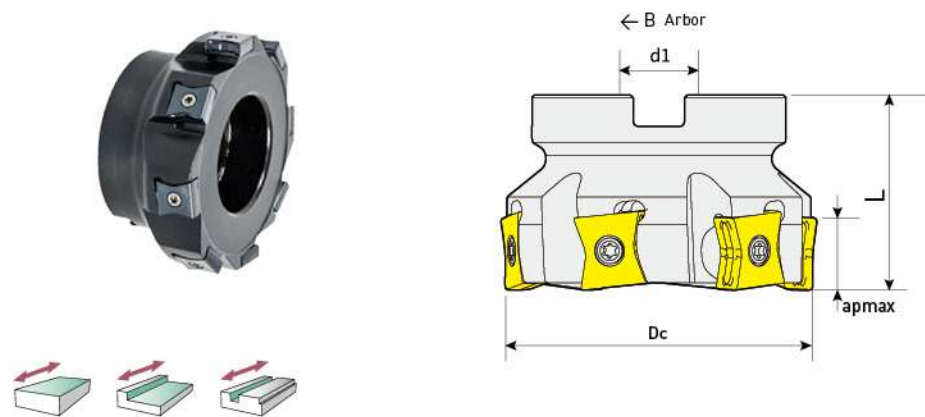
Series	型号 Type	R	BS	P				M				K				S	
				APM2SE	APU2SE	ACP3SE	APP4SE	APM2SC	APM3SC	APP4SE	ACK1SE	APK1SE	ACK2SE	APM2SC	ACK3SE	APP2SC	APP3SC
-M5	 SNMX12T512-M5	1.2	-	●	●	●		●	●				●	●	●		
-M5	 SNMX12T5ZNN-M5	0.8	1.2	●	●			●	●		◎	●		●	◎		

● Standing stock ◎ Optional stock

ISO	Material Group	Feed Parameter		ap(mm)		fz(mm/t)	
		Tensile Strength (N/mm²)	HB	Min	Max	Min	Max
P	Unalloyed steel	430	125	0.5	10.0	0.16	0.36
		640-1010	190-300	0.5	10.0	0.15	0.32
	Low-alloyed Steel	700-950	200-280	0.5	10.0	0.15	0.32
		950-1200	280-355	0.5	10.0	0.12	0.3
M	Duplex Stainless Steel	1200-1400	355-415	0.5	10.0	0.12	0.3
		780	230			0.12	0.24
	Austenitic Steel	680	200			0.12	0.24
		1010	300			0.1	0.2
K	Grey Cast Iron	200-350	180-245	0.5	10.0	0.18	0.4
		400-700	155-265	0.5	10.0	0.16	0.36
	Nodular Cast Iron	400	230	0.5	10.0	0.15	0.32
		840-1180	250-350				
S	Cobalt Base/Nickel Base Alloy	1260-1400	375-410				
		260-450	75-130				
	Titanium Alloy	-	HRC50-60				
		-	HRC55				

Shoulder Milling Cutter

M2190-LN15 Series



Unit: mm

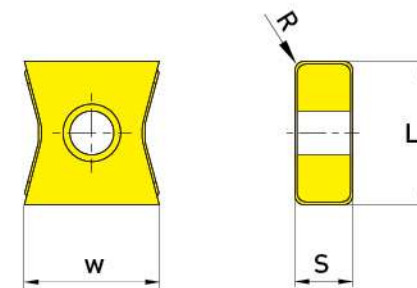
Series B	Type	Dc	d1	L	apmax	Inner Cooling	Z
LN** 1506	M2190-LN15-D050-B22-Z05-C	50	22	40	14	yes	5
	M2190-LN15-D063-B22-Z06-C	63	22	40	14	yes	6
	M2190-LN15-D080-B27-Z07-C	80	27	50	14	yes	7
	M2190-LN15-D100-B32-Z08-C	100	32	50	14	yes	8
	M2190-LN15-D125-B40-Z09-C	125	40	63	14	yes	9
	M2190-LN15-D160-B40-Z10	160	40	63	14	no	10

Customizable Backhand milling cutter head

	Attachment	
	Insert with Screw	AF1092
	Insert Screw Driver	AF2031

Shoulder Milling Cutter

M2190-LN15 Series



	L	W	S
LN**1506**	15	13.88	6.0

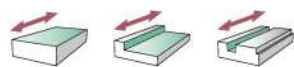
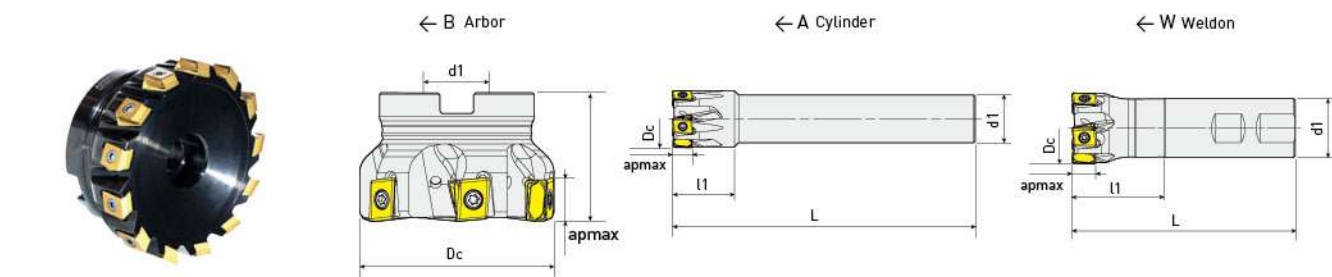
Series	Type	R	BS	P				M				K				S	
				APM2SE	APU2SE	ACP3SE	APP4SE	APM2SE	APM3SE	APP4SE	ACK1SE	APK1SE	ACK2SE	APM2SE	ACK3SE	APP2SE	APP3SE
-M5	LNGX1506PNN-M5	0.8	-	●	●			●	●			●	●	●	●		

● Standing stock ○ Optional stock

ISO	Material Group	Feed Parameter		ap(mm)		fz(mm/t)	
		Tensile Strength (N/mm²)	HB	Min	Max	Min	Max
P	Unalloyed steel	430	125	0.5	14	0.18	0.36
		640-1010	190-300	0.5	14	0.15	0.3
	Low-alloyed Steel	700-950	200-280	0.5	14	0.15	0.3
		950-1200	280-355	0.5	14	0.12	0.24
M	High-alloyed Steel	1200-1400	355-415	0.5	14	0.12	0.24
	Duplex Stainless Steel	780	230	0.5	14		
	Austenitic Steel	680	200	0.5	14		
K	PH Stainless Steel	1010	300	0.5	14		
	Grey Cast Iron	200-350	180-245	0.5	14	0.2	0.4
	Nodular Cast Iron	400-700	155-265	0.5	14	0.18	0.36
S	Vermicular graphite cast iron	400	230	0.5	14	0.15	0.3
	Cobalt Base/Nickel Base Alloy	840-1180	250-350	0.5	14		
	Titanium Alloy	1260-1400	375-410	0.5	14		
	Aluminium Alloy	260-450	75-130	0.5	14		
H	Hardened Steel	-	HRC50-60				
	Hardened Cast Iron	-	HRC55				

Shoulder Milling Cutter

M2190-LN13 Series



Unit: mm

Series A	Type	Dc	d1	L	l1	apmax	Inner Cooling	Z
LN** 1306	M2190-LN13-D040-A32-Z5-C	40	32	200	44	12	yes	5

Series W	Type	Dc	d1	L	l1	apmax	Inner Cooling	Z
LN** 1306	M2190-LN13-D040-W32-Z5-C	40	32	120	50	12	yes	5

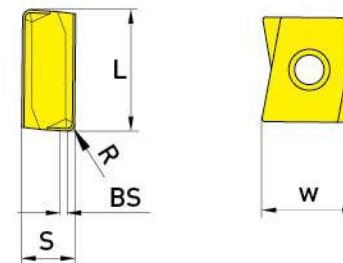
Series B	Type	Dc	d1	L	apmax	Inner Cooling	Z
LN** 1306	M2190-LN13-D040-B16-Z4-C	40	16	40	12	yes	4
	M2190-LN13-D040-B16-Z5-C	40	16	40	12	yes	5
	M2190-LN13-D050-B22-Z5-C	50	22	40	12	yes	5
	M2190-LN13-D050-B22-Z6-C	50	22	40	12	yes	6
	M2190-LN13-D063-B22-Z6-C	63	22	40	12	yes	6
	M2190-LN13-D063-B22-Z8-C	63	22	40	12	yes	8
	M2190-LN13-D080-B27-Z7-C	80	27	50	12	yes	7
	M2190-LN13-D080-B27-Z10-C	80	27	50	12	yes	10
	M2190-LN13-D100-B32-Z9-C	100	32	50	12	yes	9
	M2190-LN13-D100-B32-Z13-C	100	32	50	12	yes	13
LN** 1306	M2190-LN13-D125-B40-Z11-C	125	40	63	12	yes	11
	M2190-LN13-D125-B40-Z16-C	125	40	63	12	yes	16

Attachment		
	Insert with Screw	AF1101
	Insert Screw Driver	AF2062

M2190-LN13 Series

Shoulder Milling Cutter

	L	W	S
LN**1306**	13	12	6.8



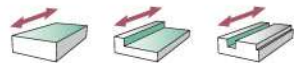
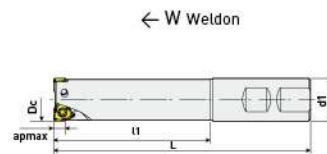
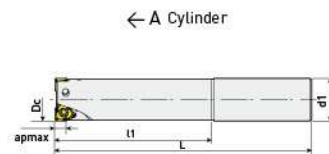
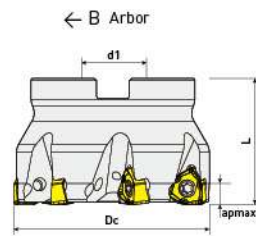
Series	型号 Type	R	BS	P				M				K				S	
				APM25E	APU25C	ACP35E	APP45E	APM25C	APM35C	APP45E	ACK15E	ACK19E	ACK25E	ACK35E	APS25C	APS35C	
-M5	 LNHU130608PER-M5	0.8	2.25	●	●		◎	●	●		◎		●			●	

● Standing stock ◎ Optional stock

Feed Parameter				ap(mm)		fz(mm/t)	
ISO	Material Group	Tensile Strength (N/mm²)	HB	Min	Max	Min	Max
P	Unalloyed steel	430	125	0.5	12.0	0.16	0.32
		640-1010	190-300	0.5	12.0	0.12	0.24
	Low-alloyed Steel	700-950	200-280	0.5	12.0	0.12	0.24
		950-1200	280-355	0.5	12.0	0.1	0.2
M	High-alloyed Steel	1200-1400	355-415	0.5	12.0	0.1	0.2
	Duplex Stainless Steel	780	230	0.5	12.0	0.08	0.16
K	Austenitic Steel	680	200	0.5	12.0	0.08	0.18
	PH Stainless Steel	1010	300	0.5	12.0	0.06	0.12
	Grey Cast Iron	200-350	180-245	0.5	12.0	0.18	0.36
S	Nodular Cast Iron	400-700	155-265	0.5	12.0	0.16	0.32
	Vermicular graphite cast iron	400	230	0.5	12.0	0.12	0.24
N	Cobalt Base/Nickel Base Alloy	840-1180	250-350	0.5	12.0	0.05	0.1
	Titanium Alloy	1260-1400	375-410	0.5	12.0	0.05	0.1
H	Aluminium Alloy	260-450	75-130	0.5	12.0	0.05	0.2
	Hardened Steel	-	HRC50-60				
	Hardened Cast Iron	-	HRC55				

Shoulder Milling Cutter

M2190-WN06 Series



Unit: mm

Series A	Type	Dc	d1	L	l1	apmax	Inner Cooling	Z
WN** 0604	M2190-WN06-D025-A25-Z2-C	25	25	150	30	5.0	yes	2
	M2190-WN06-D032-A32-Z3-C	32	32	160	40	5.0	yes	3
	M2190-WN06-D040-A32-Z4-C	40	32	200	40	5.0	yes	4

Series W	Type	Dc	d1	L	l1	apmax	Inner Cooling	Z
WN** 0604	M2190-WN06-D025-W25-Z2-C	25	25	100	30	5.0	yes	2
	M2190-WN06-D032-W32-Z3-C	32	32	110	40	5.0	yes	3
	M2190-WN06-D040-W32-Z4-C	40	32	115	40	5.0	yes	4

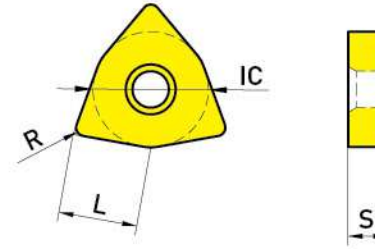
Series B	Type	Dc	d1	L	l1	apmax	Inner Cooling	Z
WN** 0604	M2190-WN06-D050-B22-Z5-C	50	22	40	-	5.0	yes	5
	M2190-WN06-D050-B22-Z6-C	50	22	40	-	5.0	yes	6
	M2190-WN06-D063-B22-Z6-C	63	22	40	-	5.0	yes	6
	M2190-WN06-D063-B22-Z7-C	63	22	40	-	5.0	yes	7
	M2190-WN06-D080-B27-Z7-C	80	27	50	-	5.0	yes	7
	M2190-WN06-D080-B27-Z9-C	80	27	50	-	5.0	yes	9
	M2190-WN06-D100-B32-Z11-C	100	32	50	-	5.0	yes	11

Attachment		
	Insert with Screw	AF1022
	Insert Screw Driver	AF2031

M2190-WN06 Series

Shoulder Milling Cutter

	IC	L	S
WN**0604**	10.12	6.4	4.4



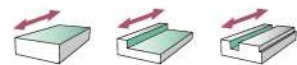
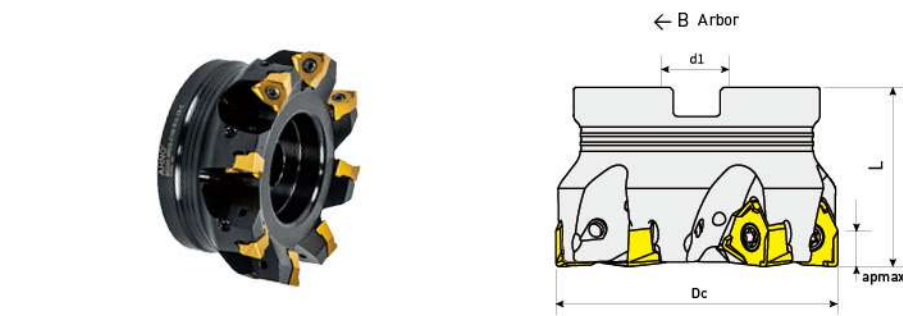
Series	Type	R	BS	P				M				K				S	
				APM25E	APU25B	ACP35E	APP45E	APM25C	APM35C	APP45E	ACK15E	APK15E	ACK25E	APM25C	ACK35E	APP525C	APP535C
-M5	WNMX060408-M5	0.8	-	◎	●	◎		◎				●	●		◎		

● Standing stock ◎ Optional stock

Feed Parameter				ap(mm)		fz(mm/t)	
ISO	Material Group	Tensile Strength (N/mm²)	HB	ap		M5	
				Min	Max	Min	Max
P	Unalloyed steel	430	125	0.5	5.0	0.15	0.3
		640-1010	190-300	0.5	5.0	0.12	0.24
	Low-alloyed Steel	700-950	200-280	0.5	5.0	0.12	0.24
		950-1200	280-355	0.5	5.0	0.1	0.2
M	High-alloyed Steel	1200-1400	355-415	0.5	5.0	0.1	0.2
	Duplex Stainless Steel	780	230	0.5	5.0	0.08	0.15
K	Austenitic Steel	680	200	0.5	5.0	0.08	0.18
	PH Stainless Steel	1010	300	0.5	5.0	0.06	0.12
	Grey Cast Iron	200-350	180-245	0.5	5.0	0.16	0.32
S	Nodular Cast Iron	400-700	155-265	0.5	5.0	0.15	0.3
	Vermicular graphite cast iron	400	230	0.5	5.0	0.12	0.24
N	Cobalt Base/Nickel Base Alloy	840-1180	250-350	0.5	5.0	0.05	0.1
	Titanium Alloy	1260-1400	375-410	0.5	5.0	0.05	0.1
H	Aluminium Alloy	260-450	75-130				
	Hardened Steel	-	HRC50-60				
	Hardened Cast Iron	-	HRC55				

Shoulder Milling Cutter

M2290-WN08 Series



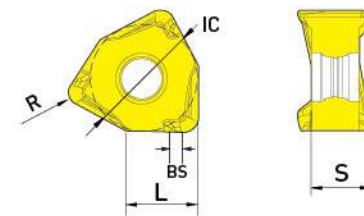
Unit: mm

Series B	Type	Dc	d1	L	apmax	Inner Cooling	Z
WN*X 0806	M2290-WN08-D050-B22-Z4-C	50	22	50	7.5	yes	4
	M2290-WN08-D050-B22-Z5-C	50	22	50	7.5	yes	5
	M2290-WN08-D063-B22-Z5-C	63	22	50	7.5	yes	5
	M2290-WN08-D063-B22-Z6-C	63	22	50	7.5	yes	6
	M2290-WN08-D080-B27-Z7-C	80	27	50	7.5	yes	7
	M2290-WN08-D080-B27-Z8-C	80	27	50	7.5	yes	8
	M2290-WN08-D100-B32-Z8-C	100	32	50	7.5	yes	8
	M2290-WN08-D100-B32-Z10-C	100	32	50	7.5	yes	10
	M2290-WN08-D125-B40-Z10-C	125	40	63	7.5	yes	10
	M2290-WN08-D125-B40-Z12-C	125	40	63	7.5	yes	12
	M2290-WN08-D160-B40-Z12	160	40	63	7.5	no	12
	M2290-WN08-D160-B40-Z15	160	40	63	7.5	no	15

Attachment		
	Insert with Screw	AF1052
	Insert Screw Driver	AF2031

M2290-WN08 Series

Shoulder Milling Cutter



	IC	L	S
WN**0806**	12.48	7.5	6.45

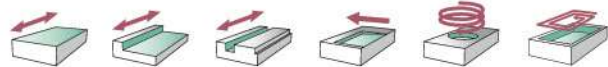
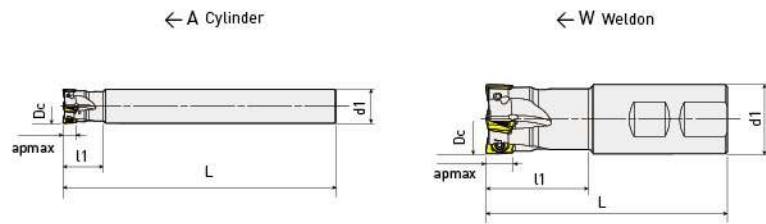
Series	Type	R	BS	P				M				K				S		
				APM2SE	APU2SE	ACP3SE	APP4SE	APM25C	APM2SE	APM35C	APP4SE	ACK15E	APK19E	ACK25E	APM25C	ACK35E	AP525C	AP535C
-F7	 WNGX080608R-F7	0.8	1.4	⊙				●	⊙				●		●		⊙	
-M4	 WNEX080608R-M4	0.8	1.4	●				●	●	⊙					●		●	
-M5	 WNEX080608R-M5	0.8	1.4	●	●		⊙	●	●		⊙		●		●	⊙		
-R5	 WNEX080608R-R5	0.8	1.4		●	●							●	⊙	●		⊙	

● Standing stock ◎ Optional stock

Feed Parameter				ap(mm)				fz(mm/t)					
ISO	Material Group	Tensile Strength (N/mm ²)	HB	ap		F7		M4		M5		R5	
				Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
P	Unalloyed steel	430	125	0.5	7.5	0.15	0.3	0.12	0.24	0.15	0.3	0.16	0.32
		640-1010	190-300	0.5	7.5	0.12	0.24	0.1	0.2	0.12	0.24	0.15	0.3
	Low-alloyed Steel	700-950	200-280	0.5	7.5	0.12	0.24	0.1	0.2	0.12	0.24	0.15	0.3
	High-alloyed Steel	950-1200	280-355	0.5	7.5	0.1	0.2	0.08	0.18	0.1	0.2	0.12	0.24
		1200-1400	355-415	0.5	7.5	0.1	0.2	0.08	0.18	0.1	0.2	0.12	0.24
M	Duplex Stainless Steel	780	230	0.5	7.5	0.08	0.15	0.06	0.12	0.08	0.15		
	Austenitic Steel	680	200	0.5	7.5	0.08	0.18	0.06	0.15	0.08	0.18		
	PH Stainless Steel	1010	300	0.5	7.5	0.06	0.12	0.05	0.1	0.06	0.12		
K	Grey Cast Iron	200-350	180-245	0.5	7.5	0.16	0.32	0.15	0.3	0.16	0.32	0.2	0.4
	Nodular Cast Iron	400-700	155-245	0.5	7.5	0.15	0.3	0.12	0.24	0.15	0.3	0.18	0.36
	Vermicular graphite cast iron	400	230	0.5	7.5	0.12	0.24	0.1	0.2	0.12	0.24	0.15	0.3
S	Cobalt Base Nickel Base Alloy	840-1180	250-350	0.5	7.5	0.05	0.1	0.04	0.08	0.05	0.1		
	Titanium Alloy	1260-1400	375-410	0.5	7.5	0.05	0.1	0.04	0.08	0.05	0.1		
N	Aluminium Alloy	260-450	75-130										
H	Hardened Steel	-	HRC50-60										
	Hardened Cast Iron	-	HRC55										

Shoulder Milling Cutter

M2190-X006 Series



Unit: mm

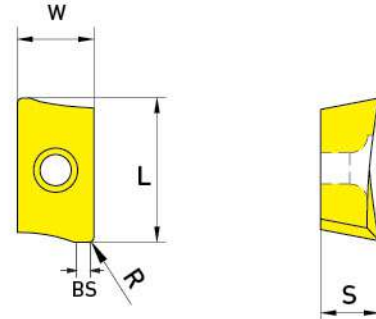
Series A	Type	Dc	d1	L	l1	apmax	Inner Cooling	Z
X0** 0602	M2190-X006-D010-A10-Z2	10	10	100	18	5.0	no	2
	M2190-X006-D012-A12-Z3	12	12	100	20	5.0	no	3
	M2190-X006-D014-A12-Z3	14	12	100	-	5.0	no	3
	M2190-X006-D016-A16-Z4-C	16	16	120	24	5.0	yes	4
	M2190-X006-D020-A20-Z5-C	20	20	160	30	5.0	yes	5

Series W	Type	Dc	d1	L	l1	apmax	Inner Cooling	Z
X0** 0602	M2190-X006-D016-W16-Z4-C	16	16	90	24	5.0	yes	4
	M2190-X006-D020-W20-Z5-C	20	20	105	30	5.0	yes	5
	M2190-X006-D025-W25-Z7-C	25	25	120	40	5.0	yes	7

	Attachment	
	Insert with Screw	AF1081
	Insert Screw Driver	AF2081

Shoulder Milling Cutter

M2190-X006 Series



	L	W	S
X0**0602	6.7	4.15	2.6

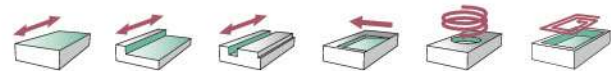
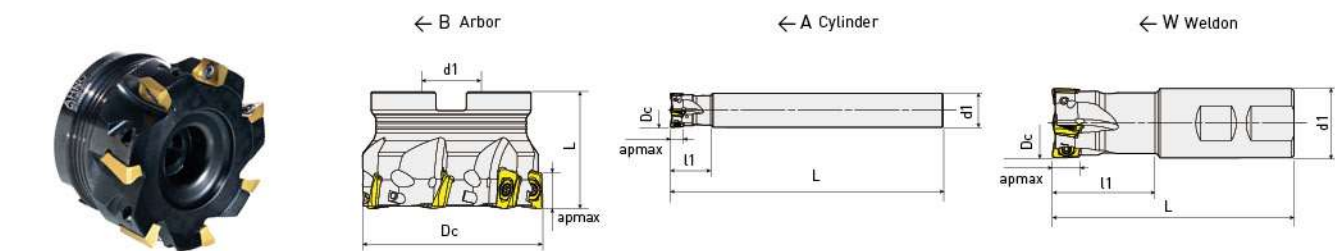
Series	Type	R	BS	P				M				K				S	
				APM25E	APU25B	ACP35E	APP45E	APM25C	APM35C	APP45E	ACK15E	APK15E	ACK25E	APM25C	ACK35E	APP25C	APP35C
-M5	XOMT060202-M5	0.2	0.8	●	●			●	○					●			
	XOMT060204-M5	0.4	0.9	●	●			●	○					●			
	XOMT060208-M5	0.8	1.0	●	●			●	○					●			

● Standing stock ○ Optional stock

ISO	Material Group	Feed Parameter		ap(mm)		fz(mm/t)	
		Tensile Strength (N/mm²)	HB	ap		M5	
				Min	Max	Min	Max
P	Unalloyed steel	430	125	0.5	5.0	0.1	0.18
		640-1010	190-300	0.5	5.0	0.08	0.16
	Low-alloyed Steel	700-950	200-280	0.5	5.0	0.08	0.16
		950-1200	280-355	0.5	5.0	0.06	0.15
M	High-alloyed Steel	1200-1400	355-415	0.5	5.0	0.06	0.15
	Duplex Stainless Steel	780	230	0.5	5.0	0.06	0.12
	Austenitic Steel	680	200	0.5	5.0	0.06	0.12
K	PH Stainless Steel	1010	300	0.5	5.0	0.05	0.1
	Grey Cast Iron	200-350	180-245	0.5	5.0	0.12	0.2
	Nodular Cast Iron	400-700	155-265	0.5	5.0	0.1	0.18
	Vermicular graphite cast iron	400	230	0.5	5.0	0.08	0.16
S	Cobalt Base/Nickel Base Alloy	840-1180	250-350	0.5	5.0	0.04	0.08
	Titanium Alloy	1260-1400	375-410	0.5	5.0	0.04	0.08
N	Aluminium Alloy	260-450	75-130				
H	Hardened Steel	-	HRC50-60				
	Hardened Cast Iron	-	HRC55				

Shoulder Milling Cutter

M2190-X012 Series



Unit: mm

Series A	Type	Dc	d1	L	l1	apmax	Inner Cooling	Z
X0** 1204	M2190-X012-D025-A25-Z3-C	25	25	200	40	10.0	yes	3
	M2190-X012-D032-A32-Z4-C	32	32	250	40	10.0	yes	4
	M2190-X012-D040-A32-Z5-C	40	32	250	45	10.0	yes	5

Series W	Type	Dc	d1	L	l1	apmax	Inner Cooling	Z
X0** 1204	M2190-X012-D025-W25-Z3-C	25	25	100	45	10.0	yes	3
	M2190-X012-D032-W32-Z4-C	32	32	110	50	10.0	yes	4
	M2190-X012-D040-W32-Z5-C	40	32	115	50	10.0	yes	5

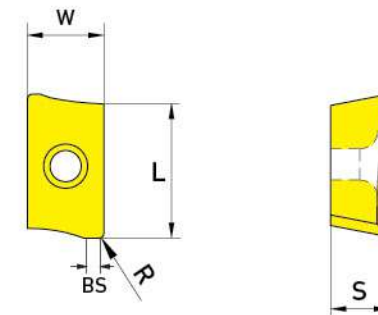
Series B	Type	Dc	d1	L	l1	apmax	Inner Cooling	Z
X0** 1204	M2190-X012-D040-B16-Z5-C	40	16	40	-	10.0	yes	5
	M2190-X012-D050-B22-Z6-C	50	22	40	-	10.0	yes	6
	M2190-X012-D063-B22-Z7-C	63	22	40	-	10.0	yes	7
	M2190-X012-D080-B27-Z8-C	80	27	50	-	10.0	yes	8

Attachment		
	Insert with Screw	AF1082
	Insert Screw Driver	AF2082

M2190-X012 Series

Shoulder Milling Cutter

	L	W	S
X0**1204	13.6	8.4	4.76



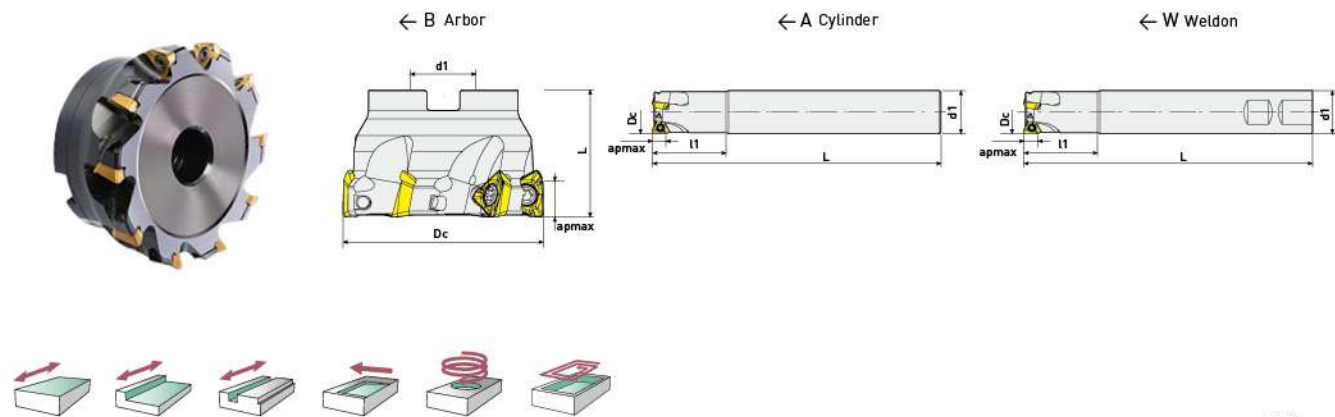
Series	Type	R	BS	P				M				K				S	
				APM25E	APU25E	ACP35E	APP45E	APM25C	APM35C	APP45C	ACK15E	APK15E	ACK25E	APM25C	ACK35E	AP525C	AP535C
-M5	XOMT120408PER-M5	0.8	1.2	◎	●		◎	●	◎				◎	●	◎		
	XOMT120430PER-M5	3.0	0.8	◎				●	◎					●		●	

● Standing stock ◎ Optional stock

Feed Parameter				ap(mm)		fz(mm/t)	
ISO	Material Group	Tensile Strength (N/mm²)	HB	ap		M5	
				Min	Max	Min	Max
P	Unalloyed steel	430	125	0.5	10.0	0.1	0.2
		640-1010	190-300	0.5	10.0	0.08	0.18
	Low-alloyed Steel	700-950	200-280	0.5	10.0	0.08	0.18
		950-1200	280-355	0.5	10.0	0.06	0.15
	High-alloyed Steel	1200-1400	355-415	0.5	10.0	0.06	0.15
M	Duplex Stainless Steel	780	230	0.5	10.0	0.06	0.12
	Austenitic Steel	680	200	0.5	10.0	0.06	0.12
	PH Stainless Steel	1010	300	0.5	10.0	0.05	0.1
K	Grey Cast Iron	200-350	180-245	0.5	10.0	0.12	0.24
	Nodular Cast Iron	400-700	155-265	0.5	10.0	0.1	0.2
	Vermicular graphite cast iron	400	230	0.5	10.0	0.08	0.18
S	Cobalt Base/Nickel Base Alloy	840-1180	250-350	0.5	10.0	0.04	0.08
	Titanium Alloy	1260-1400	375-410	0.5	10.0	0.04	0.08
N	Aluminium Alloy	260-450	75-130				
H	Hardened Steel	-	HRC50-60				
	Hardened Cast Iron	-	HRC55				

Shoulder Milling Cutter

M2190-TP10 Series



Unit: mm

Series A	Type	Dc	d1	L	l1	apmax	Inner Cooling	Z
TP** 1004	M2190-TP10-D020-A20-Z2-C	20	20	170	40	6.0	no	2
	M2190-TP10-D025-A25-Z3-C	25	25	210	40	6.0	yes	3
	M2190-TP10-D032-A32-Z4-C	32	32	250	40	6.0	yes	4
	M2190-TP10-D040-A32-Z4-C	40	32	200	40	6.0	yes	4

Series W	Type	Dc	d1	L	l1	apmax	Inner Cooling	Z
TP** 1004	M2190-TP10-D020-W20-Z2-C	20	20	90	25	6.0	yes	2
	M2190-TP10-D025-W25-Z3-C	25	25	100	30	6.0	yes	3
	M2190-TP10-D032-W25-Z3-C	32	25	110	35	6.0	yes	3
	M2190-TP10-D032-W32-Z4-C	32	32	110	40	6.0	yes	4
	M2190-TP10-D040-W32-Z5-C	40	32	115	40	6.0	yes	5
	M2190-TP10-D040-W32-Z6-C	40	32	115	40	6.0	yes	6

Series B	Type	Dc	d1	L	l1	apmax	Inner Cooling	Z
TP** 1004	M2190-TP10-D040-B16-Z5-C	40	16	40	-	6.0	yes	5
	M2190-TP10-D040-B16-Z6-C	40	16	40	-	6.0	yes	6
	M2190-TP10-D050-B22-Z6-C	50	22	40	-	6.0	yes	6
	M2190-TP10-D050-B22-Z7-C	50	22	40	-	6.0	yes	7
	M2190-TP10-D063-B22-Z8-C	63	22	40	-	6.0	yes	8
	M2190-TP10-D063-B22-Z9-C	63	22	40	-	6.0	yes	9

Attachment



Insert with Screw

AF1011



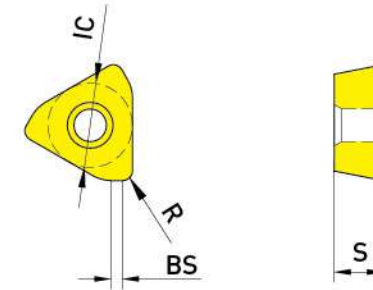
Insert Screw Driver

AF2021

Shoulder Milling Cutter

M2190-TP10 Series

	IC	S
TP**1004	6.9	4.0



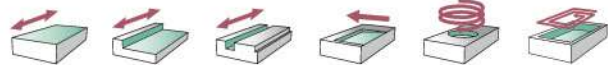
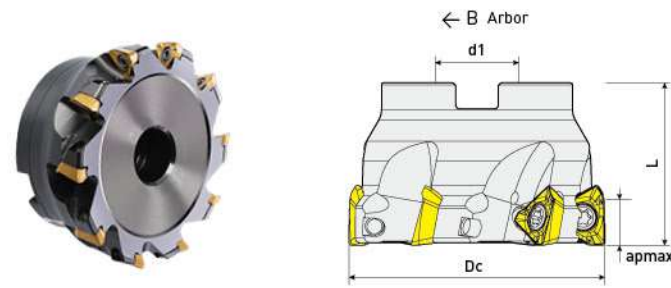
Series	Type	R	BS	P				M				K				S	
				APM2SE	APU2SE	ACP3SE	APP4SE	APM2SE	APM3SE	APP4SE	ACK1SE	APK1SE	ACK2SE	APM2SE	ACK3SE	APM2SE	APM3SE
-M5	TPEX100408PER-M5	0.8	0.8	●	●		●	●	●	●		●	●	●	●	●	●

● Standing stock ○ Optional stock

ISO	Material Group	Feed Parameter		ap(mm)		fz(mm/t)	
		Tensile Strength (N/mm²)	HB	Min	Max	Min	Max
P	Unalloyed steel	430	125	0.5	6.0	0.1	0.18
		640-1010	190-300	0.5	6.0	0.08	0.16
	Low-alloyed Steel	700-950	200-280	0.5	6.0	0.08	0.16
		950-1200	280-355	0.5	6.0	0.06	0.15
M	High-alloyed Steel	1200-1400	355-415	0.5	6.0	0.06	0.15
	Duplex Stainless Steel	780	230	0.5	6.0	0.06	0.12
	Austenitic Steel	680	200	0.5	6.0	0.06	0.12
K	PH Stainless Steel	1010	300	0.5	6.0	0.05	0.1
	Grey Cast Iron	200-350	180-245	0.5	6.0	0.12	0.2
	Nodular Cast Iron	400-700	155-265	0.5	6.0	0.1	0.18
	Vermicular graphite cast iron	400	230	0.5	6.0	0.08	0.16
S	Cobalt Base/Nickel Base Alloy	840-1180	250-350	0.5	6.0	0.04	0.08
	Titanium Alloy	1260-1400	375-410	0.5	6.0	0.04	0.08
N	Aluminium Alloy	260-450	75-130				
H	Hardened Steel	-	HRC50-60				
	Hardened Cast Iron	-	HRC55				

Shoulder Milling Cutter

M2190-TP15 Series



Unit: mm

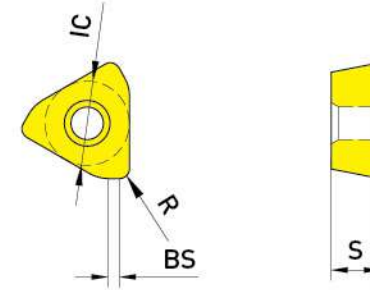
Series B	Type	Dc	d1	L	apmax	Inner Cooling	Z
TP** 1004	M2190-TP15-D050-B22-Z4-C	50	22	40	10.0	yes	4
	M2190-TP15-D050-B22-Z5-C	50	22	40	10.0	yes	5
	M2190-TP15-D063-B22-Z4-C	63	22	40	10.0	yes	4
	M2190-TP15-D063-B22-Z6-C	63	22	40	10.0	yes	6
	M2190-TP15-D080-B27-Z7-C	80	27	50	10.0	yes	7
	M2190-TP15-D080-B27-Z8-C	80	27	50	10.0	yes	8
	M2190-TP15-D100-B32-Z8-C	100	32	50	10.0	yes	8
	M2190-TP15-D100-B32-Z10-C	100	32	50	10.0	yes	10
	M2190-TP15-D125-B40-Z10-C	125	40	63	10.0	yes	10

Attachment		
	Insert with Screw	AF1012
	Insert Screw Driver	AF2031

Shoulder Milling Cutter

M2190-TP15 Series

	IC	S
TP**1505	10.7	5.0



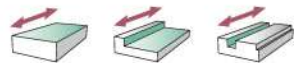
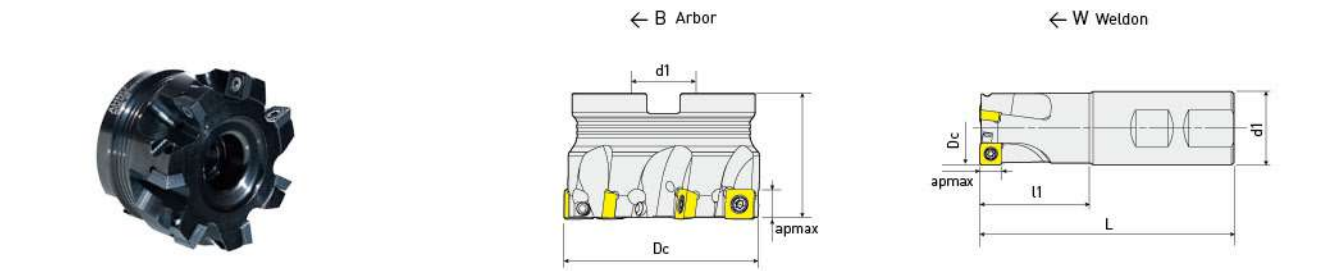
Series	Type	R	BS	P				M				K				S		N	
				APM25E	APU25E	ACP35E	APP45E	APM25C	APM35C	APP45C	ACK15E	APK15E	ACK25E	APM25C	ACK35E	AP525C	AP535C	ANN15	APN15E
-F2	TPHX150508PER-F2	0.8	1.2															●	◎
-M5	TPEX150508PER-M5	0.8	1.2	◎	●	◎		●	◎				◎	●	◎	◎			

● Standing stock ◎ Optional stock

Feed Parameter				ap(mm)		fz(mm/t)	
ISO	Material Group	Tensile Strength (N/mm²)	HB	ap		M5	
P	Unalloyed steel	430	125	0.5	10.0	0.1	0.18
		640-1010	190-300	0.5	10.0	0.08	0.16
	Low-alloyed Steel	700-950	200-280	0.5	10.0	0.08	0.16
		950-1200	280-355	0.5	10.0	0.06	0.15
M	High-alloyed Steel	1200-1400	355-415	0.5	10.0	0.06	0.15
	Duplex Stainless Steel	780	230	0.5	10.0	0.06	0.12
	Austenitic Steel	680	200	0.5	10.0	0.06	0.12
K	PH Stainless Steel	1010	300	0.5	10.0	0.05	0.1
	Grey Cast Iron	200-350	180-245	0.5	10.0	0.12	0.2
	Nodular Cast Iron	400-700	155-265	0.5	10.0	0.1	0.18
	Vermicular graphite cast iron	400	230	0.5	10.0	0.08	0.16
S	Cobalt Base/Nickel Base Alloy	840-1180	250-350	0.5	10.0	0.04	0.08
	Titanium Alloy	1260-1400	375-410	0.5	10.0	0.04	0.08
N	Aluminium Alloy	260-450	75-130	0.5	10.0	0.05	0.15
H	Hardened Steel	-	HRC50-60				
	Hardened Cast Iron	-	HRC55				

Shoulder Milling Cutter

M2290-S009 Series



Unit: mm

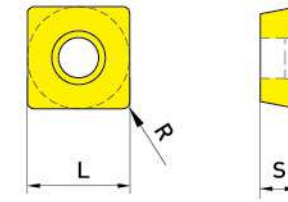
Series W		Type	Dc	d1	L	l1	apmax	Inner Cooling	Z
S0** 09T3		M2290-S009-D032-W32-Z3-C	32	32	110	49	7.5	yes	3
		M2290-S009-D032-W32-Z4-C	32	32	110	49	7.5	yes	4
		M2290-S009-D040-W40-Z4-C	40	40	125	49	7.5	yes	4
		M2290-S009-D040-W40-Z5-C	40	40	125	49	7.5	yes	5

Series B		Type	Dc	d1	L	l1	apmax	Inner Cooling	Z
S0** 09T3		M2290-S009-D040-B16-Z4-C	40	16	40	-	7.5	yes	4
		M2290-S009-D040-B16-Z5-C	40	16	40	-	7.5	yes	5
		M2290-S009-D050-B22-Z5-C	50	22	40	-	7.5	yes	5
		M2290-S009-D050-B22-Z6-C	50	22	40	-	7.5	yes	6
		M2290-S009-D063-B22-Z6-C	63	22	40	-	7.5	yes	6
		M2290-S009-D063-B22-Z8-C	63	22	40	-	7.5	yes	8
		M2290-S009-D080-B27-Z6-C	80	27	50	-	7.5	yes	6
		M2290-S009-D080-B27-Z9-C	80	27	50	-	7.5	yes	9

Attachment		
	Insert with Screw	AF1091
	Insert Screw Driver	AF2091

Shoulder Milling Cutter

M2290-S009 Series



	L	S
S0**09T3	9.52	3.97

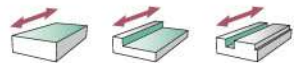
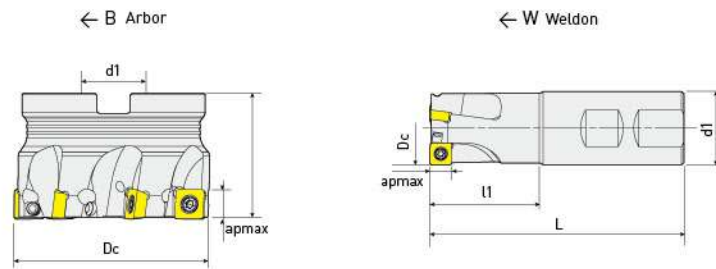
				P				M				K				S		
Series	Type	R	BS	APM2SE	APU2SE	ACP3SE	APP4SE	APM25C	APM2SE	APM35C	APP4SE	ACK15E	APK19E	ACK25E	APM25C	ACK35E	APS25C	APS35C
-M5	 SOMT09T308-M5	0.8	-	●	●		○	●	●		○				●		○	
	SOMT09T320-M5	2.0	-	○	○		●		○	●	●					○	○	●
-M7	 SOMT09T308-M7	0.8	-		●		○				○				●	○		

● Standing stock ○ Optional stock

Feed Parameter				ap(mm)		fz(mm/t)			
ISO	Material Group	Tensile Strength (N/mm ²)	HB	ap		M5		M7	
				Min	Max	Min	Max	Min	Max
P	Unalloyed steel	430	125	0.5	7.5	0.1	0.2	0.12	0.24
		640-1010	190-300	0.5	7.5	0.08	0.18	0.1	0.2
	Low-alloyed Steel	700-950	200-280	0.5	7.5	0.08	0.18	0.1	0.2
		950-1200	280-355	0.5	7.5	0.06	0.15	0.08	0.16
M	Duplex Stainless Steel	780	230	0.5	7.5	0.06	0.12		
		680	200	0.5	7.5	0.06	0.12		
	PH Stainless Steel	1010	300	0.5	7.5	0.05	0.1		
		200-350	180-245	0.5	7.5	0.12	0.24	0.15	0.3
K	Nodular Cast Iron	400-700	155-265	0.5	7.5	0.1	0.2	0.12	0.24
	Vermicular graphite cast iron	400	230	0.5	7.5	0.08	0.18	0.1	0.2
S	Cobalt Base/Nickel Base Alloy	840-1180	250-350	0.5	7.5	0.04	0.08		
	Titanium Alloy	1260-1400	375-410	0.5	7.5	0.04	0.08		
N	Aluminium Alloy	260-450	75-130						
H	Hardened Steel	-	HRC50-60						
	Hardened Cast Iron	-	HRC55						

Shoulder Milling Cutter

M2290-S012 Series



Unit: mm

Series W	Type	Dc	d1	L	l1	apmax	Inner Cooling	Z
S0** 1204	M2290-S012-D040-W40-Z3-C	40	40	125	49	10.0	yes	3
	M2290-S012-D040-W40-Z4-C	40	40	125	49	10.0	yes	4

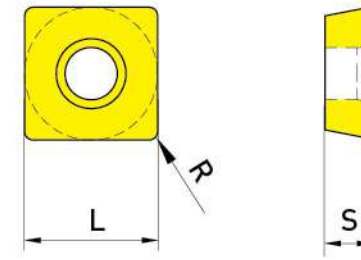
Series B	Type	Dc	d1	L	l1	apmax	Inner Cooling	Z
S0** 1204	M2290-S012-D050-B22-Z4-C	50	22	40	-	10.0	yes	4
	M2290-S012-D050-B22-Z5-C	50	22	40	-	10.0	yes	5
	M2290-S012-D063-B22-Z5-C	63	22	40	-	10.0	yes	5
	M2290-S012-D063-B22-Z6-C	63	22	40	-	10.0	yes	6
	M2290-S012-D080-B27-Z6-C	80	27	50	-	10.0	yes	6
	M2290-S012-D080-B27-Z8-C	80	27	50	-	10.0	yes	8
	M2290-S012-D100-B32-Z8-C	100	32	50	-	10.0	yes	8
	M2290-S012-D100-B32-Z10-C	100	32	50	-	10.0	yes	10
	M2290-S012-D125-B40-Z9-C	125	40	63	-	10.0	yes	9
	M2290-S012-D125-B40-Z12-C	125	40	63	-	10.0	yes	12

Attachment		
	Insert with Screw	AF1032
	Insert Screw Driver	AF2062

Shoulder Milling Cutter

M2290-S012 Series

	L	S
S0**1204	12.7	4.76



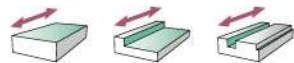
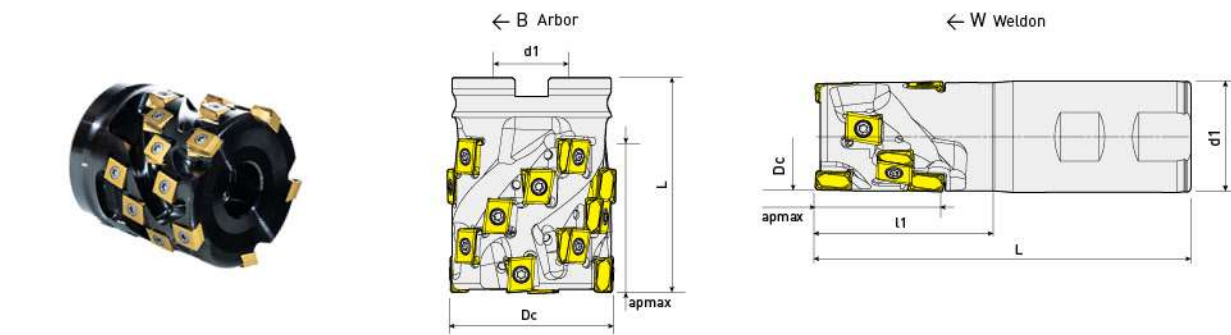
				P				M				K				S		
Series	Type	R	BS	APM2SE	APU2SE	ACP3SE	APP4SE	APM2SC	APM2SE	APM3SC	APP4SE	ACK1SE	APK1SE	ACK2SE	APM2SC	ACK3SE	APP2SC	APP3SC
-M5	 SOMT120408-M5	0.8	-	●	●		○	●	●		○				●		○	
	SOMT120425-M5	2.5	-	○	○		●		○	●	●					○	○	●
-M7	 SOMT120408-M7	0.8	-		●		○				○				●	○		

● Standing stock ○ Optional stock

Feed Parameter				ap(mm)				fz(mm/t)			
ISO	Material Group	Tensile Strength (N/mm ²)	HB	ap		M5		M7		Min	Max
				Min	Max	Min	Max	Min	Max		
P	Unalloyed steel	430	125	0.5	10.0	0.1	0.2	0.12	0.24		
		640-1010	190-300	0.5	10.0	0.08	0.18	0.1	0.2		
	Low-alloyed Steel	700-950	200-280	0.5	10.0	0.08	0.18	0.1	0.2		
		950-1200	280-355	0.5	10.0	0.06	0.15	0.08	0.16		
M	Duplex Stainless Steel	1200-1400	355-415	0.5	10.0	0.06	0.15	0.08	0.16		
		780	230	0.5	10.0	0.06	0.12				
	Austenitic Steel	680	200	0.5	10.0	0.06	0.12				
		1010	300	0.5	10.0	0.05	0.1				
K	Grey Cast Iron	200-350	180-245	0.5	10.0	0.12	0.24	0.15	0.3		
		400-700	155-265	0.5	10.0	0.1	0.2	0.12	0.24		
	Nodular Cast Iron	400	230	0.5	10.0	0.08	0.18	0.1	0.2		
		Vermicular graphite cast iron									
S	Cobalt Base/Nickel Base Alloy	840-1180	250-350	0.5	10.0	0.04	0.08				
		1260-1400	375-410	0.5	10.0	0.04	0.08				
	Titanium Alloy	260-450	75-130								
N	Aluminium Alloy										
H	Hardened Steel	-	HRC50-60								
		-	HRC55								

Corn Milling

M9190-LN13 Series



Unit: mm

Series W	Type	Dc	d1	L	L1	apmax	Inner Cooling	Z	Inserts Quantity
LN** 1306	M9190-LN13-D040-W40-Z2-L34-C	40	40	120	54	32	yes	2	6
	M9190-LN13-D040-W40-Z2-L45-C	40	40	135	64	45	yes	2	8

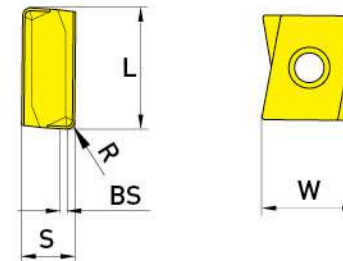
Series B	Type	Dc	d1	L	L1	apmax	Inner Cooling	Z	Inserts Quantity
LN** 1306	M9190-LN13-D040-B16-Z2-L34-C	40	16	55	-	32	yes	2	6
	M9190-LN13-D040-B16-Z2-L45-C	40	16	65	-	45	yes	2	8
	M9190-LN13-D050-B22-Z3-L34-C	50	22	55	-	32	yes	3	9
	M9190-LN13-D050-B22-Z3-L45-C	50	22	65	-	45	yes	3	12
	M9190-LN13-D063-B27-Z4-L45-C	63	27	70	-	45	yes	4	16
	M9190-LN13-D063-B27-Z4-L56-C	63	27	80	-	54	yes	4	20
	M9190-LN13-D080-B32-Z5-L56-C	80	32	85	-	54	yes	5	25

Attachment		
	Insert with Screw	AF1101
	Insert Screw Driver	AF2062

M9190-LN13 Series

Corn Milling

	L	W	S
LN**1306**	13	12	6.8



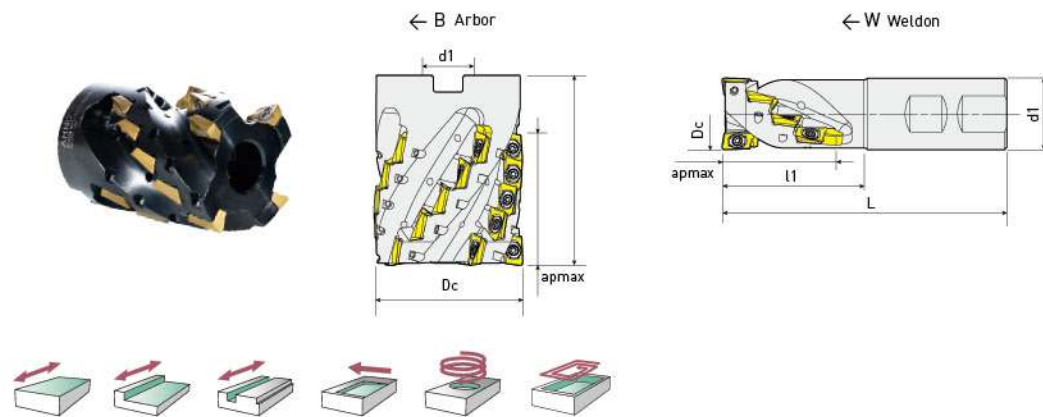
				P				M				K				S		
Series	Type	R	BS	APM25E	APU25C	ACP35E	APP45E	APM25C	APM25E	APM35C	APP45E	ACK15E	APK15E	ACK25E	APM25C	ACK35E	AP525C	AP535C
-M5	LNHU130608PER-M5	0.8	2.25	●	●		◎	●	●		◎				●		●	
																		

● Standing stock ◎ Optional stock

Feed Parameter				ap(mm)		fz(mm/t)	
ISO	Material Group	Tensile Strength (N/mm²)	HB	ap		M5	
				Min	Max	Min	Max
P	Unalloyed steel	430	125	0.5	32-54	0.12	0.2
		640-1010	190-300	0.5	32-54	0.1	0.16
	Low-alloyed Steel	700-950	200-280	0.5	32-54	0.1	0.16
		950-1200	280-355	0.5	32-54	0.08	0.15
M	High-alloyed Steel	1200-1400	355-415	0.5	32-54	0.08	0.15
	Duplex Stainless Steel	780	230	0.5	32-54	0.05	0.12
	Austenitic Steel	680	200	0.5	32-54	0.06	0.15
K	PH Stainless Steel	1010	300	0.5	32-54	0.04	0.1
	Grey Cast Iron	200-350	180-245	0.5	32-54	0.15	0.25
	Nodular Cast Iron	400-700	155-265	0.5	32-54	0.12	0.2
	Vermicular graphite cast iron	400	230	0.5	32-54	0.1	0.16
S	Cobalt Base/Nickel Base Alloy	840-1180	250-350	0.5	32-54	0.03	0.08
	Titanium Alloy	1260-1400	375-410	0.5	32-54	0.03	0.08
N	Aluminium Alloy	260-450	75-130				
H	Hardened Steel	-	HRC50-60				
	Hardened Cast Iron	-	HRC55				

Corn Milling

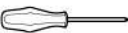
M9190-X012 Series



Unit: mm

Series W	Type	Dc	d1	L	l1	apmax	Inner Cooling	Z	Inserts Quantity
X0** 1204	M9190-X012-D032-W32-Z2-43-C	32	32	125	64	40	yes	2	8
	M9190-X012-D040-W40-Z3-54-C	40	40	150	79	50	yes	3	15

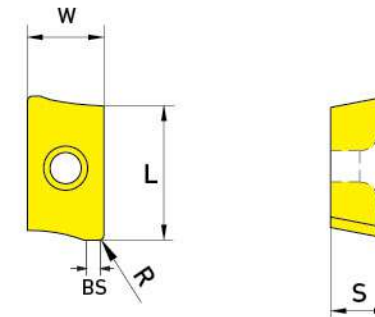
Series B	Type	Dc	d1	L	l1	apmax	Inner Cooling	Z	Inserts Quantity
X0** 1204	M9190-X012-D040-B16-Z3-43-C	40	16	65	-	40	yes	3	12
	M9190-X012-D050-B22-Z4-54-C	50	22	75	-	50	yes	4	20
	M9190-X012-D063-B27-Z5-54-C	63	27	80	-	50	yes	5	25

Attachment		
	Insert with Screw	AF1082
	Insert Screw Driver	AF2082

Corn Milling

M9190-X012 Series

	L	W	S
X0**1204	13.6	8.4	4.76



				P				M				K				S		
Series	Type	R	BS	APM25E	APU25E	ACP35E	APP45E	APM25C	APM25E	APM35C	APP45E	ACK15E	APK15E	ACK25E	APM25C	ACK35E	APS25C	APS35C
-M5	XOMT120408PER-M5	0.8	1.2	⊙	●		⊙	●	⊙		⊙			⊙	●	⊙	⊙	
	* XOMT120430PER-M5	3.0	0.8	⊙				●	⊙						●		●	

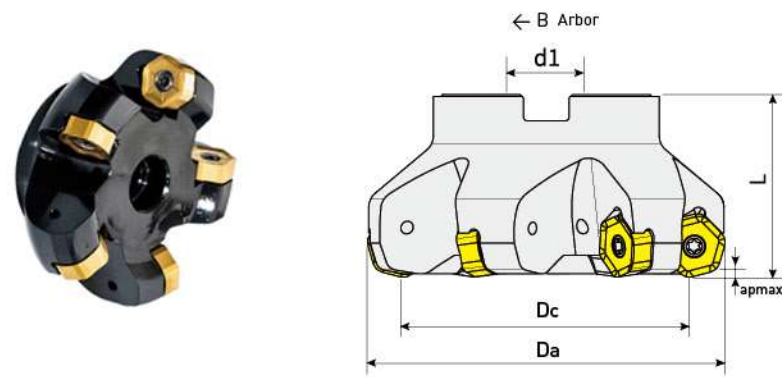
● Standing stock ⊙ Optional stock

* Only applicable to End edge

Feed Parameter				ap(mm)		fz(mm/t)	
ISO	Material Group	Tensile Strength (N/mm²)	HB	ap		M5	
P	Unalloyed steel	430	125	0.5	40-50	0.12	0.2
		640-1010	190-300	0.5	40-50	0.1	0.16
	Low-alloyed Steel	700-950	200-280	0.5	40-50	0.1	0.16
		950-1200	280-355	0.5	40-50	0.08	0.15
M	High-alloyed Steel	1200-1400	355-415	0.5	40-50	0.08	0.15
	Duplex Stainless Steel	780	230	0.5	40-50	0.05	0.12
	Austenitic Steel	680	200	0.5	40-50	0.06	0.15
K	PH Stainless Steel	1010	300	0.5	40-50	0.04	0.1
	Grey Cast Iron	200-350	180-245	0.5	40-50	0.15	0.25
	Nodular Cast Iron	400-700	155-265	0.5	40-50	0.12	0.2
	Vermicular graphite cast iron	400	230	0.5	40-50	0.1	0.16
S	Cobalt Base/Nickel Base Alloy	840-1180	250-350	0.5	40-50	0.03	0.08
	Titanium Alloy	1260-1400	375-410	0.5	40-50	0.03	0.08
N	Aluminium Alloy	260-450	75-130				
H	Hardened Steel	-	HRC50-60				
	Hardened Cast Iron	-	HRC55				

High Feed Milling Cutter

M3115-HN09 Series



Unit: mm

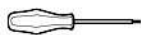
Series B	Type	Dc	Da	d1	L	apmax	Inner Cooling	Z
HN**0905	M3115-HN09-D050-B22-Z4-C	50	67.9	22	40	2.0	yes	4
	M3115-HN09-D063-B22-Z5-C	63	80.9	22	40	2.0	yes	5
	M3115-HN09-D080-B27-Z6-C	80	97.9	27	50	2.0	yes	6
	M3115-HN09-D100-B32-Z8-C	100	117.9	32	50	2.0	yes	8
	M3115-HN09-D125-B40-Z9-C	125	142.9	40	63	2.0	yes	9

Attachment



Insert with Screw

AF1031

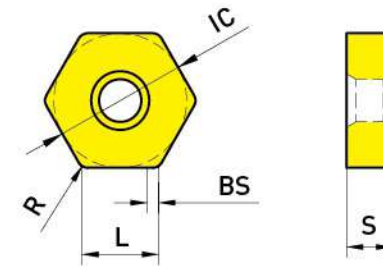


Insert Screw Driver

AF2031

M3115-HN09 Series

High Feed Milling Cutter



	IC	L	S
HN**0905**	15.88	8.58	5.56

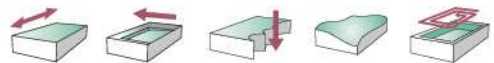
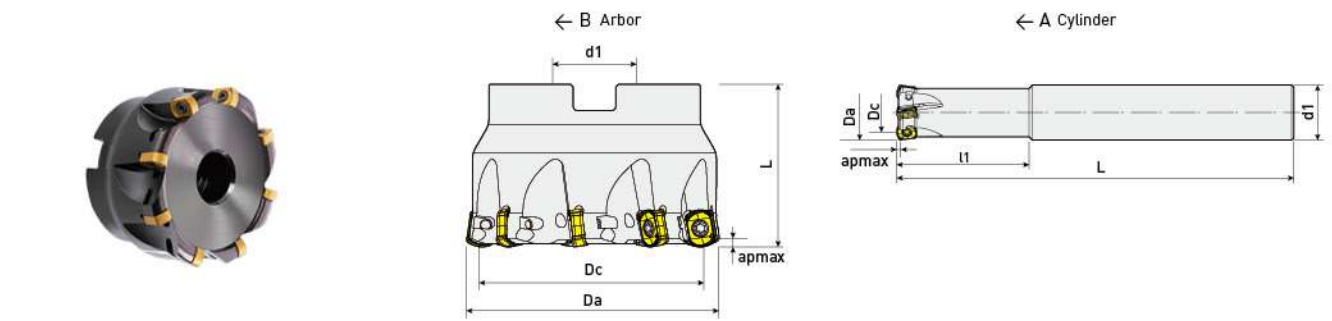
Series	Type	R	BS	P				M				K				S		
				APM25E	APU25E	ACP35E	APP45E	APM25C	APM25E	APM35C	APP45E	AWK05	ACK15E	APK15E	ACK25E	APM25C	ACK35E	AP525C
-M4	 HNEX0905ANSN-M4	1.2	1.8	●	◎			●	●						◎	●		●
-M5	 HNEX0905ANSN-M5	1.2	1.8	●	●	◎	●	●	●	●	●			◎	●	●	◎	●
-M7	 HNEX0905ANSN-M7	1.2	1.6		●	●								◎	●		◎	

● Standing stock ◎ Optional stock

ISO	Material Group	Feed Parameter		ap(mm)		fz(mm/t)	
		Tensile Strength (N/mm²)	HB	Min	Max	Min	Max
P	Unalloyed steel	430	125	0.5	2.0	0.8	1.5
		640-1010	190-300	0.5	2.0	0.75	1.2
	Low-alloyed Steel	700-950	200-280	0.5	2.0	0.75	1.2
		950-1200	280-355	0.5	2.0	0.6	1.0
M	High-alloyed Steel	1200-1400	355-415	0.5	2.0	0.6	1.0
	Duplex Stainless Steel	780	230	0.5	2.0	0.6	1.0
	Austenitic Steel	680	200	0.5	2.0	0.6	1.0
K	PH Stainless Steel	1010	300	0.5	2.0	0.5	0.8
	Grey Cast Iron	200-350	180-245	0.5	2.0	1.0	2.0
	Nodular Cast Iron	400-700	155-265	0.5	2.0	0.75	1.6
S	Vermicular graphite cast iron	400	230	0.5	2.0	0.6	1.5
	Cobalt Base/Nickel Base Alloy	840-1180	250-350	0.5	2.0	0.4	0.75
	Titanium Alloy	1260-1400	375-410	0.5	2.0	0.4	0.75
	Aluminium Alloy	260-450	75-130				
H	Hardened Steel	-	HRC50-60				
	Hardened Cast Iron	-	HRC55				

High Feed Milling Cutter

M3120-LN06 Series



Unit: mm

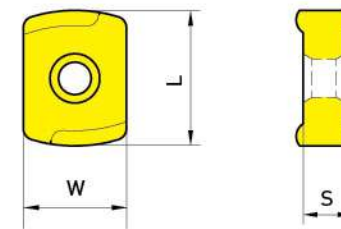
Series A	Type	Dc	Da	d1	L	L1	apmax	Inner Cooling	Z
LN*X 0603	M3120-LN06-D016-A16-Z2-C	9.4	16	16	150	40	0.75	yes	2
	M3120-LN06-D020-A20-Z3-C	12.4	20	20	150	50	1.0	yes	3
	M3120-LN06-D025-A25-Z4-C	17.3	25	25	180	60	1.0	yes	4
	M3120-LN06-D032-A32-Z5-C	24.3	32	32	180	80	1.0	yes	5

Series B	Type	Dc	Da	d1	L	L1	apmax	Inner Cooling	Z
LN*X 0603	M3120-LN06-D032-B16-Z4-C	24.3	32	16	40	-	1.0	yes	4
	M3120-LN06-D032-B16-Z5-C	24.3	32	16	40	-	1.0	yes	5
	M3120-LN06-D040-B22-Z6-C	32.2	40	22	40	-	1.0	yes	6
	M3120-LN06-D050-B22-Z7-C	42.2	50	22	50	-	1.0	yes	7
	M3120-LN06-D050-B22-Z8-C	42.2	50	22	50	-	1.0	yes	8
	M3120-LN06-D063-B22-Z8-C	55.5	63	22	50	-	1.0	yes	8
	M3120-LN06-D063-B22-Z9-C	55.5	63	22	50	-	1.0	yes	9

Attachment		
	Insert with Screw	AF1051
	Insert Screw Driver	AF2021

M3120-LN06 Series

High Feed Milling Cutter



	L	W	S
LN**0603	9.0	6.39	3.73

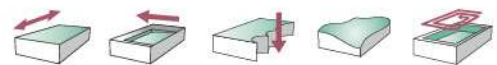
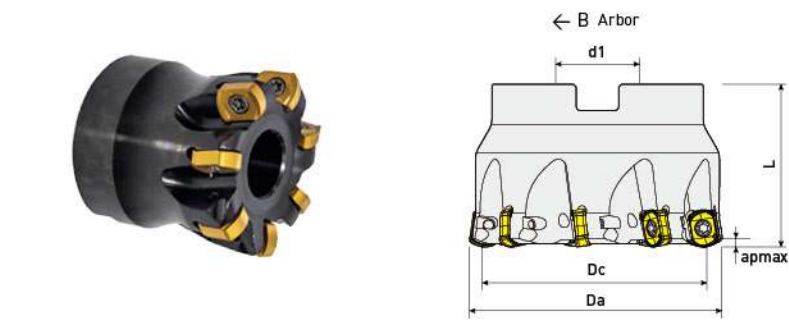
				P				M				K				S		H			
Series		Type	R	BS	APM25E	APU25E	ACP35E	APP45E	APM25C	APM25E	APM35C	APP45E	ACK15E	APK15E	ACK25E	APM25C	ACK35E	APS25C	APS35C	APH5E	
-M4		LNMX060310R-M4			●	●		●		●		●									●
-M5		LNMX060310R-M5			●	●		◎		●		◎						◎			●

● Standing stock ◎ Optional stock

Feed Parameter				ap(mm)		fz(mm/t)	
ISO	Material Group	Tensile Strength (N/mm²)	HB	ap		M5	
P	Unalloyed steel	430	125	0.4	1.0	0.5	1.0
		640-1010	190-300	0.4	1.0	0.4	0.8
	Low-alloyed Steel	700-950	200-280	0.4	1.0	0.4	0.8
		950-1200	280-355	0.4	1.0	0.3	0.75
M	High-alloyed Steel	1200-1400	355-415	0.4	1.0	0.3	0.75
	Duplex Stainless Steel	780	230	0.4	1.0	0.3	0.75
	Austenitic Steel	680	200	0.4	1.0	0.3	0.75
K	PH Stainless Steel	1010	300	0.4	1.0	0.25	0.6
	Grey Cast Iron	200-350	180-245	0.4	1.0	0.5	1.2
	Nodular Cast Iron	400-700	155-265	0.4	1.0	0.4	1.0
	Vermicular graphite cast iron	400	230	0.4	1.0	0.3	0.8
S	Cobalt Base/Nickel Base Alloy	840-1180	250-350	0.4	1.0	0.2	0.5
	Titanium Alloy	1260-1400	375-410	0.4	1.0	0.2	0.5
N	Aluminium Alloy	260-450	75-130				
H	Hardened Steel	-	HRC50-60				
	Hardened Cast Iron	-	HRC55				

High Feed Milling Cutter

M3120-LN09 Series



Unit: mm

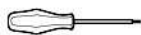
Series B	Type	Dc	Da	d1	L	apmax	Inner Cooling	Z
LN*X 0904	M3120-LN09-D040-B16-Z4-C	29.6	40	16	40	1.5	yes	4
	M3120-LN09-D040-B16-Z5-C	29.6	40	16	40	1.5	yes	5
	M3120-LN09-D050-B22-Z6-C	39.6	50	22	50	1.5	yes	6
	M3120-LN09-D050-B22-Z7-C	39.6	50	22	50	1.5	yes	7
	M3120-LN09-D063-B22-Z7-C	52.6	63	22	50	1.5	yes	7
	M3120-LN09-D063-B22-Z8-C	52.6	63	22	50	1.5	yes	8
	M3120-LN09-D080-B27-Z9-C	69.6	80	27	50	1.5	yes	9
	M3120-LN09-D080-B27-Z10-C	69.6	80	27	50	1.5	yes	10

Attachment



Insert with Screw

AF1201



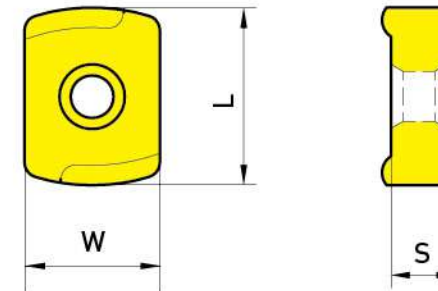
Insert Screw Driver

AF2031

M3120-LN09 Series

High Feed Milling Cutter

	L	W	S
LN**0904	11.9	9.2	4.8



Series	Type	R	BS	P				M				K				S		H	
				APM25E	APU25E	ACF35E	APP45E	APM25C	APM25E	APM35C	APP45E	ACK15E	APK15E	ACK25E	APM25C	ACK35E	AP525C	AP535C	APH25E
-M5		LNMX090412R-M5		●	●		◎		●		◎					◎			●

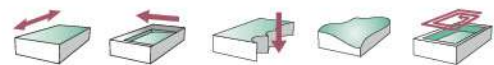
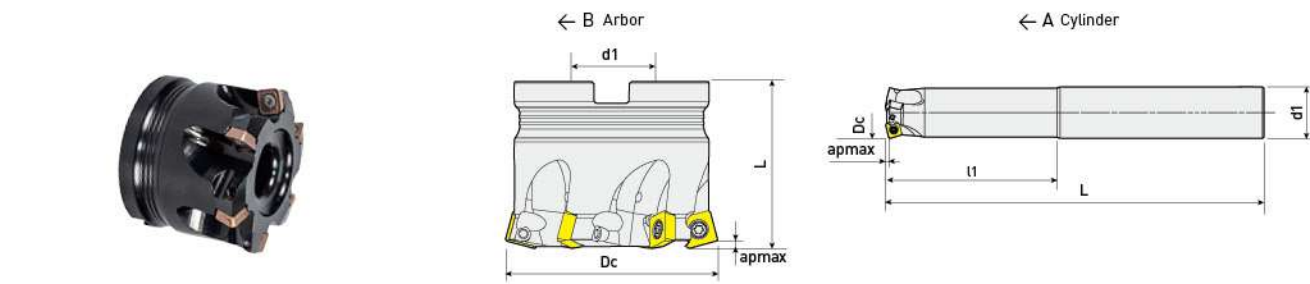
● Standing stock ◎ Optional stock

● Standing stock ◎ Optional stock

Feed Parameter				ap(mm)		fz(mm/t)	
ISO	Material Group	Tensile Strength [N/mm²]	HB	ap		M5	
				Min	Max	Min	Max
P	Unalloyed steel	430	125	0.5	1.5	0.5	1
		640-1010	190-300	0.5	1.5	0.4	0.8
	Low-alloyed Steel	700-950	200-280	0.5	1.5	0.4	0.8
		950-1200	280-355	0.5	1.5	0.3	0.75
M	High-alloyed Steel	1200-1400	355-415	0.5	1.5	0.3	0.75
	Duplex Stainless Steel	780	230	0.5	1.5	0.3	0.75
	Austenitic Steel	680	200	0.5	1.5	0.3	0.75
K	PH Stainless Steel	1010	300	0.5	1.5	0.25	0.6
	Grey Cast Iron	200-350	180-245	0.5	1.5	0.5	1.2
	Nodular Cast Iron	400-700	155-265	0.5	1.5	0.4	1.0
	Vermicular graphite cast iron	400	230	0.5	1.5	0.3	0.8
S	Cobalt Base/Nickel Base Alloy	840-1180	250-350	0.5	1.5	0.2	0.5
	Titanium Alloy	1260-1400	375-410	0.5	1.5	0.2	0.5
N	Aluminium Alloy	260-450	75-130				
H	Hardened Steel	-	HRC50-60				
	Hardened Cast Iron	-	HRC55				

High Feed Milling Cutter

M3215-S009 Series



Unit: mm

Series A	Type	Dc	d1	L	l1	apmax	Inner Cooling	Z
S0** 09T3	M3215-S009-D032-A32-Z4-C	32	32	200	90	1.0	yes	4
	M3215-S009-D035-A32-Z4-C	35	32	200	-	1.0	yes	4
	M3215-S009-D040-A32-Z5-C	40	32	200	100	1.0	yes	5

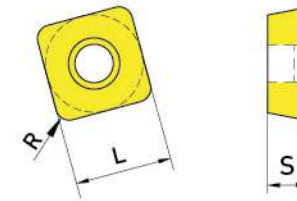
Series B	Type	Dc	d1	L	l1	apmax	Inner Cooling	Z
S0** 09T3	M3215-S009-D040-B16-Z5-C	40	16	40	-	1.0	yes	5
	M3215-S009-D050-B22-Z6-C	50	22	40	-	1.0	yes	6
	M3215-S009-D063-B22-Z7-C	63	22	50	-	1.0	yes	7

Attachment		
	Insert with Screw	AF1091
	Insert Screw Driver	AF2091

M3215-S009 Series

High Feed Milling Cutter

	L	S
S0**09T3	9.52	3.97



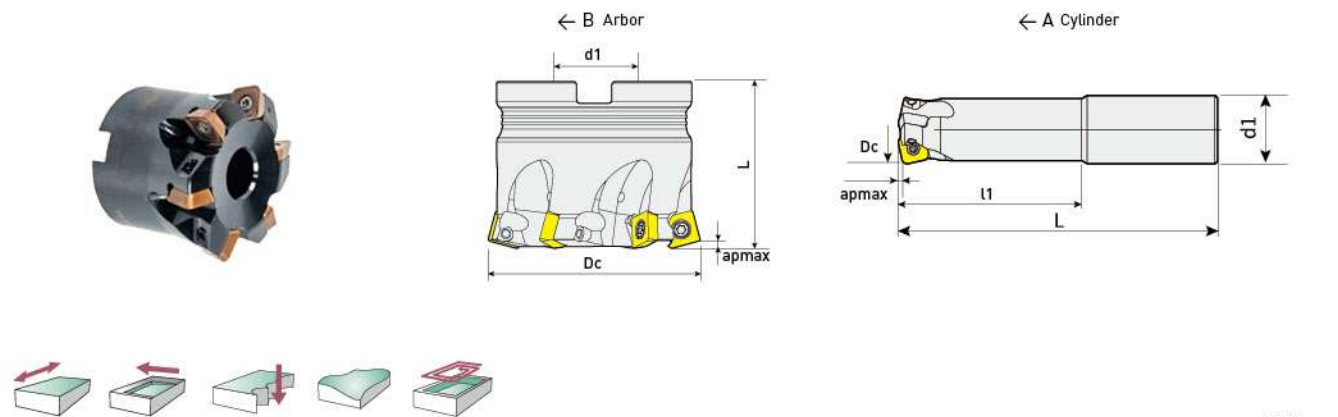
				P				M				K				S		
Series	Type	R	BS	APM2SE	APU2SE	ACP3SE	APP4SE	APM2SC	APM2SE	APM3SC	APP4SE	ACK1SE	APK1SE	ACK2SE	APM2SC	ACK3SE	APP2SC	APP3SC
-M5	 SOMT09T308-M5	0.8	-	●	●		○	●	●		○				●		○	
	SOMT09T320-M5	2.0	-	○	○		●		○	●	●					○	○	●
-M7	 SOMT09T308-M7	0.8	-		●		○				○				●	○		

● Standing stock ○ Optional stock

Feed Parameter				ap(mm)		fz(mm/t)			
ISO	Material Group	Tensile Strength (N/mm ²)	HB	ap		M5		M7	
P	Unalloyed steel	430	125	0.4	1.0	0.75	1.2	0.8	1.5
		640-1010	190-300	0.4	1.0	0.6	1.0	0.75	1.2
	Low-alloyed Steel	700-950	200-280	0.4	1.0	0.6	1.0	0.75	1.2
		950-1200	280-355	0.4	1.0	0.5	0.9	0.6	1.0
M	High-alloyed Steel	1200-1400	355-415	0.4	1.0	0.5	0.9	0.6	1.0
	Duplex Stainless Steel	780	230	0.4	1.0	0.5	0.9		
	Austenitic Steel	680	200	0.4	1.0	0.5	0.9		
K	PH Stainless Steel	1010	300	0.4	1.0	0.45	0.8		
	Grey Cast Iron	200-350	180-245	0.4	1.0	0.75	1.5	0.8	1.6
	Nodular Cast Iron	400-700	155-265	0.4	1.0	0.6	1.2	0.75	1.5
	Vermicular graphite cast iron	400	230	0.4	1.0	0.5	1.0	0.6	1.2
S	Cobalt Base/Nickel Base Alloy	840-1180	250-350	0.4	1.0	0.4	0.75		
	Titanium Alloy	1260-1400	375-410	0.4	1.0	0.4	0.75		
N	Aluminium Alloy	260-450	75-130						
H	Hardened Steel	-	HRC50-60						
	Hardened Cast Iron	-	HRC55						

High Feed Milling Cutter

M3215-S012 Series



Unit: mm

Series A	Type	Dc	d1	L	l1	apmax	Inner Cooling	Z
S0** 1204	M3215-S012-D032-A32-Z3-C	32	32	150	89	1.5	yes	3
	M3215-S012-D040-A32-Z4-C	40	32	175	114	1.5	yes	4

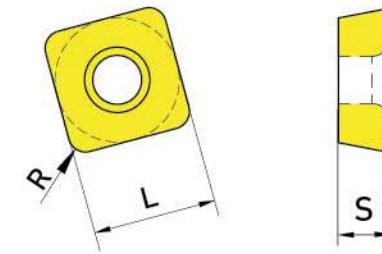
Series B	Type	Dc	d1	L	l1	apmax	Inner Cooling	Z
S0** 1204	M3215-S012-D050-B22-Z5-C	50	22	40	-	1.5	yes	5
	M3215-S012-D063-B22-Z6-C	63	22	50	-	1.5	yes	6
	M3215-S012-D080-B27-Z8-C	80	27	50	-	1.5	yes	8

	Attachment	
	Insert with Screw	AF1032
	Insert Screw Driver	AF2062

M3215-S012 Series

High Feed Milling Cutter

	L	S
S0**1204	12.7	4.76



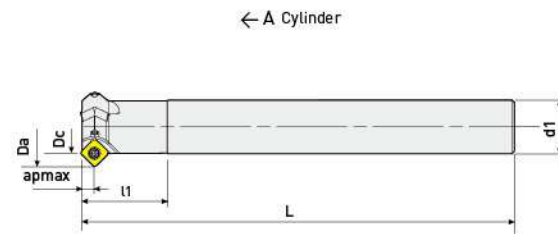
				P				M				K				S		
Series	Type	R	BS	APM2SE	APU2SE	ACP3SE	APP4SE	APM2SC	APM2SE	APM3SC	APP4SE	ACK1SE	APK1SE	ACK2SE	APM2SC	ACK3SE	APS2SC	APS3SC
-M5	 SOMT120408-M5	0.8	-	●	●		○	●	●		○				●		○	
	SOMT120425-M5	2.5	-	○	○		●		○	●	●					○	○	●
-M7	 SOMT120408-M7	0.8	-		●		○				○				●	○		

● Standing stock ○ Optional stock

ISO	Material Group	Feed Parameter		ap(mm)				fz(mm/t)			
		Tensile Strength (N/mm ²)	HB	ap		M5		M7		Min	Max
				Min	Max	Min	Max	Min	Max		
P	Unalloyed steel	430	125	0.5	1.5	0.75	1.2	0.8	1.5		
		640-1010	190-300	0.5	1.5	0.6	1.0	0.75	1.2		
	Low-alloyed Steel	700-950	200-280	0.5	1.5	0.6	1.0	0.75	1.2		
		950-1200	280-355	0.5	1.5	0.5	0.9	0.6	1.0		
M	High-alloyed Steel	1200-1400	355-415	0.5	1.5	0.5	0.9	0.6	1.0		
	Duplex Stainless Steel	780	230	0.5	1.5	0.5	0.9				
	Austenitic Steel	680	200	0.5	1.5	0.5	0.9				
K	PH Stainless Steel	1010	300	0.5	1.5	0.45	0.8				
	Grey Cast Iron	200-350	180-245	0.5	1.5	0.75	1.5	0.8	1.6		
	Nodular Cast Iron	400-700	155-265	0.5	1.5	0.6	1.2	0.75	1.5		
	Vermicular graphite cast iron	400	230	0.5	1.5	0.5	1.0	0.6	1.2		
S	Cobalt Base/Nickel Base Alloy	840-1180	250-350	0.5	1.5	0.4	0.75				
	Titanium Alloy	1260-1400	375-410	0.5	1.5	0.4	0.75				
N	Aluminium Alloy	260-450	75-130								
H	Hardened Steel	-	HRC50-60								
	Hardened Cast Iron	-	HRC55								

45°Positive Opposite Angle Milling

M7145-S009 Series



Unit: mm

Series A	Type	Dc	Da	d1	L	l1	apmax	Inner Cooling	Z
S0** 09T3	M7145-S009-D012-A16-Z1-C	12	24.8	16	160	40	5.0	yes	1
	M7145-S009-D016-A16-Z2-C	16	28.8	16	160	40	5.0	yes	2
	M7145-S009-D020-A20-Z2-C	20	32.8	20	200	40	5.0	yes	2
	M7145-S009-D025-A25-Z3-C	25	37.8	25	200	40	5.0	yes	3
	M7145-S009-D032-A32-Z3-C	32	44.8	32	250	40	5.0	yes	3

Attachment



Insert with Screw

AF1091

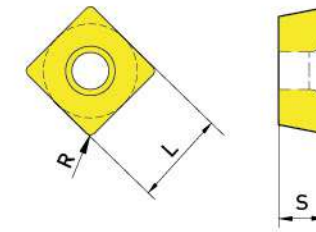


Insert Screw Driver

AF2091

M7145-S009 Series

45°Positive Opposite Angle Milling



	L	S
S0**09T3	9.52	3.97

				P				M				K				S			
Series		Type	R	BS	APM2SE	APU2SE	ACP3SE	APP4SE	APM2SC	APM2SE	APM3SC	APP4SE	ACK1SE	APK1SE	ACK2SE	APM2SC	ACK3SE	APS2SC	APS3SC
-M5		SOMT09T308-M5	0.8	-	●	●		◎	●	●		◎				●		◎	
-M7		SOMT09T308-M7	0.8	-		●		◎				◎				●	◎		

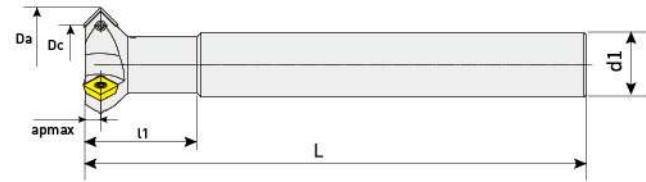
● Standing stock ◎ Optional stock

ISO	Material Group	Feed Parameter		ap(mm)		fz(mm/t)			
		Tensile Strength (N/mm²)	HB	ap		M5		M7	
				Min	Max	Min	Max	Min	Max
P	Unalloyed steel	430	125	0.5	5.0	0.15	0.25	0.15	0.3
		640-1010	190-300	0.5	5.0	0.12	0.2	0.12	0.25
	Low-alloyed Steel	700-950	200-280	0.5	5.0	0.12	0.2	0.12	0.25
		950-1200	280-355	0.5	5.0	0.1	0.16	0.1	0.2
M	High-alloyed Steel	1200-1400	355-415	0.5	5.0	0.1	0.16	0.1	0.2
	Duplex Stainless Steel	780	230	0.5	5.0	0.08	0.15		
	Austenitic Steel	680	200	0.5	5.0	0.08	0.15		
K	PH Stainless Steel	1010	300	0.5	5.0	0.06	0.12		
	Grey Cast Iron	200-350	180-245	0.5	5.0	0.2	0.3	0.2	0.4
	Nodular Cast Iron	400-700	155-265	0.5	5.0	0.15	0.25	0.15	0.3
	Vermicular graphite cast iron	400	230	0.5	5.0	0.12	0.2	0.12	0.25
S	Cobalt Base/Nickel Base Alloy	840-1180	250-350	0.5	5.0	0.05	0.1		
	Titanium Alloy	1260-1400	375-410	0.5	5.0	0.05	0.1		
N	Aluminium Alloy	260-450	75-130						
H	Hardened Steel	-	HRC50-60						
	Hardened Cast Iron	-	HRC55						

45°Positive Opposite Angle Milling

M7145-S012 Series

← A Cylinder



Unit: mm

Series A	Type	Dc	Da	d1	L	l1	apmax	Inner Cooling	Z
S0** 1204	M7145-S012-D025-A25-Z02-C	25	41.6	25	200	40	7.5	yes	2
	M7145-S012-D032-A32-Z03-C	32	48.6	32	250	40	7.5	yes	3
	M7145-S012-D040-A32-Z03-C	40	56.6	32	250	40	7.5	yes	3

Attachment



Insert with Screw

AF1032



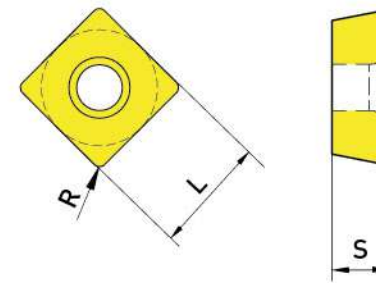
Insert Screw Driver

AF2062

M7145-S012 Series

45°Positive Opposite Angle Milling

	L	S
S0**1204	12.7	4.76



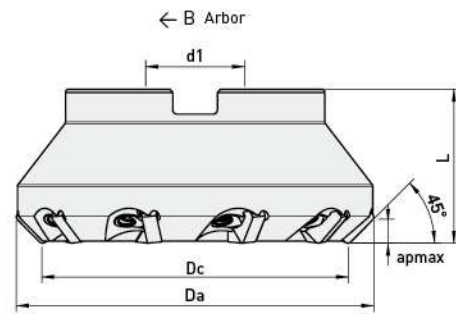
				P				M				K				S			
Series		Type	R	BS	APM2SE	APU2SE	ACP3SE	APP4SE	APM2SC	APM2SE	APM3SC	APP4SE	ACK1SE	APK1SE	ACK2SE	APM2SC	ACK3SE	APS2SC	APS3SC
-M5		SOMT120408-M5	0.8	-	●	●		◎	●	●		◎				●		◎	
-M7		SOMT120408-M7	0.8	-	●			◎				◎				●		◎	

● Standing stock ◎ Optional stock

ISO	Material Group	Feed Parameter		ap(mm)		fz(mm/t)			
		Tensile Strength (N/mm²)	HB	ap		M5		M7	
				Min	Max	Min	Max	Min	Max
P	Unalloyed steel	430	125	0.5	7.5	0.15	0.25	0.15	0.3
		640-1010	190-300	0.5	7.5	0.12	0.2	0.12	0.25
	Low-alloyed Steel	700-950	200-280	0.5	7.5	0.12	0.2	0.12	0.25
		950-1200	280-355	0.5	7.5	0.1	0.16	0.1	0.2
M	High-alloyed Steel	1200-1400	355-415	0.5	7.5	0.1	0.16	0.1	0.2
	Duplex Stainless Steel	780	230	0.5	7.5	0.08	0.15		
	Austenitic Steel	680	200	0.5	7.5	0.08	0.15		
K	PH Stainless Steel	1010	300	0.5	7.5	0.06	0.12		
	Grey Cast Iron	200-350	180-245	0.5	7.5	0.2	0.3	0.2	0.4
	Nodular Cast Iron	400-700	155-265	0.5	7.5	0.15	0.25	0.15	0.3
	Vermicular graphite cast iron	400	230	0.5	7.5	0.12	0.2	0.12	0.25
S	Cobalt Base/Nickel Base Alloy	840-1180	250-350	0.5	7.5	0.05	0.1		
	Titanium Alloy	1260-1400	375-410	0.5	7.5	0.05	0.1		
N	Aluminium Alloy	260-450	75-130						
H	Hardened Steel	-	HRC50-60						
	Hardened Cast Iron	-	HRC55						

45°Cutting Edge Angle Platen Type Face Milling Cutter

M1145-SN12N Series



Unit: mm

Series B	Type	Dc	Da	d1	L	apmax	Inner Cooling	Z
SN*N 1204	M1145-SN12N-D050-B22-Z5	50	65	22	40	6.0	no	5
	M1145-SN12N-D063-B22-Z6	63	78	22	40	6.0	no	6
	M1145-SN12N-D080-B27-Z8	80	95	27	50	6.0	no	8
	M1145-SN12N-D100-B32-Z10	100	115	32	50	6.0	no	10
	M1145-SN12N-D125-B40-Z12	125	140	40	63	6.0	no	12
	M1145-SN12N-D160-B40-Z15	160	175	40	63	6.0	no	15

Attachment	Type
	Torque Wrench
	Screw Bits Shank
	Setting Wedge
	Wedge Screw
	Screw Grease

M1145-SN12N Series

45°Cutting Edge Angle Platen Type Face Milling Cutter

	L	S
SN**1204	12.7	4.76

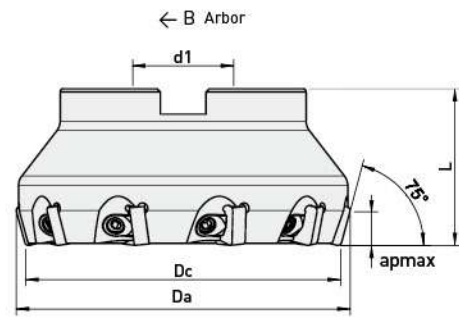
Series	Type	R	C	BS	K					
					ABK05	AMK05	ACK15E	APK15E	ACK25E	ACK35E
-M5	 	SNGF120412-M5	1.2	-	-					
-R6	 	SNGN120408-R6	0.8	-	-					
-R6	 	SNGN120412-R6	1.2	-	-					
-R62	 	SNCN1204ZN-R62	-	1.1	-					
-R6	 	SNCN1204AN-R6	-	2.4	-					

● Standing stock ◎ Optional stock

Feed Parameter				ap(mm)		fz(mm/t)			
ISO	Material Group	Tensile Strength (N/mm²)	HB	ap		fz			
				Min	Max	M5		R6/R62	
K	Grey Cast Iron	200-350	180-245	0.5	6.0	0.12	0.25	0.15	0.30
	Nodular Cast Iron	400-700	155-265	0.5	6.0	0.10	0.20	0.12	0.25
	Vermicular graphite cast iron	400	230	0.5	6.0	0.08	0.15	0.10	0.20
S	Cobalt Base/Nickel Base Alloy	840-1180	250-350						
	Titanium Alloy	1260-1400	375-410						
H	Hardened Steel	-	HRC50-60						
	Hardened Cast Iron	-	HRC55						

75°Cutting Edge Angle Platen Type Face Milling Cutter

M1175-SN12N Series



Unit: mm

Series B	Type	Dc	Da	d1	L	apmax	Inner Cooling	Z
SN*N 1204	M1175-SN12N-D050-B22-Z5	50	56	22	40	8.0	no	5
	M1175-SN12N-D063-B22-Z6	63	69	22	40	8.0	no	6
	M1175-SN12N-D080-B27-Z8	80	86	27	50	8.0	no	8
	M1175-SN12N-D100-B32-Z10	100	106	32	50	8.0	no	10
	M1175-SN12N-D125-B40-Z12	125	131	40	63	8.0	no	12
	M1175-SN12N-D160-B40-Z15	160	166	40	63	8.0	no	15
	M1175-SN12N-D200-B60-Z20	200	206	60	63	8.0	no	20
	M1175-SN12N-D250-B60-Z24	250	256	60	63	8.0	no	24
	M1175-SN12N-D315-B60-Z30	315	321	60	80	8.0	no	30

Attachment	Type
	Torque Wrench
	Screw Bits Shank
	Setting Wedge
	Wedge Screw
	Screw Grease

M1175-SN12N Series

75°Cutting Edge Angle Platen Type Face Milling Cutter

	L	S
SN**1204	12.7	4.76

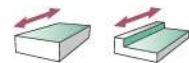
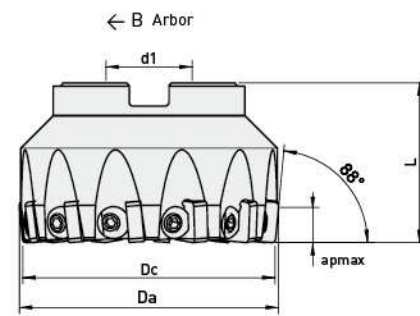
Series	Type	R	C	BS	K					
					ABK05	AWK05	ACK15E	APK15E	ACK25E	ACK35E
-M5	 	1.2	-	-			◎	●	●	●
-R6	 	0.8	-	-		◎				
-R6	 	1.2	-	-		◎				
-R6	 	-	-	1.4		◎				

● Standing stock ◎ Optional stock

Feed Parameter				ap(mm)		fz(mm/t)			
ISO	Material Group	Tensile Strength (N/mm²)	HB	ap		M5		R6/R62	
				Min	Max	Min	Max	Min	Max
K	Grey Cast Iron	200-350	180-245	0.5	8.0	0.12	0.25	0.15	0.30
	Nodular Cast Iron	400-700	155-265	0.5	8.0	0.10	0.20	0.12	0.25
	Vermicular graphite cast iron	400	230	0.5	8.0	0.08	0.15	0.10	0.20
S	Cobalt Base/Nickel Base Alloy	840-1180	250-350						
	Titanium Alloy	1260-1400	375-410						
H	Hardened Steel	-	HRC50-60						
	Hardened Cast Iron	-	HRC55						

88°Cutting Edge Angle Platen Type Face Milling Cutter

M1188-SN12N Series



Unit: mm

Series B	Type	Dc	Da	d1	L	apmax	Inner Cooling	Z
SN*N 1204	M1188-SN12N-D050-B22-Z5	50	51	22	40	10.0	no	5
	M1188-SN12N-D063-B22-Z6	63	64	22	40	10.0	no	6
	M1188-SN12N-D080-B27-Z8	80	81	27	50	10.0	no	8
	M1188-SN12N-D100-B32-Z10	100	101	32	50	10.0	no	10
	M1188-SN12N-D125-B40-Z12	125	126	40	63	10.0	no	12
	M1188-SN12N-D160-B40-Z15	160	161	40	63	10.0	no	15
	M1188-SN12N-D200-B60-Z20	200	201	60	63	10.0	no	20
	M1188-SN12N-D250-B60-Z24	250	251	60	63	10.0	no	24
	M1188-SN12N-D315-B60-Z30	315	316	60	80	10.0	no	30

Attachment	Type
	Torque Wrench 211750 5.0
	Screw Bits Shank 674242 3HEX
	Setting Wedge ACK281
	Wedge Screw ACS239
	Screw Grease Anti5ml

M1188-SN12N Series

88°Cutting Edge Angle Platen Type Face Milling Cutter

	L	S
SN**1204	12.7	4.76

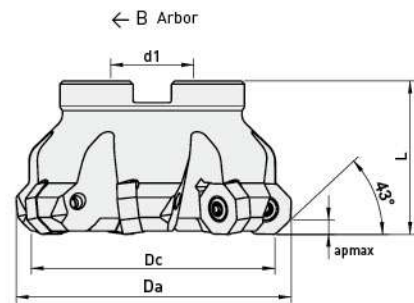
Series	Type	RE	C	BS	K					
					ABK05	AWK05	ACK15E	APK15E	ACK25E	ACK35E
-M5		1.2	-	-			◎	●	●	●
-R6		0.8	-	-		◎				
-R6		1.2	-	-		◎				
-R6		0.8	-	2.4		◎				
-R62		-	1.1	-		◎				
-R6		-	2.4	-		◎				
-R6		-	-	2.4		◎				

● Standing stock ◎ Optional stock

Feed Parameter				ap(mm)		fz(mm/t)			
ISO	Material Group	Tensile Strength (N/mm²)	HB	Min	Max	M5		R6/R62	
K	Grey Cast Iron	200-350	180-245	0.5	10.0	0.12	0.25	0.15	0.30
	Nodular Cast Iron	400-700	155-265	0.5	10.0	0.10	0.20	0.12	0.25
	Vermicular graphite cast iron	400	230	0.5	10.0	0.08	0.15	0.10	0.20
S	Cobalt Base/Nickel Base Alloy	840-1180	250-350						
	Titanium Alloy	1260-1400	375-410						
H	Hardened Steel	-	HRC50-60						
	Hardened Cast Iron	-	HRC55						

43°Cutting Edge Angle Ceramic Face Milling Cutter

M1143-ON0606 Series



Unit: mm

Series B	Type	Dc	Da	d1	L	apmax	Inner Cooling	Z
ON*X 0606	M1143-ON0606-D063-B22-Z6	63	74	22	40	4.0	no	6
	M1143-ON0606-D080-B27-Z7	80	91	27	50	4.0	no	7
	M1143-ON0606-D100-B32-Z9	100	111	32	50	4.0	no	9
	M1143-ON0606-D125-B40-Z10	125	136	40	63	4.0	no	10
	M1143-ON0606-D160-B40-Z12	160	171	40	63	4.0	no	12

	Attachment	Type
	Torque Wrench	211750 5.0
	Torx Screw Bits Shank E6.3	674252 20IP
	Blade Screws	ILD5014
	Screw Grease	Anti5ml

M1143-ON0606 Series

43°Cutting Edge Angle Ceramic Face Milling Cutter

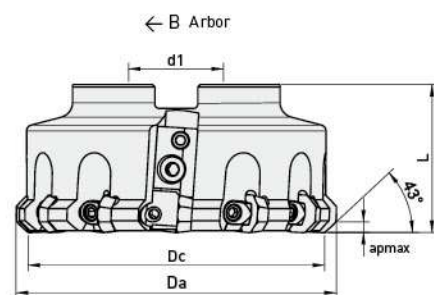
Series	Type	RE	BS	K					
				ABK05	AMK05	ACK15E	APK15E	ACK25E	ACK35E
-R6		0.8	-		◎				
-R6		1.2	-		◎				
-R6		1.6	-		◎				
-R6		0.8	1.4		◎				

● Standing stock ◎ Optional stock

ISO	Material Group	Tensile Strength (N/mm²)	HB	ap(mm)		fz(mm/t)			
				Min	Max	M5		R6/R62	
K	Grey Cast Iron	200-350	180-245	0.5	4.0	0.15	0.30	0.15	0.30
	Nodular Cast Iron	400-700	155-265	0.5	4.0	0.12	0.25	0.12	0.25
	Vermicular graphite cast iron	400	230	0.5	4.0	0.10	0.20	0.10	0.20
S	Cobalt Base/Nickel Base Alloy	840-1180	250-350						
	Titanium Alloy	1260-1400	375-410						
H	Hardened Steel	-	HRC50-60						
	Hardened Cast Iron	-	HRC55						

43°Cutting Edge Angle Finishing Ceramic Face Milling Cutter

M1143F-OP05N Series



Unit: mm

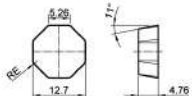
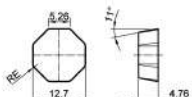
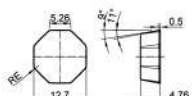
Series B	Type	Dc	Da	d1	L	apmax	Inner Cooling	Z
OP*N 0504	M1143F-OP05N-D080-B27-Z10	80	88.5	27	50	3.0	no	8+2
	M1143F-OP05N-D100-B32-Z12	100	108.5	32	50	3.0	no	10+2
	M1143F-OP05N-D125-B40-Z15	125	133.5	40	63	3.0	no	12+3
	M1143F-OP05N-D160-B40-Z12	160	168.5	40	63	3.0	no	10+2
	M1143F-OP05N-D160-B40-Z22	160	168.5	40	63	3.0	no	18+4
	M1143F-OP05N-D200-B60-Z14	200	208.5	60	63	3.0	no	12+2
	M1143F-OP05N-D200-B60-Z28	200	208.5	60	63	3.0	no	24+4
	M1143F-OP05N-D250-B60-Z18	250	258.5	60	63	3.0	no	15+3
	M1143F-OP05N-D250-B60-Z36	250	258.5	60	63	3.0	no	30+6
	M1143F-OP05N-D315-B60-Z28	315	323.5	60	63	3.0	no	24+4
M1143F-OP05N-D315-B60-Z48	315	323.5	60	63	3.0	no	40+8	

	Attachment	Type
	Setting Wedge	ACK281
	Wedge Screw	ACS239
	Locking Wedge	ACR600
	Wedge Screw	ACS239
	Adjusting Cartridge	ACR683

	Attachment	Type
	Cartridge Locking Screw	ACS9033
	Cartridge Adjusting Screw	ACS1130
	Torque Wrench	211750 5.0
	Screw Bits Shank	674242 3HEX
	Screw Grease	Anti5ml

M1143F-OP05N Series

43°Cutting Edge Angle Finishing Ceramic Face Milling Cutter

				K					
Series	Type	RE	BS	ABK05	AWK05	ACK15E	APK15E	ACK25E	ACK35E
-R6	 	0.8	-						
-R6	 	1.2	-						
W6	 	1.2	-						

● Standing stock ◎ Optional stock

Feed Parameter				ap(mm)		fz(mm/t)			
ISO	Material Group	Tensile Strength (N/mm²)	HB	ap		M5		R6/R62	
				Min	Max	Min	Max	Min	Max
K	Grey Cast Iron	200-350	180-245	0.3	1.0	0.10	0.30	0.10	0.20
	Nodular Cast Iron	400-700	155-265	0.3	1.0	0.08	0.25	0.08	0.15
	Vermicular graphite cast iron	400	230	0.5	4.0	0.10	0.20	0.10	0.20
S	Cobalt Base/Nickel Base Alloy	840-1180	250-350						
	Titanium Alloy	1260-1400	375-410						
H	Hardened Steel	-	HRC50-60						
	Hardened Cast Iron	-	HRC55						

Cutting Parameter

Cutting Parameter

Cutting Parameter						Vc[m/min]													
ISO	Material Group			Tensile Strength [N/mm²]	Tensile Strength [HB]	APU25			ACP35			APP45			APM25		APM35		
						1/5	1/2	1/1	1/5	1/2	1/1	1/5	1/2	1/1	1/5	1/2	1/5	1/2	
P	Unalloyed Steel	C ≤ 0.25%	Anneal	430	125	270	240	225	270	240	225	250	225	200					
		0.25% < C ≤ 0.55%	Anneal	640	190	250	200	180	250	200	180	225	180	160					
		0.25% < C ≤ 0.55%	Tempering	710	210	240	180	160	240	180	160	200	160	150					
		C > 0.55%	Anneal	640	190	250	200	180	250	200	180	225	180	160					
		C > 0.55%	Tempering	1010	300	160	125	100	160	125	100	125	100	90					
		Free Cutting Steel [Short chips]	Anneal	750	220	225	180	160	225	180	160	200	160	150					
	Low-alloyed Steel	Anneal		590	175	250	225	200	250	225	200	225	200	180					
		Tempering		960	285	180	160	150	180	160	150	125	100	90					
		Tempering		1280	380	125	100	90	125	100	90	100	90	75					
		Tempering		1480	430	120	90	75	120	90	75	75	60	50					
	High-alloyed Steel/ Tool steel	Anneal		680	200	150	125	100	150	125	100	125	100	90					
		Quench And Temper		1010	300	80	75	60	80	75	60	75	60	50					
		Quench And Temper			380	60	50	45	60	50	45	50	45	40					
	Stainless Steel	Ferrite	Anneal	680	200	150	125	100	150	125	100	125	100	90	160	150	150	125	
Ferrite /Martensite		Tempering	1110	330	75	60	50	75	60	50	60	50	45	90	75	75	60		
M	Stainless Steel	Austenitic	Quench	680	200							100	90	75	150	125	125	100	
		Austenitic (PH)	Precipitation Dispersion Hardening	1010	300							75	60	50	100	80	80	75	
		Austenitic-Ferrite	Diphase	780	230							90	75	60	125	100	100	80	
K	Grey Cast Iron	Low Tensile Strength		200	180														
		High Tensile Strength		350	245														
	Nodular Cast Iron	Ferrite		400	155														
		Pearlite		700	265														
	Creep Ink Cast Iron	GGV (CGI)			230														
S	Super Alloy	Iron-based	Anneal	680	200														
			Aging Treatment	940	280														
		Nickel Base Cobalt Base	Anneal	840	250														
			Aging Treatment	1180	350														
	Titanium alloy	TA Series/TC Series	α phase/α phase + β phase	1260	375														
			TB Series	β phase	1400	410													
N	Forged Aluminium Alloy	Si ≤ 1%	Non-aging Treatment	-	30														
		Si ≤ 1%	Aging Treatment	340	100														
	Cast Aluminium Alloy	Si ≤ 12%	Non-aging Treatment	260	75														
		Si ≤ 12%	Aging Treatment	310	90														
		Si → 12%	Non-aging Treatment	450	130														
H	Hardened Steel	Quench And Temper		50 HRC															
		Quench And Temper		55 HRC															
		Quench And Temper		60 HRC															
	Hardened Cast Iron	Quench And Temper		55 HRC															

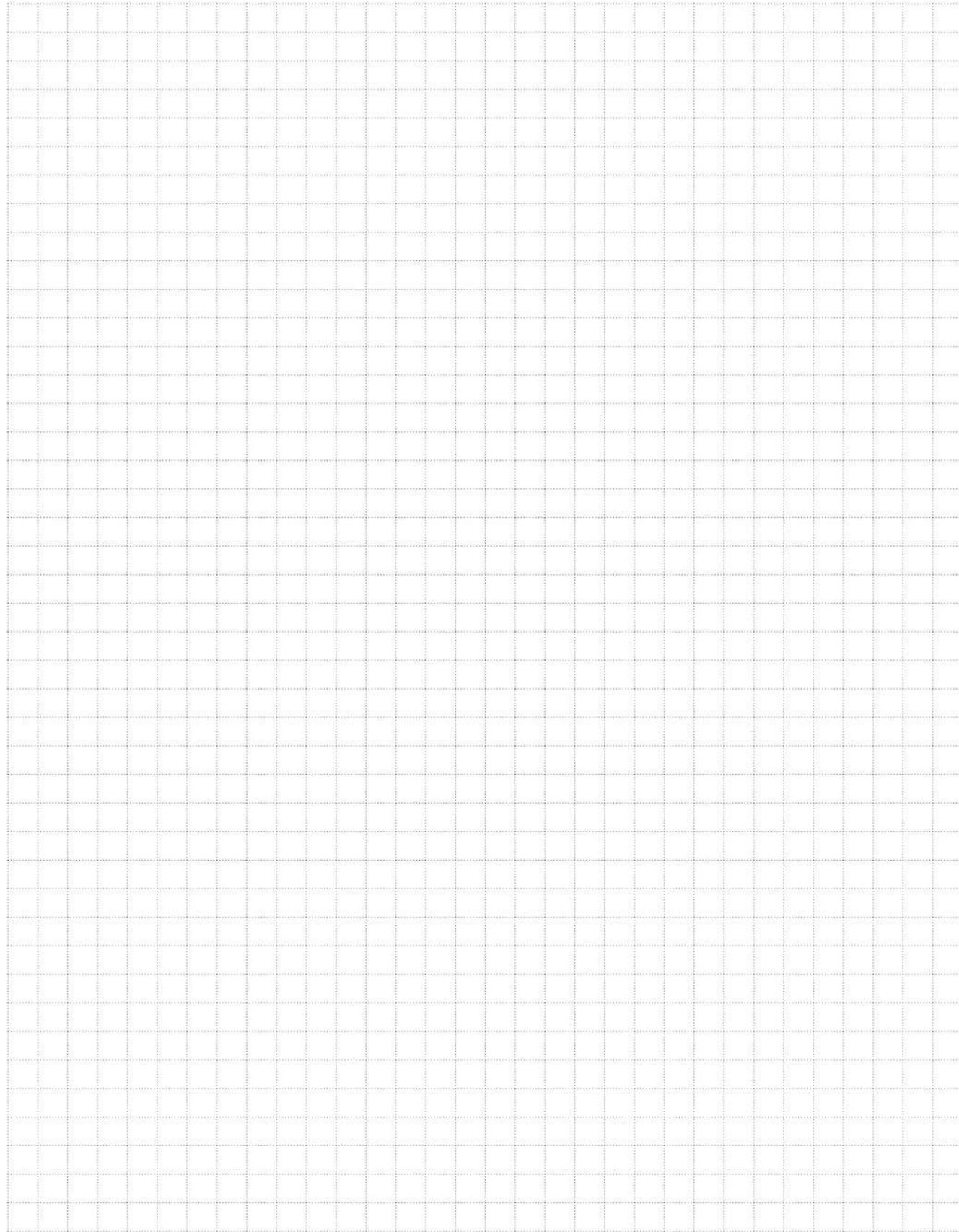
Cutting Parameter

Cutting Parameter

[illegible]

Cutting Parameter

Cutting Parameter



Drilling Inserts Name Code

DRILLING-Code System

Example:

S	P	M	G	14	05	12	-	M	5
1	2	3	4	5	6	7		8	9

1. Insert Shape

Symbol	Figure
S	
W	
Z	Special Shape

2. Relief Angle

Symbol	Figure
C	
P	
X	Special Relief Angle

3. Inserts Precision

Symbol	Accuracy
M	Pressing Accuracy
G	Grinding Accuracy

4. Blade Clamping Form

Symbol	Figure
G	
T	
X	Indexable insert drawing or detailed description is needed.

5. Cutting Edge Length

Length

6. Inserts Thickness

Thickness

7. Knife Tip Rounded Corners

Symbol	Radius r(mm)
04	0.4
06	0.6
08	0.8
10	1.0
12	1.2

8. Chipbreaker Code

Symbol	Application
F	Finishing
	Light Machining Machining Strength First
S	Semi Finishing
M	Medium Machining

9. Function Code

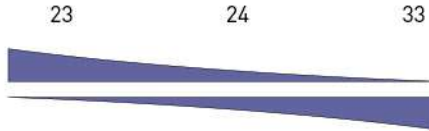
Symbol
2
4
5
6
7

DRILLING-Code System

Drilling Inserts Name Code

Example:

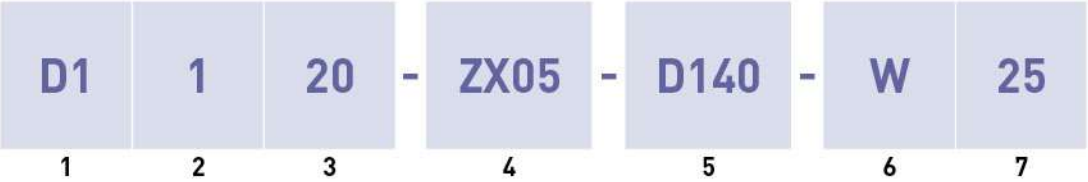
A	P	U	23	E
10	11	12	13	14

Function No.	Description	Details			
10	AHNO				
11	Basic Materials & Coating Code	C	Carbide +CVD	V	Cermet +PVD
		P	Carbide + PVD	I	Sialon Ceramics
		B	CBN	W	Whisker Ceramics
		D	PCD	N	Cemented Carbide Uncoated
		T	Cermet		
12	First Recommended Application	P	Steel	S	Hard-to-machine Materials
		M	Stainless Steel	H	Hard Materials
		K	Cast Iron	U	General
		N	Nonferrous Metals		
13	ISO Application Range				
14	Generation Code				

Drilling Holder Name Code

DRILLING-Code System

Example:



1. Product Series

Symbol	Series
D1	U Drill
D2	U Drill With Fixed Core Drill
...	...
D9	Special Machine Clamp Drill

2. Generation

Serial Generation

3. Effective Drilling Depth

Symbol	Double Diameter
20	2 Double Diameter
30	3 Double Diameter
40	4 Double Diameter
50	5 Double Diameter

4. Fit Inserts Types

Type

5. Cutter Diameter

Diameter

6. Hilt Form

Symbol	Form
A	Cylindrical Shank
W	Side Grip

7. Hilt Diameter

Diameter

Drilling Overview

DRILLING-Code System

Drilling Materials Overview

Drilling Materials Application																				
AHNO Drilling Materials Code	ISO Group	Coating Technology	Workpiece Material Group						Application Range											Technology Description
			P	M	K	N	S	H	01	05	10	15	20	25	30	35	40	45	50	
APM23E	P20	PVD	●																	Universal drilling material for a wide range of applications. Ultra-fine, uniform particle carbide matrix strength, good wear resistance, stainless steel and difficult to process materials can also be processed.
	M20			●																
	K20				●															
APU23E	P20	PVD	●																	General drilling material. Brand new nanostructure PVD coating on high-strength substrate, with excellent wear resistance and toughness.
	M20			●																
	K20				●															
APU24E	P20	PVD	●																	The preferred material for steel parts and castings drilling, the uniform particle carbide matrix with special PVD coating process, stable performance, can also be applied in harsh conditions.
	M20			●																
	K20				●															

Chipbreaker Index

Milling Cutting	Edge Geometry	Chipbreaker Description
-M5		General Machining

Drilling Overview

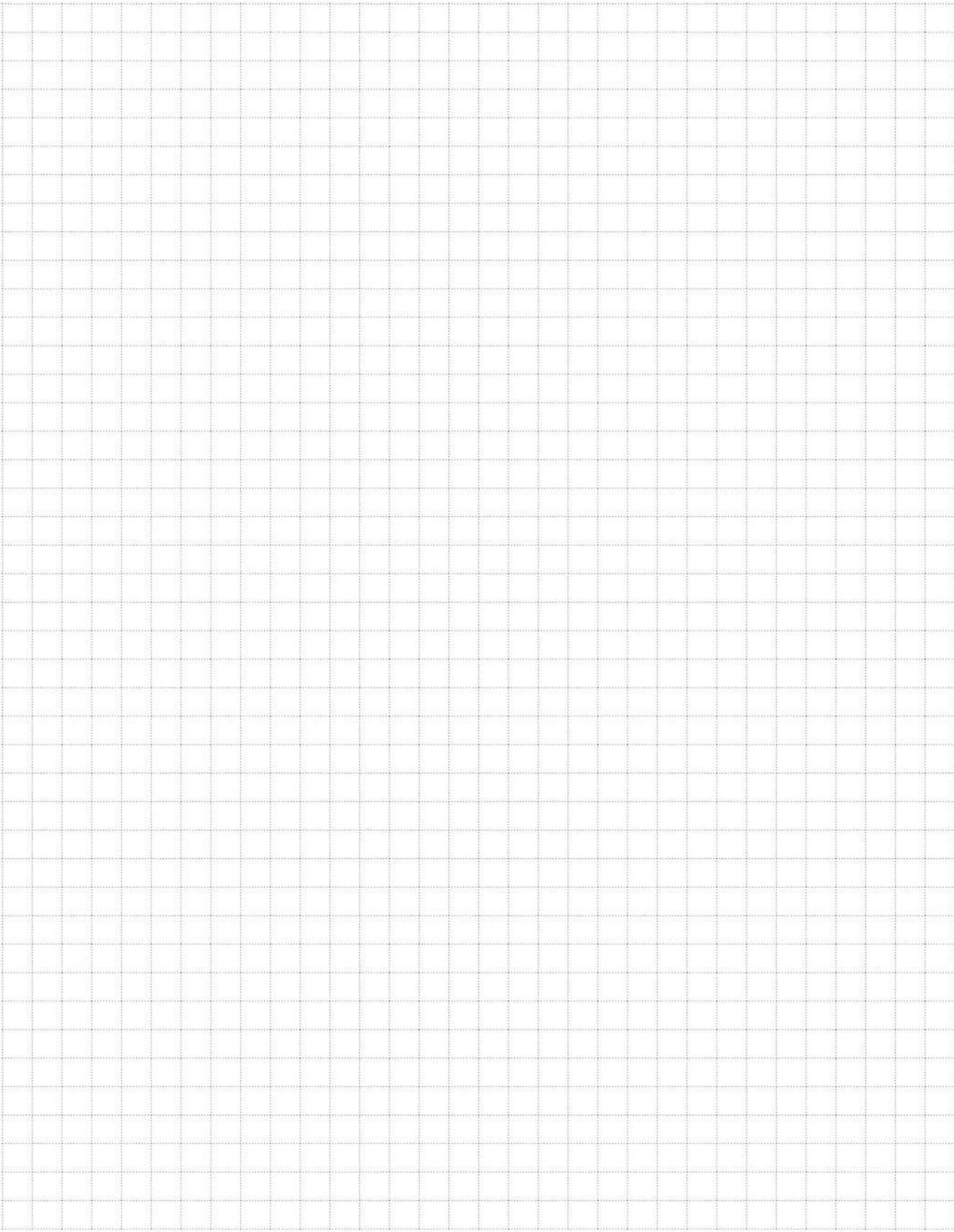
DRILLING-Code System

Drilling Materials Overview

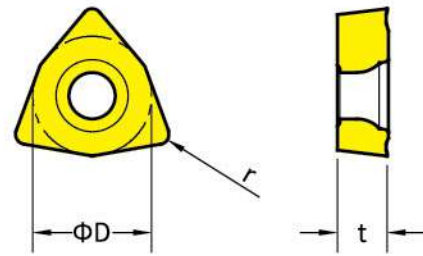
Work Material Group		Tool Material	Coating Class	Application Category				
				01	10	20	30	40
P	Unalloyed Steel Alloy Steel	Cemented Carbide	PVD		APM23E			
		Cemented Carbide	PVD			APU23E		
		Cemented Carbide	PVD		APU24E			
M	Stainless Steel	Cemented Carbide	PVD		APM23E			
		Cemented Carbide	PVD			APU23E		
		Cemented Carbide	PVD		APU24E			
K	Cast Iron	Cemented Carbide	CVD		APM 23E			
		Cemented Carbide	PVD			APU23E		
		Cemented Carbide	PVD		APU24E			

Drilling Overview

DRILLING-Code System



Drill Insert Series

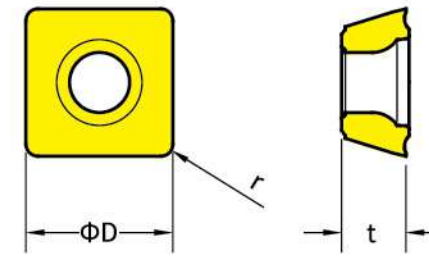


Series	Type	D	t	r	P			M			K			S		
					APU23E	APU24E	APM23E	APU23E	APU24E	APM23E	APU23E	APU24E	APM23E	APU23E	APU24E	APM23E
-M5	WCMX030204-M5	5.56	2.38	0.4	●	●	◎	●	◎	◎	●	◎	◎			◎
	WCMX030208-M5	5.56	2.38	0.8	●	●	◎	●	◎	◎	●	◎	◎			◎
	WCMX040204-M5	6.35	2.38	0.4	●	●	◎	●	◎	◎	●	◎	◎			◎
	WCMX040208-M5	6.35	2.38	0.8	●	●	◎	●	◎	◎	●	◎	◎			◎
	WCMX050308-M5	7.94	3.18	0.8	●	●	◎	●	◎	◎	●	◎	◎			◎
	WCMX06T308-M5	9.53	3.97	0.8	●	●	◎	●	◎	◎	●	◎	◎			◎
	WCMX080412-M5	12.7	4.76	1.2	●	●	◎	●	◎	◎	●	◎	◎			◎

● Standing stock ◎ Optional stock



Drill Insert Series



Series	Type	D	t	r	P			M			K			S		
					APU23E	APU24E	APM23E	APU23E	APU24E	APM23E	APU23E	APU24E	APM23E	APU23E	APU24E	APM23E
-M5	SPMG050204-M5	5.00	2.38	0.4	●	●	◎	●	◎	◎	●	◎	◎			◎
	SPMG060204-M5	6.00	2.38	0.4	●	●	◎	●	◎	◎	●	◎	◎			◎
	SPMG07T308-M5	7.94	3.97	0.8	●	●	◎	●	◎	◎	●	◎	◎			◎
	SPMG090408-M5	9.80	4.30	0.8	●	●	◎	●	◎	◎	●	◎	◎			◎
	SPMG110408-M5	11.5	4.80	0.8	●	●	◎	●	◎	◎	●	◎	◎			◎
	SPMG120408-M5	12.7	4.76	0.8	●	●	◎	●	◎	◎	●	◎	◎			◎
	SPMG140512-M5	14.3	5.2	1.2	●	●	◎	●	◎	◎	●	◎	◎			◎

● Standing stock ◎ Optional stock



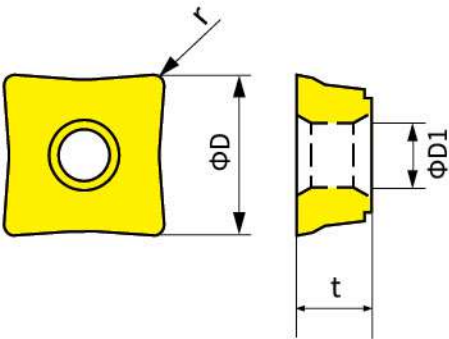
Indexable Drill Insert

TURNING

MILLING

DRILLING

TECHNICAL INFO



Series	Type	D	t	r	P			M			K			S		
					APU23E	APU24E	APM23E	APU23E	APU24E	APM23E	APU23E	APU24E	APM23E	APU23E	APU24E	APM23E
-M5	ZXMT050204-M5	4.9	2.38	0.4	●		◎	●	●	◎	●	●	◎			◎
	ZXMT060204-M5	5.7	2.38	0.4	●	●	◎	●	●	◎	●	●	◎			◎
	ZXMT070306-M5	6.8	2.80	0.6	●	●	◎	●	●	◎	●	●	◎			◎
	ZXMT08T306-M5	7.9	3.97	0.6	●	●	◎	●	●	◎	●	●	◎			◎
	ZXMT09T308-M5	9.2	3.97	0.8	●	●	◎	●	●	◎	●	●	◎			◎
	ZXMT11T308-M5	11.0	3.97	0.8	●	●	◎	●	●	◎	●	●	◎			◎
	ZXMT130408-M5	12.8	4.40	0.8	◎	●	◎	◎	●	◎	◎	●	◎			◎
	ZXMT150510-M5	15.0	4.80	1.0	◎	●	◎	◎	●	◎	◎	●	◎			◎

● Standing stock ◎ Optional stock

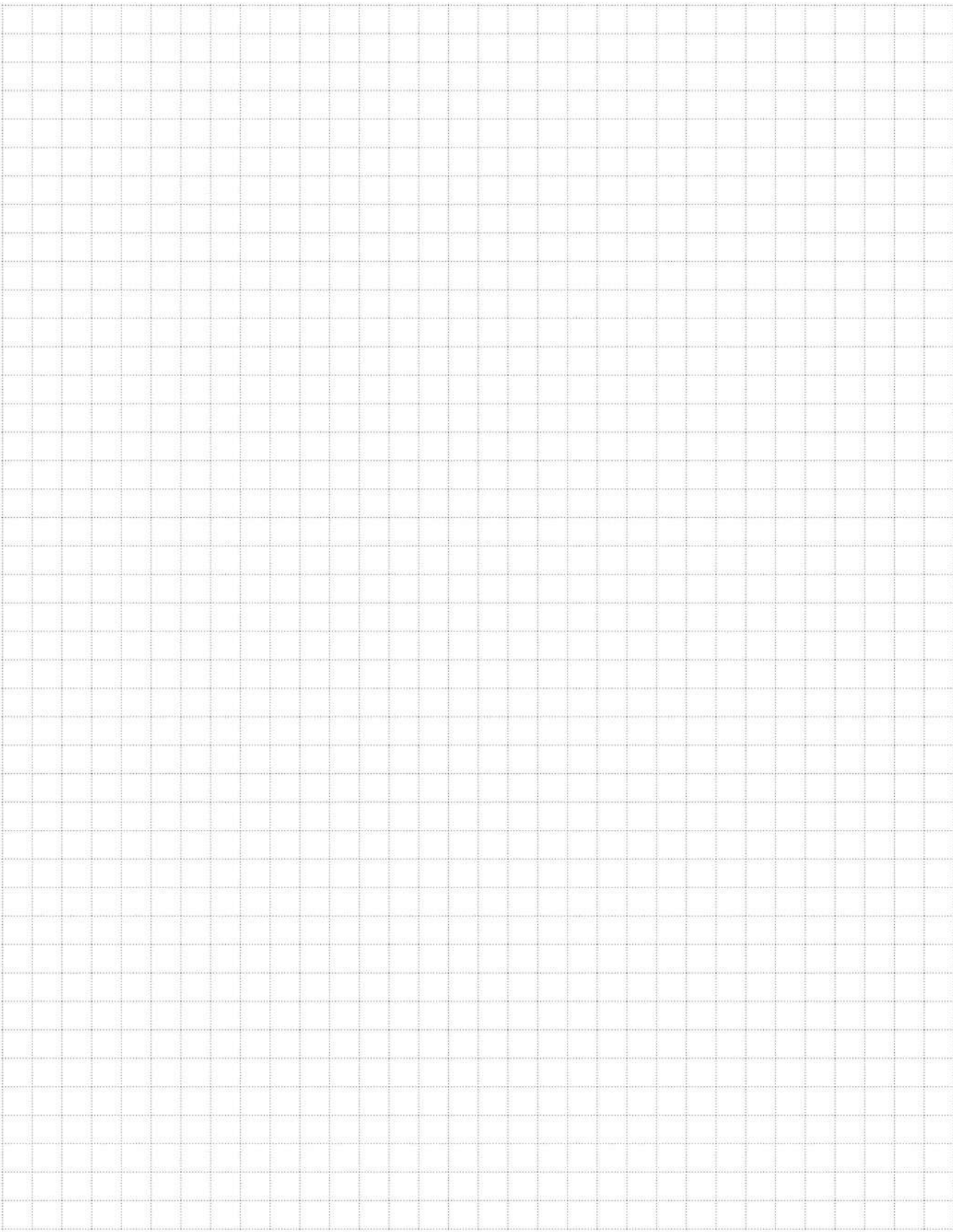
Indexable Drill Insert

TURNING

MILLING

DRILLING

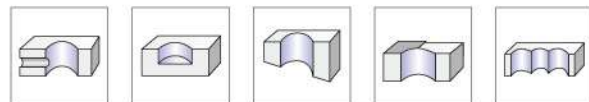
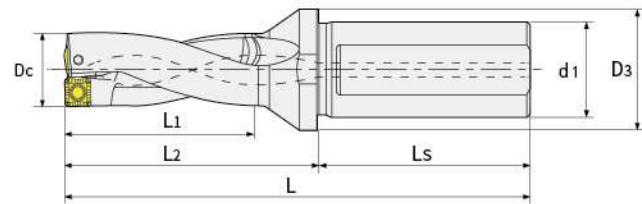
TECHNICAL INFO



D1120 Indexable Insert Drill

Shank Design Standard: ISO9766

Inner Cooling



2 x D

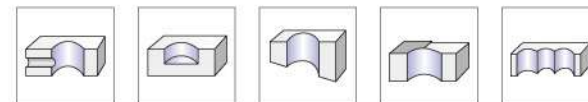
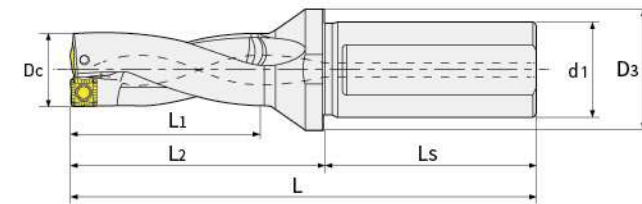
Z = 1

Fit Insert	Type	Dc	d1(h6)	D3	L	L1	L2	Ls
ZXMT05...	D1120-ZX05-D140-W20	14.0	20	25	96	28	46	50
	D1120-ZX05-D145-W20	14.5	20	25	99	30	49	50
	D1120-ZX05-D150-W20	15.0	20	25	99	30	49	50
	D1120-ZX05-D155-W20	15.5	20	25	102	32	52	50
	D1120-ZX05-D160-W20	16.0	20	25	102	32	52	50
ZXMT06...	D1120-ZX06-D165-W25	16.5	25	32	110	34	54	56
	D1120-ZX06-D170-W25	17.0	25	32	110	34	54	56
	D1120-ZX06-D175-W25	17.5	25	32	113	36	57	56
	D1120-ZX06-D180-W25	18.0	25	32	113	36	57	56
	D1120-ZX06-D185-W25	18.5	25	32	115	38	59	56
ZXMT07...	D1120-ZX06-D190-W25	19.0	25	32	115	38	59	56
	D1120-ZX07-D195-W25	19.5	25	32	119	40	63	56
	D1120-ZX07-D200-W25	20.0	25	32	119	40	63	56
	D1120-ZX07-D205-W25	20.5	25	32	121	42	65	56
	D1120-ZX07-D210-W25	21.0	25	32	121	42	65	56
ZXMT08...	D1120-ZX07-D215-W25	21.5	25	32	123	44	67	56
	D1120-ZX07-D220-W25	22.0	25	32	123	44	67	56
	D1120-ZX08-D225-W25	22.5	25	32	124	46	68	56
	D1120-ZX08-D230-W25	23.0	25	32	124	46	68	56
	D1120-ZX08-D230-W32	23.0	32	40	128	46	68	60
ZXMT08...	D1120-ZX08-D235-W25	23.5	25	32	126	48	70	56
	D1120-ZX08-D235-W32	23.5	32	40	130	48	70	60
	D1120-ZX08-D240-W25	24.0	25	32	126	48	70	56
	D1120-ZX08-D240-W32	24.0	32	40	130	48	70	60
	D1120-ZX08-D245-W25	24.5	25	32	128	50	72	56
	D1120-ZX08-D245-W32	24.5	32	40	132	50	72	60
	D1120-ZX08-D250-W25	25.0	25	32	128	50	72	56
	D1120-ZX08-D250-W32	25.0	32	40	132	50	72	60
	D1120-ZX08-D255-W25	25.5	25	32	129	52	73	56
	D1120-ZX08-D255-W32	25.5	32	40	133	52	73	60

D1120 Indexable Insert Drill

Shank Design Standard: ISO9766

Inner Cooling



2 x D

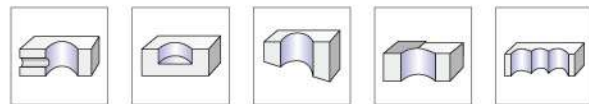
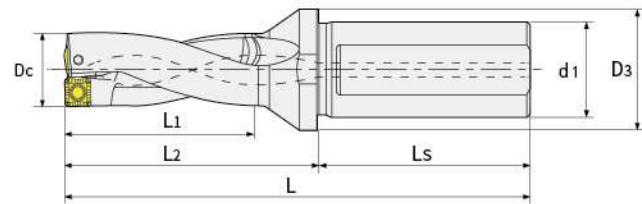
Z = 1

Fit Insert	Type	Dc	d1(h6)	D3	L	L1	L2	Ls
ZXMT08...	D1120-ZX08-D260-W25	26.0	25	32	129	52	73	56
	D1120-ZX08-D260-W32	26.0	32	40	133	52	73	60
	D1120-ZX09-D265-W32	26.5	32	40	137	54	77	60
	D1120-ZX09-D270-W25	27.0	25	40	133	54	77	56
	D1120-ZX09-D270-W32	27.0	32	40	137	54	77	60
ZXMT09...	D1120-ZX09-D275-W32	27.5	32	40	139	56	79	60
	D1120-ZX09-D280-W25	28.0	25	40	135	56	79	56
	D1120-ZX09-D280-W32	28.0	32	40	139	56	79	60
	D1120-ZX09-D285-W32	28.5	32	40	141	58	81	60
	D1120-ZX09-D290-W25	29.0	25	40	137	58	81	56
	D1120-ZX09-D290-W32	29.0	32	40	141	58	81	60
	D1120-ZX09-D295-W32	29.5	32	40	143	60	83	60
	D1120-ZX09-D300-W32	30.0	32	40	143	60	83	60
	D1120-ZX09-D305-W32	30.5	32	40	145	62	85	60
	D1120-ZX09-D310-W32	31.0	32	40	145	62	85	60
ZXMT11...	D1120-ZX11-D320-W32	32.0	32	40	147	64	87	60
	D1120-ZX11-D320-W40	32.0	40	50	157	64	87	70
	D1120-ZX11-D330-W32	33.0	32	40	149	66	89	60
	D1120-ZX11-D330-W40	33.0	40	50	159	66	89	70
	D1120-ZX11-D340-W32	34.0	32	40	151	68	91	60
	D1120-ZX11-D340-W40	34.0	40	50	161	68	91	70
	D1120-ZX11-D350-W32	35.0	32	40	153	70	93	60
	D1120-ZX11-D350-W40	35.0	40	50	163	70	93	70
	D1120-ZX11-D360-W32	36.0	32	40	155	72	95	60
	D1120-ZX11-D360-W40	36.0	40	50	165	72	95	70
ZXMT13...	D1120-ZX13-D370-W32	37.0	32	50	162	74	102	60
	D1120-ZX13-D370-W40	37.0	40	50	172	74	102	70
	D1120-ZX13-D380-W32	38.0	32	50	164	76	104	60
	D1120-ZX13-D380-W40	38.0	40	50	174	76	104	70
	D1120-ZX13-D390-W32	39.0	32	50	166	78	106	60

D1120 Indexable Insert Drill

Shank Design Standard: ISO9766

Inner Cooling



2 x D

Z = 1

Fit Insert	Type	Dc	d1(h6)	D3	L	L1	L2	Ls
ZXMT13...	D1120-ZX13-D390-W40	39.0	40	50	176	78	106	70
	D1120-ZX13-D400-W32	40.0	32	50	168	80	108	60
	D1120-ZX13-D400-W40	40.0	40	50	178	80	108	70
	D1120-ZX13-D410-W40	41.0	40	50	180	82	110	70
	D1120-ZX13-D420-W40	42.0	40	50	182	84	112	70
	D1120-ZX13-D430-W40	43.0	40	50	184	86	114	70
ZXMT15...	D1120-ZX15-D440-W40	44.0	40	60	193	88	123	70
	D1120-ZX15-D450-W40	45.0	40	60	195	90	125	70
	D1120-ZX15-D460-W40	46.0	40	60	197	92	127	70
	D1120-ZX15-D470-W40	47.0	40	60	199	94	129	70
	D1120-ZX15-D480-W40	48.0	40	60	201	96	131	70
	D1120-ZX15-D490-W40	49.0	40	60	203	98	133	70
	D1120-ZX15-D500-W40	50.0	40	60	205	100	135	70

* Standard tool bar with internal cooling

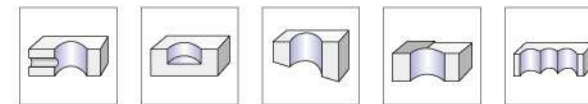
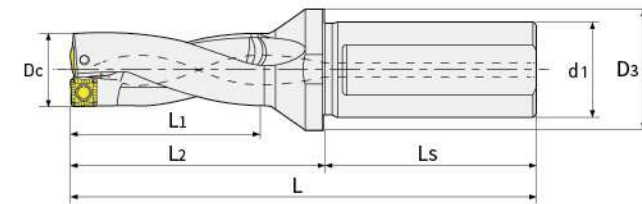
* Blades must be ordered separately

* There is no thread interface at the end of the standard tool bar. If the thread interface is needed, non-standard customization is required

D1120 Indexable Insert Drill

Shank Design Standard: ISO9766

Inner Cooling



2 x D

Z = 1

Type	Screws	Wrench	Coolant plugging
D14.0-D16.0	AF1015	AF2051	AF3011
D16.5-D22.0	AF1016	AF2052	AF3012
D22.5-D26.0	AF1017	AF2053	AF3013/AF3012
D26.5-D36.0	AF1018	AF2054	AF3013/AF3012
D37.0-D43.0	AF1019	AF2055	AF3013/AF3014
D44.0-D50.0	AF1025	AF2056	AF3013/AF3014

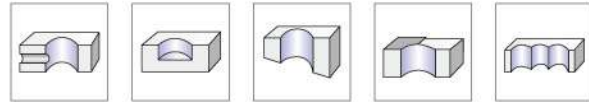
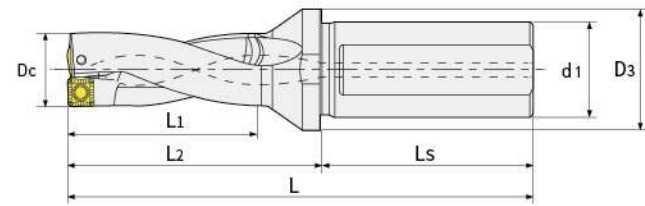
* Coolant plugging is used to seal the coolant during machining and needs to be purchased separately.

Cutting Parameters				f(mm/rpm)															
ISO	Material Group	Tensile Strength (N/mm ²)	HB	ZX05		ZX06		ZX07		ZX08		ZX09		ZX11		ZX13		ZX15	
				Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
P	Unalloyed steel	430	125	0.04	0.1	0.04	0.1	0.04	0.12	0.04	0.12	0.06	0.14	0.06	0.14	0.08	0.16	0.08	0.16
		Low-alloyed Steel	190-300	0.06	0.12	0.06	0.12	0.06	0.16	0.06	0.16	0.08	0.16	0.08	0.16	0.1	0.18	0.1	0.18
	Low-alloyed Steel	700-950	200-280	0.06	0.16	0.06	0.16	0.08	0.2	0.08	0.2	0.08	0.2	0.08	0.22	0.1	0.22	0.1	0.22
		High-alloyed Steel	950-1200	0.06	0.12	0.06	0.12	0.06	0.12	0.08	0.16	0.08	0.16	0.08	0.18	0.08	0.2	0.1	0.2
		Austenitic Stainless Steel	355-415	0.06	0.12	0.06	0.12	0.06	0.12	0.08	0.16	0.08	0.16	0.08	0.18	0.08	0.2	0.1	0.2
M	Duplex Stainless Steel	780	230	0.06	0.12	0.06	0.12	0.06	0.16	0.06	0.16	0.08	0.18	0.08	0.2	0.1	0.2	0.1	0.2
	Austenitic Stainless Steel	680	200	0.06	0.12	0.06	0.12	0.06	0.16	0.06	0.16	0.08	0.18	0.08	0.2	0.1	0.2	0.1	0.2
	PH Stainless Steel	1010	300	0.06	0.12	0.06	0.12	0.06	0.16	0.06	0.16	0.06	0.18	0.06	0.2	0.1	0.2	0.1	0.2
K	Grey Cast Iron	200-350	180-245	0.08	0.18	0.08	0.18	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.22	0.1	0.22
	Nodular Cast Iron	400-700	155-245	0.08	0.18	0.08	0.18	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.18	0.1	0.22	0.1	0.22
	Malleable Cast Iron	400	230	0.08	0.14	0.08	0.14	0.1	0.16	0.1	0.16	0.1	0.16	0.1	0.18	0.1	0.18	0.1	0.18
S	Cobalt /Nickel Base Alloy	840-1180	250-350	0.05	0.1	0.05	0.1	0.05	0.1	0.05	0.1	0.05	0.1	0.05	0.1	0.05	0.1	0.05	0.1
	Titanium Alloy	1260-1400	375-410	0.05	0.1	0.05	0.1	0.05	0.1	0.05	0.1	0.05	0.1	0.05	0.1	0.05	0.1	0.05	0.1
N	Aluminium Alloy	260-450	75-130																
H	Hardened Steel	-	HRC50-60																
	Hardened Cast Iron	-	HRC55																

D11230 Indexable Insert Drill

Shank Design Standard: ISO9766

Inner Cooling



3 x D

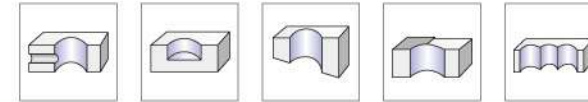
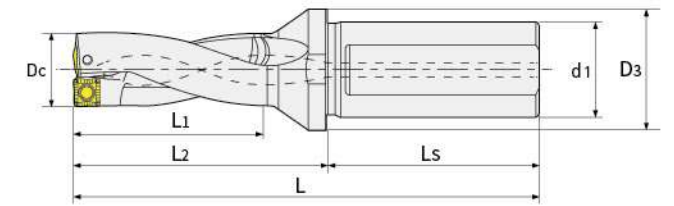
Z = 1

Fit Insert	Type	Dc	d1(h6)	D3	L	L1	L2	Ls
ZXMT05...	D1130-ZX05-D140-W20	14.0	20	25	110	42	60	50
	D1130-ZX05-D145-W20	14.5	20	25	114	45	64	50
	D1130-ZX05-D150-W20	15.0	20	25	114	45	64	50
	D1130-ZX05-D155-W20	15.5	20	25	118	48	68	50
ZXMT06...	D1130-ZX05-D160-W20	16.0	20	25	118	48	68	50
	D1130-ZX06-D165-W25	16.5	25	32	127	51	71	56
	D1130-ZX06-D170-W25	17.0	25	32	131	51	71	56
	D1130-ZX06-D175-W25	17.5	25	32	131	54	75	56
	D1130-ZX06-D180-W25	18.0	25	32	134	54	75	56
	D1130-ZX06-D185-W25	18.5	25	32	134	57	78	56
	D1130-ZX06-D190-W25	19.0	25	32	139	57	78	56
	D1130-ZX07-D195-W25	19.5	25	32	139	60	83	56
ZXMT07...	D1130-ZX07-D200-W25	20.0	25	32	142	60	83	56
	D1130-ZX07-D205-W25	20.5	25	32	142	63	86	56
	D1130-ZX07-D210-W25	21.0	25	32	145	63	86	56
	D1130-ZX07-D215-W25	21.5	25	32	145	66	89	56
	D1130-ZX07-D220-W25	22.0	25	32	145	66	89	56
	D1130-ZX07-D222-W25	22.2	25	32	147	66.6	89	56
ZXMT08...	D1130-ZX08-D225-W25	22.5	25	32	147	69	91	56
	D1130-ZX08-D230-W25	23.0	25	32	151	69	91	56
	D1130-ZX08-D230-W32	23.0	32	40	150	69	91	60
	D1130-ZX08-D235-W25	23.5	25	32	150	72	94	56
	D1130-ZX08-D235-W32	23.5	32	40	150	72	94	60
	D1130-ZX08-D240-W25	24.0	25	32	150	72	94	56
	D1130-ZX08-D240-W32	24.0	32	40	154	72	94	60
	D1130-ZX08-D245-W25	24.5	25	32	153	75	97	56
	D1130-ZX08-D245-W32	24.5	32	40	157	75	97	60
	D1130-ZX08-D250-W25	25.0	25	32	153	75	97	56
	D1130-ZX08-D250-W32	25.0	32	40	157	75	97	60
	D1130-ZX08-D254-W25	25.4	25	32	153	76.2	97	56

D1130 Indexable Insert Drill

Shank Design Standard: ISO9766

Inner Cooling



3 x D

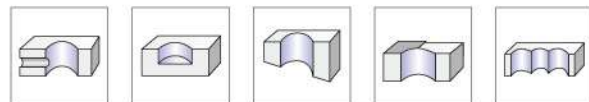
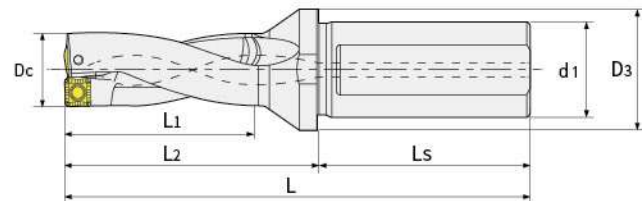
Z = 1

Fit Insert	Type	Dc	d1(h6)	D3	L	L1	L2	Ls
ZXMT08...	D1130-ZX08-D255-W25	25.5	25	32	155	78	99	56
	D1130-ZX08-D255-W32	25.5	32	40	159	78	99	60
	D1130-ZX08-D260-W25	26.0	25	32	155	78	99	56
	D1130-ZX08-D260-W32	26.0	32	32	159	78	99	60
ZXMT09...	D1130-ZX09-D265-W25	26.5	25	40	160	81	104	56
	D1130-ZX09-D265-W32	26.5	32	40	164	81	104	60
	D1130-ZX09-D270-W25	27.0	25	40	160	81	104	56
	D1130-ZX09-D270-W32	27.0	32	40	164	81	104	60
	D1130-ZX09-D275-W25	27.5	25	40	163	84	107	56
	D1130-ZX09-D275-W32	27.5	32	40	167	84	107	60
	D1130-ZX09-D280-W25	28.0	25	40	163	84	107	56
	D1130-ZX09-D280-W32	28.0	32	40	167	84	107	60
	D1130-ZX09-D285-W25	28.5	25	40	166	87	110	56
	D1130-ZX09-D285-W32	28.5	32	40	170	87	110	60
	D1130-ZX09-D290-W25	29.0	25	40	166	87	110	56
	D1130-ZX09-D290-W32	29.0	32	40	170	87	110	60
ZXMT11...	D1130-ZX09-D295-W32	29.5	32	40	173	90	113	60
	D1130-ZX09-D300-W32	30.0	32	40	173	90	113	60
	D1130-ZX09-D305-W32	30.5	32	40	176	93	116	60
	D1130-ZX09-D310-W32	31.0	32	40	176	93	116	60
	D1130-ZX11-D320-W32	32.0	32	40	179	96	119	60
	D1130-ZX11-D320-W40	32.0	40	50	189	96	119	70
	D1130-ZX11-D330-W32	33.0	32	40	182	99	122	60
	D1130-ZX11-D330-W40	33.0	40	50	192	99	122	70
	D1130-ZX11-D340-W32	34.0	32	40	185	102	125	60
	D1130-ZX11-D340-W40	34.0	40	50	195	102	125	70
	D1130-ZX11-D350-W32	35.0	32	40	188	105	128	60
	D1130-ZX11-D350-W40	35.0	40	50	198	105	128	70
	D1130-ZX11-D360-W32	36.0	32	40	191	108	131	60
	D1130-ZX11-D360-W40	36.0	40	50	201	108	131	70

D1130 Indexable Insert Drill

Shank Design Standard: ISO9766

Inner Cooling



3 x D

Z = 1

Fit Insert	Type	Dc	d1(h6)	D3	L	L1	L2	Ls
ZXMT13...	D1130-ZX13-D370-W32	37.0	32	50	199	111	139	60
	D1130-ZX13-D370-W40	37.0	40	50	209	111	139	70
	D1130-ZX13-D380-W32	38.0	32	50	202	114	142	60
	D1130-ZX13-D380-W40	38.0	40	50	212	114	142	70
	D1130-ZX13-D390-W32	39.0	32	50	205	117	145	60
	D1130-ZX13-D390-W40	39.0	40	50	215	117	145	70
	D1130-ZX13-D400-W32	40.0	32	50	208	120	148	60
	D1130-ZX13-D400-W40	40.0	40	40	218	120	148	70
	D1130-ZX13-D410-W40	41.0	40	50	221	123	151	70
	D1130-ZX13-D420-W40	42.0	40	50	224	126	154	70
ZXMT15...	D1130-ZX15-D430-W40	43.0	40	50	227	129	157	70
	D1130-ZX15-D440-W40	44.0	40	60	237	132	167	70
	D1130-ZX15-D450-W40	45.0	40	60	240	135	170	70
	D1130-ZX15-D460-W40	46.0	40	60	243	138	173	70
	D1130-ZX15-D470-W40	47.0	40	60	246	141	176	70
	D1130-ZX15-D480-W40	48.0	40	60	249	144	179	70
	D1130-ZX15-D490-W40	49.0	40	60	252	147	182	70
	D1130-ZX15-D500-W40	50.0	40	60	255	150	185	70

* Standard tool bar with internal cooling

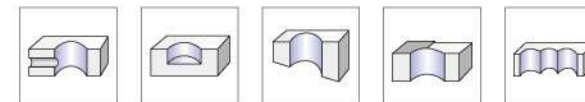
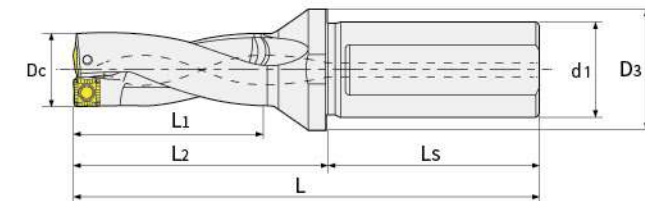
* Blades must be ordered separately

* There is no thread interface at the end of the standard tool bar. If the thread interface is needed, non-standard customization is required

D1130 Indexable Insert Drill

Shank Design Standard: ISO9766

Inner Cooling



3 x D

Z = 1

Type	Screws	Wrench	Coolant plugging
D14.0-D16.0	AF1015	AF2051	AF3011
D16.5-D22.0	AF1016	AF2052	AF3012
D22.5-D26.0	AF1017	AF2053	AF3013/AF3012
D26.5-D36.0	AF1018	AF2054	AF3013/AF3012
D37.0-D43.0	AF1019	AF2055	AF3013/AF3014
D44.0-D50.0	AF1025	AF2056	AF3013/AF3014

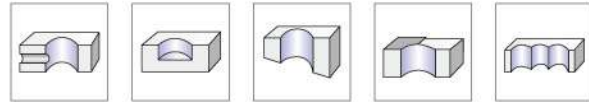
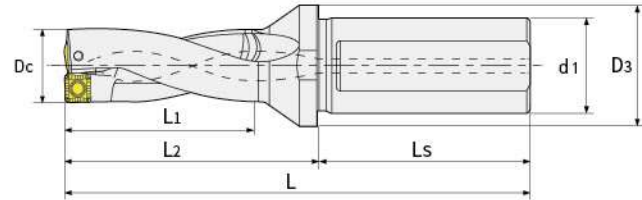
* Coolant plugging is used to seal the coolant during machining and needs to be purchased separately.

Cutting Parameters				f(mm/rpm)															
ISO	Material Group	Tensile Strength (N/mm ²)	HB	ZX05		ZX06		ZX07		ZX08		ZX09		ZX11		ZX13		ZX15	
P	Unalloyed steel	430	125	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
		Low-alloyed Steel	190-300	0.04	0.1	0.04	0.1	0.04	0.12	0.04	0.12	0.06	0.14	0.06	0.14	0.08	0.16	0.08	0.16
	Low-alloyed Steel	700-950	200-280	0.06	0.12	0.06	0.12	0.06	0.16	0.06	0.16	0.08	0.16	0.08	0.16	0.1	0.18	0.1	0.18
		950-1200	280-355	0.06	0.12	0.06	0.12	0.06	0.12	0.08	0.16	0.08	0.16	0.08	0.18	0.08	0.2	0.1	0.22
	High-alloyed Steel	Austenitic Stainless Steel	355-415	0.06	0.12	0.06	0.12	0.06	0.12	0.08	0.16	0.08	0.16	0.08	0.18	0.08	0.2	0.1	0.2
M	Duplex Stainless Steel	780	230	0.06	0.12	0.06	0.12	0.06	0.16	0.06	0.16	0.08	0.18	0.08	0.2	0.1	0.2	0.1	0.2
	Austenitic Stainless Steel	680	200	0.06	0.12	0.06	0.12	0.06	0.16	0.06	0.16	0.08	0.18	0.08	0.2	0.1	0.2	0.1	0.2
	PH Stainless Steel	1010	300	0.06	0.12	0.06	0.12	0.06	0.16	0.06	0.16	0.06	0.18	0.06	0.2	0.1	0.2	0.1	0.2
K	Grey Cast Iron	200-350	180-245	0.08	0.18	0.08	0.18	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.22	0.1	0.22
	Nodular Cast Iron	400-700	155-265	0.08	0.18	0.08	0.18	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.18	0.1	0.22	0.1	0.22
	Malleable Cast Iron	400	230	0.08	0.14	0.08	0.14	0.1	0.16	0.1	0.16	0.1	0.16	0.1	0.18	0.1	0.18	0.1	0.18
S	Cobalt /Nickel Base Alloy	840-1180	250-350	0.05	0.1	0.05	0.1	0.05	0.1	0.05	0.1	0.05	0.1	0.05	0.1	0.05	0.1	0.05	0.1
	Titanium Alloy	1260-1400	375-410	0.05	0.1	0.05	0.1	0.05	0.1	0.05	0.1	0.05	0.1	0.05	0.1	0.05	0.1	0.05	0.1
N	Aluminium Alloy	260-450	75-130																
H	Hardened Steel	-	HRC50-60																
	Hardened Cast Iron	-	HRC55																

D1140 Indexable Insert Drill

Shank Design Standard: ISO9766

Inner Cooling



4 x D

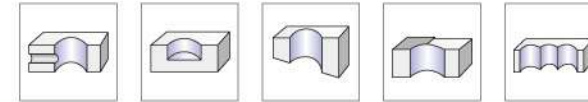
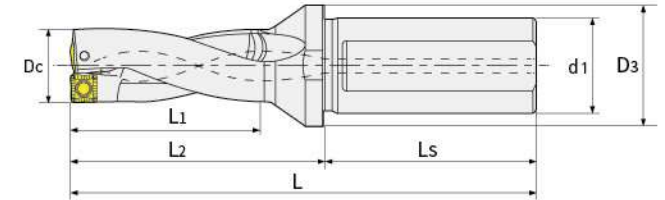
Z = 1

Fit Insert	Type	Dc	d1(h6)	D3	L	L1	L2	Ls
ZXMT05...	D1140-ZX05-D140-W20	14.0	20	25	124	56	74	50
	D1140-ZX05-D145-W20	14.5	20	25	129	60	79	50
	D1140-ZX05-D150-W20	15.0	20	25	129	60	79	50
	D1140-ZX05-D155-W20	15.5	20	25	134	64	84	50
	D1140-ZX05-D160-W20	16.0	20	25	134	64	84	50
ZXMT06...	D1140-ZX06-D165-W25	16.5	25	32	144	68	88	56
	D1140-ZX06-D170-W25	17.0	25	32	144	68	88	56
	D1140-ZX06-D175-W25	17.5	25	32	149	72	93	56
	D1140-ZX06-D180-W25	18.0	25	32	149	72	93	56
	D1140-ZX06-D185-W25	18.5	25	32	153	76	97	56
ZXMT07...	D1140-ZX06-D190-W25	19.0	25	32	153	76	97	56
	D1140-ZX07-D195-W25	19.5	25	32	159	80	103	56
	D1140-ZX07-D200-W25	20.0	25	32	159	80	103	56
	D1140-ZX07-D205-W25	20.5	25	32	163	84	107	56
	D1140-ZX07-D210-W25	21.0	25	32	163	84	107	56
ZXMT08...	D1140-ZX07-D215-W25	21.5	25	32	167	88	111	56
	D1140-ZX07-D220-W25	22.0	25	32	167	88	111	56
	D1140-ZX08-D225-W25	22.5	25	32	170	92	114	56
	D1140-ZX08-D230-W25	23.0	25	32	170	92	114	56
	D1140-ZX08-D230-W32	23.0	32	40	174	92	114	60
ZXMT08...	D1140-ZX08-D235-W25	23.5	25	32	174	96	118	56
	D1140-ZX08-D235-W32	23.5	32	40	178	96	118	60
	D1140-ZX08-D240-W25	24.0	25	32	174	96	118	56
	D1140-ZX08-D240-W32	24.0	32	40	178	96	118	60
	D1140-ZX08-D245-W25	24.5	25	32	178	100	122	56
	D1140-ZX08-D245-W32	24.5	32	40	182	100	122	60
	D1140-ZX08-D250-W25	25.0	25	32	178	100	122	56
	D1140-ZX08-D250-W32	25.0	32	40	182	100	122	60
	D1140-ZX08-D254-W25	25.4	25	32	178	101.6	122	56
	D1140-ZX08-D255-W25	25.5	25	32	181	104	125	56

D1140 Indexable Insert Drill

Shank Design Standard: ISO9766

Inner Cooling



4 x D

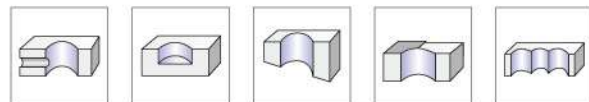
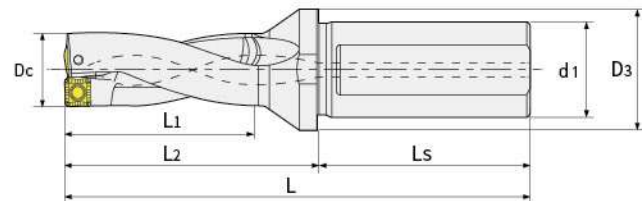
Z = 1

Fit Insert	Type	Dc	d1(h6)	D3	L	L1	L2	Ls
ZXMT08...	D1140-ZX08-D255-W32	25.5	32	40	185	104	125	60
	D1140-ZX08-D260-W25	26.0	25	32	181	104	125	56
	D1140-ZX08-D260-W32	26.0	32	40	185	104	125	60
	D1140-ZX09-D265-W25	26.5	25	40	187	108	131	56
	D1140-ZX09-D265-W32	26.5	32	40	191	108	131	60
ZXMT09...	D1140-ZX09-D270-W25	27.0	25	40	187	108	131	56
	D1140-ZX09-D270-W32	27.0	32	40	191	108	131	60
	D1140-ZX09-D275-W25	27.5	25	40	191	112	135	56
	D1140-ZX09-D275-W32	27.5	32	40	195	112	135	60
	D1140-ZX09-D280-W25	28.0	25	40	191	112	135	56
	D1140-ZX09-D280-W32	28.0	32	40	195	112	135	60
	D1140-ZX09-D285-W25	28.5	25	40	195	116	139	56
	D1140-ZX09-D285-W32	28.5	32	40	199	116	139	60
	D1140-ZX09-D290-W25	29.0	25	40	195	116	139	56
	D1140-ZX09-D290-W32	29.0	32	40	199	116	139	60
ZXMT11...	D1140-ZX09-D295-W32	29.5	32	40	203	120	143	60
	D1140-ZX09-D300-W32	30.0	32	40	203	120	143	60
	D1140-ZX09-D305-W32	30.5	32	40	207	124	147	60
	D1140-ZX09-D310-W32	31.0	32	40	207	124	147	60
	D1140-ZX11-D318-W32	31.8	32	40	211	127.2	151	60
	D1140-ZX11-D320-W32	32.0	32	40	211	128	151	60
	D1140-ZX11-D320-W40	32.0	40	50	221	128	151	70
	D1140-ZX11-D330-W32	33.0	32	40	215	132	155	60
	D1140-ZX11-D330-W40	33.0	40	50	225	132	155	70
	D1140-ZX11-D340-W32	34.0	32	40	219	136	159	60
ZXMT11...	D1140-ZX11-D340-W40	34.0	40	50	229	136	159	70
	D1140-ZX11-D350-W32	35.0	32	40	223	140	163	60
	D1140-ZX11-D350-W40	35.0	40	50	233	140	163	70
	D1140-ZX11-D360-W32	36.0	32	40	227	144	167	60
	D1140-ZX11-D360-W40	36.0	40	50	237	144	167	70

D1140 Indexable Insert Drill

Shank Design Standard: ISO9766

Inner Cooling



4 x D

Z = 1

Fit Insert	Type	Dc	d1(h6)	D3	L	L1	L2	Ls
ZXMT13...	D1140-ZX13-D370-W32	37.0	32	50	236	148	176	60
	D1140-ZX13-D370-W40	37.0	40	50	246	148	176	70
	D1140-ZX13-D380-W32	38.0	32	50	240	152	180	60
	D1140-ZX13-D380-W40	38.0	40	50	250	152	180	70
	D1140-ZX13-D381-W40	38.1	40	50	250	152.4	180	70
	D1140-ZX13-D390-W32	39.0	32	50	244	156	184	60
	D1140-ZX13-D390-W40	39.0	40	50	254	156	184	70
	D1140-ZX13-D400-W32	40.0	32	50	248	160	188	60
	D1140-ZX13-D400-W40	40.0	40	50	258	160	188	70
	D1140-ZX13-D410-W40	41.0	40	50	262	164	192	70
ZXMT15...	D1140-ZX13-D420-W40	42.0	40	50	266	168	196	70
	D1140-ZX13-D430-W40	43.0	40	50	270	172	200	70
	D1140-ZX15-D440-W40	44.0	40	50	281	176	211	70
	D1140-ZX15-D445-W40	44.5	40	60	285	178	215	70
	D1140-ZX15-D450-W40	45.0	40	60	285	180	215	70
	D1140-ZX15-D460-W40	46.0	40	60	289	184	219	70
	D1140-ZX15-D470-W40	47.0	40	60	293	188	223	70
	D1140-ZX15-D480-W40	48.0	40	60	297	192	227	70
	D1140-ZX15-D490-W40	49.0	40	60	301	196	231	70
	D1140-ZX15-D500-W40	50.0	40	60	305	200	235	70

* Standard tool bar with internal cooling

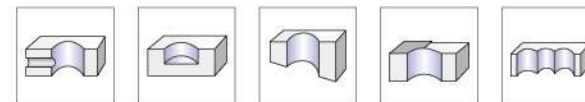
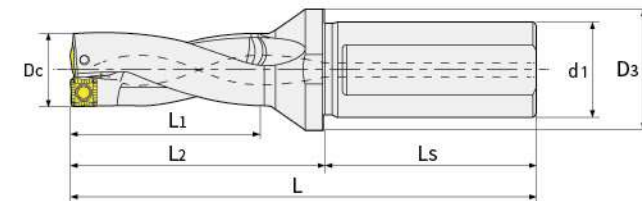
* Blades must be ordered separately

* There is no thread interface at the end of the standard tool bar. If the thread interface is needed, non-standard customization is required

D1140 Indexable Insert Drill

Shank Design Standard: ISO9766

Inner Cooling



4 x D

Z = 1

Type	Screws	Wrench	Coolant plugging
D14.0-D16.0	AF1015	AF2051	AF3011
D16.5-D22.0	AF1016	AF2052	AF3012
D22.5-D26.0	AF1017	AF2053	AF3013/AF3012
D26.5-D36.0	AF1018	AF2054	AF3013/AF3012
D37.0-D43.0	AF1019	AF2055	AF3013/AF3014
D44.0-D50.0	AF1025	AF2056	AF3013/AF3014

* Coolant plugging is used to seal the coolant during machining and needs to be purchased separately.

Cutting Parameters				f(mm/rpm)															
ISO	Material Group	Tensile Strength (N/mm ²)	HB	ZX05		ZX06		ZX07		ZX08		ZX09		ZX11		ZX13		ZX15	
				Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
P	Unalloyed steel	430	125	0.04	0.1	0.04	0.1	0.04	0.12	0.04	0.12	0.06	0.14	0.06	0.14	0.08	0.16	0.08	0.16
		Low-alloyed Steel	190-300	0.06	0.12	0.06	0.12	0.06	0.16	0.06	0.16	0.08	0.16	0.08	0.16	0.1	0.18	0.1	0.18
	Low-alloyed Steel	700-950	200-280	0.06	0.16	0.06	0.16	0.08	0.2	0.08	0.2	0.08	0.2	0.08	0.22	0.1	0.22	0.1	0.22
		950-1200	280-355	0.06	0.12	0.06	0.12	0.06	0.12	0.08	0.16	0.08	0.16	0.08	0.18	0.08	0.2	0.1	0.2
M	High-alloyed Steel	Austenitic Stainless Steel	355-415	0.06	0.12	0.06	0.12	0.06	0.12	0.08	0.16	0.08	0.16	0.08	0.18	0.08	0.2	0.1	0.2
		Duplex Stainless Steel	780	0.06	0.12	0.06	0.12	0.06	0.16	0.06	0.16	0.08	0.18	0.08	0.2	0.1	0.2	0.1	0.2
	Austenitic Stainless Steel	680	200	0.06	0.12	0.06	0.12	0.06	0.16	0.06	0.16	0.08	0.18	0.08	0.2	0.1	0.2	0.1	0.2
		PH Stainless Steel	1010	0.06	0.12	0.06	0.12	0.06	0.16	0.06	0.16	0.06	0.18	0.06	0.2	0.1	0.2	0.1	0.2
K	Grey Cast Iron	200-350	180-245	0.08	0.18	0.08	0.18	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.22	0.1	0.22
	Nodular Cast Iron	400-700	155-265	0.08	0.18	0.08	0.18	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.18	0.1	0.22	0.1	0.22
	Malleable Cast Iron	400	230	0.08	0.14	0.08	0.14	0.1	0.16	0.1	0.16	0.1	0.16	0.1	0.18	0.1	0.18	0.1	0.18
S	Cobalt /Nickel Base Alloy	840-1180	250-350	0.05	0.1	0.05	0.1	0.05	0.1	0.05	0.1	0.05	0.1	0.05	0.1	0.05	0.1	0.05	0.1
	Titanium Alloy	1260-1400	375-410	0.05	0.1	0.05	0.1	0.05	0.1	0.05	0.1	0.05	0.1	0.05	0.1	0.05	0.1	0.05	0.1
N	Aluminium Alloy	260-450	75-130																
H	Hardened Steel	-	HRC50-60																
	Hardened Cast Iron	-	HRC55																

Cutting Parameter

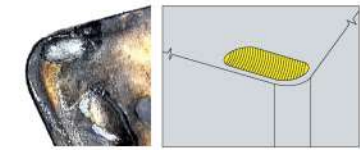
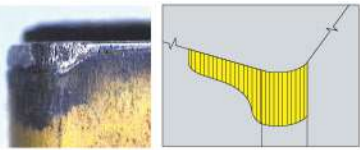
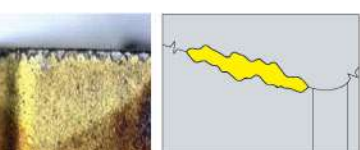
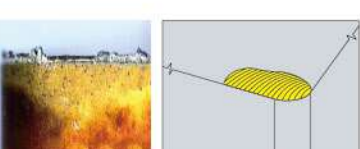
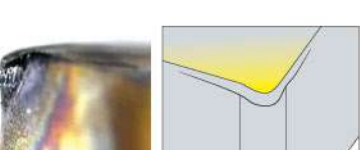
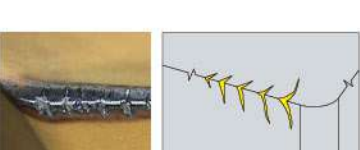
Cutting Parameter						Vc(m/min)								
ISO	Material Group			Tensile Strength [N/mm²]	Tensile Strength [HB]	APM23E			APU23E			APU24E		
						2 X D	3 X D	4 X D	2 X D	3 X D	4 X D	2 X D	3 X D	4 X D
P	Unalloyed Steel	C≤0.25%	Anneal	430	125	280	224	168	260	208	156	280	224	168
		0.25% < C≤0.55%	Anneal	640	190	250	200	150	230	184	138	250	200	150
		0.25% < C≤0.55%	Tempering	710	210	220	176	132	200	160	120	220	176	132
		C > 0.55%	Anneal	640	190	180	144	108	160	128	96	180	144	108
		C > 0.55%	Tempering	1010	300	150	120	90	130	104	78	150	120	90
		Free Cutting Steel (Short chips)	Anneal	750	220	240	192	144	210	168	126	240	192	144
	Low-alloyed Steel	Anneal		590	175	260	208	156	240	192	144	260	208	156
		Tempering		960	285	230	184	138	220	176	132	230	184	138
		Tempering		1280	380	180	144	108	160	128	96	180	144	108
		Tempering		1480	430	120	96	72	110	88	66	120	96	72
	High-alloyed Steel/Tool steel	Anneal		680	200	225	200	160	180	144	108	200	160	120
		Quench And Temper		1010	300	180	150	125	130	104	78	150	120	90
		Quench And Temper			380	150	125	100	100	80	60	120	96	72
	Stainless Steel	Ferrite	Anneal	680	200	180	160	125	140	112	84	160	128	96
		Ferrite /Martensite	Tempering	1110	330	160	125	100	100	80	60	120	96	72
	M	Stainless Steel	Austenitic	Quench	680	200	120	96	72	100	80	60	120	96
Austenitic (PH)			Precipitation Dispersion Hardening	1010	300	100	80	60	80	64	48	100	80	60
Austenitic-Ferrite			Diphas	780	230	80	64	48	60	48	36	80	64	48
K	Grey Cast Iron	Low Tensile Strength		200	180	300	240	180	280	224	168	300	240	180
		High Tensile Strength		350	245	250	200	150	240	192	144	250	200	150
	Nodular Cast Iron	Ferrite		400	155	220	176	132	200	160	120	220	176	132
		Pearlite		700	265	200	160	120	180	144	108	200	160	120
	Creep Ink Cast Iron	GGV (CGI)			230	120	96	72	100	80	60	120	96	72
S	Super Alloy	Iron-based	Anneal	680	200	100	80	50						
			Aging Treatment	940	280	90	70	45						
		Nickel Base Cobalt Base	Anneal	840	250	40	30	30						
			Aging Treatment	1180	350	30	25	25						
			Cast	1080	320	30	25	20						
	Titanium alloy	TA Series/TC Series	α phase/α phase + β phase	1260	375	50	40	30						
		TB Series	β phase	1400	410	30	25	25						
N	Forged Aluminium Alloy	Si≤1%	Non-aging Treatment	-	30	400	320	280						
		Si≤1%	Aging Treatment	340	100	400	320	280						
	Cast Aluminium Alloy	Si≤12%	Non-aging Treatment	260	75	250	200	180						
		Si≤12%	Aging Treatment	310	90	250	200	180						
		Si→12%	Non-aging Treatment	450	130	180	160	120						
H	Hardened Steel	Quench And Temper		50 HRC		20	20							
		Quench And Temper		55 HRC										
		Quench And Temper		60 HRC										
	Hardened Cast Iron	Quench And Temper		55 HRC		20	20							

Cutting Parameter

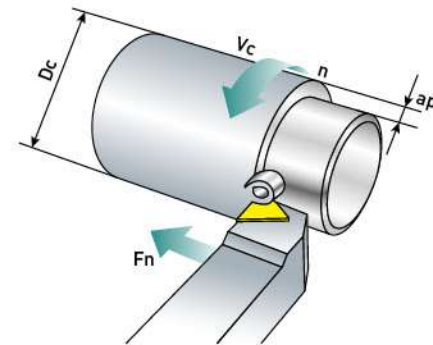
TECHNICAL INFORMATION



Blade Failure Forms and Analysis

	Failure Type	Patterns	Reasons	Solutions
	Crater Wear		concave wear on the front edge of the blade The contact between the chip and the front edge of the blade leads to diffuse wear; Blade material is too soft; The linear velocity is too high;	Choose more wear-resistant material (coating with higher Al2O3 content) blade; Reduce the line speed; Use more open grooves; Optimized cooling;
	Flank Face Wear		The wear is mainly on the back of the blade Blade material is too soft; Cutting line speed is too high; The feed is too small;	Choose blades with more wear-resistant materials; Reduce the line speed; Increase the feed rate; Optimized cooling;
	Chipping		The cutting edge or tip of the blade is broken The blade material is excellent; The feed is too large; The groove edge of the blade is not stable enough; The tool bar and handle are not rigid enough;	Use blades with better toughness; Reduce the feed rate; Use a more stable groove; Strengthen the tool bar structure to reduce the overhang length;
	Built up Edge		The workpiece material is bonded and deposited along the cutting edge of the front cutter face of the blade Low cutting line speed; The edge of the blade is not sharp enough; Inappropriate tool material or coating;	Improve cutting line speed; Use sharper grooves; Select tool materials or coatings with low affinity; Optimized cooling;
	Plastic Deformation		Tip or cutting edge collapse deformation Tool material is too soft; Cutting speed is too high; Cutting depth, feed is too large; Cutting temperature is too high;	Use more wear-resistant tools; Reduce cutting speed; Reduce cutting depth and feed rate; Optimized cooling;
	Thermal Crack		There is a comb crack on the cutting edge of the blade Expansion and contraction fluctuation caused by cutting heat; The tool material is excellent;	Use dry cutting or precise and sufficient cooling; Use tool materials with better toughness;
	Groove Wear		here is notched wear on the cutting edge of the blade Processing hard materials; The workpiece surface has oxide skin;	Select the smaller main declination Angle; Use varying depth of cut; Use tool materials with better toughness; Use a more stable groove; Optimized cooling;

Turning Formulas



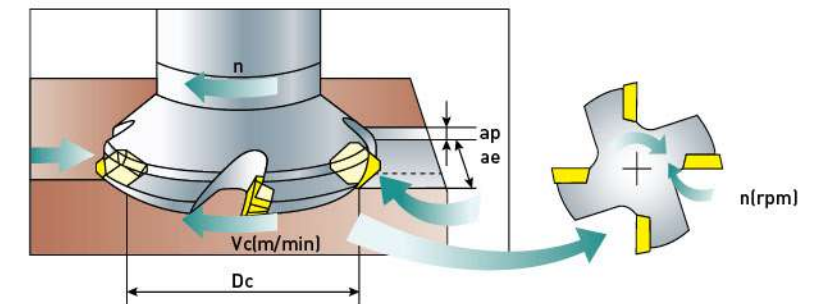
Formulas

Cutting Speed	$V_c = (D_c \times n \times \pi) \div 1000$
Spindle Speed	$n = (V_c \times 1000) \div (D_c \times \pi)$
Feed Rate	$V_f = n \times F_n$
Feed per Revolution	$F_n = V_f \div n$
Metal Removal Rate	$Q = V_c \times V_f \times A_p$
Cutting Time	$T = L \div V_f$

Terms

n	Spindle Speed	rpm
Vc	Cutting Speed	m/min
Vf	Feed Rate	mm/min
Fn	Feed per Revolution	mm
Dc	Work Diameter	mm
ap	Depth of Cut	mm
Q	Metal Removal Rate	cm ³ /min
L	Length of Cut	mm
T	Cutting Time	min
n	n 3.14	

Milling Formulas



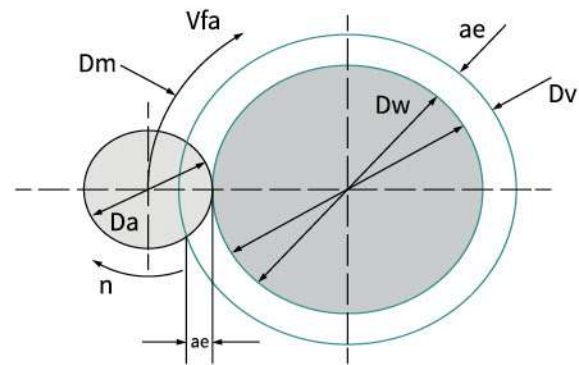
Formulas

Cutting Speed	$V_c = (D_c \times n \times \pi) \div 1000$
Spindle Speed	$n = (V_c \times 1000) \div (D_c \times \pi)$
Feed Rate	$V_f = f_z \times n \times Z$
Feed per Tooth	$f_z = V_f \div (n \times Z)$
Metal Removal Rate	$Q = (a_p \times a_e \times V_f) \div 1000$
Cutting Time	$T = L \div V_f$

Terms

n	Spindle Speed	rpm
Vc	Cutting Speed	m/min
Vf	Feed Rate	mm/min
fz	Feed per Tooth	mm
Dc	Milling Cutter Diameter	mm
Z	Milling Cutter Number of Teeth	
ap	Depth of Cut	mm
ae	Width of Cut	mm
Q	Metal Removal Rate	cm ³ /min
L	Cutting Edge Length	mm
T	Cutting Time	min
n	n 3.14	

Milling Formulas



Cylindrical Interpolation Milling Cutting Ratio

External Profile Feed Speed $V_{fa} = \left(1 + \frac{D_c}{D_w + a_e} \right) \times V_f$ [mm/min]

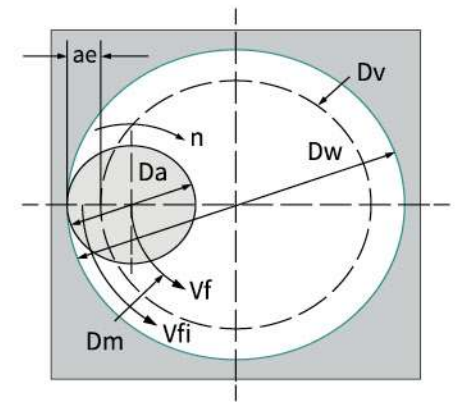
Circumferential Interpolation Milling Time $T_{rev} = \frac{D_m \times \pi}{n \times f_z \times z}$ [min] $T_{rev} = \frac{(D_w + D_a) D_a \times \pi^2 \times 60}{V_c \times f_z \times z \times 1000}$ [s]

Circumference Interpolation Milling Cutting Width $a_e = \frac{(D_v^2 - D_w^2)}{4(D_w + D_a)}$ [mm]

External Contour

Vfa	Tool center path feed speed	mm/min
Da	Outside diameter of milling cutter	m/min
Dm	Center track diameter	mm/min
Dv	The blank diameter of the workpiece	mm
Dw	Finished diameter of work	mm
ae	Cutting width	mm
n	Rotational speed	mm
fz	Feed per Tooth	rpm
Z	Number of Teeth	mm

Milling Formulas



Interpolation Cutting Ratio of the Milling Hole

Internal Profile Feed Speed $V_{fi} = \left(1 - \frac{D_c}{D_w} \right) \times V_f$ [mm/min]

Circumferential Interpolation Milling Time $T_{rev} = \frac{D_m \times \pi}{n \times f_z \times z}$ [min] $T_{rev} = \frac{(D_w - D_a) D_a \times \pi^2 \times 60}{V_c \times f_z \times z \times 1000}$ [s]

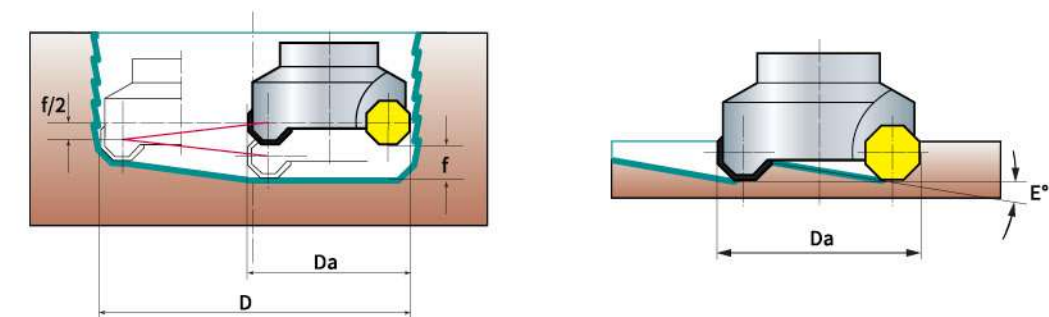
Circumference Interpolation Milling Cutting Width $a_e = \frac{(D_w^2 - D_v^2)}{4(D_w - D_a)}$ [mm]

Internal Contour

Vf	Feed Rate	mm/min
Vfi	Tool center path feed speed	mm/min
Da	Outside diameter of milling cutter	mm
Dm	Outside diameter of milling cutter	mm
Dv	The blank diameter of the workpiece	mm
Dw	Finished diameter of work	mm
ae	Machining Allowance	mm
n	Rotational speed	rpm
fz	Feed per Tooth	mm
Z	Number of Teeth	
Trev	Circumferential Interpolation Milling Time	s

M1145-0D05

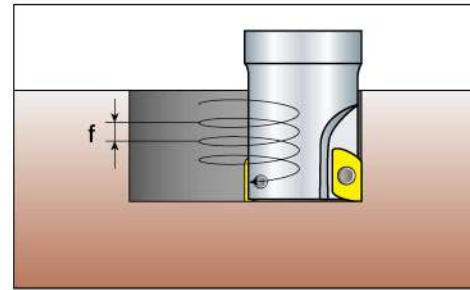
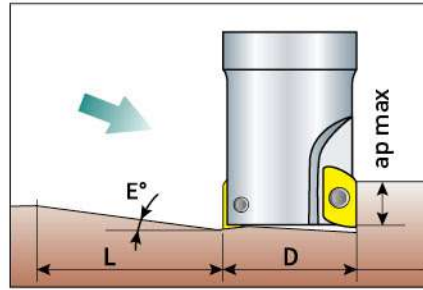
AHNO Milling Cutter Technology Application



Milling Cutter Diameter (D)	Linear Slope Milling	Spiral Interpolation Milling		
	Maximum Slope Milling Angle (E)	Minimum Diameter (Dmin)	Maximum Diameter (Dmax)	Maximum Pitch (fmax)
Ø50	5.4	78		4.5
			100	4.5
Ø58	4.5	94		4.5
			116	4.5
Ø63	3.6	104		4.5
			125	4.5
Ø71	3.2	120		4.5
			140	4.5
Ø80	2.7	138		4.5
			160	4.5
Ø88	2.4	154		4.5
			175	4.5
Ø100	2.0	178		4.5
			200	4.5
Ø108	2.0	194		4.5
			215	4.5
Ø125	1.5	228		4.5
			250	4.5
Ø133	1.5	245		4.5
			266	4.5

AHNO Milling Cutter Technology Application

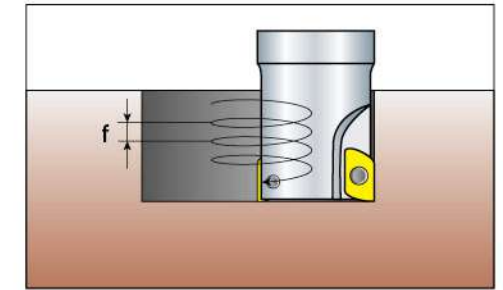
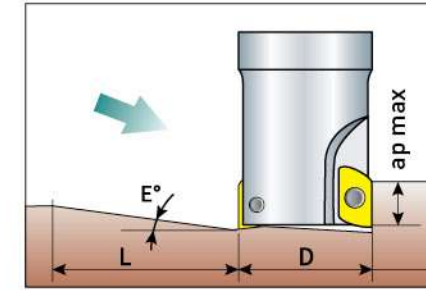
M2190-X006



Milling Cutter Diameter (D)	Linear Slope Milling			Spiral Interpolation Milling		
	Maximum Slope Milling Angle (E)	Maximum Cutting Depth (ap max)	Minimum Length (L)	Minimum Diameter (Dmin)	Maximum Diameter (Dmax)	Maximum Pitch (fmax)
Ø10	8	5	36	13	20	1.1
Ø12	6	5	48	17	24	1.4
Ø14	4.8	5	60	21	28	1.6
Ø16	4	5	72	25	32	1.7
Ø20	4	5	72	33	40	2.4
Ø25	3	5	95	43	50	2.5
						3.5

M2190-X012 / M9190-X012

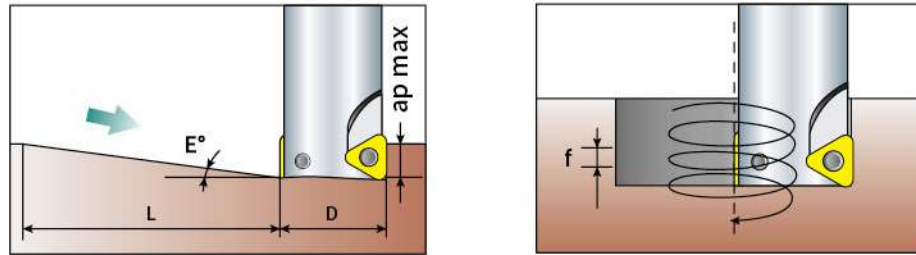
AHNO Milling Cutter Technology Application



Milling Cutter Diameter (D)	Linear Slope Milling			Spiral Interpolation Milling		
	Maximum Slope Milling Angle (E)	Maximum Cutting Depth (ap max)	Minimum Length (L)	Minimum Diameter (Dmin)	Maximum Diameter (Dmax)	Maximum Pitch (fmax)
Ø25	8.5	10	86	36	50	3.7
Ø32	5.6	10	138	50	64	3.9
Ø40	3.9	10	200	66	80	4.1
Ø50	2.7	10	275	86	100	4.8
Ø63	2	10	405	112	126	4.5
Ø80	1.5	10	530	146	160	4.6
						4.8

AHNO Milling Cutter Technology Application

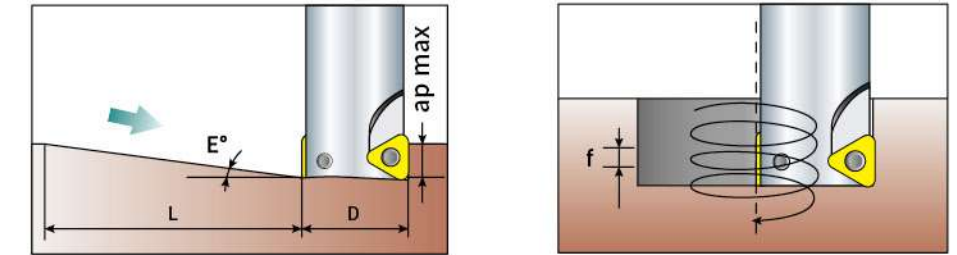
M2190-TP10



Milling Cutter Diameter (D)	Linear Slope Milling			Spiral Interpolation Milling		
	Maximum Slope Milling Angle (E)	Maximum Cutting Depth (ap max)	Minimum Length (L)	Minimum Diameter (Dmin)	Maximum Diameter (Dmax)	Maximum Pitch (fmax)
Ø20	3.3	7	121	33.9		2.1
					40	3.1
Ø25	2.8	7	143	43.5		2.4
					50	3.3
Ø32	1.8	7	223	57.5		2.1
					64	2.7
Ø40	1.3	7	309	73.7		2
					80	2.4
Ø50	1	7	401	93.7		2
					100	2.3
Ø63	0.8	7	502	119.7		2.1
					126	2.3

M2190-TP15

AHNO Milling Cutter Technology Application

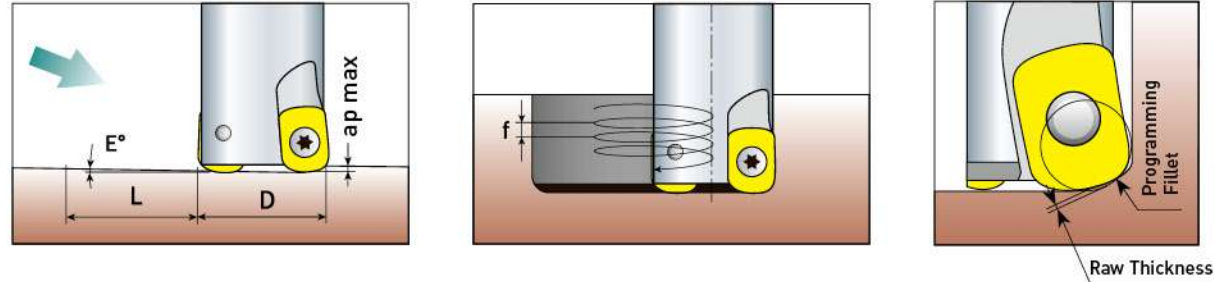


Milling Cutter Diameter (D)	Linear Slope Milling			Spiral Interpolation Milling		
	Maximum Slope Milling Angle (E)	Maximum Cutting Depth (ap max)	Minimum Length (L)	Minimum Diameter (Dmin)	Maximum Diameter (Dmax)	Maximum Pitch (fmax)
Ø50	1.5	11	420	90.1		2.8
					100	3.5
Ø63	1.1	11	573	116.1		2.7
					126	3.2
Ø80	0.8	11	788	150.3		2.6
					160	3
Ø100	0.6	11	1051	190.5		2.5
					200	2.8
Ø125	0.5	11	1261	240.3		2.7
					250	2.9

AHNO Milling Cutter Technology Application

M3120-LN06

Cutter Diameter	Programming Fillet R	Raw Thickness B
< Ø20	R1.5	0.35
≥ Ø20	R2.0	0.42

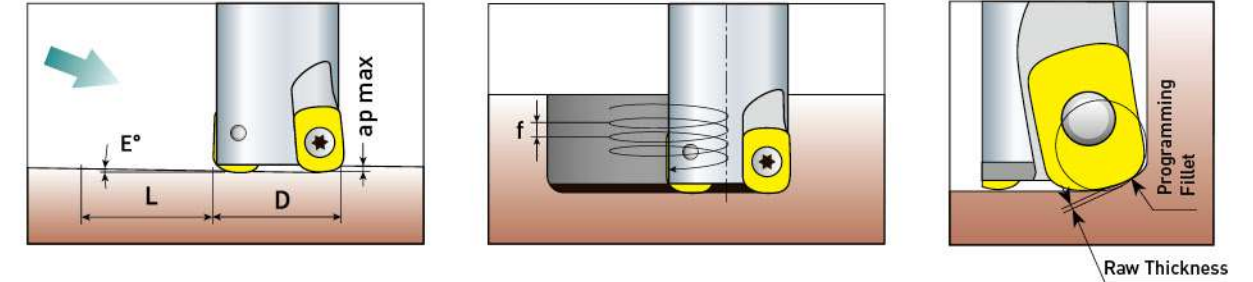


Milling Cutter Diameter (D)	Linear Slope Milling			Spiral Interpolation Milling		
	Maximum Slope Milling Angle (E)	Maximum Cutting Depth (ap max)	Minimum Length (L)	Minimum Diameter (Dmin)	Maximum Diameter (Dmax)	Maximum Pitch (fmax)
Ø16	2	0.7	13	23		0.7
					32	0.7
Ø20	1.5	1	38	31		0.8
					40	1
Ø25	1.3	1	41	41		1
					50	1
Ø32	0.9	1	57	55		1
					64	1
Ø40	0.7	1	64	71		1
					80	1
Ø50	0.6	1	96	91		1
					100	1
Ø63	0.5	1	115	117		1
					126	1

AHNO Milling Cutter Technology Application

M3120-LN09

Cutter Diameter	Programming Fillet R	Raw Thickness B
Ø40~Ø80	R2.5	0.61

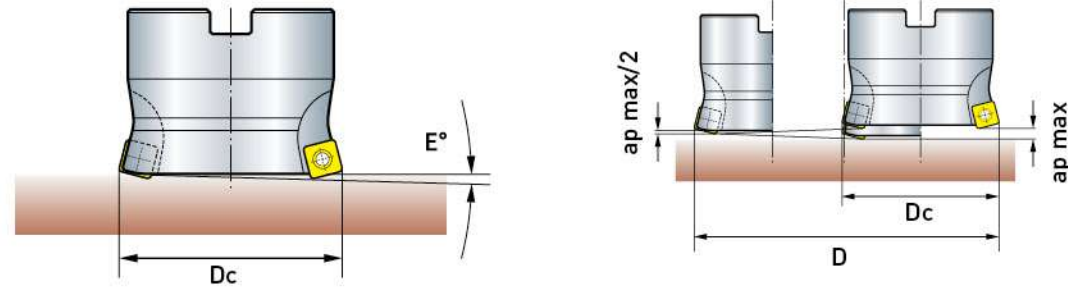


Milling Cutter Diameter (D)	Linear Slope Milling			Spiral Interpolation Milling		
	Maximum Slope Milling Angle (E)	Maximum Cutting Depth (ap max)	Minimum Length (L)	Minimum Diameter (Dmin)	Maximum Diameter (Dmax)	Maximum Pitch (fmax)
Ø40	1.5	1.5	57	72		1.5
					80	1.5
Ø50	1.0	1.5	86	92		1.5
					100	1.5
Ø63	0.9	1.5	96	118		1.5
					126	1.5
Ø80	0.8	1.5	107	152		1.5
					160	1.5

AHNO Milling Cutter Technology Application

M3215-S009

Insert	Programming Fillet R
S009T308	R2.4
S009T320	R3.2

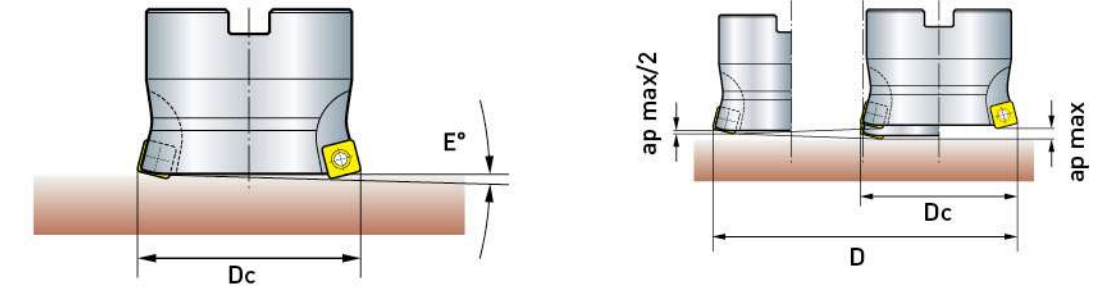


Milling Cutter Diameter (D)	Linear Slope Milling		Spiral Interpolation Milling	
	Maximum Slope Milling Angle (E)	Maximum Cutting Depth (ap max)	Minimum Diameter (Dmin)	Maximum Diameter (Dmax)
Ø32	4.5	1.0	48	64
Ø35	4.0	1.0	54	72
Ø40	2.7	1.0	64	80
Ø50	1.8	1.0	84	100
Ø63	1.5	1.0	110	125

M3215-S012

AHNO Milling Cutter Technology Application

Insert	Programming Fillet R
S0120408	R3.4
S0120425	R4.2



Milling Cutter Diameter (D)	Linear Slope Milling		Spiral Interpolation Milling	
	Maximum Slope Milling Angle (E)	Maximum Cutting Depth (ap max)	Minimum Diameter (Dmin)	Maximum Diameter (Dmax)
Ø32	3.2	1.5	48	64
Ø40	3.0	1.5	63	80
Ø50	2.7	1.5	80	100
Ø63	1.8	1.5	106	125
Ø80	1.2	1.5	140	160

Application Information

Theoretical Surface Roughness

Ra / Rz μm	Insert R Angle ISO					
	02	04	08	12	16	24
	Feed f(mm)					
0.4/1.6	0.05	0.07	0.1	0.12	0.14	0.18
1.6/6.3	0.1	0.14	0.2	0.25	0.28	0.35
3.2/12.5	0.14	0.2	0.28	0.35	0.4	0.49
6.3/25	-	0.28	0.4	0.49	0.57	0.69
8/32	-	-	0.45	0.55	0.64	0.78

Technical Information

Hardness Conversion Table

Brinell Hardness (HV)	Vickers Hardness (HB)	Rockwell Hardness		Tensile Strength (N/mm²)
		150kg Gold and Steel Cone (HRC)	100kg Steel Ball (HRB)	
208	198	-	93	667
212	201	-	94	680
217	206	[16.0]	95	696
220	209	[17.5]	95	706
222	211	[18.7]	96	716
235	223	[19.1]	97	755
242	230	20.2	97	775
248	236	22.1	99	794
257	244	23.1	100	824
262	249	24.1	100	838
266	253	24.8	101	853
272	258	25.7	101	870
275	261	26.4	102	880
277	263	27.0	103	892
291	276	29.1	104	941
302	287	29.9	105	971
308	293	30.9	106	990
315	299	32.1	107	1020
322	306	32.3	107	1035
325	309	32.4	107	1049
338	321	33.6	107	1089
343	326	35.4	108	1118
361	343	36.6	109	1157
369	351	37.6	110	1187
383	364	39.4	-	1236
392	372	40.3	-	1265
408	388	41.7	-	1314
425	404	42.9	-	1363
433	411	43.6	-	1390
441	419	44.6	-	1422
447	425	45.0	-	1447
455	432	45.8	-	1471
470	447	46.9	-	1520
485	461	48.1	-	1569

Technical Information

Turning Insert slot Comparison Table - Negative Insert

Sort	Processing Type	AHNO	MISUBISHI	SUMITOMO	KYOCERA	TUNGALOY	KORLOY	TAEGUTEC	SANDVIK	WALTER	KENNAMETAL	ISCAR	SECO	GESAC	ACHTECH	ZCC
Steel Part	Semi Finishing	PSX	SA SH SY	SE SX	CQ XQ HQ	27 TSF	VC HC	ML FM FG	PF LC	FP5 MP3	FF FN	NF	MF5	QF	PB3	
	Medium Roughing	PMA PMB	MA MP MH	GU GE	GS PS P6	TM AM	VM LP MP	MT MC MP	PM PMC QM	MP5	MN CT MP PM	M3P TF PP	M3 M5	QM 6M	PD3 PC3	DM PM NM
		PMD	GM	UZ	Channeling	Channeling	B25	Channeling		MU5					PC4	Channeling
	Roughing	PRA	RP GH	ME MU	PT GT	CH	HR GR	RT RGP	PR	RP5	RN RP RW	NR R3P	MR5 MR4 MR7	QR	PD5	DR ER
	Heavy Roughing	PRB	HX HR		PX	TU TUS	VT	HT HD	HR	RP7	MR RP RM					
		PHA	HV				VH	HY HZ		NRR	RH	HR	R5 R7 RR9	QH	PD8 PC9 PD9	HDR HPR
Stainless Steel	Finishing	MFA	SH LM	SU EF	MQ	SF	VP2 MP	FG EA SF	MF	FM5	FF LF FP	NF F3M	FF1 MF1	SF YF	MB2	EF
	Medium Roughing	MMA	MS GM MM	EX UP	MS MU SU	SM SA HRM	MM HS	EM	QM MM MMC	MM5	MS MP UP	PP M3M	MF3 MF4	LM	MC3	EM
		MMD MME						MP						SM		Channeling
Cast Iron	Medium Roughing	KMA	MK GK Channeling	UZ MU	KG Channeling	CM Channeling	B25	MC	KM	MK5	UN CT RP	NR	M4	UK	PC4	Channeling
	Roughing	KRA	GH RK	GZ	ZS GC KH	CH	GR VR MA	RT	KR		RP-NMA		MR7	HK	KC4	
		KRB	Slab		Slab	Slab	Slab	Slab		RK5		Slab		Slab	KD5	Slab
		KRC								RK7						TR
Hard-to-machine Materials	Finishing	SSA	FJ LS MJ	EF SU	MQ SK	HRF	VP1 VP2	FA	SF	NFT MS3	FS FF	NF	MF1 MF3	EL	SC1 MB2	NF
	Medium Roughing	SMA	MS MA	EG EX UP	SQ MS MU	HRM SA HMM	HA VP3	EA SF	SGF SM QM	NMS NMT	UP P NGP	PP TF	M1 M3	EM	SL3 SC3	NM
	Roughing	SRA	RS 6J	MU	SG SX		VM VP4	ET	SR SMR	NRS NRT	RP	NR	MR3 MR4		MC4	SNR

Technical Information

Turning Insert Slot Comparison Table - Positive Insert

Sort	Processing Type	AHNO	MISUBISHI	SUMITOMO	KYOCERA	TUNGALOY	KORLOY	TAEGUTEC	SANDVIK	WALTER	KENNAMETAL	ISCAR	SECO	GESAC	ACHTECH	ZCC
Steel Part	Finishing	PFA	SM6 FV FP	FP LU	CK	PF	VL	FA F6 FX	UF	FP4	LF	PF	FF1		PB1	HF XF
	Semi Finishing	PSA		LB SU SC	GF	PS	HMP	PC	PF	FP6	UF 11 LF	SM 14	F1	MM	PC2	HM XM
	Medium Roughing	PMA	LP MV	MU	HQ	PM		MT	PM UM	MP4	MF MP		MF2 F2 M3	TP	KC2	
	Roughing	PRA	MP		GK		C25		PR	RP4		17 19	M5	GP KM		HR
Stainless Steel	Finishing	MFA	FM FV LM	LU	MQ	PF	FS MS VL	FA F6	MF UF	FM4	LF	PF	F1	MM	PB1	EF
	Semi Finishing	MSA		SC SU	MS	PS	MP FP LU	FM	MM UM	FM6	UF MF	SM 14	MF2			EM
	Medium Roughing	MMA	MV		MU		C25 MU	MT		MM4	MP	17	M3	GP		
Cast Iron	Medium Roughing	UMA	MM	MU		PM			PM				M5	Channeling	PC2	HR
	Medium Roughing	KMA	MK	MU US		CM	MP	MT PMR	KM	MK4	MF	14	M3 M5	KM	KC2	HM

Technical Information

TURNING

MILLING

DRILLING

TECHNICAL INFO

Turning Insert Material Comparison Table

Sort		AHNO	MISUBISHI	SUMITOMO	KYOCERA	TUNGALOY	KORLOY	TAEGUTEK	SANDVIK	WALTER	KENAMETAL	ISCAR	SECO	GESAC	ACHTECH	ZCC
Steel Part	P10	ACP10E ACP10B ACP10D	UE6110 MC6015	AC810P AC8015P	CA515 CA5515	T9105 T9115 T9215	NC3215	TT8115	4315 4415	WPP10S WPP10G	KCP10B KCP10 KC9110	IC9150 IC8150 IC9015	TP1501 TP1500 TS2000	GP1105 GPT6110	AC150P	YBC151 YBC152
	P20	ACP20E ACP20B ACP20D	UE6020 MY5015 MC6025	AC820P AC8020P	CA025P CA525 CA5525	T9125 T9225	NC3220 NC3225 NC3120	TT5100 TT8125	4325 4425	WPP20S WPP20G	KCP25B KC9125	IC8250 IC9025 IC9250	TP2501 TP2500 TS2500	GP1125 GPT6120	AC250P AP200U	YBC251 YBC252
	P30	ACP30E ACP30B	MC6035 UE6035 UH6400	AC830P AC630M	CA530 CA5535	T9135 T9235 T9035	NC3030 NC500H NC5330	TT8135 TT7100	4335	WPP30S WPP30G	KCP40B KCP40 KC9240	IC8350 IC9350	TP3501 TP3500 TP3000 CP500	GP1130 GPT6130	AC350P	YBC351 YBC352
Cast Iron	K05	ACK05E	HT105T	H1 H2		KS05F					KU10 K313 K68					YBD052
	K10	ACK10E	UC5105	AC405K AC410K	CA310	T505 T515 T5105	NC6025	TT1300 TT7005	3205 3210	WKK10S	KCK05 KCK05B	IC5005 IC9007	TH1500 TK0501 CP200	GK1115	AC100K AC102K	YBD102
	K20	ACK20E	UC5115 MC5015	AC415K AC4015K	CA315	T5115	NC6210 NC6215	TT7310 TT7015	3215	WKK20S	KCK15 KCK20 KC9315 KC9320	IC5010	TK1501 TS2000 TS2500	GK1120	AC202K	YBD152 YBD151
	K30	ACK30E		AC420K	CA320	T5125				WKK30S			CP500	GK1125		YBD252
Stainless Steel	M10	APM10C APS10C	VP10RT VP10MF	AC510U ACZ150	PR1215	AH710	NC9020 PC8110	TT9215	2015 1515	WSM10S	KCM15 KCM15M	IC6015	TM1501 TM2000 TS2000		AC100M AP100S	
	M20	APM20B APM20C APM20E APS20C	VP15TF VP20RT VP20MF	AC520U AC610M AC6020M	PR930 PR1225 PR1525	AH120 AH725 AH630	NC9025 PC8115 PC5300	TT9080 TT9225	2025	WSM20S WMP20S	KCM25	IC6025	TM2501 TS2500 CP500	GM3220 GM3225	AC200M AP200U	YBM215 YBG205
	M30		MP7035							WSM30S	KCM35 KC9045 KC9245		TM3501 CP600 TTP2050		AP301M	
Hard-to-machine Materials	S10	APS10C APM10C	MP9005 MP9015 VP10RT	AC510U AC5015S	PR005S PR015S PR1310	AH905 SH730 AH110 AH8005	PC8105 PC8110 PC8115	TT5030	GC1105 GC15	WSM10S	KCU10 KC5010 KC5410 KC5510	IC507 IC806 IC807 IC903 IC5080T	CP200 TS2000 TS2050	T7115	APS100S	YBG102 YBG105 YBS103
	S20	APS20C	MT9015	AC520U AC5025S	PR1125 PR1325	AH120 AH725 AH8015	PC8120 PC5300 PC5400		GC1125	WSM20S WMP20S	KCU25 KC5025 KC5525	IC228 IC300 IC328 IC806 IC808 IC908 IC928	TS2500 CP500	T7120		YBG212

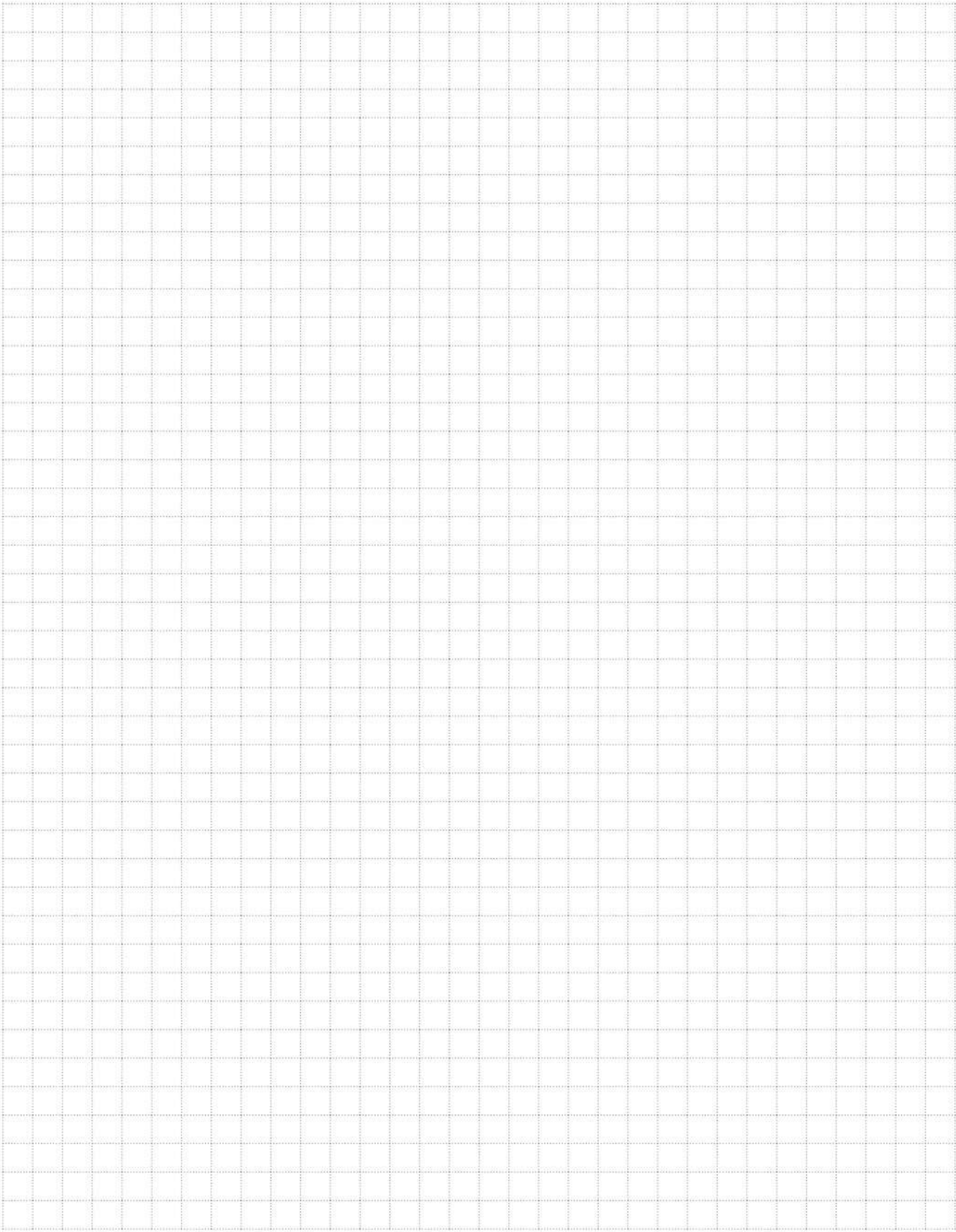
Technical Information

TURNING

MILLING

DRILLING

TECHNICAL INFO



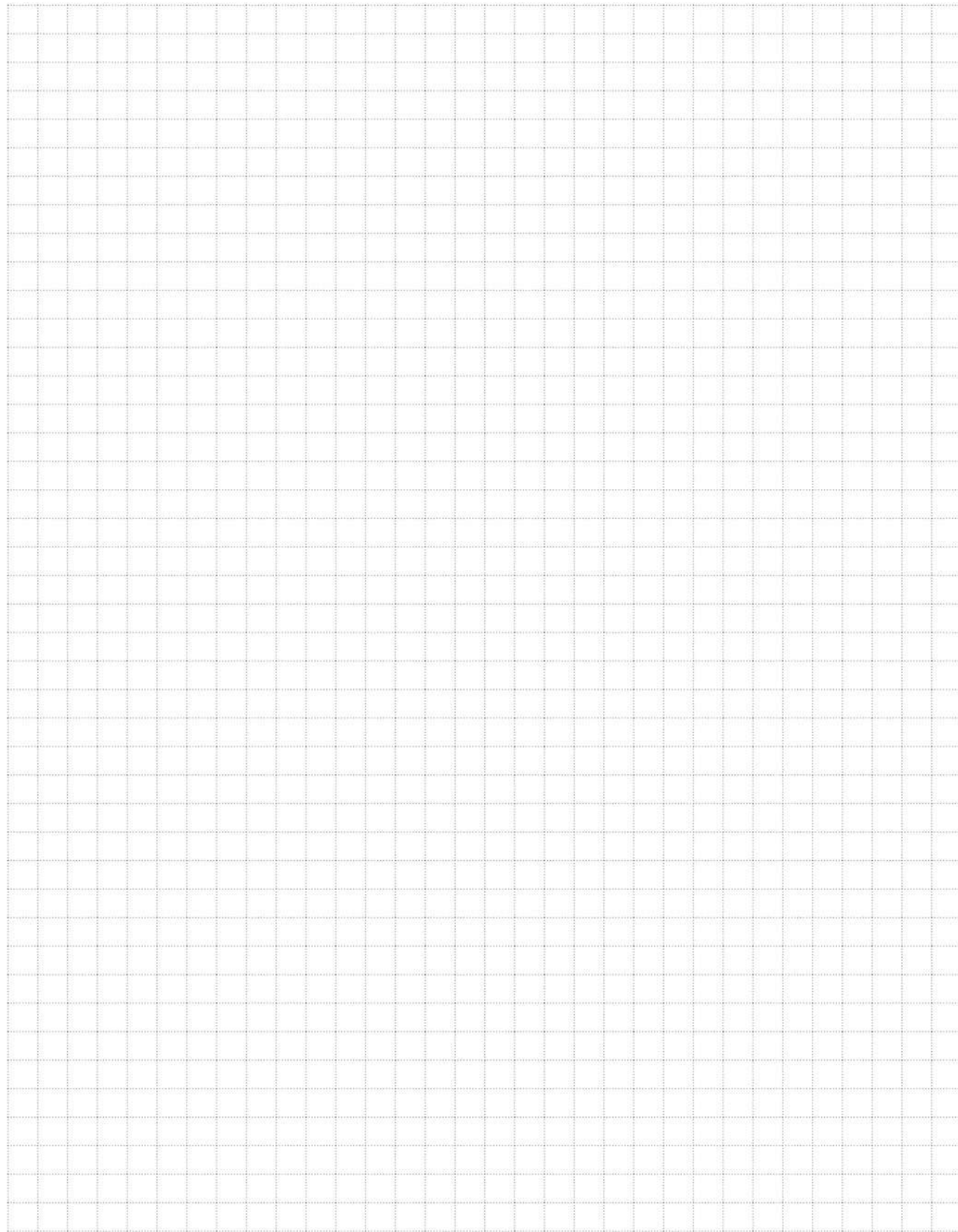
Technical Information

TURNING

MILLING

DRILLING

TECHNICAL INFO



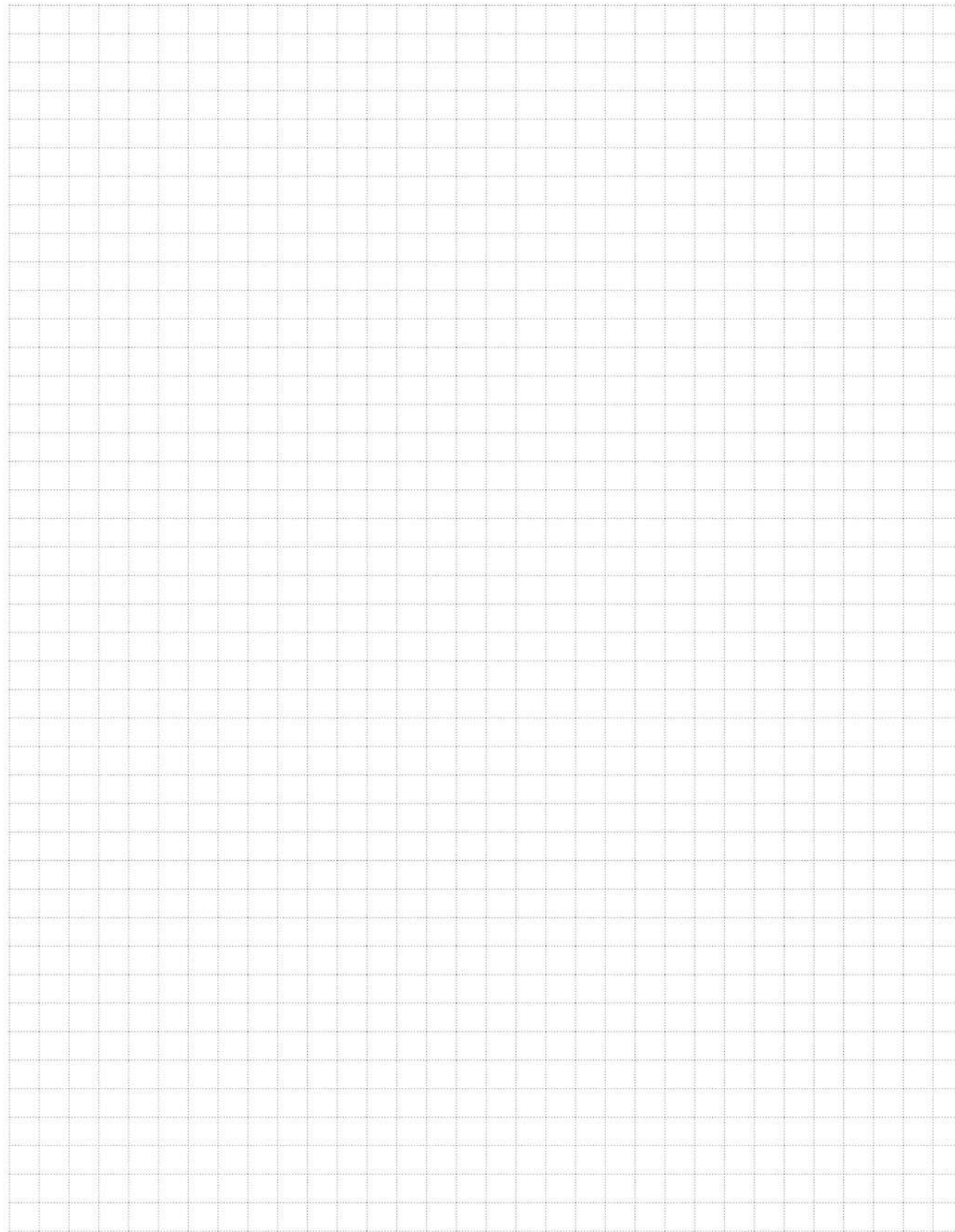
Technical Information

TURNING

MILLING

DRILLING

TECHNICAL INFO



*A good dentist for
metal cutting !*

**N0.9 Kezhi Road, Suzhou Industrial Park,
Jiangsu Province, PRC**

TEL: +86-512-62877712 FAX: +86-512-62561293
MAIL: info@ahno-tool.com WEB: www.ahno-tool.com