ACHTECK

www.achtecktool.com/en

THE EXPERT OF DIFFICULT MACHINING

CUTTING TOOL CATALOGUE

Milling Cutter Denomination System

A	FM	90	-	080	-	Z07	-	A	22	R	-	SN12	-	C
1	2	3		4		5		6	7	8		9		10

1. A--ACHTECK

2-Machining Method	
Face milling	FM
Square Shoulder milling	SM
Profile milling	PM
High feed milling	HM
Side & face milling	DM
Thread milling	TM
Chamfer milling	CM
Finish milling	FF

3-Approach Angle (Kr)	
Figure	Angle
90	90°
88	88°
75	75°
60	60°
45	45°
42	42°
*	*
15	15°
0	Round insert

4-Cutter Dia.	
025	25mm
063	63mm
080	80mm
*	*
250	250mm

5-Number of Teeth	
Z02	2 teeth
Z04	4 teeth
Z05	5 teeth
*	*
Z30	30 teeth

6-Connection Type	
A	Arbor
W	Weldon shank
C	Cylindrical shank
N	Whistle notch shank
M	Screw clamping modular head

7-Coupling Size
22——Coupling diameter 22mm

8-Direction of Tool	
R	Right
L	Left
N	Neutral

9-Insert Info
SN12——SN12 series insert

10-Others	
C	Internal coolant
M	Wedge clamping type
S	Carbide shim type
No mark	Without internal coolant

Porcupine Cutter Denomination

A	PE	90	-	063	-	Z04	-	A	27	R	-	LN13	-	L56	-	F	-	C
1	2	3		4		5		6	7	8		9		10		11		12

1. A--ACHTECK

2-Machining Method	
Porcupine milling cutter	PE

3-Approach Angle (Kr)	
90	90°
88	88°
75	75°
60	60°
45	45°
42	42°
*	*

4-Cutter Dia.	
025	25mm
063	63mm
080	80mm
*	*
250	250mm

5-Number of Teeth	
Z02	2 teeth
Z04	4 teeth
Z05	5 teeth
*	*
Z30	30 teeth

6-Connection Type	
A	Arbor
W	Weldon shank
C	Cylindrical shank
N	Whistle notch shank
M	Screw clamping modular head

7-Coupling Size
27——Connection diameter 27mm

8-Direction of Tool	
R	Right
L	Left
N	Neutral

9-Insert Info
LN13--LN13 series insert

10-Max.Cutting Depth	
L30	30mm
L45	45mm
L56	56mm

11-Tool Type	
F	Full teeth
H	Half teeth

12-Others	
C	Internal coolant
No mark	Without internal coolant

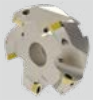
ACHTECK

www.achtecktool.com/en

THE EXPERT OF DIFFICULT MACHINING

Milling Cutters

Overview of Milling Products

Product family			AFM42-OD06 	AFM40-ON05 	AFM45-SD09 	AFM90-SD09 	AFM45-SD12 
Page			P202	P204	P206	P208	P210
Approach angle			42°	40°	45°	90°	45°
Max.ap（mm）			4.5	3.5	5	6	7
Diameter range（mm）			⌀50-160	⌀50-160	⌀16-125	⌀25-100	⌀50-125
Insert type			OD..0605..	ON..0504..	SD..09T3..	SD..09T3..	SD..1204..
Application	Face milling		●	●	●	●	●
	Square Shoulder milling						
	Slot milling						
	Ramping		●		●		●
	Helical interpolate milling		●				
	Plunging						
	Profile milling						
	Chamfer milling		●		●		●
	Pocket milling		●				

Remark: ● Recommended application

Overview of Milling Products

Product family			AFM90-SD12 	AFM45-SN12 	AFM45-SN19 	AFM75-SN12 	AFM88-SN12 
Page			P212	P214	P214	P216	P218
Approach angle			90°	45°	45°	75°	88°
Max.ap（mm）			9	6.5	11	8	10
Diameter range（mm）			⌀50-125	⌀50-315	⌀160-250	⌀50-250	⌀50-315
Insert type			SD..1204..	SN..1206..	SN..1909..	SN..1206..	SN..1206..
Application	Face milling		●	●	●	●	●
	Square Shoulder milling						
	Slot milling						
	Ramping						
	Helical interpolate milling						
	Plunging						
	Profile milling						
	Chamfer milling						
	Pocket milling						

Remark: ● Recommended application

Overview of Milling Products

Product family			AFM45-XN07 	AFM45-XN09 	AFM45-XN09(W) 	AFF40-LN12 	AFF40-LN15 
Page			P220	P222	P222	P224	P224
Approach angle			45°	45°	45°	40°	40°
Max.ap（mm）			4.4	6	6	0.5	0.5
Diameter range（mm）			∅40-250	∅63-315	∅80-315	∅80-100	∅125-250
Insert type			XN..0705..	XN..0906..	XN..0906..	0N..0504.. LN..1204..	0N..0504.. LN..1506..
Application	Face milling		●	●	●	●	●
	Square Shoulder milling						
	Slot milling						
	Ramping						
	Helical interpolate milling						
	Plunging						
	Profile milling						
	Chamfer milling						
	Pocket milling						

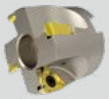
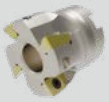
Remark: ● Recommended application

Overview of Milling Products

Product family			ASM90-LN12 	ASM90-LN09 	ASM90-LN13 	ASM90-LN16 	ASM90-WN08 
Page			P226	P228	P230	P232	P234
Approach angle			90°	90°	90°	90°	90°
Max.ap（mm）			5	8	12	15	7
Diameter range（mm）			∅63-250	∅20-80	∅40-315	∅63-160	∅40-250
Insert type			LN..1206..	LNHU 0904..	LNHU 1306..	LNHU 160708..	WNGU 0806..
Application	Face milling		●	●	●	●	●
	Square Shoulder milling		●	●	●	●	●
	Slot milling			●	●	●	
	Ramping						
	Helical interpolate milling						
	Plunging						
	Profile milling						
	Chamfer milling						
	Pocket milling						

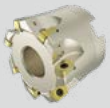
Remark: ● Recommended application

Overview of Milling Products

Product family			ASM90-WN08-N 	ASM90-AP17 	ASM90-TD15 	ASM90-AO12 	APE90-LN09 
Page			P236	P238	P240	P242	P244
Approach angle			90°	90°	90°	90°	90°
Max.ap（mm）			7	16	11	11	48
Diameter range（mm）			∅40-250	∅25-100	∅32-250	∅20-80	∅25-50
Insert type			WNMU 0806..	APKT 1705..	TD.T 1505..	AOMT 1204..	LNHU 0904..
Application	Face milling		●	●	●	●	●
	Square Shoulder milling		●	●	●	●	●
	Slot milling		●	●	●	●	
	Ramping			●	●	●	
	Helical interpolate milling			●	●	●	
	Plunging						
	Profile milling						
	Chamfer milling						
	Pocket milling			●	●	●	

Remark: ● Recommended application

Overview of Milling Products

Product family			APE90-LN13 	AHM20-LN06 	AHM25-LN10 	AHM15-XD09 	AHM15-XD12 
Page			P246	P248	P250	P252	P254
Approach angle			90°	20°	25°	15°	15°
Max.ap（mm）			56	0.65	1.2	1.5	2.5
Diameter range（mm）			∅40-80	∅16-63	∅25-125	∅25-50	∅32-125
Insert type			LNHU 1306..	LN..0604..	LN..1005..	XD..0904..	XD..1205..
Application	Face milling		●	●	●	●	●
	Square Shoulder milling		●				
	Slot milling			●	●	●	●
	Ramping			●	●	●	●
	Helical interpolate milling			●	●	●	●
	Plunging			●	●	●	●
	Profile milling						
	Chamfer milling						
	Pocket milling			●	●	●	●

Remark: ● Recommended application

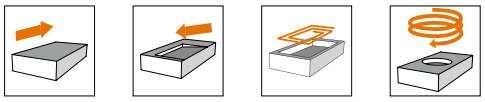
Overview of Milling Products

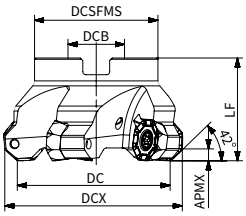
Product family			APM00-RP	APM00-RO08	APM00-RO10	APM00-RO12	APM00-RO16	APM00-RO20
								
Page			P256	P258	P260	P262	P264	P266
Approach angle			-	-	-	-	-	-
Max.ap（mm）			-	4	5	6	8	10
Diameter range（mm）			∅16-20	∅16-25	∅25-50	∅32-80	∅63-100	∅100-160
Insert type			RPM 080/100	RO.. 0803..	RO..10T3..	RO..1204..	RO..1605..	RO..2006..
Application	Face milling			●	●	●	●	●
	Square Shoulder milling							
	Slot milling							
	Ramping		●	●	●	●	●	●
	Helical interpolate milling			●	●	●	●	●
	Plunging							
	Profile milling		●	●	●	●	●	●
	Chamfer milling							
	Pocket milling			●	●	●	●	●

Remark: ● Recommended application

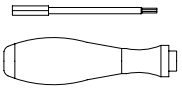
AFM42-OD06

42 °Approaching angle face milling cutter





Product code	DC	DCX	DCB	DCSFMS	LF	APMX	Internal coolant	Z	Inserts
AFM42-050-Z04-A16R-OD06-C	50	60.4	16	40	40	4.5	✓	4	OD..0605..
AFM42-063-Z05-A22R-OD06-C	63	73.4	22	48	40	4.5	✓	5	
AFM42-080-Z05-A27R-OD06-C	80	90.4	27	62	50	4.5	✓	5	
AFM42-080-Z06-A27R-OD06-C	80	90.4	27	62	50	4.5	✓	6	
AFM42-100-Z06-A32R-OD06-C	100	110.4	32	80	50	4.5	✓	6	
AFM42-100-Z07-A32R-OD06-C	100	110.4	32	80	50	4.5	✓	7	
AFM42-125-Z07-A40R-OD06-C	125	135.4	40	87	63	4.5	✓	7	
AFM42-125-Z08-A40R-OD06-C	125	135.4	40	87	63	4.5	✓	8	
AFM42-160-Z10-A40R-OD06	160	170.4	40	107	63	4.5	✗	10	

Dimension (mm)	Spare parts		
Cutter diameter	Screw	Wrench	Torque
⌀50-160			5.0Nm
	SP04512043	DT-TP20	

Note: ✓ With internal coolant
✗ Without internal coolant

Product code	Dimension (mm)		P			M	K		N
	Corner radius	Wiper length	AP251U	AP351U	AC301P	AP403M	AC301K	AP251K	AW100K
ODET 0605APFN-FM2	0.8	1.6							●
ODMT 060508EN-MM3	0.8	-	●	▲	▲		▲	●	
ODMT 060512EN-MM3	1.2	-	●						
ODHT 0605APEN-MM3	-	1.6	●	▲			▲	●	
ODEW 0605APSR-HR2	-	1.6					▲	●	
ODMW 060512EN-HR2	1.2	-					▲	●	

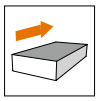
●: Stock available ▲: Stock available now but will be replaced in the future.

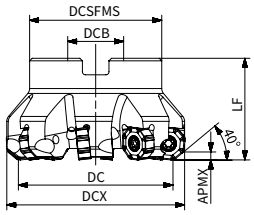
Materials				Cutting depth and feed							
				OD..0605..							
ISO	Material classification	Tensile strength (N/mm^2)	Hardness (HB)	ap		Geometry					
						HR2		MM3		FM2	
						fz					
				(mm)							
				min	max	min	max	min	max	min	max
P	Unalloyed steel	<600	<180	0.20	4.50	0.15	0.40	0.12	0.35	-	-
		<950	<280								
	Alloyed steel	700-950	200-280			0.12	0.35	0.10	0.30	-	-
		950-1200	280-355								
		1200-1400	355-415								
M	Duplex stainless steel	778	230			-	-	0.08	0.28	-	-
	Austenitic stainless steel	675	200								
	Precipitation-hardening stainless steel	1013	300								
K	Grey cast iron	700	220			0.15	0.40	0.12	0.35	-	-
	Nodular cast iron	880	260								
	Malleable cast iron	800	250								
N	Aluminum	260	75			-	-	-	-	0.10	0.35
	Aluminum alloy	447	130								
S	Fe-based alloy	943	280			-	-	-	-	-	-
	Co-based alloy	1076	320								
	Ni-based alloy	1177	350								
	Ti-alloy	1262	370								
H	Hardened steel	-	50-60HRC			0.10	0.25	-	-	-	-
	Chilled cast iron	-	55HRC								

*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

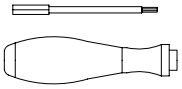
AFM40-ON05

40° Approaching angle face milling cutter





Product code	DC	DCX	DCB	DCSFMS	LF	APMX	Internal coolant	Z	Inserts
AFM40-050-Z04-A22R-ON05-N-C	50	58.8	22	47	40	3.5	✓	4	ON..0504..
AFM40-050-Z06-A22R-ON05-N-C	50	58.8	22	47	40	3.5	✓	6	
AFM40-063-Z05-A22R-ON05-N-C	63	71.8	22	52	40	3.5	✓	5	
AFM40-063-Z06-A22R-ON05-N-C	63	71.8	22	52	40	3.5	✓	6	
AFM40-063-Z08-A22R-ON05-N-C	63	71.8	22	52	40	3.5	✓	8	
AFM40-080-Z06-A27R-ON05-N-C	80	88.8	27	62	50	3.5	✓	6	
AFM40-080-Z08-A27R-ON05-N-C	80	88.8	27	62	50	3.5	✓	8	
AFM40-080-Z09-A27R-ON05-N-C	80	88.8	27	62	50	3.5	✓	9	
AFM40-100-Z07-A32R-ON05-N-C	100	108.8	32	77	50	3.5	✓	7	
AFM40-100-Z09-A32R-ON05-N-C	100	108.8	32	77	50	3.5	✓	9	
AFM40-100-Z11-A32R-ON05-N-C	100	108.8	32	77	50	3.5	✓	11	
AFM40-125-Z07-A40R-ON05-N-C	125	133.8	40	90	63	3.5	✓	7	
AFM40-125-Z09-A40R-ON05-N-C	125	133.8	40	90	63	3.5	✓	9	
AFM40-125-Z14-A40R-ON05-N-C	125	133.8	40	90	63	3.5	✓	14	
AFM40-160-Z10-A40R-ON05-N	160	168.8	40	107	63	3.5	✗	10	

Dimension (mm)	Spare parts		
Cutter diameter	Screw	Wrench	Torque
⌀50-160			4.0Nm
	SP040090	DT-TP15	

Note: ✓ With internal coolant
✗ Without internal coolant

Product code	Dimension (mm)		P			M	K		N
	Corner radius	Wiper length	AP251U	AP351U	AC301P	AP403M	AC301K	AP251K	AW100K
ONHU 050408-MM3	0.8	-	●						
ONMU 050408-MM4	0.8	-	●	▲			▲	●	
ONHU 0504ZNR-MM3	0.8	1.4	●						

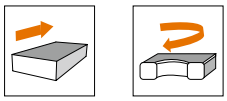
●: Stock available ▲: Stock available now but will be replaced in the future.

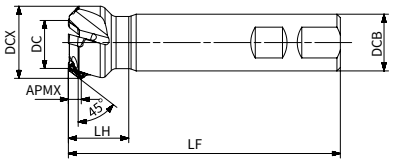
Materials				Cutting depth and feed					
				ON..0504..					
ISO	Material classification	Tensile strength (N/mm^2)	Hardness (HB)	ap		Geometry			
						MM3		MM4	
						fz			
				(mm)					
				min	max	min	max	min	max
P	Unalloyed steel	<600	<180	0.20	3.50	0.10	0.25	0.15	0.35
		<950	<280						
	Alloyed steel	700-950	200-280						
		950-1200	280-355						
		1200-1400	355-415						
M	Duplex stainless steel	778	230			0.08	0.20	0.10	0.25
	Austenitic stainless steel	675	200						
	Precipitation-hardening stainless steel	1013	300						
K	Grey cast iron	700	220			0.10	0.25	0.15	0.35
	Nodular cast iron	880	260						
	Malleable cast iron	800	250						
N	Aluminum	260	75			-	-	-	-
	Aluminum alloy	447	130						
S	Fe-based alloy	943	280			-	-	-	-
	Co-based alloy	1076	320						
	Ni-based alloy	1177	350						
	Ti-alloy	1262	370						
H	Hardened steel	-	50-60HRC			-	-	-	-
	Chilled cast iron	-	55HRC						

*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

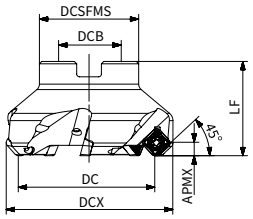
AFM45-SD09

45° Approaching angle face milling cutter

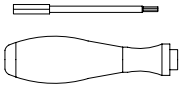




Product code	DC	DCX	DCB	LF	LH	APMX	Internal coolant	Z	Inserts
AFM45-016-Z02-W16R-SD09-C	16	25.2	16	90	25	5		2	SD..09T3..
AFM45-020-Z02-W20R-SD09-C	20	29.2	20	110	27	5		2	
AFM45-025-Z03-W25R-SD09-C	25	34	25	120	27	5		3	
AFM45-032-Z03-W32R-SD09-C	32	41	32	120	31	5		3	



Product code	DC	DCX	DCB	DCSFMS	LF	APMX	Internal coolant	Z	Inserts
AFM45-032-Z04-A16R-SD09-C	32	41.6	16	30	40	5		4	SD..09T3..
AFM45-040-Z05-A16R-SD09-C	40	49.6	16	35	40	5		5	
AFM45-050-Z05-A22R-SD09-C	50	59.6	22	42	40	5		5	
AFM45-050-Z06-A22R-SD09-C	50	59.6	22	42	40	5		6	
AFM45-063-Z05-A22R-SD09-C	63	72.6	22	42	40	5		5	
AFM45-063-Z07-A22R-SD09-C	63	72.6	22	42	40	5		7	
AFM45-080-Z06-A27R-SD09-C	80	89.6	27	42	50	5		6	
AFM45-080-Z09-A27R-SD09-C	80	89.6	27	42	50	5		9	
AFM45-100-Z07-A32R-SD09-C	100	109.6	32	80	50	5		7	
AFM45-100-Z11-A32R-SD09-C	100	109.6	32	80	50	5		11	
AFM45-125-Z08-A40R-SD09-C	125	134.6	40	87	63	5		8	

Dimension (mm)	Spare parts		
Cutter diameter	Screw	Wrench	Torque
⌀16-32			3.5Nm
	ST040075	DT-T15	
⌀40-125	SP040090	DT-TP15	

Note: With internal coolant
Without internal coolant

Product code	Dimension (mm)		P			M	K		N
	Corner radius	Wiper length	AP251U	AP351U	AC301P	AP403M	AC301K	AP251K	AW100K
SDMT 09T304EN-MM3	0.4	-	●	▲	▲		▲		
SDMT 09T308EN-MM3	0.8	-	●	▲			▲		
SDGT 09T3PDER-MR6	0.8	1.2	●	▲				●	

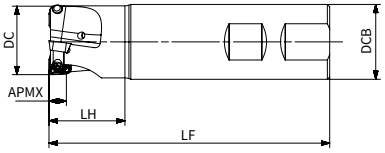
●: Stock available ▲: Stock available now but will be replaced in the future.

Materials				Cutting depth and feed			
				SD..09T3..			
ISO	Material classification	Tensile strength (N/mm^2)	Hardness (HB)	ap		MM3	
				(mm)			
				min	max	min	max
P	Unalloyed steel	<600	<180	0.20	5.00	0.08	0.30
		<950	<280				
	Alloyed steel	700-950	200-280			0.05	0.28
		950-1200	280-355				
		1200-1400	355-415				
M	Duplex stainless steel	778	230			0.05	0.25
	Austenitic stainless steel	675	200				
	Precipitation-hardening stainless steel	1013	300				
K	Grey cast iron	700	220			0.08	0.30
	Nodular cast iron	880	260				
	Malleable cast iron	800	250				
N	Aluminum	260	75			-	-
	Aluminum alloy	447	130				
S	Fe-based alloy	943	280			-	-
	Co-based alloy	1076	320				
	Ni-based alloy	1177	350				
	Ti-alloy	1262	370				
H	Hardened steel	-	50-60HRC			-	-
	Chilled cast iron	-	55HRC				

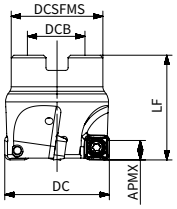
*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

AFM90-SD09

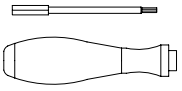
90° Approach angle face milling cutter



Product code	DC	DCB	LF	LH	APMX	Internal coolant	Z	Inserts
AFM90-025-Z02-W25R-SD09-C	25	25	120	27.7	6	✓	2	SD..09T3..
AFM90-032-Z03-W32R-SD09-C	32	32	120	32.5	6	✓	3	



Product code	DC	DCB	DCSFMS	LF	APMX	Internal coolant	Z	Inserts
AFM90-040-Z04-A16R-SD09-C	40	16	35	40	6	✓	4	SD..09T3..
AFM90-050-Z05-A22R-SD09-C	50	22	42	40	6	✓	5	
AFM90-063-Z06-A22R-SD09-C	63	22	48	40	6	✓	6	
AFM90-080-Z08-A27R-SD09-C	80	27	52	50	6	✓	8	
AFM90-100-Z10-A32R-SD09-C	100	32	80	50	6	✓	10	

Dimension (mm)	Spare parts		
Cutter diameter	Screw	Wrench	Torque
⌀25-32			3.5Nm
	ST040075	DT-T15	
⌀40-100	SP040090	DT-TP15	

Note: ✓ With internal coolant
✗ Without internal coolant

Product code	Dimension (mm)		P			M	K		N
	Corner radius	Wiper length	AP251U	AP351U	AC301P	AP403M	AC301K	AP251K	AW100K
SDMT 09T304EN-MM3	0.4	-	●	▲	▲		▲		
SDMT 09T308EN-MM3	0.8	-	●	▲			▲		
SDGT 09T3PDER-MR6	0.8	1.2	●	▲				●	

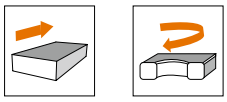
●: Stock available ▲: Stock available now but will be replaced in the future.

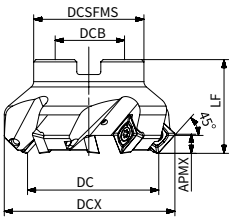
Materials				Cutting depth and feed					
				SD..09T3..					
				ap		Geometry			
						MR6		MM3	
						fz			
				(mm)					
ISO	Material classification	Tensile strength (N/mm^2)	Hardness (HB)	min	max	min	max	min	max
P	Unalloyed steel	<600	<180	0.20	6.00	0.10	0.35	0.08	0.30
		<950	<280						
	Alloyed steel	700-950	200-280			0.08	0.30	0.05	0.28
		950-1200	280-355						
		1200-1400	355-415						
M	Duplex stainless steel	778	230			-	-	0.05	0.25
	Austenitic stainless steel	675	200						
	Precipitation-hardening stainless steel	1013	300						
K	Grey cast iron	700	220			0.10	0.35	0.08	0.30
	Nodular cast iron	880	260						
	Malleable cast iron	800	250						
N	Aluminum	260	75			-	-	-	-
	Aluminum alloy	447	130						
S	Fe-based alloy	943	280			-	-	-	-
	Co-based alloy	1076	320						
	Ni-based alloy	1177	350						
	Ti-alloy	1262	370						
H	Hardened steel	-	50-60HRC			0.06	0.20	-	-
	Chilled cast iron	-	55HRC						

*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

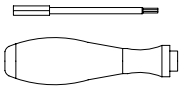
AFM45-SD12

45° Approaching angle face milling cutter





Product code	DC	DCX	DCB	DCSFMS	LF	APMX	Internal coolant	Z	Inserts
AFM45-050-Z04-A22R-SD12-C	50	62.7	22	42	40	7		4	SD..1204..
AFM45-063-Z05-A22R-SD12-C	63	75.7	22	48	40	7		5	
AFM45-080-Z06-A27R-SD12-C	80	92.7	27	52	50	7		6	
AFM45-100-Z07-A32R-SD12-C	100	112.7	32	80	50	7		7	
AFM45-125-Z08-A40R-SD12-C	125	137.7	40	87	63	7		8	

Dimension (mm)	Spare parts		
Cutter diameter	Screw	Wrench	Torque
⌀50-125			5.0Nm
	SP04511555	DT-TP20	

Note: With internal coolant
Without internal coolant

Product code	Dimension (mm)		P			M	K		N
	Corner radius	Wiper length	AP251U	AP351U	AC301P	AP403M	AC301K	AP251K	AW100K
SDMT 120408EN-MM4	0.8	-	●	▲			▲		
SDMT 120412EN-MM3	1.2	-	●		▲		▲		
SDKT 1204AEEN-MR2	-	1.5		▲				●	

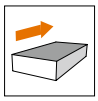
●: Stock available ▲: Stock available now but will be replaced in the future.

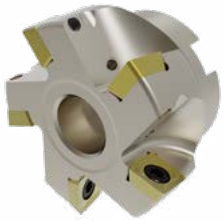
Materials				Cutting depth and feed							
				SD..1204..							
ISO	Material classification	Tensile strength (N/mm^2)	Hardness (HB)	ap		MR2		MM4		MM3	
				(mm)							
				min	max	min	max	min	max	min	max
P	Unalloyed steel	<600	<180	0.20	7.00	0.15	0.30	0.15	0.30	0.12	0.28
		<950	<280								
	Alloyed steel	700-950	200-280			0.15	0.25	0.15	0.25	0.10	0.25
		950-1200	280-355								
		1200-1400	355-415								
M	Duplex stainless steel	778	230			0.12	0.25	0.10	0.25	0.08	0.20
	Austenitic stainless steel	675	200								
	Precipitation-hardening stainless steel	1013	300								
K	Grey cast iron	700	220			0.10	0.22	0.10	0.25	0.12	0.28
	Nodular cast iron	880	260								
	Malleable cast iron	800	250								
N	Aluminum	260	75			-	-	-	-	-	-
	Aluminum alloy	447	130								
S	Fe-based alloy	943	280			-	-	-	-	0.08	0.20
	Co-based alloy	1076	320								
	Ni-based alloy	1177	350								
	Ti-alloy	1262	370								
H	Hardened steel	-	50-60HRC			-	-	-	-	-	-
	Chilled cast iron	-	55HRC								

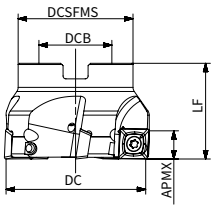
*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

AFM90-SD12

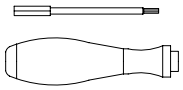
90° Approach angle face milling cutter







Product code	DC	DCB	DCSFMS	LF	APMX	Internal coolant	Z	Inserts
AFM90-050-Z04-A22R-SD12-C	50	22	42	40	9		4	SD..1204..
AFM90-063-Z05-A22R-SD12-C	63	22	48	40	9		5	
AFM90-080-Z06-A27R-SD12-C	80	27	52	50	9		6	
AFM90-100-Z08-A32R-SD12-C	100	32	80	50	9		8	
AFM90-125-Z10-A40R-SD12-C	125	40	87	63	9		10	

Dimension (mm)	Spare parts		
Cutter diameter	Screw	Wrench	Torque
⌀50-125			5.0Nm
	SP04511555	DT-TP20	

Note: With internal coolant

Without internal coolant

Product code	Dimension (mm)		P			M	K		N
	Corner radius	Wiper length	AP251U	AP351U	AC301P	AP403M	AC301K	AP251K	AW100K
SDMT 120408EN-MM4	0.8	-	●	▲		●	▲		
SDMT 120412EN-MM3	1.2	-	●		▲		▲		
SDKT 1204AEEN-MR2	-	1.5		▲				●	

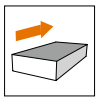
●: Stock available ▲: Stock available now but will be replaced in the future.

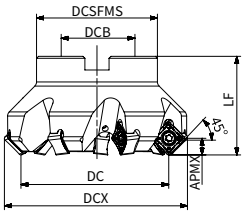
Materials				Cutting depth and feed					
				SD..1204..					
				ap		Geometry			
						MM4		MM3	
						fz			
				(mm)					
ISO	Material classification	Tensile strength (N/mm^2)	Hardness (HB)	min	max	min	max	min	max
P	Unalloyed steel	<600	<180	0.20	9.00	0.15	0.30	0.12	0.30
		<950	<280						
	Alloyed steel	700-950	200-280			0.15	0.25	0.10	0.25
		950-1200	280-355						
		1200-1400	355-415						
M	Duplex stainless steel	778	230			0.10	0.25	0.10	0.22
	Austenitic stainless steel	675	200						
	Precipitation-hardening stainless steel	1013	300						
K	Grey cast iron	700	220			0.10	0.25	0.12	0.30
	Nodular cast iron	880	260						
	Malleable cast iron	800	250						
N	Aluminum	260	75			-	-	-	-
	Aluminum alloy	447	130						
S	Fe-based alloy	943	280			-	-	0.10	0.20
	Co-based alloy	1076	320						
	Ni-based alloy	1177	350						
	Ti-alloy	1262	370						
H	Hardened steel	-	50-60HRC			0.08	0.25	-	-
	Chilled cast iron	-	55HRC						

*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

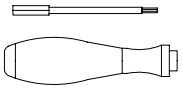
AFM45-SN12/SN19

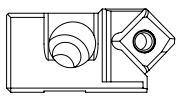
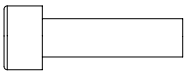
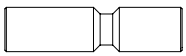
45° Approaching angle face milling cutter





Product code	DC	DCX	DCB	DCSFMS	LF	APMX	Internal coolant	Z	Inserts
AFM45-050-Z04-A22R-SN12-N-C	50	63.9	22	47	40	6.5	✓	4	SN..1206ANN.. SN..1206..
AFM45-050-Z06-A22R-SN12-N-C	50	63.9	22	47	40	6.5	✓	6	
AFM45-063-Z04-A22R-SN12-N-C	63	76.9	22	52	40	6.5	✓	4	
AFM45-063-Z06-A22R-SN12-N-C	63	76.9	22	52	40	6.5	✓	6	
AFM45-063-Z08-A22R-SN12-N-C	63	76.9	22	52	40	6.5	✓	8	
AFM45-080-Z04-A27R-SN12-N-C	80	93.9	27	62	50	6.5	✓	4	
AFM45-080-Z05-A27R-SN12-N-C	80	93.9	27	62	50	6.5	✓	5	
AFM45-080-Z07-A27R-SN12-N-C	80	93.9	27	62	50	6.5	✓	7	
AFM45-100-Z06-A32R-SN12-N-C	100	113.9	32	77	50	6.5	✓	6	
AFM45-100-Z08-A32R-SN12-N-C	100	113.9	32	77	50	6.5	✓	8	
AFM45-125-Z07-A40R-SN12-N-C	125	138.9	40	90	63	6.5	✓	7	
AFM45-125-Z08-A40R-SN12-N-C	125	138.9	40	90	63	6.5	✓	8	
AFM45-125-Z10-A40R-SN12-N-C	125	138.9	40	90	63	6.5	✓	10	
AFM45-160-Z10-A40R-SN12-N	160	173.9	40	107	63	6.5	✗	10	
AFM45-200-Z14-A60R-SN12-N	200	213.9	60	130	63	6.5	✗	14	
AFM45-250-Z16-A60R-SN12-N	250	263.9	60	180	63	6.5	✗	16	
AFM45-315-Z14-A60R-SN12-M	315	328.5	60	220	63	6.5	✗	14	
AFM45-160-Z08-A40R-SN19	160	181.3	40	107	63	11	✗	8	
AFM45-200-Z10-A60R-SN19	200	221.3	60	130	63	11	✗	10	SN..1909ANN..
AFM45-250-Z12-A60R-SN19	250	271.3	60	180	63	11	✗	12	

Dimension (mm)	Spare parts		
Cutter diameter	Screw	Wrench	Torque
⌀50-315(SN..1206ANN)			3.5Nm
	SP050120	DT-TP20	
⌀160-250(SN..1909ANN)	SP06018070	DT-TP25	5.0Nm

Cartridge	Cartridge screw	Cartridge screw wrench	Wedge	Wedge screw	Wedge screw wrench
					
C-SN1242-62-45	ACH622	LT-H5	AWG-6H-6	AWCH624	LT-H3

Note: ✓ With internal coolant
✗ Without internal coolant

Product code	Dimension (mm)		P			M	K		N
	Corner radius	Wiper length	AP251U	AP351U	AC301P	AP403M	AC301K	AP251K	AW100K
SNGX 1206ANN-MM3	0.4	1.8	●	▲	▲		▲	●	
SNGX 1206ANN-MM4	0.4	1.8	●	▲	▲	●	▲	●	
SNGX 1206ANN-MR6	0.4	1.8	●	▲	▲		▲	●	
SNGX 1206ANN-RR2	0.5	1.8	●	▲	▲		▲	●	
SNGX 1909ANN-MM3	0.4	2.9		▲					
SNGX 1909ANN-MR6	0.8	2.9		▲					
SNGX 120608-MM4	0.8	-	●	▲	▲		▲	●	
SNGX 120612-MM4	1.2	-	●						
SNMX 1206ANN-MM3	0.4	1.8	●	▲	▲		▲	●	
SNMX 1206ANN-MM4	0.4	1.8	●	▲	▲	●	▲	●	
SNMX 1206ANN-MR6	0.4	1.8	●	▲	▲		▲	●	
SNMX 120608-MM4	0.8	-	●	▲	▲		▲	●	
SNMX 120612-MM3	1.2	-	●	▲	▲		▲	●	
SNMX 120612-MM4	1.2	-	●	▲	▲		▲	●	
SNMX 120612R-MM4	1.2	-	●	▲	▲	●	▲	●	
SNMX 120612-MR6	1.2	-	●	▲	▲		▲	●	
SNMX 120612-RR2	1.2	-	●	▲	▲		▲	●	
SNMX 120620-MM4	2.0	-	●	▲	▲		▲	●	
SNMX 120620-RR2	2.0	-	●	▲	▲		▲	●	
SNHX 1206ANN-FM2	0.5	1.8							●
SNHX 1206ANN-W	1.2	6.7	●				▲		

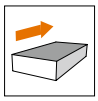
●: Stock available ▲: Stock available now but will be replaced in the future.

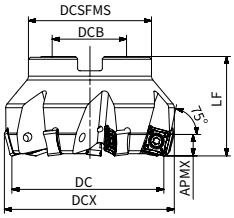
Materials				Cutting depth and feed											
				SN.. 1206..											
				ap		Geometry									
						MM3		MM4		MR6		RR2		FM2	
						fz									
						(mm)									
ISO	Material classification	Tensile strength (N/mm^2)	Hardness (HB)	min	max	min	max	min	max	min	max	min	max	min	max
P	Unalloyed steel	<600	<180	0.20	6.50	0.15	0.35	0.18	0.38	0.18	0.40	0.18	0.45	-	-
		<950	<280												
	Alloyed steel	700-950	200-280			0.12	0.32	0.15	0.35	0.15	0.38	0.15	0.38	-	-
		950-1200	280-355												
		1200-1400	355-415												
M	Duplex stainless steel	778	230			0.12	0.30	0.12	0.32	-	-	-	-	-	-
	Austenitic stainless steel	675	200												
	Precipitation-hardening stainless steel	1013	300												
K	Grey cast iron	700	220			0.15	0.35	0.18	0.38	0.18	0.40	0.18	0.45	-	-
	Nodular cast iron	880	260												
	Malleable cast iron	800	250												
N	Aluminum	260	75			-	-	-	-	-	-	-	-	0.15	0.35
	Aluminum alloy	447	130												
S	Fe-based alloy	943	280			0.10	0.25	0.12	0.28	-	-	-	-	-	-
	Co-based alloy	1076	320												
	Ni-based alloy	1177	350												
	Ti-alloy	1262	370												
H	Hardened steel	-	50-60HRC			-	-	-	-	-	-	-	-	-	-
	Chilled cast iron	-	55HRC												

*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

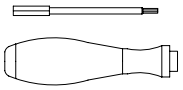
AFM75-SN12

75° Approaching angle face milling cutter





Product code	DC	DCX	DCB	DCSFMS	LF	APMX	Internal coolant	Z	Inserts
AFM75-050-Z04-A22R-SN12-N-C	50	56.4	22	42	40	8	✓	4	SN..1206ENN.. SN..1206..
AFM75-063-Z06-A22R-SN12-N-C	63	69.4	22	52	40	8	✓	6	
AFM75-080-Z07-A27R-SN12-N-C	80	86.4	27	62	50	8	✓	7	
AFM75-100-Z08-A32R-SN12-N-C	100	106.4	32	67	50	8	✓	8	
AFM75-125-Z08-A40R-SN12-N-C	125	131.4	40	90	63	8	✓	8	
AFM75-125-Z10-A40R-SN12-N-C	125	131.4	40	90	63	8	✓	10	
AFM75-160-Z10-A40R-SN12-N	160	166.4	40	107	63	8	✗	10	
AFM75-200-Z14-A60R-SN12-N	200	206.4	60	130	63	8	✗	14	
AFM75-250-Z16-A60R-SN12-N	250	256.4	60	180	63	8	✗	16	

Dimension (mm)	Spare parts		
Cutter diameter	Screw	Wrench	Torque
⌀50-250			3.5Nm
	SP050120	DT-TP20	

Note: ✓ With internal coolant
✗ Without internal coolant

Product code	Dimension (mm)		P			M	K		N
	Corner radius	Wiper length	AP251U	AP351U	AC301P	AP403M	AC301K	AP251K	AW100K
SNGX 1206ENN-MM3	0.8	1.2	●	▲	▲		▲	●	
SNGX 1206ENN-MM4	0.8	1.2	●	▲	▲		▲	●	
SNGX 1206ENN-MR6	0.8	1.2	●	▲	▲		▲	●	
SNGX 120608-MM4	0.8	-	●	▲	▲		▲	●	
SNGX 120612-MM4	1.2	-	●						
SNMX 1206ENN-MM4	0.8	1.2			▲			●	
SNMX 120608-MM4	0.8	-	●	▲	▲		▲	●	
SNMX 120612-MM3	1.2	-	●	▲	▲		▲	●	
SNMX 120612-MM4	1.2	-	●	▲	▲		▲	●	
SNMX 120612R-MM4	1.2	-	●	▲	▲	●	▲	●	
SNMX 120612-MR6	1.2	-	●	▲	▲		▲	●	
SNMX 120612-RR2	1.2	-	●	▲	▲		▲	●	
SNMX 120620-MM4	2.0	-	●	▲	▲		▲	●	
SNMX 120620-RR2	2.0	-	●	▲	▲		▲	●	
SNHX 1206ENN-W	0.6	1.2	●				▲		

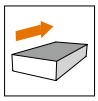
●: Stock available ▲: Stock available now but will be replaced in the future.

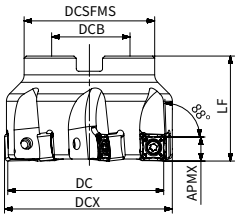
Materials				Cutting depth and feed									
				SN..1206..									
ISO	Material classification	Tensile strength (N/mm^2)	Hardness (HB)	ap		Geometry							
						MM3		MM4		MR6		RR2	
						fz							
				(mm)									
				min	max	min	max	min	max	min	max	min	max
P	Unalloyed steel	<600	<180	0.20	8.00	0.12	0.32	0.19	0.35	0.15	0.38	0.18	0.40
		<950	<280										
	Alloyed steel	700-950	200-280			0.10	0.30	0.12	0.32	0.10	0.35	0.15	0.35
		950-1200	280-355										
		1200-1400	355-415										
M	Duplex stainless steel	778	230			0.10	0.28	0.10	0.30	-	-	-	-
	Austenitic stainless steel	675	200										
	Precipitation-hardening stainless steel	1013	300										
K	Grey cast iron	700	220			0.12	0.32	0.15	0.35	0.12	0.35	0.18	0.40
	Nodular cast iron	880	260										
	Malleable cast iron	800	250										
N	Aluminum	260	75			-	-	-	-	-	-	-	-
	Aluminum alloy	447	130										
S	Fe-based alloy	943	280			0.10	0.22	0.10	0.25	-	-	-	-
	Co-based alloy	1076	320										
	Ni-based alloy	1177	350										
	Ti-alloy	1262	370										
H	Hardened steel	-	50-60HRC			-	-	-	-	-	-	-	-
	Chilled cast iron	-	55HRC										

*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

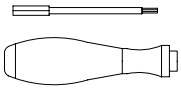
AFM88-SN12

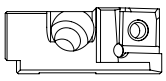
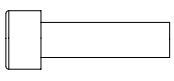
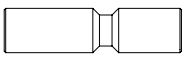
88° Approaching angle face milling cutter





Product code	DC	DCX	DCB	DCSFMS	LF	APMX	Internal coolant	Z	Inserts
AFM88-050-Z04-A22R-SN12-N-C	50	51.2	22	42	40	10	✓	4	SN..1206ZNN.. SN..1206..
AFM88-063-Z04-A22R-SN12-N-C	63	64.2	22	52	40	10	✓	4	
AFM88-063-Z06-A22R-SN12-N-C	63	64.2	22	62	40	10	✓	6	
AFM88-080-Z04-A27R-SN12-N-C	80	81.2	27	62	50	10	✓	4	
AFM88-080-Z07-A27R-SN12-N-C	80	81.2	27	62	50	10	✓	7	
AFM88-100-Z08-A32R-SN12-N-C	100	101.2	32	77	50	10	✓	8	
AFM88-100-Z11-A32R-SN12-N-C	100	101.2	32	77	50	10	✓	11	
AFM88-125-Z10-A40R-SN12-N-C	125	126.2	40	90	63	10	✓	10	
AFM88-125-Z13-A40R-SN12-N-C	125	126.2	40	90	63	10	✓	13	
AFM88-160-Z12-A40R-SN12-N	160	161.2	40	108	63	10	✗	12	
AFM88-200-Z14-A60R-SN12-N	200	201.2	60	130	63	10	✗	14	
AFM88-250-Z12-A60R-SN12-M	250	250.9	60	180	63	10	✗	12	
AFM88-315-Z14-A60R-SN12-M	315	315.9	60	220	63	10	✗	14	

Dimension (mm)	Spare parts		
Cutter diameter	Screw	Wrench	Torque
⌀50-315			3.5Nm
	SP050120	DT-TP20	

Cartridge	Cartridge screw	Cartridge screw wrench	Wedge	Wedge screw	Wedge screw wrench
					
C-SN1242-62-88	ACH622	LT-H5	AWG-6H-6	AWCH624	LT-H3

Note: ✓ With internal coolant
✗ Without internal coolant

Product code	Dimension (mm)		P			M	K		N
	Corner radius	Wiper length	AP251U	AP351U	AC301P	AP403M	AC301K	AP251K	AW100K
SNGX 1206ZNN-MM3	0.8	1.2	●	▲	▲		▲	●	
SNGX 1206ZNN-MM4	0.8	1.2	●	▲	▲	●	▲	●	
SNGX 1206ZNN-MR6	0.8	1.2	●	▲	▲		▲	●	
SNGX 120608-MM4	0.8	-	●	▲	▲		▲	●	
SNGX 120612-MM4	1.2	-	●						
SNMX 120608-MM4	0.8	-	●	▲	▲		▲	●	
SNMX 120612-MM3	1.2	-	●	▲	▲		▲	●	
SNMX 120612-MM4	1.2	-	●	▲	▲		▲	●	
SNMX 120612R-MM4	1.2	-	●	▲	▲	●	▲	●	
SNMX 120612-MR6	1.2	-	●	▲	▲		▲	●	
SNMX 120612-RR2	1.2	-	●	▲	▲		▲	●	
SNMX 120620-MM4	2.0	-	●	▲	▲		▲	●	
SNMX 120620-RR2	2.0	-	●	▲	▲		▲	●	
SNHX 1206ZNN-FM2	0.8	1.2							●
SNHX 1206ZNN-W	1.0	4.4	●				▲		

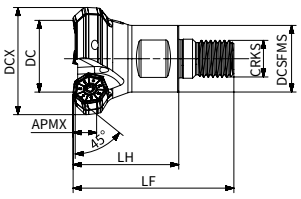
●: Stock available ▲: Stock available now but will be replaced in the future.

Materials				Cutting depth and feed											
				SN.. 1206..											
				ap		Geometry									
						MM3		MM4		MR6		RR2		FM2	
						fz									
						(mm)									
ISO	Material classification	Tensile strength (N/mm^2)	Hardness (HB)	min	max	min	max	min	max	min	max	min	max	min	max
P	Unalloyed steel	<600	<180	0.20	10.00	0.12	0.32	0.19	0.35	0.15	0.38	0.18	0.40	-	-
		<950	<280												
	Alloyed steel	700-950	200-280			0.10	0.30	0.12	0.32	0.10	0.35	0.15	0.35	-	-
		950-1200	280-355												
		1200-1400	355-415												
M	Duplex stainless steel	778	230			0.10	0.28	0.10	0.30	-	-	-	-	-	-
	Austenitic stainless steel	675	200												
	Precipitation-hardening stainless steel	1013	300												
K	Grey cast iron	700	220			0.12	0.32	0.15	0.35	0.12	0.35	0.18	0.40	-	-
	Nodular cast iron	880	260												
	Malleable cast iron	800	250												
N	Aluminum	260	75			-	-	-	-	-	-	-	-	0.12	0.32
	Aluminum alloy	447	130												
S	Fe-based alloy	943	280			0.10	0.22	0.10	0.25	-	-	-	-	-	-
	Co-based alloy	1076	320												
	Ni-based alloy	1177	350												
	Ti-alloy	1262	370												
H	Hardened steel	-	50-60HRC			-	-	-	-	-	-	-	-	-	-
	Chilled cast iron	-	55HRC												

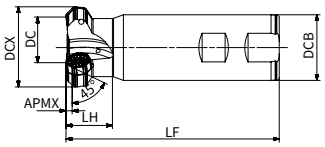
*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

AFM45-XN07

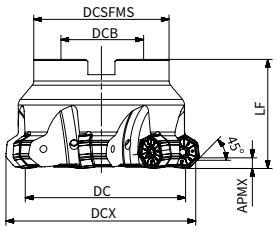
45° Approaching angle face milling cutter



Product code	DC	DCX	CRKS	DCSFMS	LF	LH	APMX	Internal coolant	Z	Inserts
AFM45-040-Z03-M16R-XN07-C	40	49.3	M16	29	70	43	4.4		3	XN..0705..



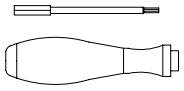
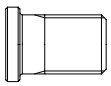
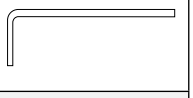
Product code	DC	DCX	DCB	LF	LH	APMX	Internal coolant	Z	Inserts
AFM45-040-Z03-W40R-XN07-C	40	49.8	40	130	28.3	4.4		3	XN..0705..



Product code	DC	DCX	DCB	DCSFMS	LF	APMX	Internal coolant	Z	Inserts
AFM45-040-Z03-A16R-XN07-C	40	49.7	16	35	40	4.4		3	XN..0705..
AFM45-050-Z04-A22R-XN07-C	50	59.7	22	42	40	4.4		4	
AFM45-050-Z05-A22R-XN07-C	50	59.7	22	42	40	4.4		5	
AFM45-063-Z05-A22R-XN07-C	63	72.7	22	48	40	4.4		5	
AFM45-063-Z06-A22R-XN07-C	63	72.7	22	48	40	4.4		6	
AFM45-080-Z06-A27R-XN07-C	80	89.7	27	62	50	4.4		6	
AFM45-080-Z07-A27R-XN07-C	80	89.7	27	62	50	4.4		7	
AFM45-100-Z07-A32R-XN07-C	100	109.7	32	77	50	4.4		7	
AFM45-100-Z08-A32R-XN07-C	100	109.7	32	77	50	4.4		8	
AFM45-125-Z08-A40R-XN07-C	125	134.7	40	87	63	4.4		8	
AFM45-125-Z10-A40R-XN07-C	125	134.7	40	87	63	4.4		10	
AFM45-160-Z09-A40R-XN07	160	169.7	40	107	63	4.4		9	
AFM45-160-Z12-A40R-XN07	160	169.7	40	107	63	4.4		12	
AFM45-200-Z14-A60R-XN07	200	209.3	60	130	63	4.4		14	
AFM45-250-Z14-A60R-XN07-S	250	259.6	60	180	63	4.4		14	

Note: With internal coolant

Without internal coolant

Dimension (mm)	Spare parts					
Cutter diameter	Screw	Wrench	Shim	Shim screw	Shim screw wrench	Torque
⌀40-250						3.5Nm
	SP035120H	DT-TP15	S-XN07030	SS050085F	LT-H3.5	

Product code	Dimension (mm)		P			M	K		N
	corner radius	Wiper length	AP251U	AP351U	AC301P	AP403M	AC301K	AP251K	AW100K
XNGU 0705ANN-MM3	0.8	1.1	●	▲			▲		
XNGU 0705ANN-MM4	0.8	1.1	●				▲		
XNMU 0705ANN-MM4	0.8	1.1	●	▲	▲		▲	●	
XNMU 0705ANN-MR6	0.8	1.1	●	▲			▲	●	
XNMU 070508-MM4	0.8	-	●	▲		●	▲	●	
XNGX 0705ANN-W	1.0	6	●				▲		

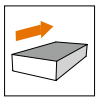
●: Stock available ▲: Stock available now but will be replaced in the future.

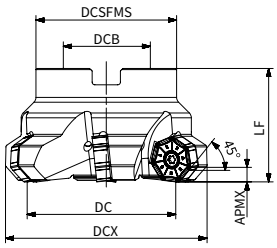
Materials				Cutting depth and feed							
				XN.. 0705..							
				ap		Geometry					
						MM3		MM4		MR6	
						fz					
				(mm)							
ISO	Material classification	Tensile strength (N/mm^2)	Hardness (HB)	min	max	min	max	min	max	min	max
P	Unalloyed steel	<600	<180	0.20	4.40	0.15	0.35	0.18	0.38	0.18	0.40
		<950	<280								
	Alloyed steel	700-950	200-280			0.12	0.32	0.15	0.35	0.15	0.38
		950-1200	280-355								
		1200-1400	355-415								
M	Duplex stainless steel	778	230			0.12	0.30	0.12	0.32	-	-
	Austenitic stainless steel	675	200								
	Precipitation-hardening stainless steel	1013	300								
K	Grey cast iron	700	220			0.15	0.35	0.18	0.38	0.18	0.40
	Nodular cast iron	880	260								
	Malleable cast iron	800	250								
N	Aluminum	260	75			-	-	-	-	-	-
	Aluminum alloy	447	130								
S	Fe-based alloy	943	280			0.10	0.25	0.12	0.28	-	-
	Co-based alloy	1076	320								
	Ni-based alloy	1177	350								
	Ti-alloy	1262	370								
H	Hardened steel	-	50-60HRC			-	-	-	-	-	-
	Chilled cast iron	-	55HRC								

*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

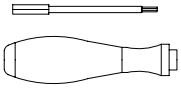
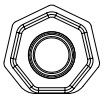
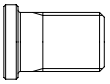
AFM45-XN09

45° Approaching angle face milling cutter



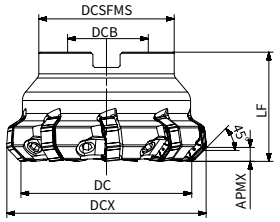


Product code	DC	DCX	DCB	DCSFMS	LF	APMX	Internal coolant	Z	Inserts
AFM45-063-Z05-A22R-XN09-C	63	75.2	22	48	40	6	✓	5	XN..0906..
AFM45-080-Z06-A27R-XN09-C	80	92.2	27	62	50	6	✓	6	
AFM45-100-Z07-A32R-XN09-C	100	112.2	32	80	50	6	✓	7	
AFM45-100-Z08-A32R-XN09-C	100	112.2	32	80	50	6	✓	8	
AFM45-125-Z08-A40R-XN09-C	125	137.2	40	87	63	6	✓	8	
AFM45-125-Z10-A40R-XN09-C	125	137.2	40	87	63	6	✓	10	
AFM45-160-Z09-A40R-XN09	160	172.2	40	107	63	6	✗	9	
AFM45-160-Z11-A40R-XN09	160	172.2	40	107	63	6	✗	11	
AFM45-200-Z12-A60R-XN09	200	212.2	60	130	63	6	✗	12	
AFM45-250-Z12-A60R-XN09-S	250	262.8	60	180	63	6	✗	12	
AFM45-315-Z14-A60R-XN09-S	315	328.2	60	240	63	6	✗	14	

Dimension (mm)	Spare parts					
Cutter diameter	Screw	Wrench	Shim	Shim screw	Shim screw wrench	Torque
⌀63-315						5.0Nm
	SP050130	DT-TP20	S-XN09040	SS080100F	LT-H5	

AFM45-XN09-W

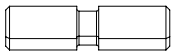
45° Wedge clamping face milling cutter



Product code	DC	DCX	DCB	DCSFMS	LF	APMX	Internal coolant	Z	Inserts
AFM45-080-Z09-A27R-XN09-W	80	92.7	27	62	50	6	✗	9	XN..0906..
AFM45-100-Z12-A32R-XN09-W	100	112.7	32	80	50	6	✗	12	
AFM45-125-Z16-A40R-XN09-W	125	137.7	40	87	63	6	✗	16	
AFM45-125-Z16-A40L-XN09-W	125	137.7	40	87	63	6	✗	16	
AFM45-160-Z20-A40R-XN09-W	160	172.7	40	107	63	6	✗	20	
AFM45-160-Z20-A40L-XN09-W	160	172.7	40	107	63	6	✗	20	
AFM45-200-Z26-A60R-XN09-W	200	212.7	60	130	63	6	✗	26	
AFM45-200-Z26-A60L-XN09-W	200	212.7	60	130	63	6	✗	26	
AFM45-250-Z30-A60R-XN09-W	250	262.7	60	170	63	6	✗	30	
AFM45-315-Z39-A60R-XN09-W	315	327.7	60	250	63	6	✗	39	

Note: ✓ With internal coolant

✗ Without internal coolant

Dimension (mm)	Spare parts			
Cutter diameter	Wedge	Screw	Wrench	Touque
⌀80-315				7.0Nm
	AWG-8H	WD080320F	LT-H4	

Product code	Dimension (mm)		P			M	K		N
	Corner radius	Wiper length	AP251U	AP351U	AC301P	AP403M	AC301K	AP251K	AW100K
XNGU 0906ANN-MM3	0.8	1.4	●	▲	▲		▲		
XNGU 0906ANN-MM4	0.8	1.4	●	▲	▲		▲		
XNMU 0906ANN-MR6	0.8	1.4	●				▲	●	
XNMF 0906ANN-MR6	0.8	1.4					▲	●	
XNMU 090612-MM4	1.2	-	●	▲		●	▲	●	
XNGX 0906ANN-W	1.0	7.5	●				▲		

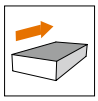
●: Stock available ▲: Stock available now but will be replaced in the future.

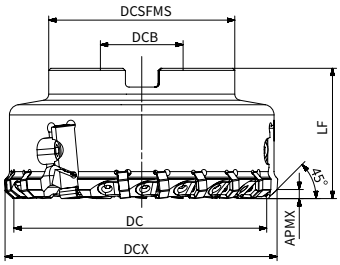
Materials				Cutting depth and feed							
				XN..0906..							
ISO	Material classification	Tensile strength (N/mm^2)	Hardness (HB)	ap		Geometry					
						MM3		MM4		MR6	
						fz					
				(mm)							
				min	max	min	max	min	max	min	max
P	Unalloyed steel	<600	<180	0.20	6.00	0.15	0.35	0.18	0.38	0.18	0.40
		<950	<280								
	Alloyed steel	700-950	200-280			0.12	0.32	0.15	0.35	0.15	0.38
		950-1200	280-355								
		1200-1400	355-415								
M	Duplex stainless steel	778	230			0.12	0.30	0.12	0.32	-	-
	Austenitic stainless steel	675	200								
	Precipitation-hardening stainless steel	1013	300								
K	Grey cast iron	700	220			0.15	0.35	0.18	0.38	0.18	0.40
	Nodular cast iron	880	260								
	Malleable cast iron	800	250								
N	Aluminum	260	75			-	-	-	-	-	-
	Aluminum alloy	447	130								
S	Fe-based alloy	943	280			0.10	0.25	0.12	0.28	-	-
	Co-based alloy	1076	320								
	Ni-based alloy	1177	350								
	Ti-alloy	1262	370								
H	Hardened steel	-	50-60HRC			-	-	-	-	-	-
	Chilled cast iron	-	55HRC								

*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

AFF40-LN12/LN15

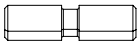
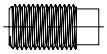
Cast iron finishing milling cutter

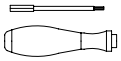




Product code	DC	DCX	DCB	DCSFMS	LF	APMX	Internal coolant	*Z	Number of Wiper insert	Inserts
AFF40-080-Z08-A27R-LN12	80	88.4	27	65	50	0.5		8+2	2	ONHF 050408-MM3 LNHQ 120408FN-W
AFF40-100-Z10-A32R-LN12	100	108.4	32	80	50	0.5		10+2	2	
AFF40-125-Z15-A40R-LN15	125	133.4	40	90	63	0.5		15+3	3	ONHF 050408-MM3 LNHQ 150416FN-W
AFF40-160-Z18-A40R-LN15	160	168.4	40	120	63	0.5		18+3	3	
AFF40-200-Z24-A60R-LN15	200	208.4	60	160	63	0.5		24+3	3	
AFF40-250-Z30-A60R-LN15	250	258.4	60	200	63	0.5		30+3	3	

*means 8pcs rough inserts+2pcs finish inserts

Dimension (mm)	Spare parts				
Cutter diameter	Wedge	Wedge locking screw	Wiper insert locking screw	Wiper insert adjusting screw	Wiper cartridge locking screw
∅80-250					
	AWG-6H-13B	WD060200	SP040085H	AH050100F	SH060250

Dimension (mm)	Spare parts					
Cutter diameter	Wedge screw wrench	Wiper insert screw wrench	Wiper insert adjusting screw wrench	Wiper insert cartridge locking screw wrench	Wiper cartridge	
∅80-250						
	LT-H3	DT-TP10	LT-H2.5	LT-H5	∅80-100	∅125-250
					C-LN1235-2545	C-LN1535-2545

Note: With internal coolant

Without internal coolant

Product code	Dimension (mm)		P		M	K		H
	Corner radius	Wiper length	AP251U	AP351U	AP403M	AC301K	AP251K	AP151H
ONHF 050408-MM3	0.8	-						●
LNHQ 120408FN-W	0.8	-						●
LNHQ 150416FN-W	1.6	-						●

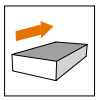
●: Stock available ▲: Stock available now but will be replaced in the future.

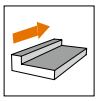
Materials				Cutting depth and feed			
ISO	Material classification	Tensile strength (N/mm^2)	Hardness (HB)	ONHF..05 + LNHQ..12/15			
				ap		Geometry	
						MM3 + W	
						fz	
				(mm)			
				min	max	min	max
K	Grey cast iron	700	220	0.20	0.50	0.08	0.25
	Nodular cast iron	880	260				
	Malleable cast iron	800	250				

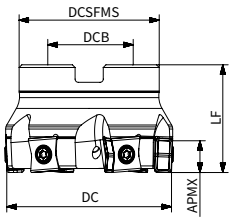
*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

ASM90-LN12

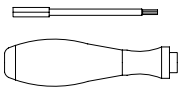
Square shoulder milling cutter







Product code	DC	DCB	DCSFMS	LF	APMX	Internal coolant	Z	Inserts
ASM90-063-Z06-A22R-LN12-C	63	22	52	40	5	✓	6	LN..1206..
ASM90-063-Z06-A22L-LN12-C	63	22	52	40	5	✓	6	
ASM90-063-Z08-A22R-LN12	63	22	52	40	5	✗	8	
ASM90-063-Z08-A22L-LN12	63	22	52	40	5	✗	8	
ASM90-080-Z08-A27R-LN12-C	80	27	62	50	5	✓	8	
ASM90-080-Z08-A27L-LN12-C	80	27	62	50	5	✓	8	
ASM90-080-Z10-A27R-LN12	80	27	62	50	5	✗	10	
ASM90-080-Z10-A27L-LN12	80	27	62	50	5	✗	10	
ASM90-100-Z09-A32R-LN12	100	32	78	50	5	✗	9	
ASM90-100-Z09-A32L-LN12	100	32	78	50	5	✗	9	
ASM90-100-Z13-A32R-LN12	100	32	78	50	5	✗	13	
ASM90-100-Z13-A32L-LN12	100	32	78	50	5	✗	13	
ASM90-125-Z10-A40R-LN12	125	40	90	63	5	✗	10	
ASM90-125-Z10-A40L-LN12	125	40	90	63	5	✗	10	
ASM90-125-Z16-A40R-LN12	125	40	90	63	5	✗	16	
ASM90-125-Z16-A40L-LN12	125	40	90	63	5	✗	16	
ASM90-160-Z13-A40R-LN12	160	40	107	63	5	✗	13	
ASM90-160-Z13-A40L-LN12	160	40	107	63	5	✗	13	
ASM90-160-Z21-A40R-LN12	160	40	107	63	5	✗	21	
ASM90-160-Z21-A40L-LN12	160	40	107	63	5	✗	21	
ASM90-200-Z16-A60R-LN12	200	60	130	63	5	✗	16	
ASM90-200-Z16-A60L-LN12	200	60	130	63	5	✗	16	
ASM90-200-Z26-A60R-LN12	200	60	130	63	5	✗	26	
ASM90-200-Z26-A60L-LN12	200	60	130	63	5	✗	26	
ASM90-250-Z20-A60R-LN12	250	60	180	63	5	✗	20	
ASM90-250-Z20-A60L-LN12	250	60	180	63	5	✗	20	
ASM90-250-Z32-A60R-LN12	250	60	180	63	5	✗	32	
ASM90-250-Z32-A60L-LN12	250	60	180	63	5	✗	32	

Dimension (mm)	Spare parts		
Cutter diameter	Screw	Wrench	Torque
⌀63-250			3.5Nm
	SP040112	DT-TP15	

Note: ✓ With internal coolant
✗ Without internal coolant

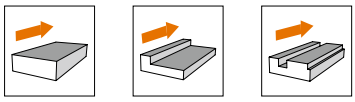
Product code	Dimension (mm)		P			M	K		N
	Corner radius	Wiper length	AP251U	AP351U	AC301P	AP403M	AC151K	AP251K	AW100K
LNET 1206-MM4	0.8	2.5	●			●	●	●	

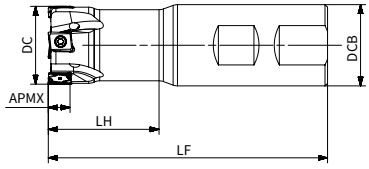
●: Stock available ▲: Stock available now but will be replaced in the future.

Materials				Cutting depth and feed			
				LN..1206..			
ISO	Material classification	Tensile strength (N/mm^2)	Hardness (HB)	ap		MM4	
				(mm)			
				min	max	min	max
P	Unalloyed steel	<600	<180	0.20	5.00	0.08	0.35
		<950	<280				
	Alloyed steel	700-950	200-280			0.08	0.30
		950-1200	280-355				
		1200-1400	355-415				
M	Duplex stainless steel	778	230			0.05	0.25
	Austenitic stainless steel	675	200				
	Precipitation-hardening stainless steel	1013	300				
K	Grey cast iron	700	220			0.10	0.35
	Nodular cast iron	880	260				
	Malleable cast iron	800	250				
N	Aluminum	260	75			-	-
	Aluminum alloy	447	130				
S	Fe-based alloy	943	280			0.05	0.20
	Co-based alloy	1076	320				
	Ni-based alloy	1177	350				
	Ti-alloy	1262	370				
H	Hardened steel	-	50-60HRC			-	-
	Chilled cast iron	-	55HRC				

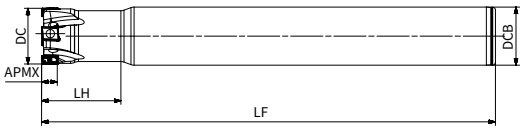
*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

ASM90-LN09
Square shoulder milling cutter

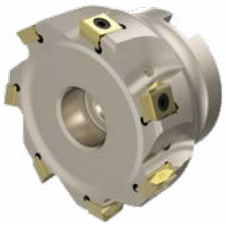


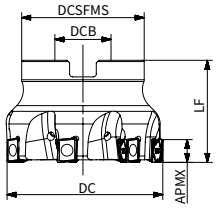


Product code	DC	DCB	LF	LH	APMX	Internal coolant	Z	Inserts
ASM90-025-Z03-W25R-LN09-C	25	25	100	39	8	✓	3	LNHU 0904..
ASM90-025-Z04-W25R-LN09-C	25	25	100	39	8	✓	4	
ASM90-032-Z04-W32R-LN09-C	32	32	110	44	8	✓	4	
ASM90-032-Z05-W32R-LN09-C	32	32	110	44	8	✓	5	
ASM90-040-Z04-W32R-LN09-C	40	32	110	25	8	✓	4	
ASM90-040-Z06-W32R-LN09-C	40	32	110	25	8	✓	6	



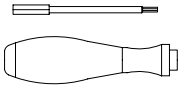
Product code	DC	DCB	LF	LH	APMX	Internal coolant	Z	Inserts
ASM90-020-Z02-C20R-LN09-L110	20	20	110	30	8	✗	2	LNHU 0904..
ASM90-020-Z03-C20R-LN09-L110	20	20	110	30	8	✗	3	
ASM90-021-Z02-C20R-LN09-L200	21	20	200	30	8	✗	2	
ASM90-025-Z03-C25R-LN09-L200-C	25	25	200	34	8	✓	3	
ASM90-025-Z04-C25R-LN09-L200-C	25	25	200	34	8	✓	4	
ASM90-026-Z03-C25R-LN09-L200-C	26	25	200	34	8	✓	3	
ASM90-028-Z03-C25R-LN09-L110-C	28	25	110	34	8	✓	3	
ASM90-032-Z04-C32R-LN09-L250-C	32	32	250	45	8	✓	4	
ASM90-032-Z05-C32R-LN09-L250-C	32	32	250	45	8	✓	5	
ASM90-033-Z04-C32R-LN09-L250-C	33	32	250	45	8	✓	4	





Product code	DC	DCB	LF	DCSFMS	APMX	Internal coolant	Z	Inserts
ASM90-040-Z04-A16R-LN09-C	40	16	40	35	8	✓	4	LNHU 0904..
ASM90-040-Z06-A16R-LN09-C	40	16	40	35	8	✓	6	
ASM90-050-Z05-A22R-LN09-C	50	22	40	42	8	✓	5	
ASM90-050-Z07-A22R-LN09-C	50	22	40	42	8	✓	7	
ASM90-063-Z07-A22R-LN09-C	63	22	40	48	8	✓	7	
ASM90-063-Z10-A22R-LN09-C	63	22	40	48	8	✓	10	
ASM90-080-Z09-A27R-LN09-C	80	27	50	62	8	✓	9	
ASM90-080-Z13-A27R-LN09-C	80	27	50	62	8	✓	13	

Note: ✓ With internal coolant
✗ Without internal coolant

Dimension (mm)	Spare parts		
Cutter diameter	Screw	Wrench	Torque
⌀20-80			1.8Nm
	SP030083	DT-TP09	

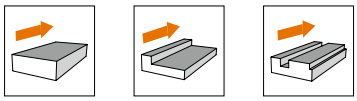
Product code	Dimension (mm)		P			M	K		N
	Corner radius	Wiper length	AP251U	AP351U	AP351M	AP403M	AC301K	AP251K	AW100K
LNHU 090404ER-FM2	0.4	1.85							●
LNHU 090404ER-MM3	0.4	1.85		▲		●			
LNHU 090404ER-MR2	0.4	1.85	●	▲		●	▲	●	
LNHU 090404ER-MM4	0.4	1.85	●		●	●		●	
LNHU 090408ER-MM4	0.8	1.3	●		●	●		●	
LNHU 090408ER-MR2	0.8	1.3	●	▲		●	▲	●	
LNHU 090408ER-MM3	0.8	1.3	●		●	●		●	
LNHU 090412ER-MR2	1.2	1.0	●			●	▲		
LNHU 090416ER-MR2	1.6	0.65	●			●	▲		
LNHU 090420ER-MR2	2.0	0.65	●			●	▲		
LNHU 0904PDER-W	0.4	3.6	●				▲		

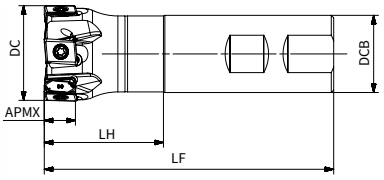
●: Stock available ▲: Stock available now but will be replaced in the future.

Materials				Cutting depth and feed							
				LNHU 0904..							
ISO	Material classification	Tensile strength (N/mm^2)	Hardness (HB)	ap		Geometry					
						MR2		MM4		FM2	
						fz					
				(mm)							
				min	max	min	max	min	max	min	max
P	Unalloyed steel	<600	<180	0.20	8.00	0.08	0.28	0.08	0.25	-	-
		<950	<280								
	Alloyed steel	700-950	200-280			0.06	0.22	0.06	0.20	-	-
		950-1200	280-355								
		1200-1400	355-415								
M	Duplex stainless steel	778	230			0.06	0.22	0.06	0.20	-	-
	Austenitic stainless steel	675	200								
	Precipitation-hardening stainless steel	1013	300								
K	Grey cast iron	700	220			0.08	0.30	0.08	0.28	-	-
	Nodular cast iron	880	260								
	Malleable cast iron	800	250								
N	Aluminum	260	75			-	-	-	-	0.06	0.25
	Aluminum alloy	447	130								
S	Fe-based alloy	943	280			-	-	0.08	0.15	-	-
	Co-based alloy	1076	320								
	Ni-based alloy	1177	350								
	Ti-alloy	1262	370								
H	Hardened steel	-	50-60HRC			-	-	-	-	-	-
	Chilled cast iron	-	55HRC								

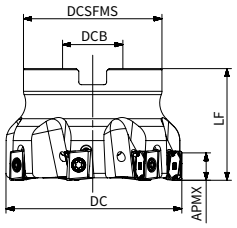
*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

ASM90-LN13
Square shoulder milling cutter

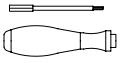
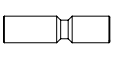
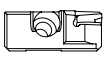
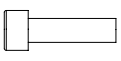




Product code	DC	DCB	LF	LH	APMX	Internal coolant	Z	Inserts
ASM90-040-Z05-W32R-LN13-C	40	32	120	49	12	✓	5	LNHU 1306..



Product code	DC	DCB	LF	DCSFMS	APMX	Internal coolant	Z	Inserts
ASM90-040-Z04-A16R-LN13-C	40	16	40	35	12	✓	4	
ASM90-040-Z05-A16R-LN13-C	40	16	40	35	12	✓	5	
ASM90-050-Z05-A22R-LN13-C	50	22	40	42	12	✓	5	
ASM90-050-Z06-A22R-LN13-C	50	22	40	42	12	✓	6	
ASM90-063-Z04-A22R-LN13-C	63	22	40	48	12	✓	4	
ASM90-063-Z06-A22R-LN13-C	63	22	40	48	12	✓	6	
ASM90-063-Z08-A22R-LN13-C	63	22	40	48	12	✓	8	
ASM90-080-Z05-A27R-LN13-C	80	27	50	62	12	✓	5	
ASM90-080-Z07-A27R-LN13-C	80	27	50	62	12	✓	7	
ASM90-080-Z10-A27R-LN13-C	80	27	50	62	12	✓	10	
ASM90-100-Z07-A32R-LN13-C	100	32	50	80	12	✓	7	LNHU 1306..
ASM90-100-Z09-A32R-LN13-C	100	32	50	80	12	✓	9	
ASM90-100-Z13-A32R-LN13-C	100	32	50	80	12	✓	13	
ASM90-125-Z09-A40R-LN13-C	125	40	63	87	12	✓	9	
ASM90-125-Z11-A40R-LN13-C	125	40	63	87	12	✓	11	
ASM90-125-Z16-A40R-LN13-C	125	40	63	87	12	✓	16	
ASM90-160-Z09-A40R-LN13	160	40	63	107	12	✗	9	
ASM90-160-Z13-A40R-LN13	160	40	63	107	12	✗	13	
ASM90-200-Z12-A60R-LN13	200	60	63	140	12	✗	12	
ASM90-250-Z12-A60R-LN13-M	250	60	63	180	12	✗	12	
ASM90-315-Z14-A60R-LN13-M	315	60	63	220	12	✗	14	

Dimension (mm)	Spare parts								
Cutter diameter	Screw	Wrench	Wedge	Wedge wrench	Wedge screw	Cartridge	Cartridge wrench	Cartridg escrew	Torque
⌀40-315									3.5Nm
	SP040115	DT-TP15	AWG-6H-6	LT-H3	AWCH624	C-LN1342-62-90	LT-H5	ACH622	

Note: ✓ With internal coolant
✗ Without internal coolant

Product code	Dimension (mm)		P			M	K		N
	Corner radius	Wiper length	AP251U	AP351U	AP351M	AP403M	AC301K	AP251K	AW100K
LNHU 130608ER-FM2	0.8	2.7							●
LNHU 130608ER-MM3	0.8	2.7		▲		●			
LNHU 130608ER-MM4	0.8	2.7	●		●	●		●	
LNHU 130608ER-MR2	0.8	2.7	●	▲	●	●	▲	●	
LNHU 130612ER-MM4	1.2	2.3	●		●	●		●	
LNHU 130612ER-MR2	1.2	2.3	●	▲	●	●	▲		
LNHU 130616ER-MR2	1.6	1.9	●	▲	●	●	▲	●	
LNHU 130620ER-MR2	2.0	1.5	●	▲	●	●			
LNHU 130624ER-MR2	2.4	1.0		▲	●	●			
LNHU 130631ER-MR2	3.1	0.4		▲	●	●	▲		
LNHU 1306PDR-W	0.8	5.6	●				▲		

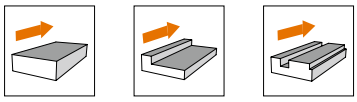
●: Stock available ▲: Stock available now but will be replaced in the future.

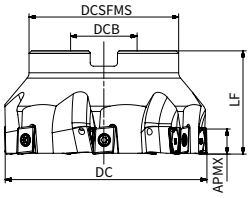
Materials				Cutting depth and feed					
				LNHU..1306..					
ISO	Material classification	Tensile strength (N/mm^2)	Hardness (HB)	ap		Geometry			
						MM3		MR2	
						fz			
				(mm)					
				min	max	min	max	min	max
P	Unalloyed steel	<600	<180	0.3	12.00	0.10	0.30	0.12	0.35
		<950	<280						
	Alloyed steel	700-950	200-280			0.08	0.25	0.10	0.30
		950-1200	280-355						
		1200-1400	355-415						
M	Duplex stainless steel	778	230			0.06	0.20	0.08	0.25
	Austenitic stainless steel	675	200						
	Precipitation-hardening stainless steel	1013	300						
K	Grey cast iron	700	220			-	-	0.12	0.35
	Nodular cast iron	880	260						
	Malleable cast iron	800	250						
N	Aluminum	260	75			-	-	-	-
	Aluminum alloy	447	130						
S	Fe-based alloy	943	280			0.06	0.18	0.08	0.22
	Co-based alloy	1076	320						
	Ni-based alloy	1177	350						
	Ti-alloy	1262	370						
H	Hardened steel	-	50-60HRC			-	-	0.08	0.20
	Chilled cast iron	-	55HRC						

*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

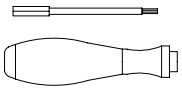
ASM90-LN16

Square shoulder milling cutter





Product code	DC	DCB	LF	DCSFMS	APMX	Internal coolant	Z	Inserts
ASM90-063-Z04-A22R-LN16-C	63	22	40	52	15	✓	4	LNHU 1607..
ASM90-080-Z05-A27R-LN16-C	80	27	50	62	15	✓	5	
ASM90-100-Z06-A32R-LN16-C	100	32	50	80	15	✓	6	
ASM90-125-Z07-A40R-LN16-C	125	40	63	87	15	✓	7	
ASM90-160-Z08-A40R-LN16	160	40	63	107	15	✗	8	

Dimension (mm)	Spare parts		
Cutter diameter	Screw	Wrench	Torque
⌀63-160			5Nm
	ST05013063	DT-T20	

Note: ✓ With internal coolant
✗ Without internal coolant

Product code	Dimension (mm)		P			M	K		N
	Corner radius	Wiper length	AP251U	AP351U	AP351M	AP403M	AC301K	AP251K	AW100K
LNHU 160708ER-MR2	0.8	1.97	●	▲			▲	●	
LNHU 160716ER-MR2	1.6	1.5	●				▲		

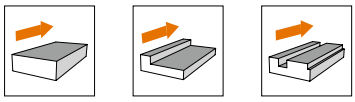
●: Stock available ▲: Stock available now but will be replaced in the future.

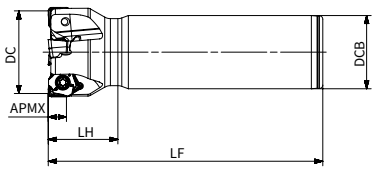
Materials				Cutting depth and feed			
				LNHU 1607..			
				ap		Geometry	
						MR2	
						fz	
				(mm)			
ISO	Material classification	Tensile strength (N/mm^2)	Hardness (HB)	min	max	min	max
P	Unalloyed steel	<600	<180	0.30	15.00	0.10	0.30
		<950	<280				
	Alloyed steel	700-950	200-280			0.08	0.28
		950-1200	280-355				
		1200-1400	355-415				
M	Duplex stainless steel	778	230			0.08	0.25
	Austenitic stainless steel	675	200				
	Precipitation-hardening stainless steel	1013	300				
K	Grey cast iron	700	220			0.10	0.30
	Nodular cast iron	880	260				
	Malleable cast iron	800	250				
N	Aluminum	260	75			-	-
	Aluminum alloy	447	130				
S	Fe-based alloy	943	280			-	-
	Co-based alloy	1076	320				
	Ni-based alloy	1177	350				
	Ti-alloy	1262	370				
H	Hardened steel	-	50-60HRC			-	-
	Chilled cast iron	-	55HRC				

*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

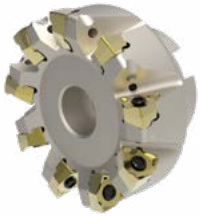
ASM90-WN08

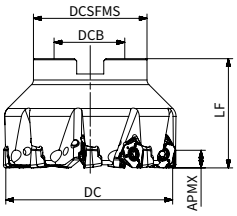
Square shoulder milling cutter



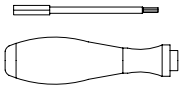


Product code	DC	DCB	LF	LH	APMX	Internal coolant	Z	Inserts
ASM90-040-Z03-W32R-WN08-C	40	32	120	31	7	✓	3	WNGU 0806..
ASM90-040-Z04-W32R-WN08-C	40	32	120	31	7	✓	4	





Product code	DC	DCB	LF	DCSFMS	APMX	Internal coolant	Z	Inserts
ASM90-050-Z04-A22R-WN08-C	50	22	40	42	7	✓	4	WNGU 0806..
ASM90-050-Z05-A22R-WN08-C	50	22	40	42	7	✓	5	
ASM90-063-Z04-A22R-WN08-C	63	22	40	48	7	✓	4	
ASM90-063-Z06-A22R-WN08-C	63	22	40	48	7	✓	6	
ASM90-063-Z07-A22R-WN08-C	63	22	40	48	7	✓	7	
ASM90-080-Z05-A27R-WN08-C	80	27	50	62	7	✓	5	
ASM90-080-Z07-A27R-WN08-C	80	27	50	62	7	✓	7	
ASM90-080-Z09-A27R-WN08-C	80	27	50	62	7	✓	9	
ASM90-100-Z06-A32R-WN08-C	100	32	50	80	7	✓	6	
ASM90-100-Z08-A32R-WN08-C	100	32	50	80	7	✓	8	
ASM90-100-Z11-A32R-WN08-C	100	32	50	80	7	✓	11	
ASM90-125-Z07-A40R-WN08-C	125	40	63	87	7	✓	7	
ASM90-125-Z11-A40R-WN08-C	125	40	63	87	7	✓	11	
ASM90-125-Z13-A40R-WN08-C	125	40	63	87	7	✓	13	
ASM90-160-Z08-A40R-WN08	160	40	63	107	7	✗	8	
ASM90-160-Z12-A40R-WN08	160	40	63	107	7	✗	12	
ASM90-200-Z14-A60R-WN08	200	60	63	140	7	✗	14	
ASM90-250-Z16-A60R-WN08	250	60	63	180	7	✗	16	

Dimension (mm)	Spare parts		
Cutter diameter	Screw	Wrench	Torque
⌀40-250			3.5Nm
	SP040090	DT-TP15	

Note: ✓ With internal coolant
✗ Without internal coolant

Product code	Dimension (mm)		P				M	K		N	H
	Corner radius	Wiper length	AP251U	AP351U	AP351M	AP401U	AP403M	AC301K	AP251K	AW100K	AP151H
WNHU 080608R-FM2	0.8	2.0								●	
WNGU 080604R-MM3	0.4	2.2		▲	●	▲					
WNGU 080608R-MM3	0.8	2.0	●	▲	●	▲	●		●		
WNGU 080604R-MM4	0.4	2.2	●	▲	●	▲			●		
WNGU 080608R-MM4	0.8	2.0	●	▲	●	▲		▲	●		●
WNGU 080612R-MM4	1.2	1.6	●	▲	●	▲					
WNGU 080616R-MM4	1.6	1.2	●	▲	●	▲					
WNGU 080608R-MR2	0.8	2.0	●	▲	●		●	▲	●		
WNGU 080612R-MR2	1.2	1.6	●		●				●		
WNGU 080616R-MR2	1.6	1.2	●		●				●		
WNHX 0806ZZR-W	1.0	4.8	●					●			

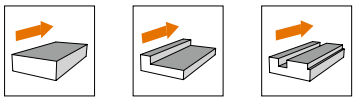
●: Stock available ▲: Stock available now but will be replaced in the future.

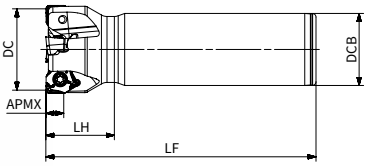
Materials				Cutting depth and feed									
				WNGU..0806..									
ISO	Material classification	Tensile strength (N/mm^2)	Hardness (HB)	ap		Geometry							
						FM2		MM3		MM4		MR2	
						fz							
				(mm)									
				min	max	min	max	min	max	min	max	min	max
P	Unalloyed steel	<600	<180	0.60	8.00	-	-	0.12	0.25	0.12	0.28	0.12	0.30
		<950	<280										
	Alloyed steel	700-950	200-280					0.10	0.20	0.10	0.25	0.10	0.28
		950-1200	280-355										
		1200-1400	355-415										
M	Duplex stainless steel	778	230					0.08	0.18	0.08	0.18	-	-
	Austenitic stainless steel	675	200										
	Precipitation-hardening stainless steel	1013	300										
K	Grey cast iron	700	220					0.12	0.20	0.10	0.28	0.15	0.30
	Nodular cast iron	880	260										
	Malleable cast iron	800	250										
N	Aluminum	260	75			0.10	0.24	-	-	-	-	-	-
	Aluminum alloy	447	130										
S	Fe-based alloy	943	280			-	-	0.12	0.13	0.10	0.15	-	-
	Co-based alloy	1076	320										
	Ni-based alloy	1177	350										
	Ti-alloy	1262	370										
H	Hardened steel	-	50-60HRC			-	-	-	-	-	-	-	-
	Chilled cast iron	-	55HRC										

*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

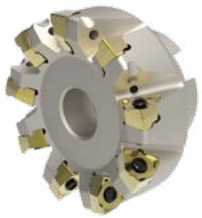
ASM90-WN08-N

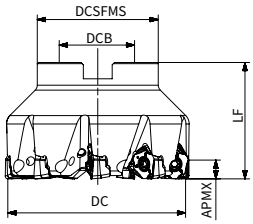
Square shoulder milling cutter



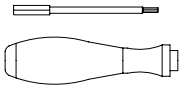


Product code	DC	DCB	LF	LH	APMX	Internal coolant	Z	Inserts
ASM90-040-Z03-W32R-WN08-N-C	40	32	120	30	8	✓	3	WNMU 0806..
ASM90-040-Z04-W32R-WN08-N-C	40	32	120	30	8	✓	4	





Product code	DC	DCB	LF	DCSFMS	APMX	Internal coolant	Z	Inserts
ASM90-050-Z04-A22R-WN08-N-C	50	22	40	42	7	✓	4	WNMU 0806..
ASM90-050-Z05-A22R-WN08-N-C	50	22	40	42	7	✓	5	
ASM90-063-Z04-A22R-WN08-N-C	63	22	40	48	7	✓	4	
ASM90-063-Z06-A22R-WN08-N-C	63	22	40	48	7	✓	6	
ASM90-063-Z07-A22R-WN08-N-C	63	22	40	48	7	✓	7	
ASM90-080-Z05-A27R-WN08-N-C	80	27	50	62	7	✓	5	
ASM90-080-Z07-A27R-WN08-N-C	80	27	50	62	7	✓	7	
ASM90-080-Z09-A27R-WN08-N-C	80	27	50	62	7	✓	9	
ASM90-100-Z06-A32R-WN08-N-C	100	32	50	80	7	✓	6	
ASM90-100-Z08-A32R-WN08-N-C	100	32	50	80	7	✓	8	
ASM90-100-Z11-A32R-WN08-N-C	100	32	50	80	7	✓	11	
ASM90-125-Z07-A40R-WN08-N-C	125	40	63	87	7	✓	7	
ASM90-125-Z11-A40R-WN08-N-C	125	40	63	87	7	✓	11	
ASM90-125-Z13-A40R-WN08-N-C	125	40	63	87	7	✓	13	
ASM90-160-Z08-A40R-WN08-N	160	40	63	107	7	✗	8	
ASM90-160-Z12-A40R-WN08-N	160	40	63	107	7	✗	12	
ASM90-200-Z14-A60R-WN08-N	200	60	63	140	7	✗	14	
ASM90-250-Z16-A60R-WN08-N	250	60	63	180	7	✗	16	

Dimension (mm)	Spare parts		
Cutter diameter	Screw	Wrench	Torque
⌀40-250			3.5Nm
	SP040112	DT-TP15	

Note: ✓ With internal coolant
✗ Without internal coolant

Product code	Dimension (mm)		P		M	K	
	Corner radius	Wiper length	AP251U	AP351M	AP403M	AC301K	AP251K
WNMU 080608R-MR2	0.8	2.3	●	●	●	▲	●
WNMU 080608R-MM4	0.8	2.3	●	●	●	▲	●
WNMU 080608R-MM3	0.8	2.3	●	●	●	▲	●
WNMU 080612R-MR2	1.2	1.19	●	●		▲	●
WNMU 080612R-MM4	1.2	1.18	●	●	●		●
WNMU 080616R-MR2	1.6	0.81	●		●		
WNMU 080616R-MM4	1.6	0.8	●		●		

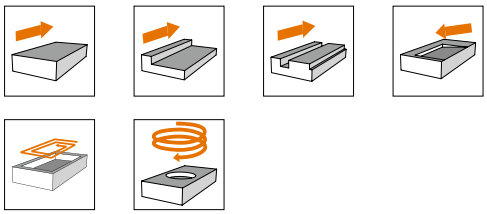
●: Stock available ▲: Stock available now but will be replaced in the future.

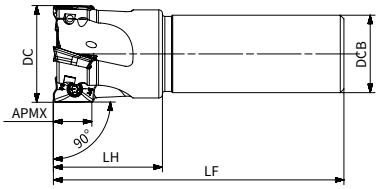
Materials				Cutting depth and feed							
ISO	Material classification	Tensile strength (N/mm^2)	Hardness (HB)	WNMU 0806..							
				ap		MM3		MM4		MR2	
				(mm)							
				min	max	min	max	min	max	min	max
P	Unalloyed steel	<600	<180	0.60	8.00	0.12	0.25	0.12	0.28	0.12	0.30
		<950	<280								
	Alloyed steel	700-950	200-280			0.10	0.20	0.10	0.25	0.10	0.28
		950-1200	280-355								
		1200-1400	355-415								
M	Duplex stainless steel	778	230			0.08	0.18	0.08	0.18	-	-
	Austenitic stainless steel	675	200								
	Precipitation-hardening stainless steel	1013	300								
K	Grey cast iron	700	220			0.12	0.20	0.10	0.28	0.15	0.30
	Nodular cast iron	880	260								
	Malleable cast iron	800	250								
S	Fe-based alloy	943	280			0.12	0.13	0.10	0.15	-	-
	Co-based alloy	1076	320								
	Ni-based alloy	1177	350								
	Ti-alloy	1262	370								
H	Hardened steel	-	50-60HRC			-	-	-	-	-	-
	Chilled cast iron	-	55HRC								

*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

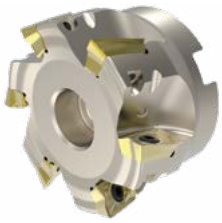
ASM90-AP17

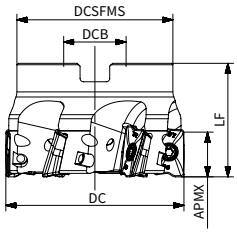
Square shoulder milling cutter





Product code	DC	DCB	LF	LH	APMX	Internal coolant	Z	Inserts
ASM90-025-Z02-C25R-AP17-L100-C	25	25	100	39	16	✓	2	APKT 1705..
ASM90-032-Z03-C32R-AP17-L110-C	32	32	110	40	16	✓	3	
ASM90-032-Z03-C32R-AP17-L200-C	32	32	200	40	16	✓	3	
ASM90-040-Z04-C32R-AP17-L120-C	40	32	120	45	16	✓	4	





Product code	DC	DCB	LF	DCSFMS	APMX	Internal coolant	Z	Inserts
ASM90-050-Z05-A22R-AP17-C	50	22	40	45	16	✓	5	APKT 1705..
ASM90-063-Z06-A22R-AP17-C	63	22	40	55	16	✓	6	
ASM90-080-Z06-A27R-AP17-C	80	27	50	62	16	✓	6	
ASM90-100-Z08-A32R-AP17-C	100	32	50	78	16	✓	8	

Dimension (mm)	Spare parts		
Cutter diameter	Screw	Wrench	Torque
⌀25	SP040084	DT-TP15	4.0Nm
⌀32-100	SP040100H		

Note: ✓ With internal coolant
✗ Without internal coolant

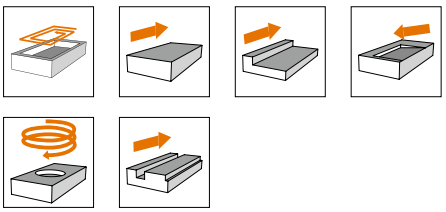
Product code	Dimension (mm)		P			M	K		S	N
	Corner radius	Wiper length	AP251U	AP351U	AP351M	AP403M	AC301K	AP251K	AP403S	AW100K
APKT 1705PDER-DT	0.8	2.16	●	▲		●		●		●
APKT 170516R-DT	1.6	1.7	●					●		
APKT 170524R-DT	2.4	0.95	●		●	●		●		
APKT 170530R-DT	3.0	0.48	●		●	●		●		
APKT 170540R-DT	4.0	-	●		●	●				

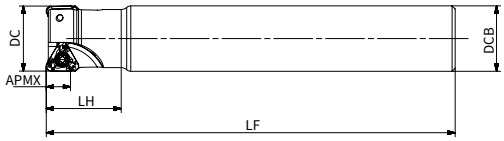
●: Stock available ▲: Stock available now but will be replaced in the future.

Materials				Cutting depth and feed			
ISO	Material classification	Tensile strength (N/mm^2)	Hardness (HB)	APKT..1705..			
				ap		DT fz	
				(mm)			
				min	max	min	max
P	Unalloyed steel	<600	<180	0.10	16.00	0.08	0.25
		<950	<280				
	Alloyed steel	700-950	200-280			0.06	0.22
		950-1200	280-355				
		1200-1400	355-415				
M	Duplex stainless steel	778	230			0.06	0.20
	Austenitic stainless steel	675	200				
	Precipitation-hardening stainless steel	1013	300				
K	Grey cast iron	700	220			0.08	0.25
	Nodular cast iron	880	260				
	Malleable cast iron	800	250				
N	Aluminum	260	75			0.06	0.30
	Aluminum alloy	447	130				
S	Fe-based alloy	943	280			0.06	0.18
	Co-based alloy	1076	320				
	Ni-based alloy	1177	350				
	Ti-alloy	1262	370				
H	Hardened steel	-	50-60HRC			-	-
	Chilled cast iron	-	55HRC				

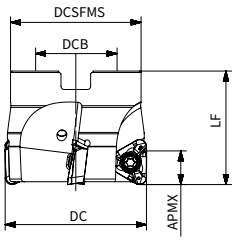
*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

ASM90-TD15
Square shoulder milling cutter



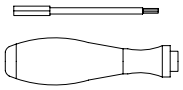


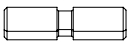
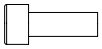
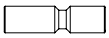
Product code	DC	DCB	LF	LH	APMX	Internal coolant	Z	Inserts
ASM90-032-Z02-C32R-TD15-C	32	32	110	37	11		2	TD.T 1505..
ASM90-032-Z02-C32R-TD15-L200-C	32	32	200	37	11		2	
ASM90-040-Z03-C32R-TD15-C	40	32	120	38	11		3	
ASM90-040-Z03-C32R-TD15-L200-C	40	32	200	38	11		3	



Product code	DC	DCB	LF	DCSFMS	APMX	Internal coolant	Z	Inserts
ASM90-040-Z04-A16R-TD15-C	40	16	40	35	11		4	TD.T 1505..
ASM90-050-Z04-A22R-TD15-C	50	22	40	42	11		4	
ASM90-050-Z05-A22R-TD15-C	50	22	40	42	11		5	
ASM90-063-Z04-A22R-TD15-C	63	22	40	48	11		4	
ASM90-063-Z05-A22R-TD15-C	63	22	40	48	11		5	
ASM90-063-Z06-A22R-TD15-C	63	22	40	48	11		6	
ASM90-080-Z05-A27R-TD15-C	80	27	50	62	11		5	
ASM90-080-Z06-A27R-TD15-C	80	27	50	62	11		6	
ASM90-080-Z07-A27R-TD15-C	80	27	50	62	11		7	
ASM90-100-Z06-A32R-TD15-C	100	32	50	80	11		6	
ASM90-100-Z08-A32R-TD15-C	100	32	50	80	11		8	
ASM90-125-Z07-A40R-TD15-C	125	40	63	87	11		7	
ASM90-125-Z09-A40R-TD15-C	125	40	63	87	11		9	
ASM90-160-Z08-A40R-TD15	160	40	63	107	11		8	
ASM90-160-Z10-A40R-TD15	160	40	63	107	11		10	
ASM90-200-Z09-A60R-TD15	200	60	63	140	11		9	
ASM90-250-Z11-A60-TD15-M	250	60	63	180	11		11	

Note: With internal coolant
Without internal coolant

Dimension (mm)	Spare parts		
Cutter diameter	Screw	Wrench	Torque
⌀32-250			3.5Nm
	SP040100H	DT-TP15	

Mounting bolt	Mounting bolt wrench	Cartridge screw	Cartridge screw wrench	Wedge	Wedge screw	Wedge screw wrench	Cartridge
							
WD080300	LT-H4	ACH622	LT-H5	AWG-6H-6	AWCH624	LT-H3	C-TD1540-62-90

Product code	Dimension (mm)		P		M	K		N
	Corner radius	Wiper length	AP251U	AP351M	AP403M	AC301K	AP251K	AW100K
TDMT 150508R-MM4	0.8	1.49	●	●	●	▲	●	
TDMT 150512R-MM4	1.2	1	●	●	●	▲	●	
TDMT 150516R-MM4	1.6	0.93	●	●	●	▲	●	
TDMT 150520R-MM4	2	0.71	●		●		●	
TDMT 150524R-MM4	2.4	0.59	●		●		●	
TDMT 150531R-MM4	3.1	0.4	●		●		●	
TDMT 150540R-MM4	4	0.4	●		●		●	
TDMT 150508R-MM3	0.8	1.49	●		●		●	
TDHT 150508R-MM4	0.8	1.5	●				●	

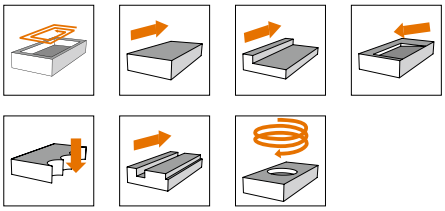
●: Stock available ▲: Stock available now but will be replaced in the future.

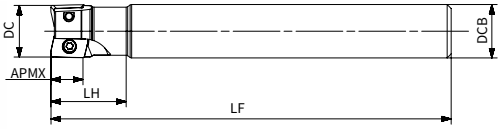
Materials				Cutting depth and feed			
				TD.T 1505..			
				ap		fz	
				(mm)			
ISO	Material classification	Tensile strength (N/mm^2)	Hardness (HB)	min	max	min	max
P	Unalloyed steel	<600	<180	0.10	11.00	0.08	0.25
		<950	<280				
	Alloyed steel	700-950	200-280			0.06	0.22
		950-1200	280-355				
		1200-1400	355-415				
M	Duplex stainless steel	778	230			0.06	0.20
	Austenitic stainless steel	675	200				
	Precipitation-hardening stainless steel	1013	300				
K	Grey cast iron	700	220			0.08	0.25
	Nodular cast iron	880	260				
	Malleable cast iron	800	250				
N	Aluminum	260	75			0.06	0.30
	Aluminum alloy	447	130				
S	Fe-based alloy	943	280			0.06	0.18
	Co-based alloy	1076	320				
	Ni-based alloy	1177	350				
	Ti-alloy	1262	370				
H	Hardened steel	-	50-60HRC			-	-
	Chilled cast iron	-	55HRC				

*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

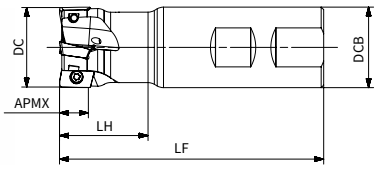
ASM90-AO12

Square shoulder milling cutter

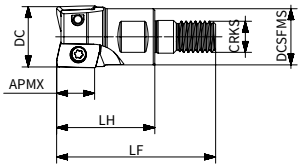




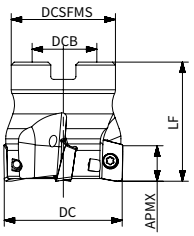
Product code	DC	DCB	LF	LH	APMX	Internal coolant	Z	Inserts
ASM90-020-Z02-C20R-AO12-L150-C	20	20	150	28	11		2	AO.T 1204..
ASM90-025-Z03-C25R-AO12-L170-C	25	25	170	33	11		3	
ASM90-032-Z04-C32R-AO12-L250-C	32	32	250	35	11		4	



Product code	DC	DCB	LF	LH	APMX	Internal coolant	Z	Inserts
ASM90-020-Z02-W20R-AO12-C	20	20	85	30	11		2	AO.T 1204..
ASM90-025-Z03-W20R-AO12-C	25	20	95	35	11		3	
ASM90-032-Z04-W32R-AO12-C	32	32	105	40	11		4	
ASM90-040-Z04-W32R-AO12-C	40	32	120	45	11		4	



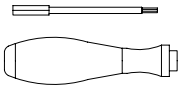
Product code	DC	LF	LH	CRKS	DCSFMS	APMX	Internal coolant	Z	Inserts
ASM90-020-Z02-M10R-AO12-C	20	51	31	M10	18	11		2	AO.T 1204..
ASM90-025-Z03-M12R-AO12-C	25	59	37	M12	23	11		3	
ASM90-032-Z04-M16R-AO12-C	32	72	48	M16	29	11		4	
ASM90-035-Z04-M16R-AO12-C	35	72	48	M16	29	11		4	



Product code	DC	DCB	LF	DCSFMS	APMX	Internal coolant	Z	Inserts
ASM90-040-Z04-A16R-AO12-C	40	16	40	35	11		4	AO.T 1204..
ASM90-050-Z05-A22R-AO12-C	50	22	40	42	11		5	
ASM90-050-Z07-A22R-AO12-C	50	22	40	42	11		7	
ASM90-063-Z06-A22R-AO12-C	63	22	40	48	11		6	
ASM90-063-Z08-A22R-AO12-C	63	22	40	48	11		8	
ASM90-080-Z07-A27R-AO12-C	80	27	50	62	11		7	
ASM90-080-Z10-A27R-AO12-C	80	27	50	62	11		10	

Note: With internal coolant

Without internal coolant

Dimension (mm)	Spare parts		
Cutter diameter	Screw	Wrench	Torque
⌀20-32	SP035078		4.0Nm
⌀40-80	SP035086	DT-TP10	

Product code	Dimension (mm)		P		M	K		S
	Corner radius	Wiper length	AP251U	AP351M	AP403M	AC301K	AP251K	AP403S
AOGU 120408ER-MM3	0.8	-	●	●	●			●
AOMT 120408ER-MM4	0.8	1.56	●	●	●		●	●
AOMT 120412ER-MM4	1.2	1.18		●	●			●
AOMT 120416ER-MM4	1.6	1.16		●	●			●
AOMT 120420ER-MM4	2.0	0.96	●	●	●			●
AOMT 120424ER-MM4	2.4	0.93	●	●	●			●
AOMT 120431ER-MM4	3.1	0.59		●	●			●
AOMT 120440ER-MM4	4.0	0.75		●	●			●

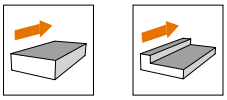
●: Stock available ▲: Stock available now but will be replaced in the future.

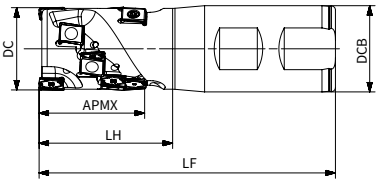
Materials				Cutting depth and feed			
				AO.T 1204..			
				ap		fz	
				(mm)			
ISO	Material classification	Tensile strength (N/mm^2)	Hardness (HB)	min	max	min	max
P	Unalloyed steel	<600	<180	0.10	11.00	0.08	0.25
		<950	<280				
	Alloyed steel	700-950	200-280			0.06	0.22
		950-1200	280-355				
		1200-1400	355-415				
M	Duplex stainless steel	778	230			0.06	0.20
	Austenitic stainless steel	675	200				
	Precipitation-hardening stainless steel	1013	300				
K	Grey cast iron	700	220			0.08	0.25
	Nodular cast iron	880	260				
	Malleable cast iron	800	250				
N	Aluminum	260	75			0.06	0.30
	Aluminum alloy	447	130				
S	Fe-based alloy	943	280			0.06	0.18
	Co-based alloy	1076	320				
	Ni-based alloy	1177	350				
	Ti-alloy	1262	370				
H	Hardened steel	-	50-60HRC			-	-
	Chilled cast iron	-	55HRC				

*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

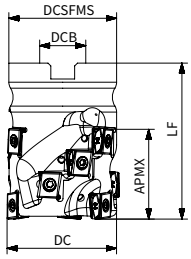
APE90-LN09

Square shoulder porcupine milling cutter



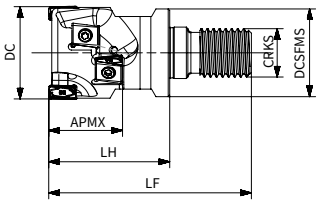


Product code	DC	DCB	LF	LH	APMX	Internal coolant	Z	Row	Insert QTY	Inserts
APE90-025-Z02-W25R-LN09-L32-F-C	25	25	100	43	32		2	4	8	
APE90-032-Z02-W32R-LN09-L32-F-C	32	32	105	44	32		2	4	8	
APE90-032-Z02-W32R-LN09-L40-F-C	32	32	110	50	40		2	5	10	LNHU 0904..
APE90-040-Z03-W40R-LN09-L40-F-C	40	40	125	55	40		3	5	15	
APE90-040-Z03-W40R-LN09-L48-F-C	40	40	130	59	48		3	6	18	



Product code	DC	DCB	LF	DCSFMS	APMX	Internal coolant	Clamping screw	Z	Row	Insert QTY	Inserts
APE90-040-Z03-A16R-LN09-L32-F-C	40	16	55	38	32		SH080400	3	4	12	
APE90-040-Z03-A16R-LN09-L40-F-C	40	16	65	38	40		SH080500	3	5	15	LNHU 0904..
APE90-050-Z04-A22R-LN09-L48-F-C	50	22	75	47.5	48		SH100550	4	6	24	

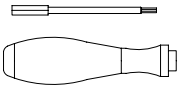
Clamping screw	Product code	Screw type	Clamping torque
	SH080400	M8*40	41Nm
	SH080500	M8*50	41Nm
	SH100550	M10*55	81Nm



Product code	DC	LF	LH	CRKS	DCSFMS	APMX	Internal coolant	Z	Row	Insert QTY	Inserts
APE90-025-Z02-M12R-LN09-L24-F-C	25	64	40	M12	23	24		2	3	6	
APE90-032-Z02-M16R-LN09-L24-F-C	32	67	40	M16	30	24		2	3	6	LNHU 0904..
APE90-032-Z02-M16R-LN09-L32-F-C	32	77	50	M16	30	32		2	4	8	

Note: With internal coolant

Without internal coolant

Dimension (mm)	Spare parts			
Cutter diameter	Screw	Wrench	Wrench	Torque
⌀25-50				1.8Nm
	SP030083	DT-TP09	AFW-15/24	

Product code	Dimension (mm)		P			M	K		N
	Corner radius	Wiper length	AP251U	AP351U	AP351M	AP403M	AC301K	AP251K	AW100K
LNHU 090404ER-FM2	0.4	1.85							●
LNHU 090404ER-MM3	0.4	1.85		▲		●			
LNHU 090404ER-MR2	0.4	1.85	●	▲		●	▲	●	
LNHU 090404ER-MM4	0.4	1.85	●		●	●		●	
LNHU 090408ER-MM4	0.8	1.3	●		●	●		●	
LNHU 090408ER-MR2	0.8	1.3	●	▲		●	▲	●	
LNHU 090408ER-MM3	0.8	1.3	●		●	●		●	
LNHU 090412ER-MR2	1.2	1.0	●			●	▲		
LNHU 090416ER-MR2	1.6	0.65	●			●	▲		
LNHU 090420ER-MR2	2.0	0.65	●			●	▲		
LNHU 0904PDER-W	0.4	3.6	●					●	

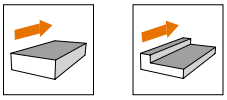
●: Stock available ▲: Stock available now but will be replaced in the future.

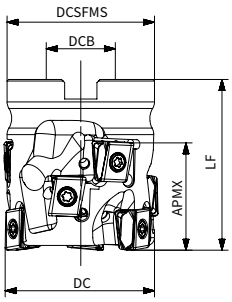
Materials				Cutting depth and feed							
				LNHU..0904..							
ISO	Material classification	Tensile strength (N/mm^2)	Hardness (HB)	ap		MM3		MR2		FM2	
						fz					
				(mm)							
				min	max	min	max	min	max	min	max
P	Unalloyed steel	<600	<180	0.20	48.00	0.06	0.22	0.08	0.25	-	-
		<950	<280								
	Alloyed steel	700-950	200-280			0.05	0.18	0.06	0.20	-	-
		950-1200	280-355								
		1200-1400	355-415								
M	Duplex stainless steel	778	230			0.05	0.18	0.06	0.18	-	-
	Austenitic stainless steel	675	200								
	Precipitation-hardening stainless steel	1013	300								
K	Grey cast iron	700	220			0.05	0.22	0.08	0.25	-	-
	Nodular cast iron	880	260								
	Malleable cast iron	800	250								
N	Aluminum	260	75			-	-	-	-	0.06	0.25
	Aluminum alloy	447	130								
S	Fe-based alloy	943	280			0.05	0.15	-	-	-	-
	Co-based alloy	1076	320								
	Ni-based alloy	1177	350								
	Ti-alloy	1262	370								
H	Hardened steel	-	50-60HRC			-	-	0.05	0.12	-	-
	Chilled cast iron	-	55HRC								

*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

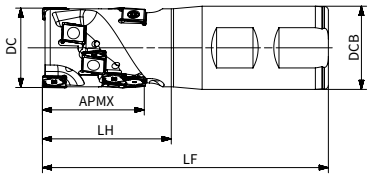
APE90-LN13

Square shoulder porcupine milling cutter



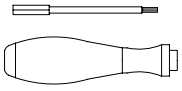


Product code	DC	DCB	LF	DCSFMS	APMX	Internal coolant	Clamping screw	Z	Row	Insert QTY	Inserts
APE90-040-Z02-A16R-LN13-L34-F-C	40	16	55	39	34		SH100400	2	3	6	LNHU 1306..
APE90-040-Z02-A16R-LN13-L45-F-C	40	16	65	39	45		SH100450	2	4	8	
APE90-050-Z03-A22R-LN13-L34-F-C	50	22	55	47.5	34		SH100400	3	3	9	
APE90-050-Z03-A22R-LN13-L45-F-C	50	22	65	47.5	45		SH100450	3	4	12	
APE90-063-Z04-A27R-LN13-L56-F-C	63	27	80	59.5	56		SH120600	4	5	20	
APE90-063-Z04-A27R-LN13-L45-F-C	63	27	70	59.5	45		SH120500	4	4	16	
APE90-080-Z05-A32R-LN13-L56-F-C	80	32	85	75.6	56		SH160650	5	5	25	



Product code	DC	DCB	LF	LH	APMX	Internal coolant	Z	Row	Insert QTY	Inserts
APE90-040-Z02-W40R-LN13-L34-F-C	40	40	120	54	34		2	3	6	LNHU 1306..
APE90-040-Z02-W40R-LN13-L45-F-C	40	40	135	64	45		2	4	8	

Clamping screw	Product code	Screw type	Clamping torque
	SH080400	M8*40	41N-m
	SH080500	M8*50	41N-m
	SH100550	M10*55	81N-m
	SH100400	M10*40	81N-m
	SH100450	M10*45	81N-m
	SH120500	M12*50	142N-m
	SH120600	M12*60	142N-m
	SH160650	M16*65	350N-m

Dimension (mm)	Spare parts		
Cutter diameter	Screw	Wrench	Torque
⌀40-80			3.5Nm
	SP040115	DT-TP15	

Note: With internal coolant

Without internal coolant

Product code	Dimension (mm)		P			M	K		N
	Corner radius	Wiper length	AP251U	AP351U	AP351M	AP403M	AC301K	AP251K	AW100K
LNHU 130608ER-FM2	0.8	2.7							●
LNHU 130608ER-MM3	0.8	2.7		▲		●			
LNHU 130608ER-MM4	0.8	2.7	●		●	●		●	
LNHU 130608ER-MR2	0.8	2.7	●	▲	●	●	▲	●	
LNHU 130612ER-MM4	1.2	2.3	●		●	●		●	
LNHU 130612ER-MR2	1.2	2.3	●	▲	●	●	▲	●	
LNHU 130616ER-MR2	1.6	1.9	●	▲	●	●		●	
LNHU 130620ER-MR2	2.0	1.5		▲	●	●	▲		
LNHU 130624ER-MR2	2.4	1.0		▲	●	●	▲		
LNHU 130631ER-MR2	3.1	0.4		▲	●	●	▲		
LNHU 1306PDR-W	0.8	5.6	●					●	

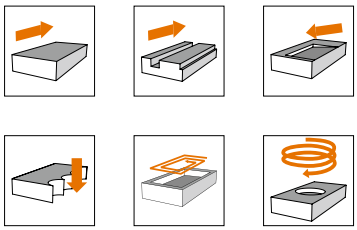
●: Stock available ▲: Stock available now but will be replaced in the future.

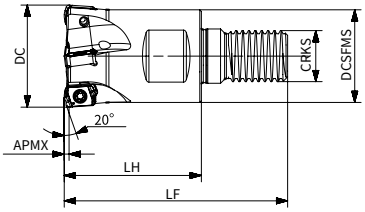
Materials				Cutting depth and feed							
ISO	Material classification	Tensile strength (N/mm^2)	Hardness (HB)	LNHU..1306..							
				ap		MM3		MR2		FM2	
						fz					
				(mm)							
				min	max	min	max	min	max	min	max
P	Unalloyed steel	<600	<180	0.30	85	0.10	0.28	0.10	0.30	-	-
		<950	<280								
	Alloyed steel	700-950	200-280			0.08	0.25	0.08	0.28	-	-
		950-1200	280-355								
		1200-1400	355-415								
M	Duplex stainless steel	778	230			0.08	0.22	0.08	0.25	-	-
	Austenitic stainless steel	675	200								
	Precipitation-hardening stainless steel	1013	300								
K	Grey cast iron	700	220			-	-	0.10	0.32	-	-
	Nodular cast iron	880	260								
	Malleable cast iron	800	250								
N	Aluminum	260	75			-	-	-	-	0.08	0.30
	Aluminum alloy	447	130								
S	Fe-based alloy	943	280			0.06	0.18	0.08	0.22	-	-
	Co-based alloy	1076	320								
	Ni-based alloy	1177	350								
	Ti-alloy	1262	370								
H	Hardened steel	-	50-60HRC			-	-	0.06	0.15	-	-
	Chilled cast iron	-	55HRC								

*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

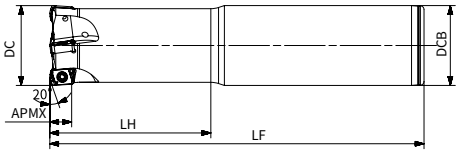
AHM20-LN06

20° Approaching angle high feed milling cutter

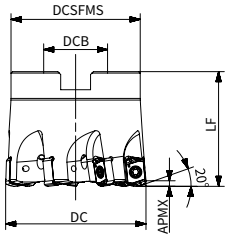




Product code	DC	CRKS	DCSFMS	LF	LH	APMX	Internal coolant	Z	Inserts
AHM20-016-Z02-M08R-LN06-C	16	M8	14.5	42	25	0.65		2	LN..0604..
AHM20-017-Z02-M08R-LN06-C	17	M8	14.5	42	25	0.65		2	
AHM20-020-Z03-M10R-LN06-C	20	M10	18	51	30	0.65		3	
AHM20-021-Z03-M10R-LN06-C	21	M10	18	51	30	0.65		3	
AHM20-025-Z04-M12R-LN06-C	25	M12	23	59	35	0.65		4	
AHM20-026-Z03-M12R-LN06-C	26	M12	23	59	35	0.65		3	
AHM20-026-Z04-M12R-LN06-C	26	M12	23	59	35	0.65		4	
AHM20-032-Z04-M16R-LN06-C	32	M16	23	70	43	0.65		4	
AHM20-032-Z05-M16R-LN06-C	32	M16	29	70	43	0.65		5	
AHM20-033-Z05-M16R-LN06-C	33	M16	29	70	43	0.65		5	
AHM20-035-Z05-M16R-LN06-C	35	M16	29	70	43	0.65		5	
AHM20-040-Z06-M16R-LN06-C	40	M16	29	70	43	0.65		6	



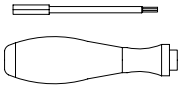
Product code	DC	DCB	LF	LH	APMX	Internal coolant	Z	Inserts
AHM20-016-Z02-C16R-LN06-L100-C	16	16	100	30	0.65		2	LN..0604..
AHM20-017-Z02-C16R-LN06-L150-C	17	16	150	21	0.65		2	
AHM20-020-Z03-C20R-LN06-L130-C	20	20	130	30	0.65		3	
AHM20-021-Z03-C20R-LN06-L160-C	21	20	160	26	0.65		3	
AHM20-025-Z03-C25R-LN06-L140-C	25	25	140	56	0.65		3	
AHM20-026-Z03-C25R-LN06-L180-C	26	25	180	31	0.65		3	
AHM20-032-Z04-C32R-LN06-L150-C	32	32	150	66	0.65		4	
AHM20-033-Z04-C32R-LN06-L200-C	33	32	200	31	0.65		4	
AHM20-035-Z05-C32R-LN06-L200-C	35	32	200	31	0.65		5	



Product code	DC	DCB	DCSFMS	LF	APMX	Internal coolant	Z	Inserts
AHM20-040-Z06-A16R-LN06-C	40	16	35	40	0.65		6	LN..0604..
AHM20-050-Z07-A22R-LN06-C	50	22	45	40	0.65		7	
AHM20-052-Z07-A22R-LN06-C	52	22	45	40	0.65		7	
AHM20-063-Z08-A22R-LN06-C	63	22	52	40	0.65		8	

Note: With internal coolant

Without internal coolant

Dimension (mm)	Spare parts		
Cutter diameter	Screw	Wrench	Torque
⌀16-63			1.0Nm
	SP02506450H	DT-TP08	

Product code	Dimension (mm)		P			M	K		S	H
	Corner radius	Wiper length	AP251U	AP351U	AP351M	AP403M	AC301K	AP251K	AP403S	AP151H
LNMX 060410R-MM3	1.0	-	●	▲		●			●	●
LNMX 060410R-MM4	1.0	-	●	▲		●			●	●
LNMX 060410R-MM4N	1.0	-	●	▲		●	▲		●	●

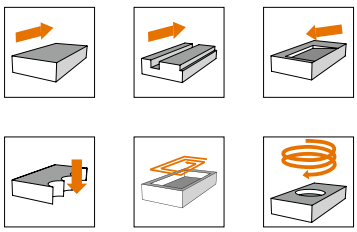
●: Stock available ▲: Stock available now but will be replaced in the future.

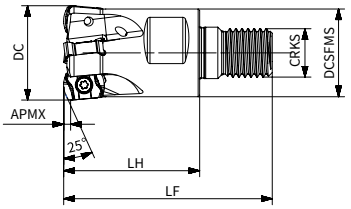
Materials				Depth(width) of cut and feed rate							
				LN..0604..							
				High feed milling				Plunging			
				ap		fz		ae		fz	
				(mm)							
ISO	Material classification	Tensile strength (N/mm^2)	Hardness (HB)	min	max	min	max	min	max	min	max
P	Unalloyed steel	<600	<180	0.30	0.65	0.30	1.00	0.50	4.00	0.08	0.15
		<950	<280								
	Alloyed steel	700-950	200-280			0.30	1.00			0.06	0.12
		950-1200	280-355								
		1200-1400	355-415								
M	Duplex stainless steel	778	230			0.25	0.80			0.06	0.12
	Austenitic stainless steel	675	200								
	Precipitation-hardening stainless steel	1013	300								
K	Grey cast iron	700	220			0.30	1.00			0.08	0.15
	Nodular cast iron	880	260								
	Malleable cast iron	800	250								
N	Aluminum	260	75			-	-			-	-
	Aluminum alloy	447	130								
S	Fe-based alloy	943	280			0.25	0.60			0.06	0.10
	Co-based alloy	1076	320								
	Ni-based alloy	1177	350								
	Ti-alloy	1262	370								
H	Hardened steel	-	50-60HRC			0.25	0.60			0.06	0.10
	Chilled cast iron	-	55HRC								

*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

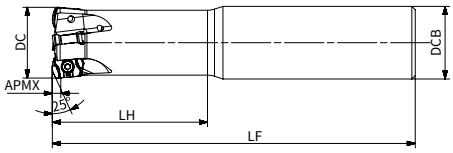
AHM25-LN10

25° Approaching angle high feed milling cutter

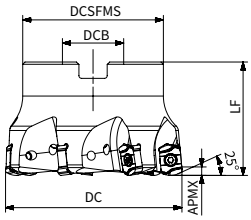




Product code	DC	CRKS	DCSFMS	LF	LH	APMX	Internal coolant	Z	Inserts
AHM25-025-Z02-M12R-LN10-C	25	M12	23	61	39	1.2		2	LN..1005..
AHM25-025-Z03-M12R-LN10-C	25	M12	23	61	39	1.2		3	
AHM25-026-Z03-M12R-LN10-C	26	M12	23	61	39	1.2		3	
AHM25-032-Z03-M16R-LN10-C	32	M16	29	69	45	1.2		3	
AHM25-032-Z04-M16R-LN10-C	32	M16	29	69	45	1.2		4	
AHM25-033-Z04-M16R-LN10-C	33	M16	29	69	45	1.2		4	



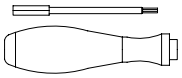
Product code	DC	DCB	LF	LH	APMX	Internal coolant	Z	Inserts
AHM25-025-Z02-C25R-LN10-L150-C	25	25	150	70	1.2		2	LN..1005..
AHM25-025-Z03-C25R-LN10-L150-C	25	25	150	70	1.2		3	
AHM25-026-Z03-C25R-LN10-L150-C	26	25	150	30	1.2		3	
AHM25-026-Z03-C25R-LN10-L220-C	26	25	220	30	1.2		3	
AHM25-032-Z03-C32R-LN10-L160-C	32	32	160	70	1.2		3	
AHM25-032-Z04-C32R-LN10-L160-C	32	32	160	70	1.2		4	
AHM25-033-Z04-C32R-LN10-L180-C	33	32	180	30	1.2		4	
AHM25-033-Z04-C32R-LN10-L250-C	33	32	250	30	1.2		4	



Product code	DC	DCB	DCSFMS	LF	APMX	Internal coolant	Z	Inserts
AHM25-040-Z04-A16R-LN10-C	40	16	38	40	1.2		4	LN..1005..
AHM25-040-Z05-A16R-LN10-C	40	16	38	40	1.2		5	
AHM25-050-Z05-A22R-LN10-C	50	22	45	40	1.2		5	
AHM25-050-Z07-A22R-LN10-C	50	22	45	40	1.2		7	
AHM25-063-Z06-A22R-LN10-C	63	22	52	40	1.2		6	
AHM25-063-Z08-A22R-LN10-C	63	22	52	40	1.2		8	
AHM25-080-Z07-A27R-LN10-C	80	27	62	50	1.2		7	
AHM25-080-Z09-A27R-LN10-C	80	27	62	50	1.2		9	
AHM25-100-Z08-A32R-LN10-C	100	32	78	50	1.2		8	
AHM25-100-Z10-A32R-LN10-C	100	32	78	50	1.2		10	
AHM25-125-Z12-A40R-LN10-C	125	40	90	63	1.2		12	

Note: With internal coolant

Without internal coolant

Dimension (mm)	Spare parts		
Cutter diameter	Screw	Wrench	Torque
⌀25-125			3.0Nm
	SP035087H	DT-TP10	

Product code	Dimension (mm)		P			M	K		S	H
	Corner radius	Wiper length	AP251U	AP351U	AP351M	AP403M	AC301K	AP251K	AP403S	AP151H
LNMX 100512R-MM3	1.2	-	●	▲	●	●			●	●
LNMX 100512R-MM4	1.2	-	●	▲		●			●	●

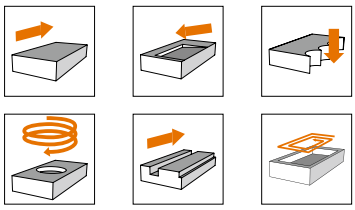
●: Stock available ▲: Stock available now but will be replaced in the future.

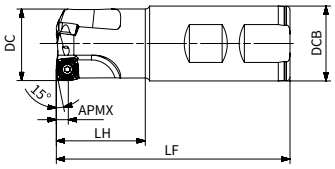
Materials				Depth(width) of cut and feed rate							
				LN.. 1005..							
				High feed milling				Plunging			
				ap		fz		ae		fz	
				(mm)							
ISO	Material classification	Tensile strength (N/mm^2)	Hardness (HB)	min	max	min	max	min	max	min	max
P	Unalloyed steel	<600	<180	0.30	1.2	0.30	1.00	0.50	4.00	0.08	0.15
		<950	<280								
	Alloyed steel	700-950	200-280			0.30	1.00			0.06	0.12
		950-1200	280-355								
		1200-1400	355-415								
M	Duplex stainless steel	778	230			0.25	0.80			0.06	0.12
	Austenitic stainless steel	675	200								
	Precipitation-hardening stainless steel	1013	300			0.25	0.60				
K	Grey cast iron	700	220			0.30	1.00			0.08	0.15
	Nodular cast iron	880	260								
	Malleable cast iron	800	250								
N	Aluminum	260	75			-	-			-	-
	Aluminum alloy	447	130								
S	Fe-based alloy	943	280			0.25	0.60			0.06	0.10
	Co-based alloy	1076	320								
	Ni-based alloy	1177	350								
	Ti-alloy	1262	370								
H	Hardened steel	-	50-60HRC			0.25	0.60			0.06	0.10
	Chilled cast iron	-	55HRC								

*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

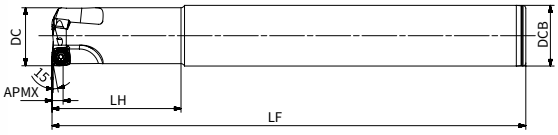
AHM15-XD09

15° Approaching angle high feed milling cutter

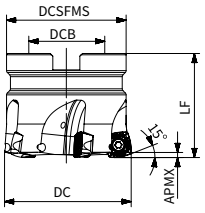




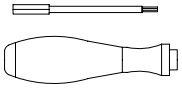
Product code	DC	DCB	LF	LH	APMX	Internal coolant	Z	Inserts
AHM15-025-Z02-W25R-XD09-C	25	25	96	38	1.5		2	XD..0904..
AHM15-032-Z03-W32R-XD09-C	32	32	100	38	1.5		3	



Product code	DC	DCB	LF	LH	APMX	Internal coolant	Z	Inserts
AHM15-025-Z02-C25R-XD09-C	25	25	200	49	1.5		2	XD..0904..
AHM15-026-Z02-C25R-XD09-L180-C	26	25	180	29	1.5		2	
AHM15-032-Z03-C32R-XD09-C	32	32	250	69	1.5		3	



Product code	DC	DCB	DCSFMS	LF	APMX	Internal coolant	Z	Inserts
AHM15-040-Z03-A16R-XD09-C	40	16	35	32	1.5		3	XD..0904..
AHM15-040-Z04-A16R-XD09-C	40	16	35	32	1.5		4	
AHM15-040-Z05-A16R-XD09-C	40	16	35	32	1.5		5	
AHM15-050-Z05-A22R-XD09-C	50	22	46	40	1.5		5	
AHM15-050-Z06-A22R-XD09-C	50	22	46	40	1.5		6	

Dimension (mm)	Spare parts		
Cutter diameter	Screw	Wrench	Torque
⌀25-50			3.0Nm
	SP035086	DT-TP10	

Note: With internal coolant
Without internal coolant

Product code	Dimension (mm)		P			M	K		S
	Corner radius	Wiper length	AP251U	AP351U	AC301P	AP403M	AC301K	AP251K	AP403S
XDLT 090408ER-MM3	0.8	1.3	●	▲	▲		▲		●
XDMW 090408ER-HR2	0.8	1.3					▲		

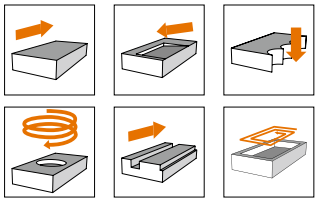
●: Stock available ▲: Stock available now but will be replaced in the future.

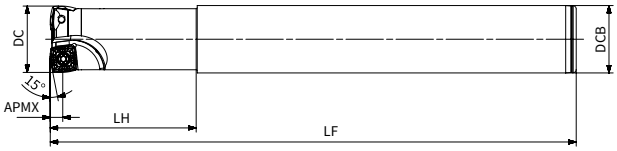
Materials				Depth(width) of cut and feed rate							
				XD..0904..							
				High feed milling				Plunging			
ISO	Material classification	Tensile strength (N/mm^2)	Hardness (HB)	ap		fz		ae		fz	
				(mm)							
				min	max	min	max	min	max	min	max
P	Unalloyed steel	<600	<180	0.20	1.50	0.30	1.50	0.00	7.00	0.05	0.15
		<950	<280								
	Alloyed steel	700-950	200-280			0.30	1.50			0.05	0.12
		950-1200	280-355								
		1200-1400	355-415								
M	Duplex stainless steel	778	230			0.20	0.80			0.05	0.10
	Austenitic stainless steel	675	200								
	Precipitation-hardening stainless steel	1013	300			0.10	0.40			0.05	0.08
K	Grey cast iron	700	220			0.30	1.50			0.05	0.15
	Nodular cast iron	880	260								
	Malleable cast iron	800	250								
N	Aluminum	260	75			-	-			-	-
	Aluminum alloy	447	130								
S	Fe-based alloy	943	280			0.10	0.50			0.05	0.10
	Co-based alloy	1076	320								
	Ni-based alloy	1177	350								
	Ti-alloy	1262	370								
H	Hardened steel	-	50-60HRC			0.30	1.00			0.05	0.10
	Chilled cast iron	-	55HRC								

*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

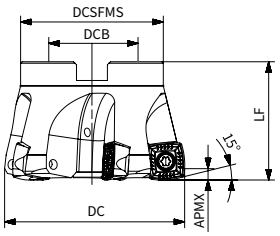
AHM15-XD12

15° Approaching angle high feed milling cutter



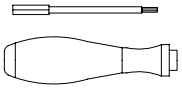


Product code	DC	DCB	LF	LH	APMX	Internal coolant	Z	Inserts
AHM15-032-Z02-C32R-XD12-C	32	32	250	70	2.5		2	XD..1205..



Product code	DC	DCB	DCSFMS	LF	APMX	Internal coolant	Z	Inserts
AHM15-052-Z03-A22R-XD12-C	52	22	45	40	2.5		3	
AHM15-052-Z04-A22R-XD12-C	52	22	45	40	2.5		4	
AHM15-052-Z05-A22R-XD12-C	52	22	45	40	2.5		5	
AHM15-063-Z04-A22R-XD12-C	63	22	48	40	2.5		4	
AHM15-063-Z05-A22R-XD12-C	63	22	48	40	2.5		5	
AHM15-063-Z04-60A22R-XD12-C	63	22	60	40	2.5		4	
AHM15-063-Z05-60A22R-XD12-C	63	22	60	40	2.5		5	
AHM15-066-Z04-A27R-XD12-C	66	27	50	45	2.5		4	
AHM15-066-Z05-A27R-XD12-C	66	27	50	45	2.5		5	
AHM15-066-Z04-63A27R-XD12-C	66	27	63	45	2.5		4	
AHM15-066-Z05-63A27R-XD12-C	66	27	63	45	2.5		5	
AHM15-080-Z05-A27R-XD12-C	80	27	55	50	2.5		5	XD..1205..
AHM15-080-Z08-A27R-XD12-C	80	27	55	50	2.5		8	
AHM15-080-Z05-76A27R-XD12-C	80	27	76	50	2.5		5	
AHM15-080-Z08-76A27R-XD12-C	80	27	76	50	2.5		8	
AHM15-100-Z06-A32R-XD12-C	100	32	80	50	2.5		6	
AHM15-100-Z09-A32R-XD12-C	100	32	80	50	2.5		9	
AHM15-100-Z06-96A32R-XD12-C	100	32	96	50	2.5		6	
AHM15-100-Z09-96A32R-XD12-C	100	32	96	50	2.5		9	
AHM15-125-Z08-A40R-XD12-C	125	40	89	63	2.5		8	
AHM15-125-Z11-A40R-XD12-C	125	40	89	63	2.5		11	
AHM15-125-Z08-100A40R-XD12-C	125	40	100	63	2.5		8	
AHM15-125-Z11-100A40R-XD12-C	125	40	100	63	2.5		11	

Note: With internal coolant
Without internal coolant

Dimension (mm)	Spare parts		
Cutter diameter	Screw	Wrench	Torque
⌀32-125			3.5Nm
	SP040112	DT-TP15	

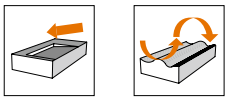
Product code	Dimension (mm)		P			M	K		N
	Corner radius	Wiper length	AP251U	AP351U	AC301P	AP403M	AC301K	AP251K	AW100K
XDLT 120508ER-MM3	0.8	2.2	●	▲	▲		▲	●	●
XDLT 120512ER-MM3	1.2	2.2	●	▲	▲		▲	●	
XDMW 120508ER-HR2	0.8	2.2	●				▲		

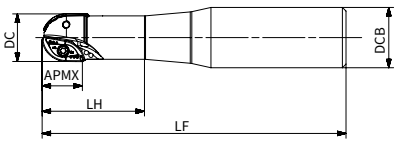
●: Stock available ▲: Stock available now but will be replaced in the future.

Materials				Depth(width) of cut and feed rate							
				XD..1205..							
				High feed milling				Plunging			
				ap		fz		ae		fz	
				(mm)							
ISO	Material classification	Tensile strength (N/mm^2)	Hardness (HB)	min	max	min	max	min	max	min	max
P	Unalloyed steel	<600	<180	0.50	2.50	0.30	2.00	0.00	10.00	0.06	0.18
		<950	<280								
	Alloyed steel	700-950	200-280			0.30	2.00			0.06	0.15
		950-1200	280-355								
		1200-1400	355-415								
M	Duplex stainless steel	778	230			0.20	1.00			0.06	0.12
	Austenitic stainless steel	675	200								
	Precipitation-hardening stainless steel	1013	300			0.10	0.60			0.05	0.10
K	Grey cast iron	700	220			0.30	2.00			0.06	0.18
	Nodular cast iron	880	260								
	Malleable cast iron	800	250								
N	Aluminum	260	75			-	-			-	-
	Aluminum alloy	447	130								
S	Fe-based alloy	943	280			0.30	2.00			0.05	0.12
	Co-based alloy	1076	320								
	Ni-based alloy	1177	350								
	Ti-alloy	1262	370								
H	Hardened steel	-	50-60HRC			0.30	1.00			0.05	0.12
	Chilled cast iron	-	55HRC								

*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

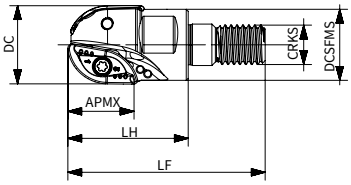
APM00-RP
Profile milling



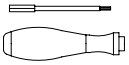


Product code	DC	DCB	LF	LH	APMX	Internal coolant	Z	Inserts
APM00-016-Z02-C20R-RP080-L120-C	16	20	120	35	14		2	RPM 080ER-MM4
APM00-020-Z02-C25R-RP100-L126-C	20	25	126	43	18		2	RPM 100ER-MM4
APM00-020-Z02-C25R-RP100-L176-C	20	25	176	43	18		2	

APM00-RP
Profile milling



Product code	DC	LF	LH	CRKS	DCSFMS	APMX	Internal coolant	Z	Inserts
APM00-016-Z02-M10R-RP080-C	16	49	28	M10	15	14		2	RPM 080ER-MM4
APM00-020-Z02-M10R-RP100-C	20	50	30	M10	15	18		2	RPM 100ER-MM4

Dimension (mm)	Spare parts			
Cutter diameter	Screw	Wrench	Wrench	Torque
⌀16				1.8Nm
	SP02506450H	DT-TP08	AFW-15	
⌀20	SP030072H	DT-TP09		

Note: With internal coolant
Without internal coolant

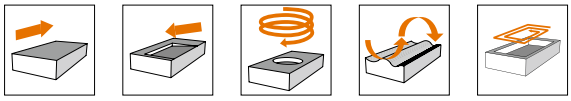
Product code	Dimension (mm)		P		M		K	S
	Corner radius	Wiper length	AP251U	AP351U	AP401U	AP351M	AP351K	AP403S
RPM 080ER-MM4	8	-	●	▲	●	●		●
RPM 100ER-MM4	10	-	●	▲	●	●		●

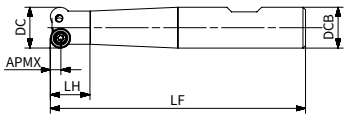
●: Stock available ▲: Stock available now but will be replaced in the future.

Materials				Cutting depth and feed			
ISO	Material classification	Tensile strength (N/mm^2)	Hardness (HB)	RPM....			
				ap		MM4 fz	
				(mm)			
				min	max	min	max
P	Unalloyed steel	<600	<180	0.20	15.00	0.10	0.20
		<950	<280				
	Alloyed steel	700-950	200-280			0.10	0.18
		950-1200	280-355				
		1200-1400	355-415				
M	Duplex stainless steel	778	230			0.10	0.18
	Austenitic stainless steel	675	200				
	Precipitation-hardening stainless steel	1013	300				
K	Grey cast iron	700	220			-	-
	Nodular cast iron	880	260				
	Malleable cast iron	800	250				
N	Aluminum	260	75			-	-
	Aluminum alloy	447	130				
S	Fe-based alloy	943	280			0.06	0.12
	Co-based alloy	1076	320				
	Ni-based alloy	1177	350				
	Ti-alloy	1262	370				
H	Hardened steel	-	50-60HRC			-	-
	Chilled cast iron	-	55HRC				

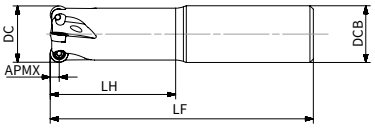
*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

APM00-RO08
Profile milling

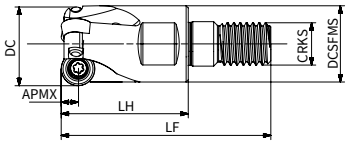




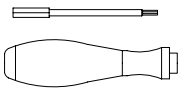
Product code	DC	DCB	LF	LH	APMX	Internal coolant	Z	Inserts
APM00-016-Z02-W16R-RO08-L100	16	16	100	15.6	4		2	RO..0803..



Product code	DC	DCB	LF	LH	APMX	Internal coolant	Z	Inserts
APM00-025-Z04-C25R-RO08-L116-C	25	25	116	55.3	4		4	RO..0803..



Product code	DC	CRKS	DCSFMS	LF	LH	APMX	Internal coolant	Z	Inserts
APM00-020-Z03-M10R-RO08-C	20	M10	18	49.5	30	4		3	RO..0803..

Dimension (mm)	Spare parts		
Cutter diameter	Screw	Wrench	Torque
⌀16-25			2.0Nm
	SP030072H	DT-TP09	

Note: With internal coolant
Without internal coolant

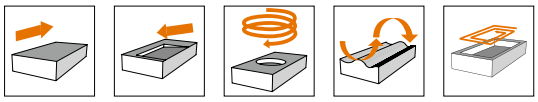
Product code	Dimension (mm)		P			M	K		S
	IC	S	AP251U	AP351U	AC301P	AP403M	AC301K	AP251K	AP403S
ROHT 0803MOE-MM3	8	3.18				●			●

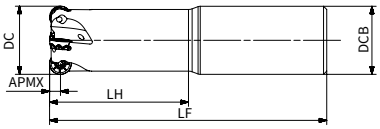
●: Stock available ▲: Stock available now but will be replaced in the future.

Materials				Cutting depth and feed					
				RO..0803..					
				MM3					
ISO	Material classification	Tensile strength (N/mm^2)	Hardness (HB)	ap		fz			
						0.1 < ap ⩽ 1		1 < ap ⩽ 4	
				(mm)					
				min	max	min	max	min	max
P	Unalloyed steel	<600	<180	0.50	4.00	0.15	0.50	0.08	0.30
		<950	<280						
	Alloyed steel	700-950	200-280			0.12	0.45	0.06	0.28
		950-1200	280-355						
		1200-1400	355-415						
M	Duplex stainless steel	778	230			0.10	0.40	0.06	0.25
	Austenitic stainless steel	675	200						
	Precipitation-hardening stainless steel	1013	300						
K	Grey cast iron	700	220			-	-	-	-
	Nodular cast iron	880	260						
	Malleable cast iron	800	250						
N	Aluminum	260	75			0.10	0.35	0.06	0.25
	Aluminum alloy	447	130						
S	Fe-based alloy	943	280			-	-	-	-
	Co-based alloy	1076	320						
	Ni-based alloy	1177	350						
	Ti-alloy	1262	370						
H	Hardened steel	-	50-60HRC			-	-	-	-
	Chilled cast iron	-	55HRC						

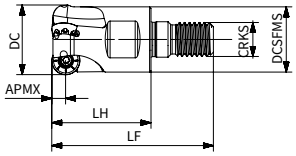
*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

APM00-RO10
Profile milling

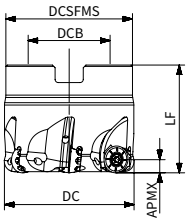




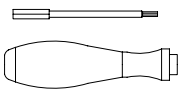
Product code	DC	DCB	LF	LH	APMX	Internal coolant	Z	Inserts
APM00-025-Z03-C25R-RO10-L225-C	25	25	225	56.2	5		3	R0..10T3..
APM00-032-Z04-C32R-RO10-L130-C	32	32	130	65	5		4	



Product code	DC	CRKS	DCSFMS	LF	LH	APMX	Internal coolant	Z	Inserts
APM00-025-Z03-M12R-RO10-C	25	M12	23	59	35	5		3	R0..10T3..
APM00-032-Z04-M16R-RO10-C	32	M16	29	70	43	5		4	



Product code	DC	DCB	DCSFMS	LF	APMX	Internal coolant	Z	Inserts
APM00-040-Z05-A16R-RO10-C	40	16	35	40	5		5	R0..10T3..
APM00-050-Z06-A22R-RO10-C	50	22	47	40	5		6	

Dimension (mm)	Spare parts		
Cutter diameter	Screw	Wrench	Torque
⌀25-50			2.0Nm
	SP030072H	DT-TP09	

Note: With internal coolant
Without internal coolant

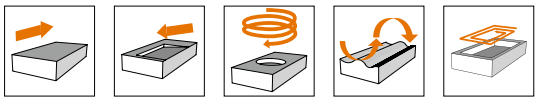
Product code	Dimension (mm)		P			M	K		S
	IC	S	AP251U	AP351U	AC301P	AP403M	AC301K	AP251K	AP403S
ROHT 10T3M8E-MM3	10	3.97				●			●
ROMT 10T3M4E-MR6	10	3.97				●			●

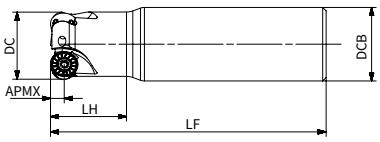
●: Stock available ▲: Stock available now but will be replaced in the future.

Materials				Cutting depth and feed									
				RO..10T3..									
ISO	Material classification	Tensile strength (N/mm^2)	Hardness (HB)	ap		MM3				MR6			
						fz				fz			
						0.1 < ap ⩽ 1.2		1.2 < ap ⩽ 5		0.1 < ap ⩽ 1.2		1.2 < ap ⩽ 5	
				(mm)									
				min	max	min	max	min	max	min	max	min	max
P	Unalloyed steel	<600	<180	0.80	5.00	0.15	0.55	0.10	0.30	0.15	0.60	0.10	0.32
		<950	<280										
	Alloyed steel	700-950	200-280			0.12	0.50	0.08	0.28	0.12	0.55	0.08	0.30
		950-1200	280-355										
		1200-1400	355-415										
M	Duplex stainless steel	778	230			0.10	0.45	0.08	0.25	0.10	0.50	0.08	0.28
	Austenitic stainless steel	675	200										
	Precipitation-hardening stainless steel	1013	300										
K	Grey cast iron	700	220			-	-	-	-	-	-	-	-
	Nodular cast iron	880	260										
	Malleable cast iron	800	250										
N	Aluminum	260	75			-	-	-	-	-	-	-	-
	Aluminum alloy	447	130										
S	Fe-based alloy	943	280			0.10	0.40	0.08	0.25	-	-	-	-
	Co-based alloy	1076	320										
	Ni-based alloy	1177	350										
	Ti-alloy	1262	370										
H	Hardened steel	-	50-60HRC			-	-	-	-	-	-	-	-
	Chilled cast iron	-	55HRC										

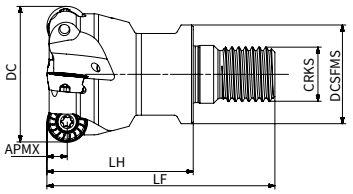
*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

APM00-RO12
Profile milling

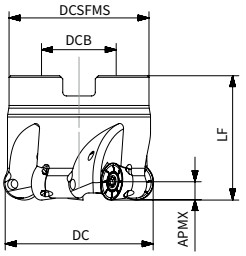




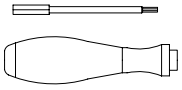
Product code	DC	DCB	LF	LH	APMX	Internal coolant	Z	Inserts
APM00-032-Z03-C32R-RO12-L120-C	32	32	120	33	6		3	RO..1204..



Product code	DC	CRKS	DCSFMS	LF	LH	APMX	Internal coolant	Z	Inserts
APM00-040-Z04-M16R-RO12-C	40	M16	29	70	43	6		4	RO..1204..



Product code	DC	DCB	DCSFMS	LF	APMX	Internal coolant	Z	Inserts
APM00-040-Z04-A16R-RO12-C	40	16	35	40	6		4	RO..1204..
APM00-050-Z05-A22R-RO12-C	50	22	45	40	6		5	
APM00-063-Z06-A22R-RO12-C	63	22	48	40	6		6	
APM00-080-Z07-A27R-RO12-C	80	27	62	50	6		7	

Dimension (mm)	Spare parts		
Cutter diameter	Screw	Wrench	Torque
⌀32-80			4.0Nm
	SP040085H	DT-TP10	

Note: With internal coolant
Without internal coolant

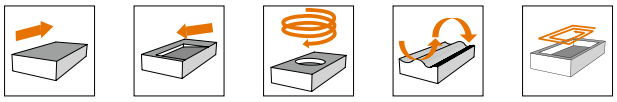
Product code	Dimension (mm)		P			M	K		S
	IC	S	AP251U	AP351U	AC301P	AP403M	AC301K	AP251K	AP403S
ROHT 1204M4E-MM3	12	4.76				●			●
ROHT 1204M6E-MM3	12	4.76				●			●
ROMT 1204M6E-MR6	12	4.76				●			●

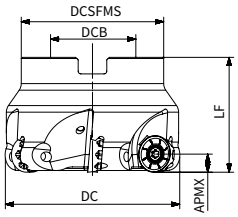
●: Stock available ▲: Stock available now but will be replaced in the future.

Materials				Cutting depth and feed									
				RO..1204..									
ISO	Material classification	Tensile strength (N/mm^2)	Hardness (HB)	ap		MM3				MR6			
						fz							
						0.1 < ap ⩽ 1.5		1.5 < ap ⩽ 6		0.1 < ap ⩽ 1.5		1.5 < ap ⩽ 6	
				(mm)									
				min	max	min	max	min	max	min	max	min	max
P	Unalloyed steel	<600	<180	0.80	6.00	0.18	0.60	0.12	0.32	0.18	0.65	0.12	0.35
		<950	<280										
	Alloyed steel	700-950	200-280			0.15	0.55	0.10	0.30	0.15	0.60	0.10	0.32
		950-1200	280-355										
		1200-1400	355-415										
M	Duplex stainless steel	778	230			0.12	0.50	0.10	0.28	0.12	0.55	0.10	0.30
	Austenitic stainless steel	675	200										
	Precipitation-hardening stainless steel	1013	300										
K	Grey cast iron	700	220			-	-	-	-	-	-	-	-
	Nodular cast iron	880	260										
	Malleable cast iron	800	250										
N	Aluminum	260	75			-	-	-	-	-	-	-	-
	Aluminum alloy	447	130										
S	Fe-based alloy	943	280			0.12	0.45	0.10	0.28	-	-	-	-
	Co-based alloy	1076	320										
	Ni-based alloy	1177	350										
	Ti-alloy	1262	370										
H	Hardened steel	-	50-60HRC			-	-	-	-	-	-	-	-
	Chilled cast iron	-	55HRC										

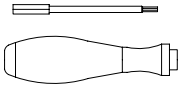
*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

APM00-RO16
Profile milling





Product code	DC	DCB	DCSFMS	LF	APMX	Internal coolant	Z	Inserts
APM00-063-Z05-A22R-RO16-C	63	22	48	40	8		5	RO..1605..
APM00-080-Z06-A27R-RO16-C	80	27	62	50	8		6	
APM00-100-Z07-A32R-RO16-C	100	32	80	50	8		7	

Dimension (mm)	Spare parts		
Cutter diameter	Screw	Wrench	Torque
⌀63-100			5.0Nm
	SP050120	DT-TP20	

Note: With internal coolant
Without internal coolant

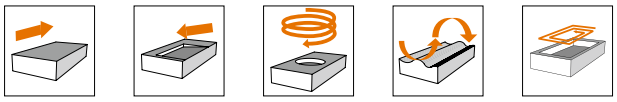
Product code	Dimension (mm)		P			M	K		S
	IC	S	AP251U	AP351U	AC301P	AP403M	AC301K	AP251K	AP403S
ROHT 1605M8E-MM3	16	5.56				●			●
ROMT 1605M6E-MR6	16	5.56				●			●

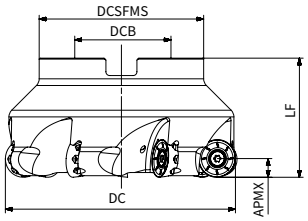
●: Stock available ▲: Stock available now but will be replaced in the future.

Materials				Cutting depth and feed									
				RO..1605..									
ISO	Material classification	Tensile strength (N/mm^2)	Hardness (HB)	ap		MM3				MR6			
						fz							
						0.1 < ap ⩽ 1.5		1.5 < ap ⩽ 8		0.1 < ap ⩽ 1.5		1.5 < ap ⩽ 8	
				(mm)									
				min	max	min	max	min	max	min	max	min	max
P	Unalloyed steel	<600	<180	0.80	8.00	0.20	0.65	0.12	0.35	0.20	0.68	0.12	0.38
		<950	<280										
	Alloyed steel	700-950	200-280			0.18	0.60	0.10	0.32	0.18	0.65	0.10	0.35
		950-1200	280-355										
		1200-1400	355-415										
M	Duplex stainless steel	778	230			0.15	0.55	0.10	0.30	0.15	0.58	0.10	0.32
	Austenitic stainless steel	675	200										
	Precipitation-hardening stainless steel	1013	300										
K	Grey cast iron	700	220			-	-	-	-	-	-	-	-
	Nodular cast iron	880	260										
	Malleable cast iron	800	250										
N	Aluminum	260	75			-	-	-	-	-	-	-	-
	Aluminum alloy	447	130										
S	Fe-based alloy	943	280			0.15	0.50	0.10	0.30	-	-	-	-
	Co-based alloy	1076	320										
	Ni-based alloy	1177	350										
	Ti-alloy	1262	370										
H	Hardened steel	-	50-60HRC			-	-	-	-	-	-	-	-
	Chilled cast iron	-	55HRC										

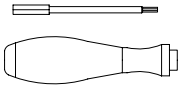
*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

APM00-RO20
Profile milling





Product code	DC	DCB	DCSFMS	LF	APMX	Internal coolant	Z	Inserts
APM00-100-Z06-A32R-RO20-C	100	32	80	50	10	✓	6	RO..2006..
APM00-125-Z07-A40R-RO20-C	125	40	87	63	10	✓	7	
APM00-160-Z08-A40R-RO20	160	40	107	63	10	✗	8	

Dimension (mm)	Spare parts		
Cutter diameter	Screw	Wrench	Torque
⌀100-160			7.0Nm
	ST060180	DT-T25	

Note: ✓ With internal coolant
✗ Without internal coolant

Product code	Dimension (mm)		P			M	K		S
	IC	S	AP251U	AP351U	AC301P	AP403M	AC301K	AP251K	AP403S
ROHT 2006M8E-MM3	20	6.35				●			●
ROMT 2006M8E-MR6	20	6.35				●			●

●: Stock available ▲: Stock available now but will be replaced in the future.

Materials				Cutting depth and feed									
				RO..2006..									
ISO	Material classification	Tensile strength (N/mm^2)	Hardness (HB)	ap		MM3				MR6			
						fz							
						0.1 < ap ⩽ 2.5		2.5 < ap ⩽ 10		0.1 < ap ⩽ 2.5		2.5 < ap ⩽ 10	
				(mm)									
				min	max	min	max	min	max	min	max	min	max
P	Unalloyed steel	<600	<180	1.00	10.00	0.20	0.70	0.15	0.38	0.20	0.80	0.15	0.40
		<950	<280										
	Alloyed steel	700-950	200-280			0.18	0.65	0.12	0.35	0.18	0.70	0.12	0.38
		950-1200	280-355										
		1200-1400	355-415										
M	Duplex stainless steel	778	230			0.15	0.60	0.12	0.32	0.15	0.65	0.12	0.35
	Austenitic stainless steel	675	200										
	Precipitation-hardening stainless steel	1013	300										
K	Grey cast iron	700	220			-	-	-	-	-	-	-	-
	Nodular cast iron	880	260										
	Malleable cast iron	800	250										
N	Aluminum	260	75			-	-	-	-	-	-	-	-
	Aluminum alloy	447	130										
S	Fe-based alloy	943	280			0.15	0.55	0.12	0.32	-	-	-	-
	Co-based alloy	1076	320										
	Ni-based alloy	1177	350										
	Ti-alloy	1262	370										
H	Hardened steel	-	50-60HRC			-	-	-	-	-	-	-	-
	Chilled cast iron	-	55HRC										

*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

Milling Insert Denomination System

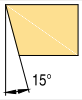
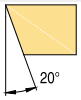
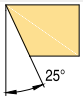
A	O	M	T
1	2	3	4

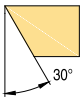
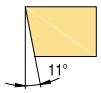
1- Shape/Code

A	H	M	O	R
				
85°	120°	86°	135°	360°

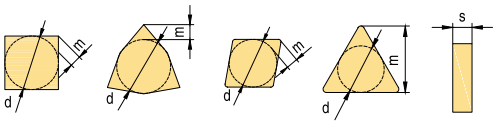
S	T	Z	X
			Special
90°	60°	86°	

2- Clearance Angle

C	D	E	F
			
7°	15°	20°	25°

G	N	P	O
			Other clearance angle
30°	0°	11°	

3- Tolerance



Class	Unit	In.Circle dimension d	Nose height m	Thickness s
A	mm	± 0,025	± 0,005	± 0,025
C	mm	± 0,025	± 0,013	± 0,025
E	mm	± 0,025	± 0,025	± 0,025
F	mm	± 0,013	± 0,005	± 0,025
G	mm	± 0,025	± 0,025	± 0,13
H	mm	± 0,013	± 0,013	± 0,025
J	mm	*	± 0,005	± 0,025
K	mm	*	± 0,013	± 0,025
L	mm	*	± 0,025	± 0,025
M	mm	*	*	± 0,127
U	mm	*	*	± 0,127
N	mm	*	*	± 0,025

* For details refer to right and below tables

Shape: C, E, H, M, O, P, S, T, R, W				
IC	d		m	
	J,K,L,M,N	U	M, N	U
4.76	± 0,05	± 0,08	± 0,08	± 0,13
5.56	± 0,05	± 0,08	± 0,08	± 0,13
6	± 0,05	± 0,08	± 0,08	± 0,13
6.35	± 0,05	± 0,08	± 0,08	± 0,13
7.94	± 0,05	± 0,08	± 0,08	± 0,13
8	± 0,05	± 0,08	± 0,08	± 0,13
9.525	± 0,05	± 0,08	± 0,08	± 0,13
10	± 0,05	± 0,08	± 0,08	± 0,13
12	± 0,08	± 0,13	± 0,13	± 0,2
12.7	± 0,08	± 0,13	± 0,13	± 0,2
15.875	± 0,1	± 0,18	± 0,15	± 0,27
16	± 0,1	± 0,18	± 0,15	± 0,27
19.05	± 0,1	± 0,18	± 0,15	± 0,27
20	± 0,1	± 0,18	± 0,15	± 0,27
25	± 0,13	± 0,25	± 0,18	± 0,38
25.4	± 0,13	± 0,25	± 0,18	± 0,38
31.75	± 0,15	± 0,25	± 0,2	± 0,38
32	± 0,15	± 0,25	± 0,2	± 0,38

M&N shape	D shape		V shape	
IC	d	m	d	m
5.56	± 0,05	± 0,11		
6.35	± 0,05	± 0,11	± 0,05	± 0,16
7.94	± 0,05	± 0,11	± 0,05	± 0,16
9.525	± 0,05	± 0,11	± 0,05	± 0,16
12.7	± 0,08	± 0,15	± 0,08	± 0,2
15.875	± 0,10	± 0,18	± 0,10	± 0,27
19.05	± 0,10	± 0,18	± 0,10	± 0,27

4- Clamping Type

A	B	C	F	G
				
	70°-90°	70°-90°		

H	J	M	N	Q
				
70°-90°	70°-90°			40°-60°

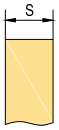
R	T	U	W	Z
				Special
	40°-60°	40°-60°	40°-60°	

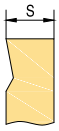
12	04	08	E	R	-	MM4
5	6	7	8	9	-	10

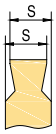
5- Cutting Edge Length

In.Circle dimension (mm)	H	M	O	R	S	T	Z
3.180						05	
3.970						06	
5.000				05			
5.560						09	
6.000				06			
6.350						11	
7.940						13	
8.000				08			
9.525				09	09	16	
10.000				10			
12.000				12			
12.700			04	12	12	22	
15.875				15	15	27	
16.000			06	16			
19.050				19	19	33	
20.000				20			
25.000				25	25		
25.400				25			
31.750				31			
32.000				32			

6- Insert Thickness





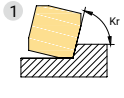


01=1.59mm
T1=1.98mm
02=2.38mm
T2=2.78mm
03=3.18mm
T3=3.97mm
04=4.76mm
05=5.56mm
06=6.35mm
07=7.94mm
09=9.52mm

7-Corner Radius and Wiper Edge

00	= sharp	24	= 2.4
01	= 0.1	28	= 2.8
02	= 0.2	32	= 3.2
04	= 0.4	40	= 4.0
08	= 0.8	48	= 4.8
12	= 1.2	56	= 5.6
16	= 1.6	64	= 6.4
20	= 2.0	X	= others

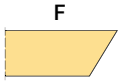
Round insert:MO refers to metric dia. size



1 Approach angle(Entering angle) (kr)
A = 45°
D = 60°
E = 75°
F = 85°
P = 90°
Z = Others

2 Clearance angle of wiper edge (n)
A = 3°
B = 5°
C = 7°
D = 15°
E = 20°
F = 25°
G = 30°
N = 0°
P = 11°
Z = Others

8- Edge Preparation



F
Sharp cutting edge

E
Honed cutting edge

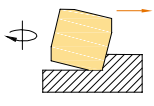
T
Negative land

K
Double negative land

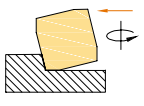
S
Negative land +honed

P
Double negative land +honed

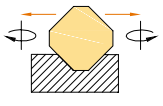
9-Hand of Tool



R
Right hand



L
Left hand



N
Neutral

10-Geometry Refers to Geometry Introduction

Marked: if it has corner radius, the information needs to put between thickness and wipers.
Example: APET 160408PDFR-FM2

ACHTECK

www.achtecktool.com/en

THE EXPERT OF DIFFICULT MACHINING

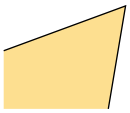
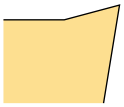
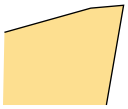
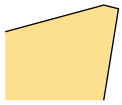
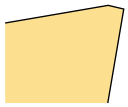
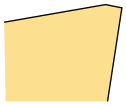
Milling Inserts

Geometry Application Guide

Materials				Milling geometry application table						
				FM2	MM3	MM4	MR2	MR6	RR2	HR2
ISO	Material classification	Tensile strength (N/mm^2)	Hardness (HB)	Suitable for machining aluminium alloy	Light cutting	General purpose	Medium machining	Roughing	Heavy roughing	Roughing
P	Unalloyed steel	<600	<180	-	◐	●	●	●	-	-
		<950	<280	-	◐	●	●	●	-	-
	Alloyed steel	700-950	200-280	-	◐	●	●	●	-	-
		950-1200	280-355	-	◐	●	●	●	-	-
		1200-1400	355-415	-	◐	●	●	●	-	-
M	Duplex stainless steel	778	230	-	◐	●	◐	-	-	-
	Austenitic stainless steel	675	200	-	◐	●	◐	-	-	-
	Precipitation-hardening stainless steel	1013	300	-	◐	●	◐	-	-	-
K	Grey cast iron	700	220	-	-	◐	●	●	●	●
	Nodular cast iron	880	260	-	-	◐	●	●	●	●
	Malleable cast iron	800	250	-	-	◐	●	●	●	●
N	Aluminum	260	75	●	-	-	-	-	-	-
	Aluminum alloy	447	130	●	-	-	-	-	-	-
S	Fe-based alloy	943	280	-	●	◐	◐	-	-	-
	Co-based alloy	1076	320	-	●	◐	◐	-	-	-
	Ni-based alloy	1177	350	-	●	◐	◐	-	-	-
	Ti-alloy	1262	370	-	●	◐	◐	-	-	-
H	Hardened steel	-	50-60HRC	-	-	◐	●	-	-	-
	Chilled cast iron	-	55HRC	-	-	◐	●	-	-	-

● 1st choice
◐ 2nd choice
- Inapplicable

Milling Geometry Introduction

Insert geometry	Edge shape	Application
FM2		▪ Low cutting force, for weak machining condition ▪ Sharp geometry ▪ For aluminium material machining
MM3		▪ Low cutting force, for weak machining condition ▪ Sharp geometry ▪ For steel, stainless-steel and heat resistant alloy machining.
MM4		▪ For medium machining condition ▪ Universal geometry ▪ For machining most materials
MR2		▪ For medium or better machining condition ▪ Universal geometry ▪ For machining most materials
MR6		▪ For stable machining condition ▪ Roughing geometry ▪ For machining most materials
HR2		▪ For stable machining condition ▪ Roughing geometry ▪ Mainly for cast iron machining
RR2		▪ For stable machining condition ▪ Heavy roughing geometry ▪ Mainly for cast iron and steel machining
IT		▪ Sharp geometry, for specified product
DT		▪ Universal geometry, for specified product

Grade Application Guide

Milling grade ISO group														
Material Group	Materials	ISO	coated											ISO
			PVD	PVD	PVD	PVD	PVD	PVD	PVD	PVD	CVD	CVD	Uncoated	
P	unalloy steels / Alloyed steels	P01												P01
		P05												P05
		P10												P10
		P15	AP251U											P15
		P20												P20
		P25									AC301P			P25
		P30		AP351U										P30
		P35			AP351M									P35
		P40												P40
		P45												P45
		P50												P50
M	Stainless steels	M01												M01
		M05												M05
		M10												M10
		M15	AP251U											M15
		M20												M20
		M25												M25
		M30			AP351M									M30
		M35					AP403S	AP403M						M35
		M40												M40
		M45												M45
		M50												M50
K	Cast iron	K01												K01
		K05												K05
		K10		AP151H							AC301K			K10
		K15	AP251K											K15
		K20												K20
		K25												K25
		K30												K30
		K35												K35
		K40												K40
		K45												K45
		K50												K50
N	Aluminum/ Aluminum alloys	N01												N01
		N05												N05
		N10											AW100K	N10
		N15												N15
		N20												N20
		N25												N25
		N30												N30
S	Heat resistant alloys	S01												S01
		S05												S05
		S10												S10
		S15												S15
		S20												S20
		S25		AP351M										S25
		S30												S30
		S35			AP403S	AP403M								S35
		S40												S40
		S45												S45
		S50												S50
H	Hardened steels/ Chilled cast iron	H01												H01
		H05												H05
		H10	AP151H											H10
		H15												H15
		H20												H20
		H25												H25
		H30												H30

Grade Application Guide

Materials				Milling grade application										
				PVD coated						CVD coated		PVD coated		Uncoated
ISO	Material classification	Tensile strength (N/mm^2)	Hardness (HB)	AP251U	AP351U	AP351M	AP401U	AP403S	AP403M	AC301P	AC301K	AP251K	AP151H	AW100K
P	Unalloyed steel	<600	<180	●	●	●	◐		●	●	◐	-	-	-
		<950	<280	●	●	●	◐		●	●	◐	-	-	-
	Alloyed steel	700-950	200-280	●	●	●	◐		●	●	◐	-	-	-
		950-1200	280-355	●	●	●	◐		●	●	◐	-	-	-
		1200-1400	355-415	●	●	●	◐		●	●	◐	-	-	-
M	Duplex stainless steel	778	230	◐	●	●	●	●	●	◐	-	-	-	-
	Austenitic stainless steel	675	200	◐	●	●	●	●	●	◐	-	-	-	-
	Precipitation-hardening stainless steel	1013	300	◐	●	●	●	●	●	◐	-	-	-	-
K	Grey cast iron	700	220	-	-	-	-	-	-	-	●	●	●	-
	Nodular cast iron	880	260	-	-	-	-	-	-	-	●	●	●	-
	Malleable cast iron	800	250	-	-	-	-	-	-	-	●	●	●	-
N	Aluminum	260	75	-	-		-			-	-	-	-	●
	Aluminum alloy	447	130	-	-		-			-	-	-	-	●
S	Fe-based alloy	943	280	-	◐	●	◐	●	●	-	-	-	-	-
	Co-based alloy	1076	320	-	◐	●	◐	●	●	-	-	-	-	-
	Ni-based alloy	1177	350	-	◐	●	◐	●	●	-	-	-	-	-
	Ti-alloy	1262	370	-	◐	●	◐	●	●	-	-	-	-	◐
H	Hardened steel	-	50-60HRC	-	-		-			-	-	-	●	-
	Chilled cast iron	-	55HRC	-	-		-			-	-	-	●	-

● 1st choice
◐ 2nd choice
- Inapplicable

Milling Grade Description

Grade for Normal Milling

P Steel, alloyed steel, unalloyed steel

Basic grade

AP251U P25(P15-P35)

PVD-coated grade, suitable for most applications. First choice for steel machining. It is recommended to be used in rough to finish machining of steel under stable working conditions, good for dry and wet machining with small cutting width, complex tool path and sticky materials.

AC301P P35(P25-P40)

CVD coated grade is suitable for big cutting depth, medium to high speed milling of steel under bad machining conditions.

Supplemental grade

AP351M P35(P25-P45)

PVD coated grade, medium hardness substrate, which is a supplement for AP251U in steel milling when high-toughness is requested.

AP351U P35(P30-P45)

PVD coated grade, medium hardness substrate, which is a supplement for AP251U in steel milling when high-toughness is requested.

M Stainless steel, austenite stainless steel, martensite stainless steel

Basic grade

AP351M M35(M25-M45)

PVD coated grade is used for milling stainless steel and steel at medium and low speed under bad machining conditions.

AP403M M35(M35-M50)

Ultra-thick PVD coated grade is the first choice for stainless steel milling. It is suitable for rough milling of stainless steel under bad machining conditions.

Supplemental grade

AP251U M25(M15-M35)

PVD coated grade is used in rough and finish milling of stainless steel under very stable machining conditions.

AP403S M15(M35-M50)

PVD coated grade, the substrate has both toughness and red hardness characteristics, and is suitable for rough milling of stainless steel under bad machining conditions. Milling at low cutting speed can get longer tool life.

AP351U M35(M30-M45)

PVD coated grade, medium hardness substrate, which is a supplement for AP251U in steel milling when high-toughness is requested. On the way to phase out.

K Cast iron, grey cast iron, nodular cast iron

Basic grade

AC301K K25(K10-K35)

CVD coated grade, suitable for semi-finish milling and rough milling of grey cast iron at medium and high cutting speed, Recommended for dry cutting conditions, can achieve longer tool life.

AP251K K25(K15-K40)

PVD coated grade is suitable for semi-finish and rough milling of grey cast iron and nodular cast iron at medium and low cutting speed, and has good tool life under dry and wet conditions.

Supplemental grade

AP151H K15(K10-K20)

PVD coated grade is suitable for finish milling of grey cast iron and nodular cast iron, which can get constant surface quality and longer tool life.

N Non-ferrous metals

Basic grade

AW100K N15 (N10-N20)

Uncoated grade, combined with sharp cutting edge, used in aluminum alloy milling.

S Heat resistant alloy

Basic grade

AP403S S15(S35-S50)

PVD coated grade, the substrate has both toughness and red hardness characteristics, and is the first choice for titanium alloy machining, as well as the machining of heat resistant alloy under weak rigidity. It is applicable to the milling at low cutting speed and can get longer tool life.

Supplemental grade

AP351M S35(S25-S45)

PVD coated grade is suitable for semi-finishing to light rough machining of heat resistant alloy and titanium alloys.

AP403M S35(S35-S50)

The super-thick PVD coated grade is suitable for low-speed milling of heat resistant alloy and titanium alloys when high toughness is requested, especially in case of large cutting width.

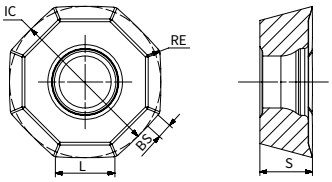
H Hard material, hardened steel

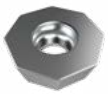
Basic grade

AP151H H15(H10-H20)

PVD coated grade, suitable for milling hardened steel, can be used in rough and finish milling, meeting the needs of most occasions.

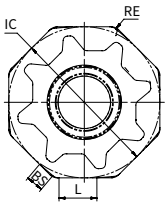
OD..06
Positive octagonal milling inserts

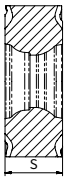


Inserts	Product code	Machining conditions: ● Good condition, ◐ General condition, ✱ Bad condition												
							●	◐	◐	✱	●	●	●
		Dimension (mm)					P			M	K		N
		L	IC	S	RE	BS	AP251U	AP351U	AC301P	AP403M	AC301K	AP251K	AW100K
	**ODET 0605APFN-FM2**	6	16	5.56	0.8	1.6							●
	**ODMT 060508EN-MM3**	6	16	5.56	0.8	-	●	▲	▲		▲	●	
	ODMT 060512EN-MM3	6	16	5.56	1.2	-	●						
	ODHT 0605APEN-MM3	6	16	5.56	0.8	1.6	●	▲			▲	●	
	**ODEW 0605APSR-HR2**	6	16	5.56	-	1.6					▲	●	
	ODMW 060512EN-HR2	6	16	5.56	1.2	-					▲	●	

●: Stock available ▲: Stock available now but will be replaced in the future.

ON..05
Negative octagonal milling inserts

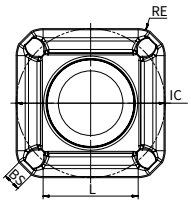




Inserts	Product code	Machining conditions: ● Good condition, ⬌ General condition, ✱ Bad condition												
							●	⬌	⬌	✱	●	●	●
		Dimension (mm)					P			M	K		N
		L	IC	S	RE	BS	AP251U	AP351U	AC301P	AP403M	AC301K	AP251K	AW100K
	**ONHU 050408-MM3**	4	12.7	4.76	0.8	-	●						
	ONMU 050408-MM4	4	12.7	4.76	0.8	-	●	▲			▲	●	
	**ONHU 0504ZNR-MM3**	4	12.7	4.76	0.8	1.4	●						

●: Stock available ▲: Stock available now but will be replaced in the future.

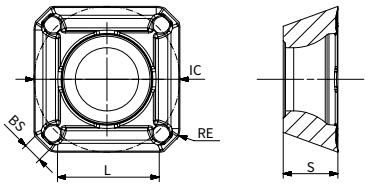
SD..09/12
Positive square milling inserts



Inserts	Product code	L	IC	S	RE	BS	AP251U	AP351U	AC301P	AP403M	AC301K	AP251K	AW100K
		Machining conditions					● Good condition ◐ General condition ✱ Bad condition						
							●	◐	◐	✱	●	●	●
		Dimension (mm)					P			M	K		N
	SDMT 09T304EN-MM3	8.7	9.525	3.97	0.4	-	●	▲	▲		▲		
	**SDMT 09T308EN-MM3**	7.9	9.525	3.97	0.8	-	●	▲			▲		
	SDMT 120408EN-MM4	11.1	12.7	4.76	0.8	-	●	▲		●	▲		
	SDMT 120412EN-MM3	10.3	12.7	4.76	1.2	-	●	●	▲		▲		
	**SDKT 1204AEEN-MR2**	8.1	12.7	4.76	-	2		▲				●	
	**SDGT 09T3PDER-MR6**	6.7	9.525	3.97	0.8	1.2	●	▲			●	●	

●: Stock available ▲: Stock available now but will be replaced in the future.

SE..12
Positive square milling inserts

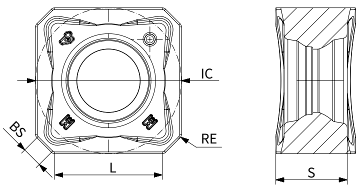


Inserts	Product code	Machining conditions: Dimension (mm) L	IC	S	RE	BS	P: AP251U	P: AP351U	P: AC301P	M: AP403M	K: AC301K	K: AP251K	N: AW100K
							● Good condition	◖◗ General condition	◖◗ General condition	✱ Bad condition	●	●	●
	**SEKT 1204AFER-MR2**	8.9	12.7	4.91	1.2	1.8	●	▲					

●: Stock available ▲: Stock available now but will be replaced in the future.

SN..12/19

Negative short wiper milling inserts(applicable to AFM45-SN12/SN19 milling cutter)

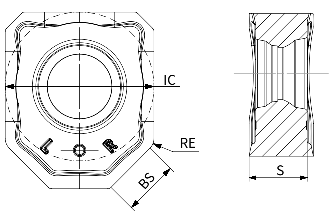


Inserts	Product code	Machining conditions					● Good condition ◐ General condition ✖ Bad condition						
							●	◐	◐	✖	●	●	●
		Dimension (mm)					P			M	K		N
		L	IC	S	RE	BS	AP251U	AP351U	AC301P	AP403M	AC301K	AP251K	AW100K
	SNHX 1206ANN-FM2	9.3	12.7	6.25	0.5	1.8							●
	SNGX 1206ANN-MM3	9.4	12.7	6.25	0.4	1.8	●	▲	▲		▲	●	
	SNGX 1206ANN-MM4	9.4	12.7	6.25	0.4	1.8	●	▲	▲	●	▲	●	
	SNGX 1206ANN-MR6	9.4	12.7	6.25	0.4	1.8	●	▲	▲		▲	●	
	SNGX 1206ANN-RR2	9.3	12.7	6.25	0.5	1.8	●	▲	▲		▲	●	
	SNMX 1206ANN-MM3	9.4	12.7	6.25	0.4	1.8	●	▲	▲		▲	●	
	SNMX 1206ANN-MM4	9.4	12.7	6.25	0.4	1.8	●	▲	▲	●	▲	●	
	SNMX 1206ANN-MR6	9.4	12.7	6.25	0.4	1.8	●	▲	▲		▲	●	
	SNGX 1909ANN-MM3	14.2	19.05	8.55	0.4	2.9		▲					
	SNGX 1909ANN-MR6	14.2	19.05	8.55	0.8	2.9		▲					

●: Stock available ▲: Stock available now but will be replaced in the future.

SNHX12

Negative long wiper milling inserts(applicable to AFM45-SN12 milling cutter)

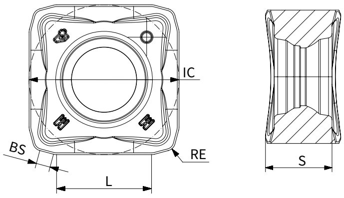


Inserts	Product code	Machining conditions					● Good condition ◐ General condition ✖ Bad condition						
							●	◐	◐	✖	●	●	●
		Dimension (mm)					P			M	K		N
		L	IC	S	RE	BS	AP251U	AP351U	AC301P	AP403M	AC301K	AP251K	AW100K
	SNHX 1206ANN-W	-	12.7	6.25	1.2	6.7	●				▲		

●: Stock available ▲: Stock available now but will be replaced in the future.

SN..12

Negative short wiper milling inserts (applicable to AFM75-SN12 milling cutter)

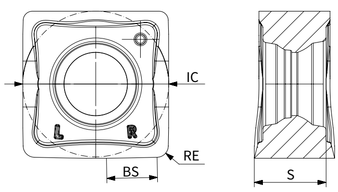


		Machining conditions					● Good condition ◐ General condition ✤ Bad condition						
							●	◐	◐	✤	●	●	●
Inserts	Product code	Dimension (mm)					P			M	K		N
		L	IC	S	RE	BS	AP251U	AP351U	AC301P	AP403M	AC301K	AP251K	AW100K
	SNGX 1206ENN-MM3	8.1	12.7	6.35	0.8	1.2	●	▲	▲		▲	●	
	SNGX 1206ENN-MM4	8.1	12.7	6.35	0.8	1.2	●	▲	▲		▲	●	
	SNGX 1206ENN-MR6	8.1	12.7	6.35	0.8	1.2	●	▲	▲		▲	●	
	SNMX 1206ENN-MM4	8.1	12.7	6.35	0.8	1.2			▲			●	

●: Stock available ▲: Stock available now but will be replaced in the future.

SNHX12

Negative long wiper milling inserts (applicable to AFM75-SN12 milling cutter)

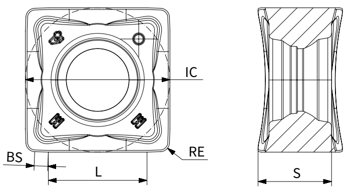


		Machining conditions					● Good condition ◐ General condition ✤ Bad condition						
							●	◐	◐	✤	●	●	●
Inserts	Product code	Dimension (mm)					P			M	K		N
		L	IC	S	RE	BS	AP251U	AP351U	AC301P	AP403M	AC301K	AP251K	AW100K
	SNHX 1206ENN-W	-	12.7	6.25	0.6	1.2	●				▲		

●: Stock available ▲: Stock available now but will be replaced in the future.

SN..12

Negative short wiper milling inserts (applicable to AFM88-SN12 milling cutter)



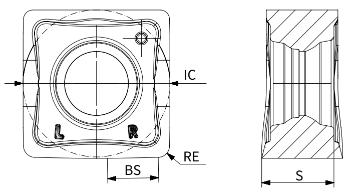
● Good condition ◐ General condition ✖ Bad condition

Inserts	Product code	L	IC	S	RE	BS	AP251U	AP351U	AC301P	AP403M	AC301K	AP251K	AW100K
		Machining conditions					●	◐	◐	✖	●	●	●
		Dimension (mm)					P			M	K		N
	**SNHX 1206ZNN-FM2**	8.7	12.7	6.45	0.8	1.2							●
	SNGX 1206ZNN-MM4	8.7	12.7	6.45	0.8	1.2	●	▲	▲	●	▲	●	
	SNGX 1206ZNN-MR6	8.7	12.7	6.45	0.8	1.2	●	▲	▲		▲	●	
	SNGX 1206ZNN-MM3	8.7	12.7	6.45	0.8	1.2	●	▲	▲		▲	●	
	SNMX 1206ZNN-MM4	8.7	12.7	6.45	0.8	1.2	●			●		●	

●: Stock available ▲: Stock available now but will be replaced in the future.

SNHX12

Negative long wiper milling inserts (applicable to AFM88-SN12 milling cutter)



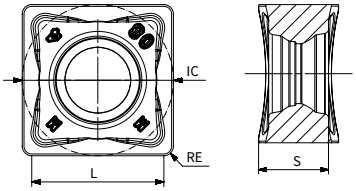
● Good condition ◐ General condition ✖ Bad condition

Inserts	Product code	L	IC	S	RE	BS	AP251U	AP351U	AC301P	AP403M	AC301K	AP251K	AW100K
		Machining conditions					●	◐	◐	✖	●	●	●
		Dimension (mm)					P			M	K		N
	**SNHX 1206ZNN-W**	-	12.7	6.25	1.0	4.4	●				▲		

●: Stock available ▲: Stock available now but will be replaced in the future.

SN..12

Negative square milling inserts with corner radius

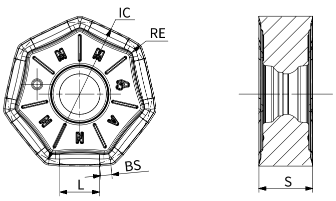


Inserts	Product code	Machining conditions					● Good condition ⬌ General condition ✱ Bad condition						
							●	⬌	⬌	✱	●	●	●
		Dimension (mm)					P			M	K		N
		L	IC	S	RE	BS	AP251U	AP351U	AC301P	AP403M	AC301K	AP251K	AW100K
	**SNGX 120608-MM4**	11.1	12.7	6.4	0.8	-	●	▲	▲		▲	●	
	SNGX 120612-MM4	10.3	12.7	6.4	1.2	-	●						
	**SNMX 120608-MM4**	11.1	12.7	6.4	0.8	-	●	▲	▲		▲	●	
	SNMX 120612-MM3	10.3	12.7	6.4	1.2	-	●	▲	▲		▲	●	
	SNMX 120612-MM4	10.3	12.7	6.4	1.2	-	●	▲	▲		▲	●	
	SNMX 120612-MR6	10.3	12.7	6.4	1.2	-	●	▲	▲		▲	●	
	SNMX 120612-RR2	10.3	12.7	6.4	1.2	-	●	▲	▲		▲	●	
	SNMX 120620-MM4	8.7	12.7	6.4	2.0	-	●	▲	▲		▲	●	
	SNMX 120620-RR2	8.7	12.7	6.4	2.0	-	●	▲	▲		▲	●	
	**SNMX 120612R-MM4**	8.7	12.7	6.4	1.2	-	●	▲	▲	●	▲	●	

●: Stock available ▲: Stock available now but will be replaced in the future.

XN..07/09ANN

Negative heptagonal milling inserts with short wiper



● Good condition ◐ General condition ✖ Bad condition

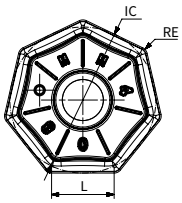
Inserts	Product code	L	IC	S	RE	BS	AP251U	AP351U	AC301P	AP403M	AC301K	AP251K	AW100K
	Machining conditions						●	◐	◐	✖	●	●	●
		Dimension (mm)					P	P	P	M	K	K	N
	XNGU 0705ANN-MM3	7	14.5	5	0.8	1.1	●	▲			▲		
	XNGU 0705ANN-MM4	7	14.5	5	0.8	1.1	●				▲		
	XNMU 0705ANN-MM4	7	14.5	5	0.8	1.1	●	▲	▲		▲	●	
	XNMU 0705ANN-MR6	7	14.5	5	0.8	1.1	●	▲			▲	●	
	XNGU 0906ANN-MM3	9.2	19	5.875	0.8	1.4	●	▲	▲		▲		
	XNGU 0906ANN-MM4	9.2	19	5.875	0.8	1.4	●	▲	▲		▲		
	XNMU 0906ANN-MR6	9.2	19	5.875	0.8	1.4	●				▲	●	

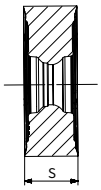
●: Stock available ▲: Stock available now but will be replaced in the future.

Milling cutters

XN..07/09

Negative heptagonal milling inserts with corner radius



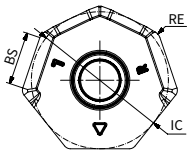


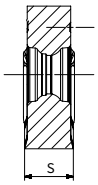
Inserts	Product code	Dimension (mm)					Machining conditions ● Good condition ⇔ General condition ✱ Bad condition						
							●	⇔	⇔	✱	●	●	●
							P			M	K		N
		L	IC	S	RE	BS	AP251U	AP351U	AC301P	AP403M	AC301K	AP251K	AW100K
	**XNMU 070508-MM4**	7	14.5	5	0.8	-	●	▲		●	▲	●	
	XNMU 090612-MM4	9.2	19	5.875	1.2	-	●	▲		●	▲	●	

●: Stock available ▲: Stock available now but will be replaced in the future.

XNGX 07/09ANN-W

Negative milling inserts with long wiper

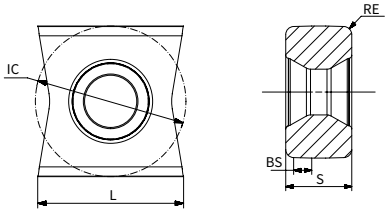




Inserts	Product code	Dimension (mm)					Machining conditions ● Good condition ⇔ General condition ✱ Bad condition						
							●	⇔	⇔	✱	●	●	●
		L	IC	S	RE	BS	AP251U	AP351U	AC301P	AP403M	AC301K	AP251K	AW100K
	**XNGX 0705ANN-W**	6	15	5	1.0	1.1	●				▲		
	XNGX 0906ANN-W	7.5	19.05	5.88	1.0	1.4	●				▲		

●: Stock available ▲: Stock available now but will be replaced in the future.

LNET 12
Square shoulder milling inserts

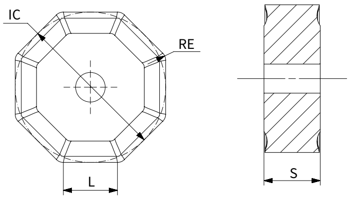


Inserts	Product code	Machining conditions: ● Good condition, ⧓ General condition, ✱ Bad condition												
							●	⧓	⧓	✱	●	●	●
		Dimension (mm)					P			M	K		N
		L	IC	S	RE	BS	AP251U	AP351U	AC301P	AP403M	AC151K	AP251K	AW100K
	**LNET 1206-MM4**	12.3	12.7	6.35	0.8	2.5	●			●	●	●	

●: Stock available ▲: Stock available now but will be replaced in the future.

ON05/LN12/LN15

Cast iron finishing machining inserts



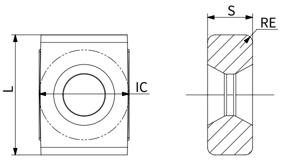
Machining conditions: ● Good condition ◐ General condition ✤ Bad condition

Inserts	Product code	Dimension (mm)				P		M	K		H
	Machining conditions					●	◐	✤	●	●	●
		L	IC	S	RE	AP251U	AP351U	AP403M	AC301K	AP251K	AP151H
	ONHF 050408-MM3	5.3	12.7	4.76	0.8						●

●: Stock available ▲: Stock available now but will be replaced in the future.

LN12

Cast iron finishing wiper insert



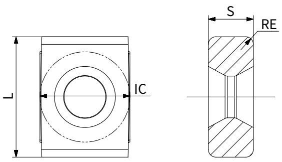
Machining conditions: ● Good condition ◐ General condition ✤ Bad condition

Inserts	Product code	Dimension (mm)				P		M	K		H
	Machining conditions					●	◐	✤	●	●	●
		L	IC	S	RE	AP251U	AP351U	AP403M	AC301K	AP251K	AP151H
	LNHQ 120408FN-W	12.7	9.525	4.76	0.8						●

●: Stock available ▲: Stock available now but will be replaced in the future.

LN15

Cast iron finishing wiper insert



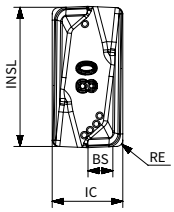
Machining conditions: ● Good condition ◐ General condition ✤ Bad condition

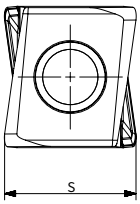
Inserts	Product code	Dimension (mm)				P		M	K		H
	Machining conditions					●	◐	✤	●	●	●
		L	IC	S	RE	AP251U	AP351U	AP403M	AC301K	AP251K	AP151H
	LNHQ 150416FN-W	15.875	9.525	4.76	1.6						●

●: Stock available ▲: Stock available now but will be replaced in the future.

LNHU 0904..

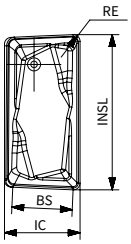
Negative square shoulder milling inserts

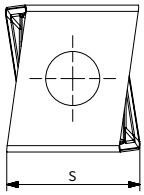


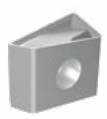


Inserts	Product code	Dimension (mm)					Machining conditions: ● Good condition ✱ Bad condition						
							●	●	●	✱	●	●	●
							P			M	K		N
		INSL	IC	S	RE	BS	AP251U	AP351U	AP351M	AP403M	AC301K	AP251K	AW100K
	**LNHU 090404ER-FM2**	9	4.5	8.49	0.4	1.85							●
	LNHU 090404ER-MM3	9	4.5	8.49	0.4	1.85		▲		●			
	LNHU 090404ER-MR2	9	4.5	8.49	0.4	1.85	●	▲		●	▲	●	
	LNHU 090404ER-MM4	9	4.5	8.5	0.4	1.85	●		●	●		●	
	LNHU 090408ER-MM4	9	4.5	8.5	0.8	1.45	●		●	●		●	
	LNHU 090408ER-MR2	9	4.5	8.4	0.8	0.98	●	▲		●	▲	●	
	LNHU 090408ER-MM3	9	4.5	8.5	0.8	1.45	●		●	●		●	
	LNHU 090412ER-MR2	9	4.5	8.31	1.2	1.0	●			●	▲		
	LNHU 090416ER-MR2	9	4.5	8.22	1.6	0.65	●			●	▲		
	LNHU 090420ER-MR2	9	4.5	8.12	2.00	0.65	●			●	▲		

●: Stock available ▲: Stock available now but will be replaced in the future.



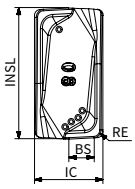


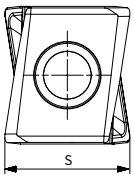
Inserts	Product code	Dimension (mm)					Machining conditions: ● Good condition ✱ Bad condition						
							●	●	●	✱	●	●	●
							P			M	K		N
		INSL	IC	S	RE	BS	AP251U	AP351U	AP351M	AP403M	AC301K	AP251K	AW100K
	**LNHU 0904PDER-W**	9.2	4.5	8.38	0.4	3.6	●				▲		

●: Stock available ▲: Stock available now but will be replaced in the future.

LNHU 1306..

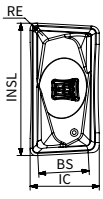
Negative square shoulder milling inserts

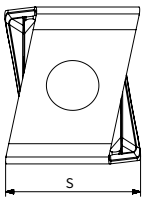




Inserts	Product code	Dimension (mm)					Machining conditions: ● Good condition, ⇔ General condition, ✱ Bad condition						
							●	⇔	⇔	✱	●	●	●
							P			M	K		N
		INSL	IC	S	RE	BS	AP251U	AP351U	AP351M	AP403M	AC301K	AP251K	AW100K
	**LNHU 130608ER-FM2**	13.02	6.8	8.49	0.8	2.7							●
	LNHU 130608ER-MM3	13.02	6.8	11.85	0.8	2.7		▲		●			
	LNHU 130608ER-MM4	13.02	6.8	11.85	0.8	2.7	●		●	●		●	
	LNHU 130608ER-MR2	13.02	6.8	11.85	0.8	2.7	●	▲	●	●	▲	●	
	LNHU 130612ER-MM4	13.02	6.8	11.74	1.2	2.3	●		●	●		●	
	LNHU 130612ER-MR2	13.02	6.8	11.73	1.2	1.3	●	▲	●	●	▲	●	
	LNHU 130616ER-MR2	13.02	6.8	11.6	1.6	1.9	●	▲	●	●		●	
	LNHU 130620ER-MR2	13.02	6.8	11.52	2	1.5		▲	●	●	▲		
	LNHU 130624ER-MR2	13.02	6.8	11.4	2.4	1.0		▲	●	●	▲		
	LNHU 130631ER-MR2	13.02	6.8	11.23	3.1	0.4		▲	●	●	▲		

●: Stock available ▲: Stock available now but will be replaced in the future.



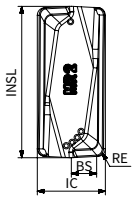


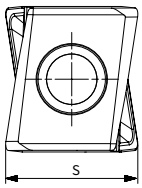
Inserts	Product code	Dimension (mm)					Machining conditions: ● Good condition, ⇔ General condition, ✱ Bad condition						
							●	⇔	⇔	✱	●	⇔	●	●
							P			M	K			N
		INSL	IC	S	RE	BS	AP251U	AP351U	AP351M	AP403M	AC301K	AP251K	AP351K	AW100K
	**LNHU 1306PDR-W**	13.39	6.8	11.63	0.8	5.2	●						●	

●: Stock available ▲: Stock available now but will be replaced in the future.

LNHU 1607..

Negative square shoulder milling inserts



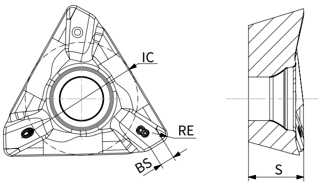


Inserts	Product code	Machining conditions: Dimension (mm)					Good condition / General condition / Bad condition						
							●	◐	◐	✱	●	●	●
							P			M	K		N
		INSL	IC	S	RE	BS	AP251U	AP351U	AP351M	AP403M	AC301K	AP251K	AW100K
	**LNHU 160708ER-MR2**	16	7.2	15.1	0.8	1.97	●	▲			▲	●	
	LNHU 160716ER-MR2	16	7.2	14.94	1.6	1.5	●				▲		

●: Stock available ▲: Stock available now but will be replaced in the future.

TDMT 1505..

Positive square shoulder triangle milling inserts

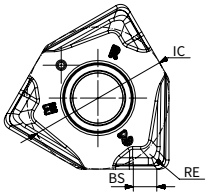


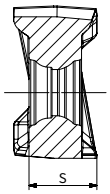
Inserts	Product code	IC	S	RE	BS	AP251U	AP351U	AP351M	AP403M	AC301K	AP251K	AW100K
		Machining conditions				● Good condition ◑ General condition ✤ Bad condition						
						●	◑	◑	✤	●	●	●
		Dimension (mm)				P			M	K		N
	TDMT 150508R-MM4	11.4	5.6	0.8	1.49	●		●	●	▲	●	
	TDMT 150512R-MM4	11.4	5.6	1.2	1.0	●		●	●	▲	●	
	TDMT 150516R-MM4	11.4	5.6	1.6	0.93	●		●	●	▲	●	
	TDMT 150520R-MM4	11.4	5.6	2.0	0.71	●			●		●	
	TDMT 150524R-MM4	11.4	5.6	2.4	0.59	●			●		●	
	TDMT 150531R-MM4	11.4	5.56	3.1	0.4	●			●		●	
	TDMT 150540R-MM4	11.4	5.56	4.0	0.4	●			●		●	
	TDMT 150508R-MM3	11.4	5.56	0.8	1.49	●			●		●	
	TDHT 150508R-MM4	11.4	5.6	0.8	1.5	●					●	

●: Stock available ▲: Stock available now but will be replaced in the future.

WNGU 0806..

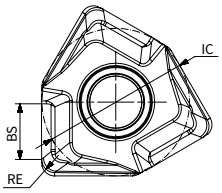
Negative square shoulder milling inserts

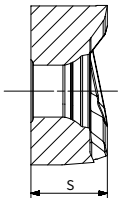


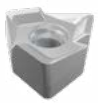


Inserts	Product code	Machining conditions: Dimension (mm) IC	S	RE	BS	● Good condition ◐ General condition ✱ Bad condition								
						●	◐	◐	✱	✱	●	●	●	●
						P			M		K		N	H
						AP251U	AP351U	AP351M	AP401U	AP403M	AC301K	AP251K	AW100K	AP151H
	**WNHU 080608R-FM2**	12.5	6.45	0.8	2.0								●	
	WNGU 080604R-MM3	12.5	6.44	0.4	2.2		▲	●	▲					
	WNGU 080608R-MM3	12.5	6.45	0.8	2.0	●	▲	●	▲	●		●		
	WNGU 080604R-MM4	12.5	6.44	0.4	2.2	●	▲	●	▲			●		
	WNGU 080608R-MM4	12.5	6.44	0.8	2.0	●	▲	●	▲		▲	●		●
	WNGU 080612R-MM4	12.5	6.44	1.2	1.6	●	▲	●	▲					
	WNGU 080616R-MM4	12.5	6.44	1.6	1.2	●	▲	●	▲					
	WNGU 080608R-MR2	12.5	6.45	0.8	2.0	●	▲	●		●	▲	●		
	WNGU 080612R-MR2	12.5	6.44	1.2	1.6	●		●				●		
	WNGU 080616R-MR2	12.5	6.45	1.6	1.2	●		●				●		

●: Stock available ▲: Stock available now but will be replaced in the future.



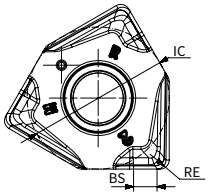


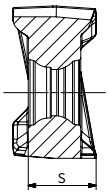
Inserts	Product code	Machining conditions: Dimension (mm) IC	S	RE	BS	● Good condition ◐ General condition ✱ Bad condition						
						●	●	◐	◐	✱	●	●
						P				M	K	N
						AP301U	AP251U	AP351U	AP351M	AP403M	AC301K	AW100K
	**WNHX 0806ZZR-W**	12.5	6.47	1.1	4.71	●					▲	

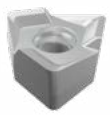
●: Stock available ▲: Stock available now but will be replaced in the future.

WNMU 0806..

Negative square shoulder milling inserts



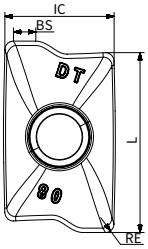


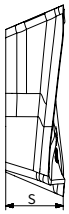
Inserts	Product code	Machining conditions: Dimension (mm) IC	S	RE	BS	● Good condition ⇔ General condition ✱ Bad condition: ●	⇔	✱	●	●
						P		M	K	
						AP251U	AP351M	AP403M	AC301K	AP251K
	**WNMU 080608R-MR2**	12.5	6.6	0.8	2.3	●	●	●	▲	●
	WNMU 080608R-MM4	12.5	6.58	0.8	2.3	●	●	●	▲	●
	WNMU 080608R-MM3	12.5	6.58	0.8	2.3	●	●	●	▲	●
	WNMU 080612R-MR2	12.5	6.47	1.2	1.19	●	●		▲	●
	WNMU 080612R-MM4	12.5	6.47	1.2	1.18	●	●	●		●
	WNMU 080616R-MR2	12.5	6.5	1.6	0.81	●		●		
	WNMU 080616R-MM4	12.5	6.5	1.6	0.8	●		●		

●: Stock available ▲: Stock available now but will be replaced in the future.

APKT 1705..-DT..

Positive square shoulder milling inserts



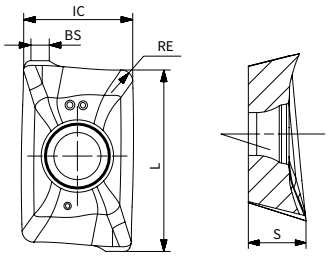


Inserts	Product code	Machining conditions: Dimension (mm) L	IC	S	RE	BS	● Good condition ⬌ General condition ✱ Bad condition: P AP251U	P AP351U	P AP351M	M AP403M	K AC301K	K AP251K	N AW100K	S AP403S
	**APKT 1705PER-DT**	17.4	10.76	5.63	0.8	2.16	●	▲		●		●	●	
	APKT 170516R-DT	17.4	10.74	5.63	1.6	1.72	●					●		
	APKT 170524R-DT	17.4	10.76	5.63	2.4	0.95	●		●	●		●		
	APKT 170530R-DT	17.4	10.76	5.63	3.0	1.48	●		●	●		●		
	APKT 170540R-DT	17.4	10.76	5.63	4.0	-	●		●	●				

●: Stock available ▲: Stock available now but will be replaced in the future.

APKT 1003.IT

Positive square shoulder milling inserts

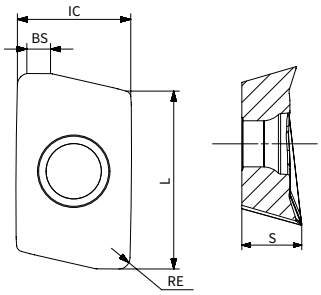


Inserts	Product code	Dimension (mm)					Machining conditions: ● Good condition, ⬌ General condition, ✱ Bad condition							
							●	⬌	⬌	✱	●	●	●	✱
							P			M	K		N	S
		L	IC	S	RE	BS	AP251U	AP351U	AP351M	AP403M	AC301K	AP251K	AW100K	AP403S
	**APKT 1003PDER-IT**	10.79	6.66	3.77	0.8	1.06	●	▲		●			●	

●: Stock available ▲: Stock available now but will be replaced in the future.

AOMT 1204..-MM4..

Positive square shoulder milling inserts

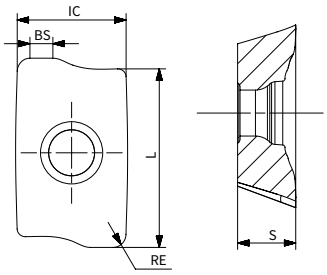


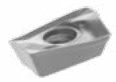
Inserts	Product code	Dimension (mm)					Machining conditions: ● Good condition, ✱ Bad condition					
							●	✱	✱	✱	●	✱
							P			M	K	S
		L	IC	S	RE	BS	AP251U	AP351U	AP351M	AP403M	AP251K	AP403S
	**AOMT 120408ER-MM4**	12.8	8.15	5.07	0.8	1.56	●		●	●	●	●
	AOMT 120412ER-MM4	12.8	8.15	5.07	1.2	1.18			●	●		●
	AOMT 120416ER-MM4	12.8	8.15	5.07	1.6	1.2			●	●		●
	AOMT 120420ER-MM4	12.8	8.15	5.07	2.0	1.0	●		●	●		●
	AOMT 120424ER-MM4	12.8	8.15	5.07	2.4	0.9	●		●	●		●
	AOMT 120431ER-MM4	12.8	8.15	5.07	3.1	0.6			●	●		●
	AOMT 120440ER-MM4	12.8	8.15	5.07	4.0	0.8			●	●		●

●: Stock available ▲: Stock available now but will be replaced in the future.

ADMT 11T3..-MM4..

Positive square shoulder milling inserts

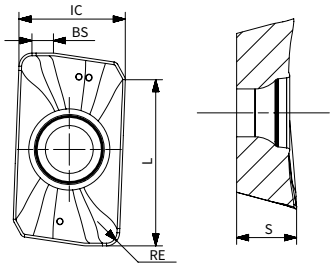


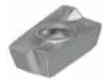
Inserts	Product code	Dimension (mm)					Machining conditions ● Good condition ⇔ General condition ✱ Bad condition					
							●	⇔	⇔	✱	●	✱
							P			M	K	S
		L	IC	S	RE	BS	AP251U	AP351U	AP351M	AP403M	AP251K	AP403S
	**ADMT 11T304R-MM4**	11	6.92	3.59	0.4	1.1	●		●	●	●	●
	ADMT 11T308R-MM4	11	6.92	3.59	0.8	1.41	●	▲	●	●	●	●
	ADMT 11T308R-MM3	11	6.92	3.59	0.8	1.3	●		●	●	●	
	ADMT 11T312R-MM4	11	6.92	3.59	1.2	0.8	●		●	●	●	●
	ADMT 11T316R-MM4	11	6.92	3.59	1.6	0.4	●		●	●	●	
	ADMT 11T320R-MM4	11	6.92	3.59	2.0	0.23	●	▲	●	●	●	●
	ADMT 11T324R-MM4	11	6.92	3.59	2.4	0.21	●		●	●	●	●
	ADMT 11T331R-MM4	11	6.92	3.59	3.1	0.63	●		●	●	●	

●: Stock available ▲: Stock available now but will be replaced in the future.

APMT..

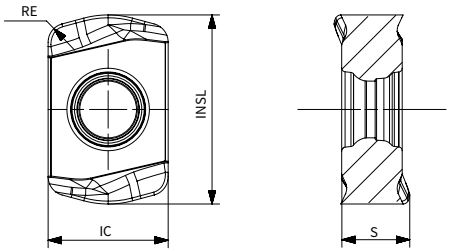
Positive square shoulder milling inserts



Inserts	Product code	Machining conditions: ● Good condition ⬍ General condition ✱ Bad condition												
							●	⬍	⬍	✱	●	●	●
		Dimension (mm)					P			M	K		H
		L	IC	S	RE	BS	AP251U	AP351U	AP351M	AP403M	AC301K	AP251K	AP151H
	**APMT 1135PDER**	9.7	6.27	3.5	0.8	1.25	●	▲	●			●	●
	APMT 113508PDER	9.7	6.17	3.5	0.8	0.85	●	▲				●	
	**APMT 1604PDER**	12.7	9.37	5.17	0.8	1.54	●		●			●	●

●: Stock available ▲: Stock available now but will be replaced in the future.

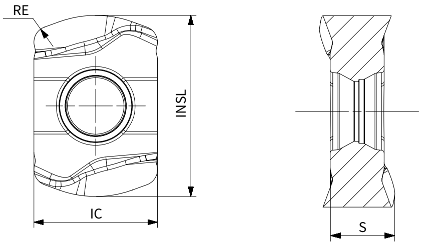
LN..06
High feed milling inserts



Inserts	Product code	Dimension (mm)				Machining conditions: ● Good condition ◐ General condition ✱ Bad condition								
						●	◐	◐	✱	●	●	●	✱	●
						P			M	K		N	S	H
		INSL	IC	S	RE	AP251U	AP351U	AP351M	AP403M	AC301K	AP251K	AW100K	AP403S	AP151H
	**LNMX 060410R-MM3**	10	6.35	3.6	1.0	●	▲		●				●	●
	**LNMX 060410R-MM4**	10	6.35	3.6	1.0	●	▲		●				●	●
	LNMX 060410R-MM4N	10	6.35	3.6	1.0	●	▲		●	▲			●	●

●: Stock available ▲: Stock available now but will be replaced in the future.

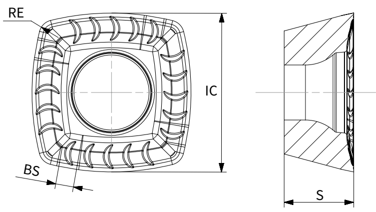
LN..10
High feed milling inserts



					Machining conditions	● Good condition ◐ General condition ✖ Bad condition								
						●	◐	◐	✖	●	●	●	✖	●
Inserts	Product code	Dimension (mm)				P			M	K		N	S	H
		INSL	IC	S	RE	AP251U	AP351U	AP351M	AP403M	AC301K	AP251K	AW100K	AP403S	AP151H
	**LNMX 100512R-MM3**	13.5	9.2	4.55	1.2	●	▲	●	●				●	●
	**LNMX 100512R-MM4**	13.5	9.2	4.55	1.2	●	▲		●				●	●

●: Stock available ▲: Stock available now but will be replaced in the future.

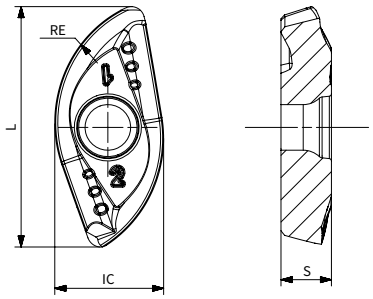
XD..09/12
High feed milling inserts



		Machining conditions				● Good condition ◐ General condition ✤ Bad condition					
						●	◐	◐	●	●	✤
Inserts	Product code	Dimension (mm)				P			K		S
		IC	S	RE	BS	AP251U	AP351U	AC301P	AC301K	AP251K	AP403S
	**XDLT 090408ER-MM3**	9.525	4.76	0.8	1.3	●	▲	▲	▲		●
	XDLT 120508ER-MM3	12.7	5.56	0.8	2.2	●	▲	▲	▲	●	●
	XDLT 120512ER-MM3	12.7	5.56	1.2	2.2	●	▲	▲	▲	●	
	**XDMW 090408ER-HR2**	9.525	4.76	0.8	1.3				▲		
	XDMW 120508ER-HR2	12.7	5.56	0.8	2.2	●			▲		

●: Stock available ▲: Stock available now but will be replaced in the future.

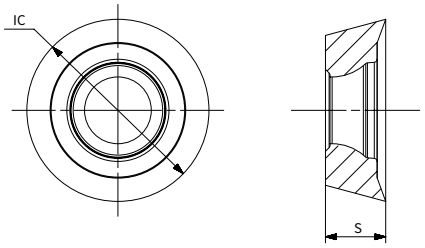
RPM ...MM4
Profile milling inserts

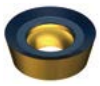
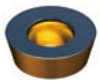
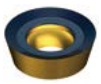
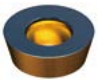
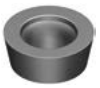


Inserts	Product code	Dimension (mm)				Machining conditions: ● Good condition ◐ General condition ✱ Bad condition					
						●	◐	✱	●	●	✱
						P		M	K		S
		L	IC	S	RE	AP251U	AP351M	AP403M	AC301K	AP251K	AP403S
	**RPM 080ER-MM4**	14.76	6.89	3.21	8.0	●	●	●			●
	RPM 100ER-MM4	18.85	8.62	3.89	10	●	●				●

●: Stock available ▲: Stock available now but will be replaced in the future.

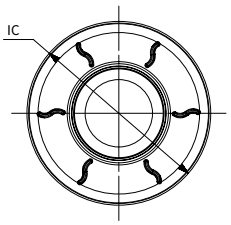
RD/RP
Round inserts

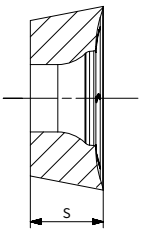


Inserts	Product code	Machining conditions: Dimension (mm) IC	S	● Good condition ◐ General condition ✱ Bad condition						
				●	◐	◐	✱	●	●	●
				P			M	K		H
				AP251U	AP351U	AC301P	AP403M	AC301K	AP251K	AP151H
	**RDHT 0702MOE-MM3**	7	2.38	●						
	RDHT 1003MOE-MM3	10	3.18	●						
	RDHT 12T3MOE-MM3	12	3.97	●	▲	▲		▲	●	
	RDHT 1606MOE-MM3	16	6.35	●	▲	▲		▲	●	
	RDHT 1604MOE-MM3	16	4.76	●	▲				●	
	**RDHW 0702MOS-HR2**	7	2.38	●	▲	▲		▲	●	
	RDHW 1003MOS-HR2	10	3.18	●	▲	▲		▲	●	
	RDHW 12T3MOS-HR2	12	3.97	●	▲	▲		▲	●	
	RDHW 1606MOS-HR2	16	6.35	●					●	
	**RDMT 0702MOE-MM3**	7	2.38					▲		
	RDMT 1003MOE-MM3	10	3.18	●	▲	▲		▲		
	RDMT 12T3MOE-MM3	12	3.97	●		▲		▲		
	RDMT 1606MOE-MM3	16	6.35	●		▲		▲		
	RDMT 1604MOE-MM3	16	4.76			▲		▲		
	**RDMW 1204MOE-HR2**	12	4.76	●	▲					
	RDMW 1606MOE-HR2	16	6.35					▲		
	**RPMW 1003MOE-HR2**	10	3.18	●	▲					●
	RPMW 10T3MOE-HR2	10	3.97	●	▲					●
	**RPMT 1204MOE**	12	4.76	●	▲					●

●: Stock available ▲: Stock available now but will be replaced in the future.

RO..T
Profile milling inserts





Inserts	Product code	Dimension (mm)		Machining conditions ● Good condition ◐ General condition ✱ Bad condition						
				●	◐	◐	✱	●	●	✱
				P			M	K		S
		IC	S	AP251U	AP351U	AC301P	AP403M	AC301K	AP251K	AP403S
	**ROHT 0803MOE-MM3**	8	3.18				●			●
	ROHT 10T3M8E-MM3	10	3.97				●			●
	ROHT 1204M4E-MM3	12	4.76				●			●
	ROHT 1204M6E-MM3	12	4.76				●			●
	ROHT 1605M8E-MM3	16	5.56				●			●
	ROHT 2006M8E-MM3	20	6.35				●			●
	**ROMT 10T3M4E-MR6**	10	3.97				●			●
	ROMT 1204M6E-MR6	12	4.76				●			●
	ROMT 1605M6E-MR6	16	5.56				●			●
	ROMT 2006M8E-MR6	20	6.35				●			●

●: Stock available ▲: Stock available now but will be replaced in the future.

Cutting Parameter Recommendation Table

Materials																		
ISO	Material classification			Brinell hardness (HB)	Tensile strength Rm(N/mm²)	AP251U			AC301P			AP351U			AP351M			
						PVD			CVD			PVD			PVD			
						P15-P35			P25-40			P30-P45			P20-P40			
						M15-M35			–			M25-M35			M20-M40			
						–			–			S25-S35			–			
						–			–			–			S20-S40			
						–			–			–			–			
						–			–			–			–			
						1/10	1/5	1/1	1/10	1/5	1/1	1/10	1/5	1/1	1/10	1/5	1/1	
P	Unalloyed steel	C ⩽ 0.25%	Annealed	125	428	320	280	240	380	300	260	280	240	200				
		0.25 < C ⩽ 0.55%	Annealed	190	639	290	240	200	350	250	220	250	210	170				
		0.25 < C ⩽ 0.55%	Heat-treated	210	708	260	210	170	310	220	190	230	180	140				
		C > 0.55%	Annealed	190	639	290	240	200	350	250	220	250	210	170				
		C > 0.55%	Heat-treated	300	1013	210	170	130	250	170	150	160	130	100				
		Free cutting steel (short-chip)	Annealed	220	745	250	200	160	300	210	180	220	170	130				
	Low-alloyed steel	Annealed		175	591	290	250	200	340	300	250	270	230	180				
		Heat-treated		285	960	250	210	160	290	250	200	230	190	140				
		Heat-treated		380	1282	230	190	140	250	210	160	210	170	120				
		Heat-treated		430	1477	190	150	110	210	170	130	170	130	90				
	High-alloyed steel and high-alloyed tool steel	Annealed		200	675	220	190	160	240	210	180	200	170	140				
		Hardened and tempered		300	1013	170	140	110	190	160	130	150	130	90				
		Hardened and tempered		400	1361	150	120	90	160	130	100	130	100	70				
	Stainless steel	Ferritic/martensitic, annealed		200	675	190	160	130	200	170	140	160	140	110	180	150	120	
		Martensitic, heat-treated		330	1114	160	120	90	170	140	110	140	110	80	150	120	90	
M	Stainless steel	Austenitic, quench hardened		200	675	180	150	120				170	140	110	170	150	120	
		Austenitic, precipitation hardened (PH)		300	1013	160	130	100				150	120	90	150	130	100	
		Austenitic/ferritic, duplex		230	778	170	140	110				160	130	100	160	140	110	
K	Malleable cast iron	Ferritic		200	400													
		Pearlitic		260	700													
	Grey cast iron	Low tensile strength		180	200													
		High tensile strength/austenitic		245	350													
	Nodular cast iron	Ferritic		155	400													
		Pearlitic		265	700													
	GGV(CGI)			230	400													
N	Wrought aluminium alloys	Non-aging		30	-													
		Aged		100	340													
	Cast aluminium alloys	⩽ 12% Si, non-aging		75	260													
		⩽ 12% Si, aged		90	310													
		> 12% Si, non-aging		130	450													
	Magnesium alloys			70	250													
	Copper and copper alloys	Unalloyed, electrolytic copper		100	340													
		Brass, bronze, red brass		90	310													
		Cu alloys, short-chipping		110	380													
		High-tensile, Ampco alloy		300	1010													
S	Heat-resistant alloys	Fe-based	Annealed	200	680							90	80	70	100	90	80	
			Hardened	280	940							75	60	50	80	70	60	
		Ni or Co based	Annealed	250	840							80	55	45	70	60	50	
			Hardened	350	1180							60	50	35	60	50	40	
			Cast	320	1080							60	55	40	65	55	45	
	Titanium alloys	Pure titanium		200	680							110	90	80	120	100	90	
		α and β alloys, hardened		375	1260							50	40	30	55	45	35	
		β alloys		410	1400							50	40	30	55	45	35	
	Tungsten alloys			300	1010							65	60	50	70	65	55	
	Molybdenum alloys			300	1010							65	60	50	70	65	55	
H	Hardened steel	Hardened and tempered		50HRC														
		Hardened and tempered		55HRC														
		Hardened and tempered		60HRC														
	Chilled cast iron	Hardened and tempered		50HRC														

*The recommended cutting conditions always refer to general conditions. These cutting conditions should be adjusted according to the practical machine rigidity, tools, workpiece clamping and coolant. Average chip thickness (hm)=fz x sinkr.

Milling grade application range																					
	AP403M			AP401U			AP403S			AC301K			AP251K			AP151H			AW100K		
	PVD			PVD			PVD			CVD			PVD			PVD			Uncoated		
	P30-P45			P20-P40			–			–			–			–			–		
	M30-M45			M20-M40			M30-M45			–			–			–			–		
	–			–			–			K10-K35			K15-K40			K15-K40			–		
	S30-S45			–			S30-S45			–			–			–			–		
	–			–			–			–			–			–			N05-N15		
	–			–			–			H15-H25			–			H15-H25			–		
	Feed(mm/z)-according to the value of ae/Dc																				
	1/10	1/5	1/1	1/10	1/5	1/1	1/10	1/5	1/1	1/10	1/5	1/1	1/10	1/5	1/1	1/10	1/5	1/1	1/10	1/5	1/1
	Cutting speed (m/min)																				
	170	140	110	160	140	110															
	140	110	80	140	110	80															
	160	140	110	160	140	110	190	160	140												
	140	120	90	150	130	90	170	140	120												
	150	130	100	150	130	100	160	130	110												
										240	210	180	220	190	160	180	150	120			
										220	190	160	200	170	140	160	130	100			
										280	250	220	260	230	200	210	180	150			
										240	210	180	210	190	160	180	150	120			
										260	230	200	240	210	180	190	160	130			
										190	160	130	170	140	110	150	120	90			
										200	170	140	180	150	120	160	130	100			
																			2200	2200	2000
																			1800	1800	1600
																			600	600	500
																			500	500	400
																			280	280	200
																			400	400	300
																			300	300	250
																			200	200	160
	95	85	75				110	100	90												
	80	65	55				90	80	70												
	85	60	50				80	70	60												
	65	55	35				75	65	50												
	65	60	45				75	65	55												
	120	95	85				120	100	90												
	50	40	30				60	50	40												
	50	40	30				60	50	40												
	70	60	50				70	65	60												
	70	60	50				70	65	60												
										70	60	50				65	55	45			
																60	50	40			
																60	50	40			

ACHTECK

www.achtecktool.com/en

THE EXPERT OF DIFFICULT MACHINING

Solid End Mills

Solid carbide end mills

Series	Pictures	Catagory	Teeth	Helix angles	Application	Cutting edge tolerance (mm)	Diameter (mm)	Material	Information
M100-2ES		ECO line	Z=2	35°		+0.00 -0.03	1-20	Universal type	Used in carbon steel, tool steel, alloyed steel machining. The workpiece hardness is up to HRC45°
M100-4ES		ECO line	Z=4	35°		+0.00 -0.03	1-20	Universal type	Used in carbon steel, tool steel, alloyed steel machining. With 4 cutting edges, it can achieve better surface finish. The workpiece hardness is up to HRC45°
M100-4EL		ECO line	Z=4	35°		+0.00 -0.03	3-20	Universal type	Used in carbon steel, tool steel, alloyed steel machining. With 4 long edge design. The workpiece hardness is up to HRC45°
M100-4RL		ECO line	Z=4	30°		R±0.02	4-12	Universal type	Used in carbon steel, tool steel, alloyed steel machining. The round corner can prevent edge breakage during high-speed cutting. With 4 long edge design. The workpiece hardness is up to HRC45°
M100-2BS		ECO line	Z=2	30°		≤6±0.01 >6±0.02	2-20	Universal type	Used in carbon steel, tool steel, alloyed steel machining. For profile milling, good toughness. The workpiece hardness is up to HRC45°
M105-6ES		ECO line	Z=6	45°		+0.00 -0.03	4-20	Universal type	High speed cutting and high feed finish cutting. Ideal choice for side finish milling. The workpiece hardness is up to HRC45°
M105-6EL		ECO line	Z=6	45°		+0.00 -0.03	6-20	Universal type	High speed cutting and high feed finish cutting. With 6 long edge design. Ideal choice for side finish milling. The workpiece hardness is up to HRC45°
M145-2ES		ECO line	Z=2	45°		+0.00 -0.02	3-20	Aluminium alloy	Design for vibration resistance. With special edge treatment. It can achieve better surface finish.
M145-3ES		ECO line	Z=3	45°		+0.00 -0.02	3-20	Aluminium alloy	Design for vibration resistance. With special edge treatment. It can achieve better surface finish.
M145-3EL		ECO line	Z=3	45°		+0.00 -0.02	4-20	Aluminium alloy	Design for vibration resistance. With special edge treatment. It can achieve better surface finish.
M110-2ES		Pro line	Z=2	35°		+0.00 -0.02	3-20	Universal type	Use in carbon steel, tool steel, alloyed steel machining. The workpiece hardness is up to HRC55°
M110-4ES		Pro line	Z=4	35°		+0.00 -0.02	3-20	Universal type	4 cutting edges can achieve better surface finishing. The workpiece hardness is up to HRC55°
M110-2BS		Pro line	Z=2	30°		≤6 ±0.01 >6 ±0.02	3-20	Universal type	Use in profile machining. The workpiece hardness is up to HRC55° and high feed.
M115-6ES		Pro line	Z=6	45°		+0.00 -0.02	6-18	Universal type	For high speed finish and high feed milling. Excellent surface finishing. 1st choice for side finish milling. The workpiece hardness is up to HRC55°
M116-4PS		Pro line	Z=4-6	45°		h10	6-20	P、M、K、S	For rough milling steel, stainless steel, Ni-based alloyed, titanium alloyed, inconel , etc. Thanks to the fine waved cutting edge, the tool has low cutting force and high chip removal rate.
M121-4CSP		XP Line	Z=4	35°/38°		≤12+0.00/-0.02 >12+0.00/-0.03	4-20	P、M、K、S	Used in stainless steel, soft steel and cast iron milling. Special flute geometry and differential helix eliminate vibration. With extended edge design. The workpiece hardness is up to HRC40°
M121-4CS		XP Line	Z=4	35°/38°		≤12+0.00/-0.02 >12+0.00/-0.03	4-20	P、M、K、S	Used in stainless steel, soft steel and cast iron milling. Special flute geometry and differential helix eliminate vibration. The workpiece hardness is up to HRC40°
M121-4ESP		XP Line	Z=4	35°/38°		≤12+0.00/-0.02 >12+0.00/-0.03	4-20	P、M、K、S	Used in stainless steel, soft steel and cast iron milling. Special flute geometry and differential helix eliminate vibration. With extended edge design. The workpiece hardness is up to HRC40°
M125-6ES		XP Line	Z=6	45°		≤12+0.00/-0.02 >12+0.00/-0.03	6-20	P、M、K、S	Used in stainless steel, soft steel and cast iron milling. It has close pitch to provide a better surface finish and tool life under the condition of high speed milling and cycloid milling.

Icons Description

Icons	Description
	Slot milling and square shoulder milling
	Square shoulder rough milling
	Square shoulder finish milling
	High feed milling
	Dynamic milling cycloid milling
	Profile milling
	Chamfering and deburring

Icons	Description
	AlTiN Coating
	AlCrN Coating
	Uncoated
	30° Helix angle
	35° Helix angle
	35°/38° Helix angle
	45° Helix angle

Icons	Description
	Cylindrical shank
	Square
	Round corner
	Ball-nose
	Corner chamfer
	Chamfer
	Waved edge

Solid Carbide end Mill Denomination

M	1	00	-	2	E	S	-	060	002	N
1	2	3	-	4	5	6	-	7	8	9

1-Tool category
M End mill

2-Generations
1

3-Series
00-09 Universal end mills HRC45
10-19 Universal end mills HRC55
20-29 High performance end mills HRC40
30-39 Dedicated for steel
40-49 Dedicated for aluminium alloy
50-59 Dedicated for stainless steel
60-69 Dedicated for difficult machining material
70-79 Dedicated for hardened material
80-99 others

4-Number of teeth
2,3,4,5,6.....

5-Tool type
E Square
B Ball nose
R Round corner
C Chamfer
P With waved edges
W Forming end mills
T Taper end mill
H High feed milling

6-Length	
S	Standard total length
L	Long version
XL	Super long version
XXL	Extra long version
SN	Short cutting edge
SP	Long cutting edge

7-Tool diameter
060=6.0mm
200=20.0mm

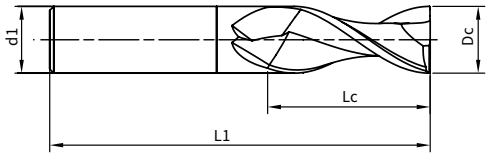
8-Chamfer / nose radius size
002=0.2mm

9-Structure type
N Straight necking
C Conical necking
P Special shank
Default: No necking

Solid Carbide end Mill M100

Eco line
Square shoulder mill with 2 cutting edges

Solid carbide end mill
Workpiece materials < HRC45



P	M	K	N	S	H	O
●●	●	●	●			

●● 1st choice ● 2nd choice

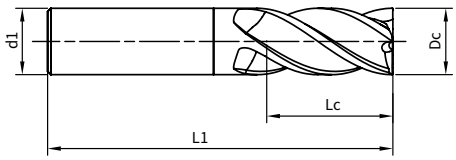
Product order	Dcmm +0.00/-0.03	d1 mm	Lc mm	L1 mm	Z	Stock
M100-2ES-010	1	4	3	50	2	●
M100-2ES-015	1.5	4	4	50	2	●
M100-2ES-020	2	4	6	50	2	●
M100-2ES-025	2.5	4	8	50	2	●
M100-2ES-030	3	4	8	50	2	●
M100-2ES-040	4	4	11	50	2	●
M100-2ES-050	5	6	13	50	2	●
M100-2ES-060	6	6	16	50	2	●
M100-2ES-070	7	8	20	60	2	●
M100-2ES-080	8	8	20	60	2	●
M100-2ES-100	10	10	25	75	2	●
M100-2ES-120	12	12	32	75	2	●
M100-2ES-140P	14	14	40	100	2	●
M100-2ES-140	14	16	40	100	2	●
M100-2ES-160	16	16	40	100	2	●
M100-2ES-180P	18	18	40	100	2	●
M100-2ES-180	18	20	40	100	2	●
M100-2ES-200	20	20	45	100	2	●

Marked: ● Stocked ○ Limited-stock

Solid Carbide end Mill M100

Eco line
Square shoulder mill with 4 cutting edges

Solid carbide end mill
Workpiece materials < HRC45



P	M	K	N	S	H	O
●●	●	●	●			

●● 1st choice ● 2nd choice

Product order	Dcmm +0.00/-0.03	d1 mm	Lc mm	L1 mm	Z	Stock
M100-4ES-010	1	4	3	50	4	●
M100-4ES-015	1.5	4	4	50	4	●
M100-4ES-020	2	4	6	50	4	●
M100-4ES-025	2.5	4	8	50	4	●
M100-4ES-030	3	4	8	50	4	●
M100-4ES-040	4	4	11	50	4	●
M100-4ES-040P	4	6	11	50	4	●
M100-4ES-050	5	6	13	50	4	●
M100-4ES-060	6	6	16	50	4	●
M100-4ES-070	7	8	20	60	4	●
M100-4ES-080	8	8	20	60	4	●
M100-4ES-090	9	10	20	75	4	●
M100-4ES-100	10	10	25	75	4	●
M100-4ES-110	11	12	30	75	4	●
M100-4ES-120	12	12	32	75	4	●
M100-4ES-140P	14	14	40	100	4	●
M100-4ES-140	14	16	40	100	4	●
M100-4ES-160	16	16	40	100	4	●
M100-4ES-180P	18	18	40	100	4	●
M100-4ES-180	18	20	40	100	4	●
M100-4ES-200	20	20	45	100	4	●

Long version

Product order	Dcmm +0.00/-0.03	d1 mm	Lc mm	L1 mm	Z	Stock
M100-4EL-030	3	4	15	60	4	●
M100-4EL-040	4	4	20	60	4	●
M100-4EL-050	5	6	25	75	4	●
M100-4EL-060	6	6	30	75	4	●
M100-4EL-080	8	8	35	100	4	●
M100-4EL-100	10	10	45	100	4	●
M100-4EL-120	12	12	45	100	4	●
M100-4EL-140	14	14	70	150	4	●
M100-4EL-160	16	16	70	150	4	●
M100-4EL-180	18	20	75	150	4	●
M100-4EL-200	20	20	75	150	4	●

Marked: ● Stocked ○ Limited-stock

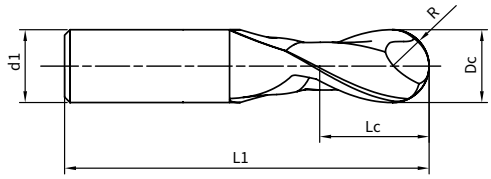
Solid Carbide end Mill M100

Eco line

Ball-nose mill with 2 cutting edges

Solid carbide end mill

Workpiece materials < HRC45



P	M	K	N	S	H	O
●●	●	●	●			

●● 1st choice ● 2nd choice

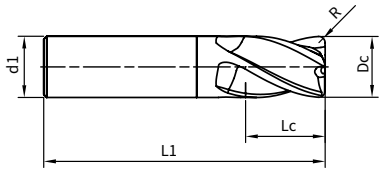
Product order	Dcmm +0.00/-0.03	R mm ≤6+0.01/>6+0.02	d1 mm	Lc mm	L1 mm	Z	Stock
M100-2BS-020	2	1	4	5	50	2	●
M100-2BS-030	3	1.5	4	6	50	2	●
M100-2BS-040	4	2	4	8	50	2	●
M100-2BS-050	5	2.5	6	10	50	2	●
M100-2BS-060	6	3	6	12	50	2	●
M100-2BS-080	8	4	8	14	60	2	●
M100-2BS-100	10	5	10	20	75	2	●
M100-2BS-120	12	6	12	24	75	2	●
M100-2BS-160	16	8	16	32	100	2	●
M100-2BS-200	20	10	20	40	100	2	●

Marked: ● Stocked ○ Limited-stock

Solid Carbide end Mill M100

Eco line
Round corner mill with 4 cutting edges

Solid carbide end mill
Workpiece materials < HRC45



P	M	K	N	S	H	O
●●	●	●	●			

●● 1st choice ● 2nd choice

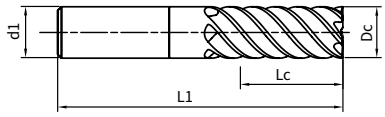
Product order	Dcmm +0.00/-0.03	R mm ±0.02	d1 mm	Lc mm	L1 mm	Z	Stock
M100-4RL-040002P	4	0.2	6	12	70	4	●
M100-4RL-040005P	4	0.5	6	12	70	4	●
M100-4RL-040010P	4	1.0	6	12	70	4	●
M100-4RL-060002	6	0.2	6	15	90	4	●
M100-4RL-060005	6	0.5	6	15	90	4	●
M100-4RL-060010	6	1.0	6	15	90	4	●
M100-4RL-080005	8	0.5	8	20	100	4	●
M100-4RL-080010	8	1.0	8	20	100	4	●
M100-4RL-080015	8	1.5	8	20	100	4	●
M100-4RL-080020	8	2.0	8	20	100	4	●
M100-4RL-100005	10	0.5	10	25	100	4	●
M100-4RL-100010	10	1.0	10	25	100	4	●
M100-4RL-100015	10	1.5	10	25	100	4	●
M100-4RL-100020	10	2.0	10	25	100	4	●
M100-4RL-100025	10	2.5	10	25	100	4	●
M100-4RL-120005	12	0.5	12	30	110	4	●
M100-4RL-120010	12	1.0	12	30	110	4	●
M100-4RL-120015	12	1.5	12	30	110	4	●
M100-4RL-120020	12	2.0	12	30	110	4	●
M100-4RL-120025	12	2.5	12	30	110	4	●
M100-4RL-120030	12	3.0	12	30	110	4	●

Marked: ● Stocked ○ Limited-stock

Solid Carbide end Mill M105

Eco line
Square shoulder mill with 4 & 6 cutting edges

Solid carbide end mill
Workpiece materials < HRC45



P	M	K	N	S	H	O
●●	●	●	●			

●● 1st choice ● 2nd choice

Product order	Dcmm +0.00/-0.03	d1 mm	Lc mm	L1 mm	Z	Stock
M105-4ES-040	4	4	11	50	4	●
M105-6ES-050	5	6	13	50	6	●
M105-6ES-060	6	6	16	50	6	●
M105-6ES-080	8	8	19	60	6	●
M105-6ES-100	10	10	22	75	6	●
M105-6ES-120	12	12	26	75	6	●
M105-6ES-140	14	14	30	90	6	●
M105-6ES-160	16	16	32	100	6	●
M105-6ES-180	18	18	38	100	6	●
M105-6ES-200	20	20	38	100	6	●

Long version

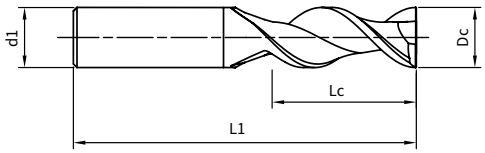
Product order	Dcmm +0.00/-0.03	d1 mm	Lc mm	L1 mm	Z	Stock
M105-6EL-060	6	6	25	80	6	●
M105-6EL-080	8	8	35	90	6	●
M105-6EL-100	10	10	45	100	6	●
M105-6EL-120	12	12	50	100	6	●
M105-6EL-160	16	16	65	150	6	●
M105-6EL-200	20	20	70	150	6	●

Marked: ● Stocked ○ Limited-stock

Solid Carbide end Mill M145

Eco line **Solid carbide mill**

Square shoulder mill with 2 cutting edges dedicated for aluminum alloy



P	M	K	N	S	H	O
			●●			

●● 1st choice ● 2nd choice

Product order	Dcmm +0.00/-0.02	d1 mm	Lc mm	L1 mm	Z	Stock
M145-2ES-030	3	4	11	50	2	●
M145-2ES-040	4	4	13	50	2	●
M145-2ES-050	5	6	17	55	2	●
M145-2ES-060	6	6	17	55	2	●
M145-2ES-080	8	8	22	65	2	●
M145-2ES-100	10	10	27	70	2	●
M145-2ES-120	12	12	32	80	2	●
M145-2ES-140	14	14	37	85	2	●
M145-2ES-160	16	16	42	100	2	●
M145-2ES-180P	18	16	48	110	2	●
M145-2ES-200	20	20	48	110	2	●

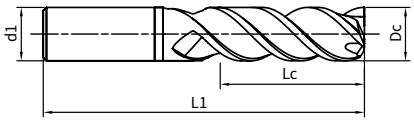
Marked: ● Stocked ○ Limited-stock

Solid Carbide end Mill M145

Eco line

Square shoulder mill with 3 cutting edges dedicated for aluminum alloy

Solid carbide mill



P	M	K	N	S	H	O
			●●			

●● 1st choice ● 2nd choice

Product order	Dcmm +0.00/-0.02	d1 mm	Lc mm	L1 mm	Z	Stock
M145-3ES-030	3	4	11	50	3	●
M145-3ES-040	4	4	13	50	3	●
M145-3ES-050	5	6	17	55	3	●
M145-3ES-060	6	6	17	55	3	●
M145-3ES-080	8	8	22	65	3	●
M145-3ES-100	10	10	27	70	3	●
M145-3ES-120	12	12	32	80	3	●
M145-3ES-140	14	14	37	85	3	●
M145-3ES-160	16	16	42	100	3	●
M145-3ES-180P	18	16	48	110	3	●
M145-3ES-200	20	20	48	110	3	●

Long version

Product order	Dcmm +0.00/-0.02	d1 mm	Lc mm	L1 mm	Z	Stock
M145-3EL-040	4	4	16	70	3	●
M145-3EL-060	6	6	22	70	3	●
M145-3EL-080	8	8	28	80	3	●
M145-3EL-100	10	10	32	90	3	●
M145-3EL-120	12	12	38	95	3	●
M145-3EL-160	16	16	52	110	3	●
M145-3EL-200	20	20	55	110	3	●

Marked: ● Stocked ○ Limited-stock

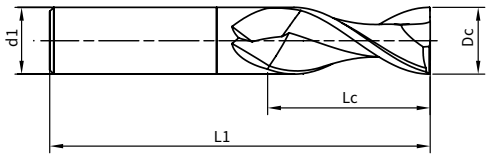
Solid Carbide end Mill M110

Pro line

Square shoulder mill with 2 cutting edges

Solid carbide end mill

Workpiece materials < HRC55



P	M	K	N	S	H	O
●●	●	●●			●	

●● 1st choice ● 2nd choice

Product order	Dcmm +0.00/-0.02	d1 mm	Lc mm	L1 mm	Z	Stock
M110-2ES-030	3	4	8	50	2	●
M110-2ES-040	4	4	11	50	2	●
M110-2ES-050	5	6	13	50	2	●
M110-2ES-060	6	6	16	50	2	●
M110-2ES-080	8	8	20	60	2	●
M110-2ES-100	10	10	25	75	2	●
M110-2ES-120	12	12	32	75	2	●
M110-2ES-140	14	16	40	100	2	●
M110-2ES-160	16	16	40	100	2	●
M110-2ES-180	18	20	40	100	2	●
M110-2ES-200	20	20	45	100	2	●

Marked: ● Stocked ○ Limited-stock

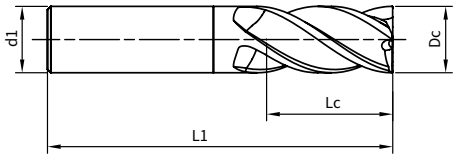
Solid Carbide end Mill M110

Pro line

Square shoulder mill with 4 cutting edges

Solid carbide end mill

Workpiece materials < HRC55



P	M	K	N	S	H	O
●●	●	●●			●	

●● 1st choice ● 2nd choice

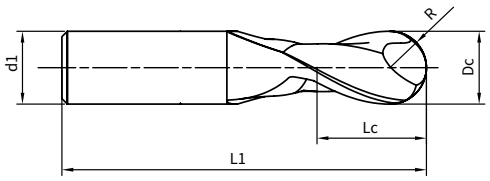
Product order	Dcmm +0.00/-0.02	d1 mm	Lc mm	L1 mm	Z	Stock
M110-4ES-030	3	4	8	50	4	●
M110-4ES-040	4	4	11	50	4	●
M110-4ES-050	5	6	13	50	4	●
M110-4ES-060	6	6	16	50	4	●
M110-4ES-080	8	8	20	60	4	●
M110-4ES-100	10	10	25	75	4	●
M110-4ES-120	12	12	32	75	4	●
M110-4ES-140	14	16	40	100	4	●
M110-4ES-160	16	16	40	100	4	●
M110-4ES-180	18	20	40	100	4	●
M110-4ES-200	20	20	45	100	4	●

Marked: ● Stocked ○ Limited-stock

Solid Carbide end Mill M110

Pro line
Ball-nose mill with 2 cutting edges

Solid carbide end mill
Workpiece materials < HRC55



P	M	K	N	S	H	O
●●	●	●●			●	

●● 1st choice ● 2nd choice

Product order	Dcmm +0.00/-0.02	R mm ≤6+0.01/>6+0.02	d1 mm	Lc mm	L1 mm	Z	Stock
M110-2BS-030	3	1.5	4	6	50	2	●
M110-2BS-040	4	2	4	8	50	2	●
M110-2BS-050	5	2.5	6	10	50	2	●
M110-2BS-060	6	3	6	12	50	2	●
M110-2BS-070	7	3.5	8	14	60	2	●
M110-2BS-080	8	4	8	14	60	2	●
M110-2BS-090	9	4.5	10	18	75	2	●
M110-2BS-100	10	5	10	20	75	2	●
M110-2BS-120	12	6	12	24	75	2	●
M110-2BS-160	16	8	16	32	100	2	●
M110-2BS-200	20	10	20	40	100	2	●

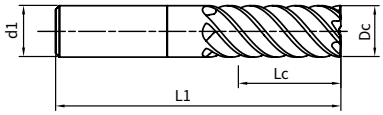
Marked: ● Stocked ○ Limited-stock

Solid Carbide end Mill M115

Pro line

Square shoulder mill with 6 cutting edges

Solid carbide end mill
Workpiece materials < HRC55
Without central cutting edge



P	M	K	N	S	H	O
●●	●	●●			●	

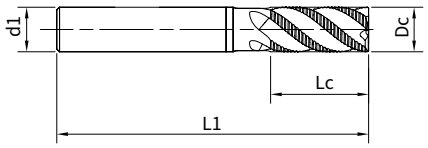
●● 1st choice ● 2nd choice

Product order	Dcmm +0.00/-0.02	d1 mm	Lc mm	L1 mm	Z	Stock
M115-6ES-060	6	6	16	50	6	●
M115-6ES-080	8	8	19	60	6	●
M115-6ES-100	10	10	22	75	6	●
M115-6ES-120	12	12	26	75	6	●
M115-6ES-140	14	14	30	90	6	●
M115-6ES-160	16	16	32	100	6	●
M115-6ES-180	18	18	38	100	6	●

Marked: ● Stocked ○ Limited-stock

Solid Carbide end Mill M116

Pro line
Square shoulder rough milling end mills with 4-6 cutting edges



Solid carbide end mill
Workpiece materials < HRC40
6 cutting edges without central cutting edge
With waved edges design

P	M	K	N	S	H	O
●●	●●	●		●		

●● 1st choice ● 2nd choice

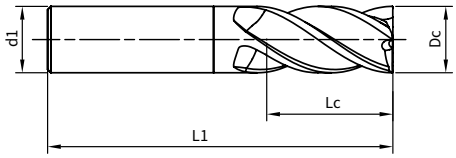
Product order	Dcmm h10	d1 mm	Lc mm	L1 mm	Z	Stock
M116-4PS-060	6	6	13	60	4	●
M116-4PS-080	8	8	19	65	4	●
M116-4PS-100	10	10	22	70	4	●
M116-4PS-120	12	12	26	80	4	●
M116-5PS-160	16	16	42	110	5	●
M116-6PS-200	20	20	48	110	6	●

Marked: ● Stocked ○ Limited-stock

Solid Carbide end Mill M121

XP line
Square shoulder end mill with 4 cutting edges (with protective chamfers)

Solid carbide end mill
Workpiece materials < HRC40



P	M	K	N	S	H	O
●●	●	●●		●		

●● 1st choice ● 2nd choice

Product order	Dcmm +0.00/-0.03	d1 mm	Chamfer mm	Lc mm	L1 mm	Z	Stock
M121 - 4CS - 040002	4	4	0.2	8	50	4	●
M121 - 4CS - 040002P	4	6	0.2	8	50	4	●
M121 - 4CS - 060002	6	6	0.2	12	50	4	●
M121 - 4CS - 080002	8	8	0.2	16	60	4	●
M121 - 4CS - 100003	10	10	0.3	20	75	4	●
M121 - 4CS - 120004	12	12	0.4	24	75	4	●
M121 - 4CS - 160004	16	16	0.4	32	100	4	●
M121 - 4CS - 200005	20	20	0.5	40	100	4	●

Long version

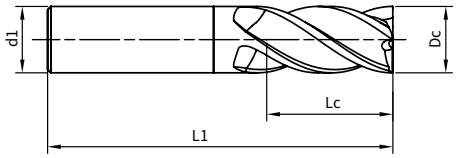
Product order	Dcmm +0.00/-0.03	d1 mm	Chamfer mm	Lc mm	L1 mm	Z	Stock
M121 - 4CSP - 040002P	4	6	0.2	10	50	4	●
M121 - 4CSP - 060002	6	6	0.2	15	60	4	●
M121 - 4CSP - 080002	8	8	0.2	20	70	4	●
M121 - 4CSP - 100003	10	10	0.3	25	75	4	●
M121 - 4CSP - 120004	12	12	0.4	30	80	4	●
M121 - 4CSP - 140004	14	16	0.4	35	100	4	●
M121 - 4CSP - 160004	16	16	0.4	40	100	4	●
M121 - 4CSP - 180005P	18	16	0.5	45	100	4	●
M121 - 4CSP - 200005	20	20	0.5	45	100	4	●

Marked: ● Stocked ○ Limited-stock

Solid Carbide end Mill M121

XP line
Square shoulder mill with 4 cutting edges Long version

Solid carbide end mill
Workpiece materials < HRC40



P	M	K	N	S	H	O
●●	●	●●		●		

●● 1st choice ● 2nd choice

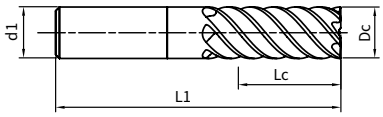
Product order	Dcmm +0.00/-0.03	d1 mm	Lc mm	L1 mm	Z	Stock
M121 - 4ESP - 040P	4	6	10	50	4	●
M121 - 4ESP - 060	6	6	15	60	4	●
M121 - 4ESP - 080	8	8	20	70	4	●
M121 - 4ESP - 100	10	10	25	75	4	●
M121 - 4ESP - 120	12	12	30	80	4	●
M121 - 4ESP - 160	16	16	40	100	4	●
M121 - 4ESP - 200	20	20	45	100	4	●

Marked: ● Stocked ○ Limited-stock

Solid Carbide end Mill M125

XP line
Square shoulder mill with 6 cutting edges

Solid carbide end mill
Workpiece materials < HRC40



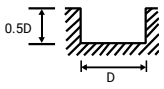
P	M	K	N	S	H	O
●●	●	●●		●		

●● 1st choice ● 2nd choice

Product order	Dcmm +0.00/-0.03	d1 mm	Lc mm	L1 mm	Z	Stock
M125 - 6ES - 060	6	6	15	60	6	●
M125 - 6ES - 080	8	8	20	70	6	●
M125 - 6ES - 100	10	10	25	75	6	●
M125 - 6ES - 120	12	12	30	80	6	●
M125 - 6ES - 160	16	16	40	100	6	●
M125 - 6ES - 200	20	20	45	100	6	●

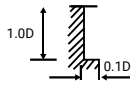
Marked: ● Stocked ○ Limited-stock

Solid Carbide End Mill Eco Line Cutting Parameters

Materials						M100-2ES Slot milling 								
ISO	Material classification			Brinell hardness (HB)	Tensile strength Rm(N/mm²)	Cutting speed Vc(m/min)	fz [mm/Tooth]							
							Mill diameter [mm]							
							2	4	6	8	10	12	14	16	20
P	Unalloyed steel	C≤0.25%	Annealed	125	428	45~80	0.012	0.024	0.038	0.058	0.060	0.062	0.065	0.066	0.070
		0.25<C≤0.55%	Annealed	190	639	45~75	0.012	0.024	0.038	0.058	0.060	0.062	0.065	0.066	0.070
		0.25<C≤0.55%	Heat-treated	210	708	45~75	0.012	0.024	0.038	0.058	0.060	0.062	0.065	0.066	0.070
		C>0.55%	Annealed	190	639	45~75	0.012	0.024	0.038	0.058	0.060	0.062	0.065	0.066	0.070
		C>0.55%	Heat-treated	300	1013	40~60	0.010	0.020	0.034	0.045	0.052	0.055	0.055	0.057	0.060
		Free cutting steel (short-chip)	Annealed	220	745	45~65	0.010	0.020	0.038	0.058	0.060	0.062	0.065	0.066	0.070
	Low-alloyed steel	Annealed		175	591	45~75	0.012	0.024	0.038	0.058	0.060	0.062	0.065	0.066	0.070
		Heat-treated		300	1013	40~60	0.010	0.020	0.034	0.045	0.052	0.055	0.055	0.057	0.060
		Heat-treated		380	1282	40~60	0.010	0.020	0.034	0.045	0.052	0.055	0.055	0.057	0.060
		Heat-treated		430	1477	30~40	0.008	0.020	0.030	0.040	0.045	0.050	0.050	0.050	0.055
	High-alloyed steel and high-alloyed tool steel	Annealed		200	675	45~75	0.012	0.020	0.038	0.058	0.060	0.062	0.055	0.057	0.060
		Hardened and tempered		300	1013	40~60	0.010	0.020	0.035	0.045	0.052	0.055	0.055	0.057	0.060
		Hardened and tempered		400	1361	40~60	0.008	0.015	0.025	0.035	0.042	0.045	0.045	0.045	0.050
	Stainless steel	Ferritic/martensitic, annealed		200	675	35~40	0.010	0.020	0.038	0.058	0.060	0.055	0.055	0.057	0.060
		Martensitic, heat-treated		330	1114	30~35	0.010	0.020	0.035	0.045	0.052	0.055	0.055	0.057	0.060
M	Stainless steel	Austenitic, quench hardened		200	675	30~35	0.007	0.020	0.035	0.043	0.050	0.053	0.055	0.057	0.058
		Austenitic, precipitation hardened (PH)		300	1013	30	0.004	0.015	0.030	0.032	0.035	0.040	0.043	0.045	0.050
		Austenitic/ferritic, duplex		230	778	30~35	0.007	0.020	0.035	0.043	0.050	0.053	0.055	0.057	0.058
K	Malleable cast iron	Ferritic		200	400	55~60	0.012	0.024	0.042	0.060	0.071	0.075	0.080	0.083	0.085
		Pearlitic		260	700	55~60	0.012	0.024	0.042	0.060	0.071	0.075	0.080	0.083	0.085
	Grey cast iron	Low tensile strength		180	200	55~60	0.012	0.024	0.042	0.060	0.071	0.075	0.080	0.083	0.085
		High tensile strength/austenitic		245	350	55~60	0.012	0.024	0.042	0.060	0.071	0.075	0.080	0.083	0.085
	Nodular cast iron	Ferritic		155	400	55~60	0.010	0.020	0.038	0.050	0.060	0.065	0.072	0.075	0.075
		Pearlitic		265	700	45~55	0.008	0.012	0.035	0.045	0.055	0.060	0.065	0.068	0.068
	GGV(CGI)			230	400	55~60	0.010	0.020	0.038	0.050	0.060	0.065	0.072	0.075	0.075
N	Wrought aluminium alloys	Non-aging		30	-										
		Aged		100	340										
	Cast aluminium alloys	≤ 12% Si, non-aging		75	260										
		≤ 12% Si, aged		90	310										
		> 12% Si, non-aging		130	450										
	Magnesium alloys			70	250										
	Copper and copper alloys	Unalloyed, electrolytic copper		100	340										
		Brass, bronze, red brass		90	310										
		Cu alloys, short-chipping		110	380										
		High-tensile, Ampco alloy		300	1010										
S	Heat-resistant alloys	Fe-based	Annealed	200	680										
			Hardened	280	940										
		Ni or Co based	Annealed	250	840										
			Hardened	350	1180										
			Cast	320	1080										
	Titanium alloys	Pure titanium		200	680										
		α and β alloys, hardened		375	1260										
		β alloys		410	1400										
	Tungsten alloys			300	1010										
	Molybdenum alloys			300	1010										
H	Hardened steel	Hardened and tempered		50HRC	-										
		Hardened and tempered		55HRC	-										
		Hardened and tempered		60HRC	-										
	Chilled cast iron	Hardened and tempered		50HRC	-										

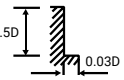
The cutting data are average recommended values. For special applications, adjustment is needed.

Solid Carbide End Mill Eco Line Cutting Parameters

Materials				Brinell hardness (HB)	Tensile strength Rm(N/mm²)	M100-4ES M100-4EL M100-4RL Square Shoulder milling (Rough Machining) 								
ISO	Material classification					Cutting speed Vc(m/min)	fz [mm/Tooth]							
							Mill diameter [mm]							
							2	4	6	8	10	12	14	16	20
P	Unalloyed steel	C≤0.25%	Annealed	125	428	60~90	0.006	0.020	0.038	0.042	0.050	0.052	0.060	0.066	0.070
		0.25<C≤0.55%	Annealed	190	639	60~85	0.006	0.020	0.038	0.042	0.050	0.052	0.060	0.066	0.070
		0.25<C≤0.55%	Heat-treated	210	708	60~85	0.006	0.020	0.038	0.042	0.050	0.052	0.060	0.066	0.070
		C>0.55%	Annealed	190	639	60~85	0.006	0.020	0.038	0.042	0.050	0.052	0.060	0.066	0.070
		C>0.55%	Heat-treated	300	1013	55~65	0.005	0.015	0.034	0.035	0.045	0.052	0.060	0.066	0.070
		Free cutting steel (short-chip)	Annealed	220	745	60~85	0.005	0.015	0.038	0.042	0.050	0.052	0.060	0.066	0.070
	Low-alloyed steel	Annealed		175	591	60~85	0.006	0.020	0.038	0.042	0.050	0.052	0.060	0.066	0.070
		Heat-treated		300	1013	45~60	0.005	0.015	0.034	0.035	0.045	0.048	0.055	0.057	0.060
		Heat-treated		380	1282	45~60	0.005	0.015	0.034	0.035	0.045	0.048	0.055	0.057	0.060
		Heat-treated		430	1477	40~45	0.004	0.015	0.030	0.030	0.040	0.045	0.050	0.050	0.055
	High-alloyed steel and high-alloyed tool steel	Annealed		200	675	60~80	0.006	0.015	0.038	0.042	0.050	0.052	0.055	0.057	0.060
		Hardened and tempered		300	1013	50~60	0.006	0.015	0.035	0.042	0.045	0.048	0.055	0.057	0.060
		Hardened and tempered		400	1361	40~45	0.005	0.012	0.025	0.030	0.040	0.042	0.045	0.045	0.050
	Stainless steel	Ferritic/martensitic, annealed		200	675	50~70	0.006	0.015	0.038	0.042	0.050	0.052	0.055	0.057	0.060
		Martensitic, heat-treated		330	1114	35~45	0.005	0.015	0.035	0.035	0.045	0.048	0.055	0.057	0.060
M	Stainless steel	Austenitic, quench hardened		200	675	35~45	0.005	0.018	0.035	0.041	0.043	0.053	0.055	0.057	0.058
		Austenitic, precipitation hardened (PH)		300	1013	35	0.005	0.012	0.030	0.032	0.035	0.040	0.043	0.045	0.050
		Austenitic/ferritic, duplex		230	778	35~45	0.005	0.018	0.035	0.041	0.043	0.053	0.055	0.057	0.058
K	Malleable cast iron	Ferritic		200	400	55~60	0.012	0.024	0.042	0.065	0.071	0.075	0.080	0.083	0.080
		Pearlitic		260	700	55~60	0.012	0.024	0.042	0.065	0.071	0.075	0.080	0.083	0.080
	Grey cast iron	Low tensile strength		180	200	55~60	0.012	0.024	0.042	0.065	0.071	0.075	0.080	0.083	0.080
		High tensile strength/austenitic		245	350	55~60	0.012	0.024	0.042	0.065	0.071	0.075	0.080	0.083	0.080
	Nodular cast iron	Ferritic		155	400	55~60	0.010	0.020	0.038	0.055	0.060	0.065	0.072	0.075	0.072
		Pearlitic		265	700	45~55	0.008	0.012	0.035	0.045	0.055	0.060	0.065	0.068	0.065
	GGV(CGI)			230	400	55~65	0.010	0.020	0.038	0.055	0.060	0.065	0.072	0.075	0.072
N	Wrought aluminium alloys	Non-aging		30	-										
		Aged		100	340										
	Cast aluminium alloys	≤ 12% Si, non-aging		75	260										
		≤ 12% Si, aged		90	310										
		> 12% Si, non-aging		130	450										
	Magnesium alloys			70	250										
	Copper and copper alloys	Unalloyed, electrolytic copper		100	340										
		Brass, bronze, red brass		90	310										
		Cu alloys, short-chipping		110	380										
		High-tensile, Ampco alloy		300	1010										
S	Heat-resistant alloys	Fe-based	Annealed	200	680										
			Hardened	280	940										
		Ni or Co based	Annealed	250	840										
			Hardened	350	1180										
			Cast	320	1080										
	Titanium alloys	Pure titanium		200	680										
		α and β alloys, hardened		375	1260										
		β alloys		410	1400										
	Tungsten alloys			300	1010										
	Molybdenum alloys			300	1010										
H	Hardened steel	Hardened and tempered		50HRC	-										
		Hardened and tempered		55HRC	-										
		Hardened and tempered		60HRC	-										
	Chilled cast iron	Hardened and tempered		50HRC	-										

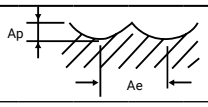
The cutting data are average recommended values. For special applications, adjustment is needed.

Solid Carbide End Mill Eco Line Cutting Parameters

Materials				Brinell hardness (HB)	Tensile strength Rm(N/mm²)	M100-4ES,M100-4EL M100-4RL,M105-6ES M105-6EL Square shoulder milling (Finish Machining) 									
ISO	Material classification					Cutting speed Vc(m/min)	fz [mm/Tooth]								
							Mill diameter [mm]								
							2	4	6	8	10	12	14	16	20
P	Unalloyed steel	C≤0.25%	Annealed	125	428	80~100	0.006	0.020	0.030	0.038	0.045	0.052	0.058	0.062	0.070
		0.25<C≤0.55%	Annealed	190	639	75~90	0.006	0.020	0.030	0.038	0.045	0.052	0.058	0.062	0.070
		0.25<C≤0.55%	Heat-treated	210	708	75~90	0.006	0.020	0.030	0.038	0.045	0.052	0.058	0.062	0.070
		C>0.55%	Annealed	190	639	75~90	0.006	0.020	0.030	0.038	0.045	0.052	0.058	0.062	0.070
		C>0.55%	Heat-treated	300	1013	60~70	0.006	0.020	0.030	0.038	0.045	0.052	0.058	0.062	0.070
		Free cutting steel (short-chip)	Annealed	220	745	75~90	0.006	0.020	0.030	0.038	0.045	0.052	0.058	0.062	0.070
	Low-alloyed steel	Annealed		175	591	75~90	0.006	0.020	0.030	0.038	0.045	0.052	0.058	0.062	0.070
		Heat-treated		300	1013	60~70	0.005	0.015	0.026	0.035	0.042	0.048	0.055	0.057	0.060
		Heat-treated		380	1282	60~70	0.005	0.015	0.026	0.035	0.042	0.048	0.055	0.057	0.060
		Heat-treated		430	1477	55~60	0.005	0.015	0.025	0.030	0.040	0.045	0.050	0.050	0.055
	High-alloyed steel and high-alloyed tool steel	Annealed		200	675	75~85	0.005	0.015	0.026	0.035	0.042	0.048	0.055	0.057	0.060
		Hardened and tempered		300	1013	60~70	0.005	0.015	0.026	0.035	0.042	0.048	0.055	0.057	0.060
		Hardened and tempered		400	1361	55~60	0.004	0.012	0.025	0.030	0.040	0.045	0.050	0.050	0.055
	Stainless steel	Ferritic/martensitic, annealed		200	675	50~70	0.005	0.015	0.026	0.035	0.042	0.048	0.055	0.057	0.060
		Martensitic, heat-treated		330	1114	40~50	0.004	0.015	0.025	0.030	0.040	0.045	0.050	0.050	0.055
M	Stainless steel	Austenitic, quench hardened		200	675	40~50	0.010	0.018	0.038	0.041	0.043	0.053	0.055	0.057	0.058
		Austenitic, precipitation hardened (PH)		300	1013	40	0.005	0.012	0.030	0.032	0.035	0.040	0.043	0.045	0.050
		Austenitic/ferritic, duplex		230	778	40~50	0.005	0.018	0.038	0.041	0.043	0.053	0.055	0.057	0.058
K	Malleable cast iron	Ferritic		200	400	70~80	0.010	0.021	0.030	0.038	0.045	0.052	0.058	0.062	0.070
		Pearlitic		260	700	70~80	0.010	0.021	0.030	0.038	0.045	0.052	0.058	0.062	0.070
	Grey cast iron	Low tensile strength		180	200	70~80	0.010	0.021	0.030	0.038	0.045	0.052	0.058	0.062	0.070
		High tensile strength/austenitic		245	350	70~80	0.010	0.021	0.030	0.038	0.045	0.052	0.058	0.062	0.070
	Nodular cast iron	Ferritic		155	400	70~80	0.009	0.018	0.028	0.035	0.040	0.050	0.052	0.060	0.065
		Pearlitic		265	700	65~75	0.009	0.018	0.028	0.035	0.040	0.050	0.052	0.060	0.065
	GGV(CGI)			230	400	70~80	0.009	0.018	0.028	0.035	0.040	0.050	0.052	0.060	0.065
N	Wrought aluminium alloys	Non-aging		30	-										
		Aged		100	340										
	Cast aluminium alloys	≤ 12% Si, non-aging		75	260										
		≤ 12% Si, aged		90	310										
		> 12% Si, non-aging		130	450										
	Magnesium alloys			70	250										
	Copper and copper alloys	Unalloyed, electrolytic copper		100	340										
		Brass, bronze, red brass		90	310										
		Cu alloys, short-chipping		110	380										
		High-tensile, Ampco alloy		300	1010										
S	Heat-resistant alloys	Fe-based	Annealed	200	680										
			Hardened	280	940										
		Ni or Co based	Annealed	250	840										
			Hardened	350	1180										
			Cast	320	1080										
	Titanium alloys	Pure titanium		200	680										
		α and β alloys, hardened		375	1260										
		β alloys		410	1400										
	Tungsten alloys			300	1010										
	Molybdenum alloys			300	1010										
H	Hardened steel	Hardened and tempered		50HRC	-										
		Hardened and tempered		55HRC	-										
		Hardened and tempered		60HRC	-										
	Chilled cast iron	Hardened and tempered		50HRC	-										

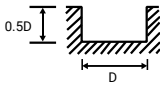
The cutting data are average recommended values. For special applications, adjustment is needed.

Solid Carbide End Mill Eco Line Cutting Parameters

Materials						M100-2BS Profile (Finishing) 									
ISO	Material classification			Brinell hardness (HB)	Tensile strength Rm(N/mm²)	Cutting speed Vc(m/min)	fz [mm/Tooth] Mill diameter [mm]								
							2	4	6	8	10	12	14	16	20
P	Unalloyed steel	C≤0.25%	Annealed	125	428	90 ~100	0.015	0.027	0.039	0.050	0.060	0.070	0.075	0.080	0.100
		0.25<C≤0.55%	Annealed	190	639	90 ~100	0.015	0.027	0.039	0.050	0.060	0.070	0.075	0.080	0.100
		0.25<C≤0.55%	Heat-treated	210	708	90 ~100	0.015	0.027	0.039	0.050	0.060	0.070	0.075	0.080	0.100
		C>0.55%	Annealed	190	639	90 ~100	0.015	0.027	0.039	0.050	0.060	0.070	0.075	0.080	0.100
		C>0.55%	Heat-treated	300	1013	80~90	0.015	0.027	0.039	0.050	0.060	0.070	0.075	0.080	0.100
		Free cutting steel (short-chip)	Annealed	220	745	90 ~100	0.015	0.027	0.039	0.050	0.060	0.070	0.075	0.080	0.100
	Low-alloyed steel	Annealed		175	591	90 ~100	0.015	0.027	0.039	0.050	0.060	0.070	0.075	0.080	0.100
		Heat-treated		300	1013	80~90	0.012	0.023	0.035	0.045	0.052	0.060	0.065	0.070	0.085
		Heat-treated		380	1282	80~90	0.010	0.020	0.030	0.041	0.045	0.050	0.055	0.060	0.070
		Heat-treated		430	1477	80~90	0.012	0.023	0.035	0.045	0.052	0.060	0.065	0.070	0.085
	High-alloyed steel and high-alloyed tool steel	Annealed		200	675	90~100	0.012	0.023	0.035	0.045	0.052	0.060	0.065	0.070	0.085
		Hardened and tempered		300	1013	80~90	0.012	0.023	0.035	0.045	0.052	0.060	0.065	0.070	0.085
		Hardened and tempered		400	1361	80~90	0.010	0.020	0.030	0.041	0.045	0.050	0.055	0.060	0.070
	Stainless steel	Ferritic/martensitic, annealed		200	675	90~100	0.012	0.023	0.035	0.045	0.052	0.060	0.065	0.070	0.085
		Martensitic, heat-treated		330	1114	80~90	0.012	0.023	0.035	0.045	0.052	0.060	0.065	0.070	0.085
M	Stainless steel	Austenitic, quench hardened		200	675	90~100	0.009	0.016	0.023	0.029	0.035	0.041	0.045	0.051	0.060
		Austenitic, precipitation hardened (PH)		300	1013	80~90	0.007	0.013	0.020	0.025	0.030	0.035	0.040	0.045	0.050
		Austenitic/ferritic, duplex		230	778	80~90	0.009	0.016	0.023	0.029	0.035	0.041	0.045	0.051	0.060
K	Malleable cast iron	Ferritic		200	400	90 ~100	0.026	0.045	0.064	0.083	0.100	0.115	0.125	0.140	0.160
		Pearlitic		260	700	90 ~100	0.026	0.045	0.064	0.083	0.100	0.115	0.125	0.140	0.160
	Grey cast iron	Low tensile strength		180	200	90 ~100	0.026	0.045	0.064	0.083	0.100	0.115	0.125	0.140	0.160
		High tensile strength/austenitic		245	350	90 ~100	0.026	0.045	0.064	0.083	0.100	0.115	0.125	0.140	0.160
	Nodular cast iron	Ferritic		155	400	90 ~100	0.020	0.035	0.050	0.060	0.080	0.090	0.105	0.120	0.140
		Pearlitic		265	700	90 ~100	0.015	0.030	0.040	0.050	0.065	0.070	0.085	0.100	0.120
	GGV(CGI)			230	400	90 ~100	0.020	0.035	0.050	0.060	0.080	0.090	0.105	0.120	0.140
N	Wrought aluminium alloys	Non-aging		30	-										
		Aged		100	340										
	Cast aluminium alloys	≤ 12% Si, non-aging		75	260										
		≤ 12% Si, aged		90	310										
		> 12% Si, non-aging		130	450										
	Magnesium alloys			70	250										
	Copper and copper alloys	Unalloyed, electrolytic copper		100	340										
		Brass, bronze, red brass		90	310										
		Cu alloys, short-chipping		110	380										
		High-tensile, Ampco alloy		300	1010										
S	Heat-resistant alloys	Fe-based	Annealed	200	680										
			Hardened	280	940										
		Ni or Co based	Annealed	250	840										
			Hardened	350	1180										
			Cast	320	1080										
	Titanium alloys	Pure titanium		200	680										
		α and β alloys, hardened		375	1260										
		β alloys		410	1400										
	Tungsten alloys			300	1010										
	Molybdenum alloys			300	1010										
H	Hardened steel	Hardened and tempered		50HRC	-										
		Hardened and tempered		55HRC	-										
		Hardened and tempered		60HRC	-										
	Chilled cast iron	Hardened and tempered		50HRC	-										

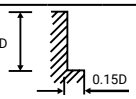
The cutting data are average recommended values. For special applications, adjustment is needed.

Solid Carbide End Mill Eco Line Cutting Parameters

Materials				Brinell hardness (HB)	Tensile strength Rm(N/mm²)	M145-2ES M145-3ES M145-3EL Slot milling 									
ISO	Material classification					Cutting speed Vc(m/min)	fz [mm/Tooth]								
							Mill diameter [mm]								
							2	4	6	8	10	12	14	16	20
P	Unalloyed steel	C≤0.25%	Annealed	125	428										
		0.25<C≤0.55%	Annealed	190	639										
		0.25<C≤0.55%	Heat-treated	210	708										
		C>0.55%	Annealed	190	639										
		C>0.55%	Heat-treated	300	1013										
		Free cutting steel (short-chip)	Annealed	220	745										
	Low-alloyed steel	Annealed		175	591										
		Heat-treated		300	1013										
		Heat-treated		380	1282										
		Heat-treated		430	1477										
	High-alloyed steel and high-alloyed tool steel	Annealed		200	675										
		Hardened and tempered		300	1013										
		Hardened and tempered		400	1361										
	Stainless steel	Ferritic/martensitic, annealed		200	675										
		Martensitic, heat-treated		330	1114										
M	Stainless steel	Austenitic, quench hardened		200	675										
		Austenitic, precipitation hardened (PH)		300	1013										
		Austenitic/ferritic, duplex		230	778										
K	Malleable cast iron	Ferritic		200	400										
		Pearlitic		260	700										
	Grey cast iron	Low tensile strength		180	200										
		High tensile strength/austenitic		245	350										
	Nodular cast iron	Ferritic		155	400										
		Pearlitic		265	700										
	GGV(CGI)			230	400										
N	Wrought aluminium alloys	Non-aging		30	-	150~200	0.030	0.050	0.065	0.085	0.100	0.120	0.140	0.160	0.180
		Aged		100	340	120~150	0.030	0.050	0.065	0.085	0.100	0.120	0.140	0.160	0.180
	Cast aluminium alloys	≤ 12% Si, non-aging		75	260	150~200	0.030	0.050	0.065	0.085	0.100	0.120	0.140	0.160	0.180
		≤ 12% Si, aged		90	310	130~150	0.030	0.050	0.065	0.085	0.100	0.120	0.140	0.160	0.180
		> 12% Si, non-aging		130	450	120~130	0.030	0.050	0.065	0.085	0.100	0.120	0.140	0.160	0.180
	Magnesium alloys			70	250	150~200	0.030	0.050	0.065	0.085	0.100	0.120	0.140	0.160	0.180
	Copper and copper alloys	Unalloyed, electrolytic copper		100	340	120~150	0.030	0.050	0.065	0.085	0.100	0.120	0.140	0.160	0.180
		Brass, bronze, red brass		90	310	120~150	0.030	0.050	0.065	0.085	0.100	0.120	0.140	0.160	0.180
		Cu alloys, short-chipping		110	380	120~150	0.030	0.050	0.065	0.085	0.100	0.120	0.140	0.160	0.180
		High-tensile, Ampco alloy		300	1010										
S	Heat-resistant alloys	Fe-based	Annealed	200	680										
			Hardened	280	940										
		Ni or Co based	Annealed	250	840										
			Hardened	350	1180										
			Cast	320	1080										
	Titanium alloys	Pure titanium		200	680										
		α and β alloys, hardened		375	1260										
		β alloys		410	1400										
	Tungsten alloys			300	1010										
	Molybdenum alloys			300	1010										
H	Hardened steel	Hardened and tempered		50HRC	-										
		Hardened and tempered		55HRC	-										
		Hardened and tempered		60HRC	-										
	Chilled cast iron	Hardened and tempered		50HRC	-										

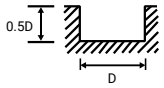
The cutting data are average recommended values. For special applications, adjustment is needed.

Solid Carbide End Mill Eco Line Cutting Parameters

Materials				Brinell hardness (HB)	Tensile strength Rm(N/mm²)	M145-2ES M145-3ES M145-3EL Square shoulder milling 									
ISO	Material classification					Cutting speed Vc(m/min)	fz [mm/Tooth]								
							Mill diameter [mm]								
							2	4	6	8	10	12	14	16	20
P	Unalloyed steel	C≤0.25%	Annealed	125	428										
		0.25<C≤0.55%	Annealed	190	639										
		0.25<C≤0.55%	Heat-treated	210	708										
		C>0.55%	Annealed	190	639										
		C>0.55%	Heat-treated	300	1013										
		Free cutting steel (short-chip)	Annealed	220	745										
	Low-alloyed steel	Annealed		175	591										
		Heat-treated		300	1013										
		Heat-treated		380	1282										
		Heat-treated		430	1477										
	High-alloyed steel and high-alloyed tool steel	Annealed		200	675										
		Hardened and tempered		300	1013										
		Hardened and tempered		400	1361										
	Stainless steel	Ferritic/martensitic, annealed		200	675										
		Martensitic, heat-treated		330	1114										
M	Stainless steel	Austenitic, quench hardened		200	675										
		Austenitic, precipitation hardened (PH)		300	1013										
		Austenitic/ferritic, duplex		230	778										
K	Malleable cast iron	Ferritic		200	400										
		Pearlitic		260	700										
	Grey cast iron	Low tensile strength		180	200										
		High tensile strength/austenitic		245	350										
	Nodular cast iron	Ferritic		155	400										
		Pearlitic		265	700										
	GGV(CGI)			230	400										
N	Wrought aluminium alloys	Non-aging		30	-	150~200	0.025	0.040	0.055	0.065	0.090	0.110	0.120	0.140	0.160
		Aged		100	340	120~150	0.025	0.040	0.055	0.065	0.090	0.110	0.120	0.140	0.160
	Cast aluminium alloys	≤ 12% Si, non-aging		75	260	150~200	0.025	0.040	0.055	0.065	0.090	0.110	0.120	0.140	0.160
		≤ 12% Si, aged		90	310	120~150	0.025	0.040	0.055	0.065	0.090	0.110	0.120	0.140	0.160
		> 12% Si, non-aging		130	450	120~150	0.025	0.040	0.055	0.065	0.090	0.110	0.120	0.140	0.160
	Magnesium alloys			70	250	150~170	0.025	0.040	0.055	0.065	0.090	0.110	0.120	0.140	0.160
	Copper and copper alloys	Unalloyed, electrolytic copper		100	340	120~150	0.025	0.040	0.055	0.065	0.090	0.110	0.120	0.140	0.160
		Brass, bronze, red brass		90	310	120~150	0.025	0.040	0.055	0.065	0.090	0.110	0.120	0.140	0.160
		Cu alloys, short-chipping		110	380	120~150	0.025	0.040	0.055	0.065	0.090	0.110	0.120	0.140	0.160
		High-tensile, Ampco alloy		300	1010										
S	Heat-resistant alloys	Fe-based	Annealed	200	680										
			Hardened	280	940										
		Ni or Co based	Annealed	250	840										
			Hardened	350	1180										
			Cast	320	1080										
	Titanium alloys	Pure titanium		200	680										
		α and β alloys, hardened		375	1260										
		β alloys		410	1400										
	Tungsten alloys			300	1010										
	Molybdenum alloys			300	1010										
H	Hardened steel	Hardened and tempered		50HRC	-										
		Hardened and tempered		55HRC	-										
		Hardened and tempered		60HRC	-										
	Chilled cast iron	Hardened and tempered		50HRC	-										

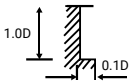
The cutting data are average recommended values. For special applications, adjustment is needed.

Solid Carbide End Mill Pro Line Cutting Parameters

Materials						M110-2ES Slot milling 								
ISO	Material classification			Brinell hardness (HB)	Tensile strength Rm(N/mm²)	Cutting speed Vc(m/min)	fz [mm/Tooth]							
							Mill diameter [mm]							
							4	6	8	10	12	14	16	20
P	Unalloyed steel	C≤0.25%	Annealed	125	428	45-80	0.024	0.038	0.058	0.060	0.062	0.065	0.066	0.070
		0.25<C≤0.55%	Annealed	190	639	45~75	0.024	0.038	0.058	0.060	0.062	0.065	0.066	0.070
		0.25<C≤0.55%	Heat-treated	210	708	45~75	0.024	0.038	0.058	0.060	0.062	0.065	0.066	0.070
		C>0.55%	Annealed	190	639	55~75	0.024	0.038	0.058	0.060	0.062	0.065	0.066	0.070
		C>0.55%	Heat-treated	300	1013	45~60	0.020	0.034	0.045	0.052	0.055	0.055	0.057	0.060
		Free cutting steel (short-chip)	Annealed	220	745	50~65	0.020	0.038	0.058	0.060	0.062	0.065	0.066	0.070
	Low-alloyed steel	Annealed		175	591	55~75	0.024	0.038	0.058	0.060	0.062	0.065	0.066	0.070
		Heat-treated		300	1013	50~60	0.020	0.034	0.045	0.052	0.055	0.055	0.057	0.060
		Heat-treated		380	1282	50~60	0.020	0.034	0.045	0.052	0.055	0.055	0.057	0.060
		Heat-treated		430	1477	35~40	0.020	0.030	0.040	0.045	0.050	0.050	0.050	0.055
	High-alloyed steel and high-alloyed tool steel	Annealed		200	675	50~75	0.020	0.038	0.058	0.060	0.062	0.055	0.057	0.060
		Hardened and tempered		300	1013	45~60	0.020	0.035	0.045	0.052	0.055	0.055	0.057	0.060
		Hardened and tempered		400	1361	45~60	0.015	0.025	0.035	0.042	0.045	0.045	0.045	0.050
	Stainless steel	Ferritic/martensitic, annealed		200	675	40~50	0.020	0.038	0.058	0.060	0.055	0.055	0.057	0.060
		Martensitic, heat-treated		330	1114	35~45	0.020	0.035	0.045	0.052	0.055	0.055	0.057	0.060
M	Stainless steel	Austenitic, quench hardened		200	675	35~40	0.020	0.035	0.043	0.050	0.053	0.055	0.057	0.058
		Austenitic, precipitation hardened (PH)		300	1013	35	0.015	0.030	0.032	0.035	0.040	0.043	0.045	0.050
		Austenitic/ferritic, duplex		230	778	35~40	0.020	0.035	0.043	0.050	0.053	0.055	0.057	0.058
K	Malleable cast iron	Ferritic		200	400	65~80	0.024	0.042	0.060	0.071	0.075	0.080	0.083	0.085
		Pearlitic		260	700	65~80	0.024	0.042	0.060	0.071	0.075	0.080	0.083	0.085
	Grey cast iron	Low tensile strength		180	200	65~80	0.024	0.042	0.060	0.071	0.075	0.080	0.083	0.085
		High tensile strength/austenitic		245	350	65~80	0.024	0.042	0.060	0.071	0.075	0.080	0.083	0.085
	Nodular cast iron	Ferritic		155	400	65~80	0.020	0.038	0.050	0.060	0.065	0.072	0.075	0.075
		Pearlitic		265	700	55~65	0.012	0.035	0.045	0.055	0.060	0.065	0.068	0.068
	GGV(CGI)			230	400	65~75	0.020	0.038	0.050	0.060	0.065	0.072	0.075	0.075
N	Wrought aluminium alloys	Non-aging		30	-									
		Aged		100	340									
	Cast aluminium alloys	≤ 12% Si, non-aging		75	260									
		≤ 12% Si, aged		90	310									
		> 12% Si, non-aging		130	450									
	Magnesium alloys			70	250									
	Copper and copper alloys	Unalloyed, electrolytic copper		100	340									
		Brass, bronze, red brass		90	310									
		Cu alloys, short-chipping		110	380									
		High-tensile, Ampco alloy		300	1010									
S	Heat-resistant alloys	Fe-based	Annealed	200	680									
			Hardened	280	940									
		Ni or Co based	Annealed	250	840									
			Hardened	350	1180									
			Cast	320	1080									
	Titanium alloys	Pure titanium		200	680									
		α and β alloys, hardened		375	1260									
		β alloys		410	1400									
	Tungsten alloys			300	1010									
	Molybdenum alloys			300	1010									
H	Hardened steel	Hardened and tempered		50HRC	-	40~45	0.020	0.030	0.040	0.050	0.050	0.060	0.070	0.090
		Hardened and tempered		55HRC	-	35~40	0.020	0.030	0.040	0.050	0.050	0.060	0.070	0.090
		Hardened and tempered		60HRC	-									
	Chilled cast iron	Hardened and tempered		50HRC	-	40~45	0.020	0.030	0.040	0.050	0.050	0.060	0.070	0.090

The cutting data are average recommended values. For special applications, adjustment is needed.

Solid Carbide End Mill Pro Line Cutting Parameters

Materials						M110-2ES	Square shoulder milling (Rough Machining) 							
ISO	Material classification			Brinell hardness (HB)	Tensile strength Rm(N/mm²)	Cutting speed Vc(m/min)	fz [mm/Tooth]							
							Mill diameter [mm]							
							4	6	8	10	12	14	16	20
P	Unalloyed steel	C≤0.25%	Annealed	125	428	70~90	0.020	0.038	0.042	0.050	0.052	0.060	0.066	0.070
		0.25<C≤0.55%	Annealed	190	639	70~85	0.020	0.038	0.042	0.050	0.052	0.060	0.066	0.070
		0.25<C≤0.55%	Heat-treated	210	708	70~85	0.020	0.038	0.042	0.050	0.052	0.060	0.066	0.070
		C>0.55%	Annealed	190	639	70~85	0.020	0.038	0.042	0.050	0.052	0.060	0.066	0.070
		C>0.55%	Heat-treated	300	1013	60~65	0.015	0.034	0.035	0.045	0.052	0.060	0.066	0.070
		Free cutting steel (short-chip)	Annealed	220	745	70~85	0.015	0.038	0.042	0.050	0.052	0.060	0.066	0.070
	Low-alloyed steel	Annealed		175	591	70~85	0.020	0.038	0.042	0.050	0.052	0.060	0.066	0.070
		Heat-treated		300	1013	50~60	0.015	0.034	0.035	0.045	0.048	0.055	0.057	0.060
		Heat-treated		380	1282	50~60	0.015	0.034	0.035	0.045	0.048	0.055	0.057	0.060
		Heat-treated		430	1477	45~50	0.015	0.030	0.030	0.040	0.045	0.050	0.050	0.055
	High-alloyed steel and high-alloyed tool steel	Annealed		200	675	70~80	0.015	0.038	0.042	0.050	0.052	0.055	0.057	0.060
		Hardened and tempered		300	1013	55~65	0.015	0.035	0.042	0.045	0.048	0.055	0.057	0.060
		Hardened and tempered		400	1361	45~50	0.012	0.025	0.030	0.040	0.042	0.045	0.045	0.050
	Stainless steel	Ferritic/martensitic, annealed		200	675	55~70	0.015	0.038	0.042	0.050	0.052	0.055	0.057	0.060
		Martensitic, heat-treated		330	1114	40~55	0.015	0.035	0.035	0.045	0.048	0.055	0.057	0.060
M	Stainless steel	Austenitic, quench hardened		200	675	35~45	0.018	0.038	0.041	0.043	0.053	0.055	0.057	0.058
		Austenitic, precipitation hardened (PH)		300	1013	35	0.012	0.030	0.032	0.035	0.040	0.043	0.045	0.050
		Austenitic/ferritic, duplex		230	778	35~45	0.018	0.038	0.041	0.043	0.053	0.055	0.057	0.058
K	Malleable cast iron	Ferritic		200	400	65~75	0.024	0.042	0.065	0.071	0.075	0.080	0.083	0.080
		Pearlitic		260	700	65~75	0.024	0.042	0.065	0.071	0.075	0.080	0.083	0.080
	Grey cast iron	Low tensile strength		180	200	65~75	0.024	0.042	0.065	0.071	0.075	0.080	0.083	0.080
		High tensile strength/austenitic		245	350	65~75	0.024	0.042	0.065	0.071	0.075	0.080	0.083	0.080
	Nodular cast iron	Ferritic		155	400	65~75	0.020	0.038	0.055	0.060	0.065	0.072	0.075	0.072
		Pearlitic		265	700	45~55	0.012	0.035	0.045	0.055	0.060	0.065	0.068	0.065
	GGV(CGI)			230	400	65~75	0.020	0.038	0.055	0.060	0.065	0.072	0.075	0.072
N	Wrought aluminium alloys	Non-aging		30	-									
		Aged		100	340									
	Cast aluminium alloys	≤ 12% Si, non-aging		75	260									
		≤ 12% Si, aged		90	310									
		> 12% Si, non-aging		130	450									
	Magnesium alloys			70	250									
	Copper and copper alloys	Unalloyed, electrolytic copper		100	340									
		Brass, bronze, red brass		90	310									
		Cu alloys, short-chipping		110	380									
		High-tensile, Ampco alloy		300	1010									
S	Heat-resistant alloys	Fe-based	Annealed	200	680									
			Hardened	280	940									
		Ni or Co based	Annealed	250	840									
			Hardened	350	1180									
			Cast	320	1080									
	Titanium alloys	Pure titanium		200	680									
		α and β alloys, hardened		375	1260									
		β alloys		410	1400									
	Tungsten alloys			300	1010									
	Molybdenum alloys			300	1010									
H	Hardened steel	Hardened and tempered		50HRC	-	40~45	0.020	0.030	0.040	0.050	0.050	0.060	0.070	0.090
		Hardened and tempered		55HRC	-	35~40	0.020	0.030	0.040	0.050	0.050	0.060	0.070	0.090
		Hardened and tempered		60HRC	-									
	Chilled cast iron	Hardened and tempered		50HRC	-	40~45	0.020	0.030	0.040	0.050	0.050	0.060	0.070	0.090

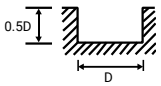
The cutting data are average recommended values. For special applications, adjustment is needed.

Solid Carbide End Mill Pro Line Cutting Parameters

Materials						M110-4ES M115-6ES Square shoulder milling (Finish Machining) 1.5D 0.03D								
ISO	Material classification			Brinell hardness (HB)	Tensile strength Rm(N/mm²)	Cutting speed Vc(m/min)	fz [mm/Tooth] Mill diameter [mm]							
							4	6	8	10	12	14	16	20
P	Unalloyed steel	C≤0.25%	Annealed	125	428	85~100	0.020	0.030	0.038	0.045	0.052	0.058	0.062	0.070
		0.25<C≤0.55%	Annealed	190	639	75~90	0.020	0.030	0.038	0.045	0.052	0.058	0.062	0.070
		0.25<C≤0.55%	Heat-treated	210	708	75~90	0.020	0.030	0.038	0.045	0.052	0.058	0.062	0.070
		C>0.55%	Annealed	190	639	75~90	0.020	0.030	0.038	0.045	0.052	0.058	0.062	0.070
		C>0.55%	Heat-treated	300	1013	65~70	0.020	0.030	0.038	0.045	0.052	0.058	0.062	0.070
		Free cutting steel (short-chip)	Annealed	220	745	75~90	0.020	0.030	0.038	0.045	0.052	0.058	0.062	0.070
	Low-alloyed steel	Annealed		175	591	75~90	0.020	0.030	0.038	0.045	0.052	0.058	0.062	0.070
		Heat-treated		300	1013	60~70	0.015	0.026	0.035	0.042	0.048	0.055	0.057	0.060
		Heat-treated		380	1282	60~70	0.015	0.026	0.035	0.042	0.048	0.055	0.057	0.060
		Heat-treated		430	1477	55~60	0.015	0.025	0.030	0.040	0.045	0.050	0.050	0.055
	High-alloyed steel and high-alloyed tool steel	Annealed		200	675	75~85	0.015	0.026	0.035	0.042	0.048	0.055	0.057	0.060
		Hardened and tempered		300	1013	60~70	0.015	0.026	0.035	0.042	0.048	0.055	0.057	0.060
		Hardened and tempered		400	1361	55~60	0.012	0.025	0.030	0.040	0.045	0.050	0.050	0.055
	Stainless steel	Ferritic/martensitic, annealed		200	675	50~70	0.015	0.026	0.035	0.042	0.048	0.055	0.057	0.060
		Martensitic, heat-treated		330	1114	40~50	0.015	0.025	0.030	0.040	0.045	0.050	0.050	0.055
M	Stainless steel	Austenitic, quench hardened		200	675	40~50	0.018	0.038	0.041	0.043	0.053	0.055	0.057	0.058
		Austenitic, precipitation hardened (PH)		300	1013	40	0.012	0.030	0.032	0.035	0.040	0.043	0.045	0.050
		Austenitic/ferritic, duplex		230	778	40~50	0.018	0.038	0.041	0.043	0.053	0.055	0.057	0.058
K	Malleable cast iron	Ferritic		200	400	75~85	0.021	0.030	0.038	0.045	0.052	0.058	0.062	0.070
		Pearlitic		260	700	75~85	0.021	0.030	0.038	0.045	0.052	0.058	0.062	0.070
	Grey cast iron	Low tensile strength		180	200	75~85	0.021	0.030	0.038	0.045	0.052	0.058	0.062	0.070
		High tensile strength/austenitic		245	350	75~85	0.021	0.030	0.038	0.045	0.052	0.058	0.062	0.070
	Nodular cast iron	Ferritic		155	400	75~85	0.018	0.028	0.035	0.040	0.050	0.052	0.060	0.065
		Pearlitic		265	700	65~75	0.018	0.028	0.035	0.040	0.050	0.052	0.060	0.065
	GGV(CGI)			230	400	75~85	0.018	0.028	0.035	0.040	0.050	0.052	0.060	0.065
N	Wrought aluminium alloys	Non-aging		30	-									
		Aged		100	340									
	Cast aluminium alloys	≤ 12% Si, non-aging		75	260									
		≤ 12% Si, aged		90	310									
		> 12% Si, non-aging		130	450									
	Magnesium alloys			70	250									
	Copper and copper alloys	Unalloyed, electrolytic copper		100	340									
		Brass, bronze, red brass		90	310									
		Cu alloys, short-chipping		110	380									
		High-tensile, Ampco alloy		300	1010									
S	Heat-resistant alloys	Fe-based	Annealed	200	680									
			Hardened	280	940									
		Ni or Co based	Annealed	250	840									
			Hardened	350	1180									
			Cast	320	1080									
	Titanium alloys	Pure titanium		200	680									
		α and β alloys, hardened		375	1260									
		β alloys		410	1400									
	Tungsten alloys			300	1010									
	Molybdenum alloys			300	1010									
H	Hardened steel	Hardened and tempered		50HRC	-	40~45	0.020	0.030	0.040	0.050	0.050	0.060	0.070	0.090
		Hardened and tempered		55HRC	-	35~40	0.020	0.030	0.041	0.045	0.050	0.055	0.070	0.090
		Hardened and tempered		60HRC	-									
	Chilled cast iron	Hardened and tempered		50HRC	-	40~45	0.020	0.030	0.040	0.050	0.050	0.060	0.070	0.090

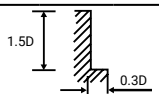
The cutting data are average recommended values. For special applications, adjustment is needed.

Solid Carbide End Mill Pro Line Cutting Parameters

Materials						M116-4PS Slot milling 						
ISO	Material classification			Brinell hardness (HB)	Tensile strength Rm(N/mm²)	Cutting speed Vc(m/min)	fz [mm/Tooth]					
							Mill diameter [mm]					
							6	8	10	12	16	20
P	Unalloyed steel	C≤0.25%	Annealed	125	428	80~100	0.035	0.055	0.069	0.082	0.088	0.089
		0.25<C≤0.55%	Annealed	190	639	75~90	0.035	0.055	0.069	0.082	0.088	0.089
		0.25<C≤0.55%	Heat-treated	210	708	75~90	0.035	0.055	0.069	0.082	0.088	0.089
		C>0.55%	Annealed	190	639	75~90	0.035	0.055	0.069	0.082	0.088	0.089
		C>0.55%	Heat-treated	300	1013	60~70	0.030	0.050	0.060	0.072	0.075	0.078
		Free cutting steel (short-chip)	Annealed	220	745	75~90	0.035	0.055	0.069	0.082	0.088	0.089
	Low-alloyed steel	Annealed		175	591	75~90	0.035	0.055	0.069	0.082	0.088	0.089
		Heat-treated		300	1013	60~70	0.030	0.050	0.060	0.072	0.075	0.078
		Heat-treated		380	1282	60~70	0.030	0.050	0.060	0.072	0.075	0.078
		Heat-treated		430	1477	55~60	0.030	0.050	0.060	0.072	0.075	0.078
	High-alloyed steel and high-alloyed tool steel	Annealed		200	675	75~85	0.035	0.055	0.069	0.082	0.088	0.089
		Hardened and tempered		300	1013	60~70	0.030	0.050	0.060	0.072	0.075	0.078
		Hardened and tempered		400	1361	55~60	0.030	0.050	0.060	0.072	0.075	0.078
	Stainless steel	Ferritic/martensitic, annealed		200	675	45~50	0.035	0.055	0.069	0.082	0.088	0.089
		Martensitic, heat-treated		330	1114	40~50	0.030	0.050	0.060	0.072	0.075	0.078
M	Stainless steel	Austenitic, quench hardened		200	675	40~50	0.020	0.045	0.051	0.055	0.062	0.075
		Austenitic, precipitation hardened (PH)		300	1013	35	0.020	0.045	0.051	0.055	0.062	0.075
		Austenitic/ferritic, duplex		230	778	40~50	0.020	0.045	0.051	0.055	0.062	0.075
K	Malleable cast iron	Ferritic		200	400	70~80	0.035	0.055	0.069	0.082	0.088	0.089
		Pearlitic		260	700	70~80	0.035	0.055	0.069	0.082	0.088	0.089
	Grey cast iron	Low tensile strength		180	200	70~80	0.035	0.055	0.069	0.082	0.088	0.089
		High tensile strength/austenitic		245	350	70~80	0.035	0.055	0.069	0.082	0.088	0.089
	Nodular cast iron	Ferritic		155	400	70~80	0.035	0.055	0.069	0.082	0.088	0.089
		Pearlitic		265	700	65~75	0.035	0.055	0.069	0.082	0.088	0.089
	GGV(CGI)			230	400	70~80	0.035	0.055	0.069	0.082	0.088	0.089
N	Wrought aluminium alloys	Non-aging		30	-							
		Aged		100	340							
	Cast aluminium alloys	≤ 12% Si, non-aging		75	260							
		≤ 12% Si, aged		90	310							
		> 12% Si, non-aging		130	450							
	Magnesium alloys			70	250							
	Copper and copper alloys	Unalloyed, electrolytic copper		100	340							
		Brass, bronze, red brass		90	310							
		Cu alloys, short-chipping		110	380							
		High-tensile, Ampco alloy		300	1010							
S	Heat-resistant alloys	Fe-based	Annealed	200	680	45~55	0.025	0.050	0.055	0.060	0.070	0.075
			Hardened	280	940	35~45	0.020	0.045	0.051	0.055	0.062	0.075
		Ni or Co based	Annealed	250	840	45~55	0.020	0.045	0.051	0.055	0.062	0.075
			Hardened	350	1180	35~45	0.020	0.045	0.051	0.055	0.062	0.075
			Cast	320	1080	35~45	0.020	0.045	0.051	0.055	0.062	0.075
	Titanium alloys	Pure titanium		200	680	45~55	0.020	0.045	0.051	0.055	0.062	0.075
		α and β alloys, hardened		375	1260	30~40	0.015	0.035	0.041	0.045	0.052	0.065
		β alloys		410	1400	20~25	0.015	0.035	0.041	0.045	0.052	0.065
	Tungsten alloys			300	1010	35~45	0.020	0.045	0.051	0.055	0.062	0.075
	Molybdenum alloys			300	1010	35~45	0.020	0.045	0.051	0.055	0.062	0.075
H	Hardened steel	Hardened and tempered		50HRC	-							
		Hardened and tempered		55HRC	-							
		Hardened and tempered		60HRC	-							
	Chilled cast iron	Hardened and tempered		50HRC	-							

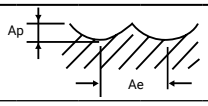
The cutting data are average recommended values. For special applications, adjustment is needed.

Solid Carbide End Mill Pro Line Cutting Parameters

Materials						M116-4PS Square shoulder milling 						
ISO	Material classification			Brinell hardness (HB)	Tensile strength Rm(N/mm²)	Cutting speed Vc(m/min)	fz [mm/Tooth] Mill diameter [mm]						
							6	8	10	12	16	20	
P	Unalloyed steel	C≤0.25%	Annealed	125	428	95~120	0.035	0.055	0.069	0.082	0.088	0.089	
		0.25<C≤0.55%	Annealed	190	639	85~100	0.035	0.055	0.069	0.082	0.088	0.089	
		0.25<C≤0.55%	Heat-treated	210	708	85~100	0.035	0.055	0.069	0.082	0.088	0.089	
		C>0.55%	Annealed	190	639	85~100	0.035	0.055	0.069	0.082	0.088	0.089	
		C>0.55%	Heat-treated	300	1013	70~85	0.030	0.050	0.060	0.072	0.075	0.078	
		Free cutting steel (short-chip)	Annealed	220	745	85~100	0.035	0.055	0.069	0.082	0.088	0.089	
	Low-alloyed steel	Annealed		175	591	85~100	0.035	0.055	0.069	0.082	0.088	0.089	
		Heat-treated		300	1013	70~85	0.030	0.050	0.060	0.072	0.075	0.078	
		Heat-treated		380	1282	70~85	0.030	0.050	0.060	0.072	0.075	0.078	
		Heat-treated		430	1477	60~70	0.030	0.050	0.060	0.072	0.075	0.078	
	High-alloyed steel and high-alloyed tool steel	Annealed		200	675	85~100	0.035	0.055	0.069	0.082	0.088	0.089	
		Hardened and tempered		300	1013	70~80	0.030	0.050	0.060	0.072	0.075	0.078	
		Hardened and tempered		400	1361	65~75	0.030	0.050	0.060	0.072	0.075	0.078	
	Stainless steel	Ferritic/martensitic, annealed		200	675	50~60	0.035	0.055	0.069	0.082	0.088	0.089	
		Martensitic, heat-treated		330	1114	45~55	0.030	0.050	0.060	0.072	0.075	0.078	
M	Stainless steel	Austenitic, quench hardened		200	675	45~55	0.020	0.045	0.051	0.055	0.062	0.075	
		Austenitic, precipitation hardened (PH)		300	1013	40	0.020	0.045	0.051	0.055	0.062	0.075	
		Austenitic/ferritic, duplex		230	778	45~55	0.020	0.045	0.051	0.055	0.062	0.075	
K	Malleable cast iron	Ferritic		200	400	80~90	0.035	0.055	0.069	0.082	0.088	0.089	
		Pearlitic		260	700	80~90	0.035	0.055	0.069	0.082	0.088	0.089	
	Grey cast iron	Low tensile strength		180	200	80~90	0.035	0.055	0.069	0.082	0.088	0.089	
		High tensile strength/austenitic		245	350	80~90	0.035	0.055	0.069	0.082	0.088	0.089	
	Nodular cast iron	Ferritic		155	400	80~90	0.035	0.055	0.069	0.082	0.088	0.089	
		Pearlitic		265	700	70~85	0.035	0.055	0.069	0.082	0.088	0.089	
	GGV(CGI)			230	400	80~90	0.035	0.055	0.069	0.082	0.088	0.089	
N	Wrought aluminium alloys	Non-aging		30	-								
		Aged		100	340								
	Cast aluminium alloys	≤ 12% Si, non-aging		75	260								
		≤ 12% Si, aged		90	310								
		> 12% Si, non-aging		130	450								
	Magnesium alloys			70	250								
	Copper and copper alloys	Unalloyed, electrolytic copper		100	340								
		Brass, bronze, red brass		90	310								
		Cu alloys, short-chipping		110	380								
		High-tensile, Ampco alloy		300	1010								
S	Heat-resistant alloys	Fe-based	Annealed	200	680	50~65	0.025	0.050	0.055	0.060	0.070	0.075	
			Hardened	280	940	40~50	0.020	0.045	0.051	0.055	0.062	0.075	
		Ni or Co based	Annealed	250	840	50~60	0.020	0.045	0.051	0.055	0.062	0.075	
			Hardened	350	1180	40~45	0.020	0.045	0.051	0.055	0.062	0.075	
			Cast	320	1080	40~45	0.020	0.045	0.051	0.055	0.062	0.075	
	Titanium alloys	Pure titanium		200	680	50~60	0.020	0.045	0.051	0.055	0.062	0.075	
		α and β alloys, hardened		375	1260	35~45	0.015	0.035	0.041	0.045	0.052	0.065	
		β alloys		410	1400	25~30	0.015	0.035	0.041	0.045	0.052	0.065	
	Tungsten alloys			300	1010	40~45	0.020	0.045	0.051	0.055	0.062	0.075	
	Molybdenum alloys			300	1010	40~45	0.020	0.045	0.051	0.055	0.062	0.075	
H	Hardened steel	Hardened and tempered		50HRC	-								
		Hardened and tempered		55HRC	-								
		Hardened and tempered		60HRC	-								
	Chilled cast iron	Hardened and tempered		50HRC	-								

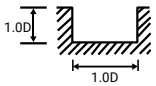
The cutting data are average recommended values. For special applications, adjustment is needed.

Solid Carbide End Mill Pro Line Cutting Parameters

Materials						M110-2BS	Profile (Finishing) ap = 0.1 x D ae = 0.1 x D 							
ISO	Material classification			Brinell hardness (HB)	Tensile strength Rm(N/mm²)	Cutting speed Vc(m/min)	fz [mm/Tooth]							
							Mill diameter [mm]							
							4	6	8	10	12	14	16	20
P	Unalloyed steel	C≤0.25%	Annealed	125	428	90~100	0.027	0.039	0.050	0.060	0.070	0.075	0.080	0.100
		0.25<C≤0.55%	Annealed	190	639	90~100	0.027	0.039	0.050	0.060	0.070	0.075	0.080	0.100
		0.25<C≤0.55%	Heat-treated	210	708	90~100	0.027	0.039	0.050	0.060	0.070	0.075	0.080	0.100
		C>0.55%	Annealed	190	639	90~100	0.027	0.039	0.050	0.060	0.070	0.075	0.080	0.100
		C>0.55%	Heat-treated	300	1013	80~90	0.027	0.039	0.050	0.060	0.070	0.075	0.080	0.100
		Free cutting steel (short-chip)	Annealed	220	745	90~100	0.027	0.039	0.050	0.060	0.070	0.075	0.080	0.100
	Low-alloyed steel	Annealed		175	591	90~100	0.027	0.039	0.050	0.060	0.070	0.075	0.080	0.100
		Heat-treated		300	1013	80~90	0.023	0.035	0.045	0.052	0.060	0.065	0.070	0.085
		Heat-treated		380	1282	80~90	0.020	0.030	0.041	0.045	0.050	0.055	0.060	0.070
		Heat-treated		430	1477	80~90	0.023	0.035	0.045	0.052	0.060	0.065	0.070	0.085
	High-alloyed steel and high-alloyed tool steel	Annealed		200	675	90~100	0.023	0.035	0.045	0.052	0.060	0.065	0.070	0.085
		Hardened and tempered		300	1013	80~90	0.023	0.035	0.045	0.052	0.060	0.065	0.070	0.085
		Hardened and tempered		400	1361	80~90	0.020	0.030	0.041	0.045	0.050	0.055	0.060	0.070
	Stainless steel	Ferritic/martensitic, annealed		200	675	90~100	0.023	0.035	0.045	0.052	0.060	0.065	0.070	0.085
		Martensitic, heat-treated		330	1114	80~90	0.023	0.035	0.045	0.052	0.060	0.065	0.070	0.085
M	Stainless steel	Austenitic, quench hardened		200	675	90~100	0.016	0.023	0.029	0.035	0.041	0.045	0.051	0.060
		Austenitic, precipitation hardened (PH)		300	1013	80~90	0.013	0.020	0.025	0.030	0.035	0.040	0.045	0.050
		Austenitic/ferritic, duplex		230	778	80~90	0.016	0.023	0.029	0.035	0.041	0.045	0.051	0.060
K	Malleable cast iron	Ferritic		200	400	90~100	0.045	0.064	0.083	0.100	0.115	0.125	0.140	0.160
		Pearlitic		260	700	90~100	0.045	0.064	0.083	0.100	0.115	0.125	0.140	0.160
	Grey cast iron	Low tensile strength		180	200	90~100	0.045	0.064	0.083	0.100	0.115	0.125	0.140	0.160
		High tensile strength/austenitic		245	350	90~100	0.045	0.064	0.083	0.100	0.115	0.125	0.140	0.160
	Nodular cast iron	Ferritic		155	400	90~100	0.035	0.050	0.060	0.080	0.090	0.105	0.120	0.140
		Pearlitic		265	700	90~100	0.030	0.040	0.050	0.065	0.070	0.085	0.100	0.120
	GGV(CGI)			230	400	90~100	0.035	0.050	0.060	0.080	0.090	0.105	0.120	0.140
N	Wrought aluminium alloys	Non-aging		30	-									
		Aged		100	340									
	Cast aluminium alloys	≤ 12% Si, non-aging		75	260									
		≤ 12% Si, aged		90	310									
		> 12% Si, non-aging		130	450									
	Magnesium alloys			70	250									
	Copper and copper alloys	Unalloyed, electrolytic copper		100	340									
		Brass, bronze, red brass		90	310									
		Cu alloys, short-chipping		110	380									
		High-tensile, Ampco alloy		300	1010									
S	Heat-resistant alloys	Fe-based	Annealed	200	680									
			Hardened	280	940									
		Ni or Co based	Annealed	250	840									
			Hardened	350	1180									
			Cast	320	1080									
	Titanium alloys	Pure titanium		200	680									
		α and β alloys, hardened		375	1260									
		β alloys		410	1400									
	Tungsten alloys			300	1010									
	Molybdenum alloys			300	1010									
H	Hardened steel	Hardened and tempered		50HRC	-	40~45	0.020	0.030	0.040	0.050	0.050	0.060	0.070	0.090
		Hardened and tempered		55HRC	-	35~40	0.020	0.030	0.041	0.045	0.050	0.055	0.070	0.090
		Hardened and tempered		60HRC	-									
	Chilled cast iron	Hardened and tempered		50HRC	-	40~45	0.020	0.030	0.040	0.050	0.050	0.060	0.070	0.090

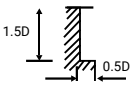
The cutting data are average recommended values. For special applications, adjustment is needed.

Solid Carbide End Mill XP Line Cutting Parameters

Materials				Brinell hardness (HB)	Tensile strength Rm(N/mm²)	M121-4CSP M121-4CS M121-4ESP Slot milling  Cutting speed Vc(m/min)	fz [mm/Tooth] Mill diameter [mm] 4	6	8	10	12	14	16	20
ISO	Material classification													
P	Unalloyed steel	C≤0.25%	Annealed	125	428	152~168	0.008	0.016	0.027	0.038	0.047	0.049	0.053	0.065
		0.25<C≤0.55%	Annealed	190	639	152~166	0.008	0.016	0.027	0.038	0.047	0.049	0.053	0.065
		0.25<C≤0.55%	Heat-treated	210	708	152~166	0.008	0.016	0.027	0.038	0.047	0.049	0.053	0.065
		C>0.55%	Annealed	190	639	157~166	0.008	0.016	0.027	0.038	0.047	0.049	0.053	0.065
		C>0.55%	Heat-treated	300	1013	152~160	0.006	0.014	0.023	0.030	0.037	0.040	0.043	0.055
		Free cutting steel (short-chip)	Annealed	220	745	155~162	0.006	0.014	0.023	0.038	0.047	0.049	0.053	0.065
	Low-alloyed steel	Annealed		175	591	152~168	0.008	0.016	0.027	0.038	0.047	0.049	0.053	0.065
		Heat-treated		300	1013	107~117	0.007	0.015	0.023	0.032	0.040	0.041	0.043	0.056
		Heat-treated		380	1282	107~117	0.007	0.015	0.023	0.032	0.040	0.041	0.043	0.056
		Heat-treated		430	1477	87~107	0.005	0.013	0.019	0.027	0.035	0.036	0.038	0.050
	High-alloyed steel and high-alloyed tool steel	Annealed		200	675	64~70	0.006	0.011	0.019	0.027	0.032	0.034	0.037	0.045
		Hardened and tempered		300	1013	60~64	0.005	0.011	0.016	0.022	0.024	0.025	0.027	0.036
		Hardened and tempered		400	1361	60~64	0.004	0.007	0.013	0.017	0.019	0.020	0.022	0.030
	Stainless steel	Ferritic/martensitic, annealed		200	675	50~55	0.005	0.011	0.019	0.027	0.032	0.034	0.037	0.045
		Martensitic, heat-treated		330	1114	45~50	0.005	0.011	0.016	0.022	0.024	0.025	0.027	0.036
M	Stainless steel	Austenitic, quench hardened		200	675	106	0.008	0.018	0.028	0.048	0.055	0.059	0.062	0.077
		Austenitic, precipitation hardened (PH)		300	1013	95	0.008	0.018	0.028	0.048	0.055	0.059	0.062	0.077
		Austenitic/ferritic, duplex		230	778	106	0.008	0.018	0.028	0.048	0.055	0.059	0.062	0.077
K	Malleable cast iron	Ferritic		200	400	112~123	0.010	0.020	0.034	0.048	0.058	0.064	0.065	0.081
		Pearlitic		260	700	112~123	0.010	0.020	0.034	0.048	0.058	0.064	0.065	0.081
	Grey cast iron	Low tensile strength		180	200	112~123	0.010	0.020	0.034	0.048	0.058	0.064	0.065	0.081
		High tensile strength/austenitic		245	350	112~123	0.010	0.020	0.034	0.048	0.058	0.064	0.065	0.081
	Nodular cast iron	Ferritic		155	400	112~123	0.008	0.016	0.029	0.040	0.050	0.052	0.057	0.071
		Pearlitic		265	700	96~112	0.006	0.014	0.026	0.036	0.046	0.048	0.052	0.066
	GGV(CGI)			230	400	112~120	0.008	0.016	0.029	0.040	0.050	0.052	0.057	0.071
N	Wrought aluminium alloys	Non-aging		30	-									
		Aged		100	340									
	Cast aluminium alloys	≤ 12% Si, non-aging		75	260									
		≤ 12% Si, aged		90	310									
		> 12% Si, non-aging		130	450									
	Magnesium alloys			70	250									
	Copper and copper alloys	Unalloyed, electrolytic copper		100	340									
		Brass, bronze, red brass		90	310									
		Cu alloys, short-chipping		110	380									
		High-tensile, Ampco alloy		300	1010									
S	Heat-resistant alloys	Fe-based	Annealed	200	680	26	0.007	0.012	0.019	0.033	0.038	0.040	0.043	0.054
			Hardened	280	940	24	0.007	0.012	0.017	0.029	0.033	0.034	0.037	0.046
		Ni or Co based	Annealed	250	840	24	0.007	0.012	0.017	0.029	0.033	0.034	0.037	0.046
			Hardened	350	1180	22	0.006	0.010	0.015	0.027	0.030	0.031	0.033	0.041
			Cast	320	1080	22	0.006	0.010	0.015	0.027	0.030	0.031	0.033	0.041
	Titanium alloys	Pure titanium		200	680	58	0.007	0.016	0.025	0.042	0.050	0.053	0.055	0.068
		α and β alloys, hardened		375	1260	45	0.006	0.014	0.021	0.035	0.040	0.044	0.050	0.060
		β alloys		410	1400	45	0.006	0.014	0.021	0.035	0.040	0.044	0.050	0.060
	Tungsten alloys			300	1010	22	0.006	0.010	0.015	0.027	0.030	0.031	0.033	0.041
	Molybdenum alloys			300	1010	22	0.006	0.010	0.015	0.027	0.030	0.031	0.033	0.041
H	Hardened steel	Hardened and tempered		50HRC	-									
		Hardened and tempered		55HRC	-									
		Hardened and tempered		60HRC	-									
	Chilled cast iron	Hardened and tempered		50HRC	-									

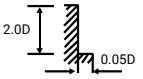
The cutting data are average recommended values. For special applications, adjustment is needed.

Solid Carbide End Mill XP Line Cutting Parameters

Materials				Brinell hardness (HB)	Tensile strength Rm(N/mm²)	M121-4CSP M121-4CS M121-4ESP Square shoulder milling 								
ISO	Material classification					Cutting speed Vc(m/min)	fz [mm/Tooth]							
							Mill diameter [mm]							
							4	6	8	10	12	14	16	20
P	Unalloyed steel	C≤0.25%	Annealed	125	428	152~168	0.008	0.016	0.027	0.038	0.047	0.049	0.053	0.065
		0.25<C≤0.55%	Annealed	190	639	152~166	0.008	0.016	0.027	0.038	0.047	0.049	0.053	0.065
		0.25<C≤0.55%	Heat-treated	210	708	152~166	0.008	0.016	0.027	0.038	0.047	0.049	0.053	0.065
		C>0.55%	Annealed	190	639	157~166	0.008	0.016	0.027	0.038	0.047	0.049	0.053	0.065
		C>0.55%	Heat-treated	300	1013	152~160	0.006	0.014	0.023	0.030	0.037	0.040	0.043	0.055
		Free cutting steel (short-chip)	Annealed	220	745	155~162	0.006	0.014	0.023	0.038	0.047	0.049	0.053	0.065
	Low-alloyed steel	Annealed		175	591	152~168	0.008	0.016	0.027	0.038	0.047	0.049	0.053	0.065
		Heat-treated		300	1013	107~117	0.007	0.015	0.023	0.032	0.040	0.041	0.043	0.056
		Heat-treated		380	1282	107~117	0.007	0.015	0.023	0.032	0.040	0.041	0.043	0.056
		Heat-treated		430	1477	87~107	0.005	0.013	0.019	0.027	0.035	0.036	0.038	0.050
	High-alloyed steel and high-alloyed tool steel	Annealed		200	675	64~70	0.006	0.011	0.019	0.027	0.032	0.034	0.037	0.045
		Hardened and tempered		300	1013	60~64	0.005	0.011	0.016	0.022	0.024	0.025	0.027	0.036
		Hardened and tempered		400	1361	60~64	0.004	0.007	0.013	0.017	0.019	0.020	0.022	0.030
	Stainless steel	Ferritic/martensitic, annealed		200	675	50~55	0.005	0.011	0.019	0.027	0.032	0.034	0.037	0.045
		Martensitic, heat-treated		330	1114	45~50	0.005	0.011	0.016	0.022	0.024	0.025	0.027	0.036
M	Stainless steel	Austenitic, quench hardened		200	675	106	0.008	0.018	0.028	0.048	0.055	0.059	0.062	0.077
		Austenitic, precipitation hardened (PH)		300	1013	95	0.008	0.018	0.028	0.048	0.055	0.059	0.062	0.077
		Austenitic/ferritic, duplex		230	778	106	0.008	0.018	0.028	0.048	0.055	0.059	0.062	0.077
K	Malleable cast iron	Ferritic		200	400	112~123	0.010	0.020	0.034	0.048	0.058	0.064	0.065	0.081
		Pearlitic		260	700	112~123	0.010	0.020	0.034	0.048	0.058	0.064	0.065	0.081
	Grey cast iron	Low tensile strength		180	200	112~123	0.010	0.020	0.034	0.048	0.058	0.064	0.065	0.081
		High tensile strength/austenitic		245	350	112~123	0.010	0.020	0.034	0.048	0.058	0.064	0.065	0.081
	Nodular cast iron	Ferritic		155	400	112~123	0.008	0.016	0.029	0.040	0.050	0.052	0.057	0.071
		Pearlitic		265	700	96~112	0.006	0.014	0.026	0.036	0.046	0.048	0.052	0.066
	GGV(CGI)			230	400	112~120	0.008	0.016	0.029	0.040	0.050	0.052	0.057	0.071
N	Wrought aluminium alloys	Non-aging		30	-									
		Aged		100	340									
	Cast aluminium alloys	≤ 12% Si, non-aging		75	260									
		≤ 12% Si, aged		90	310									
		> 12% Si, non-aging		130	450									
	Magnesium alloys			70	250									
	Copper and copper alloys	Unalloyed, electrolytic copper		100	340									
		Brass, bronze, red brass		90	310									
		Cu alloys, short-chipping		110	380									
		High-tensile, Ampco alloy		300	1010									
S	Heat-resistant alloys	Fe-based	Annealed	200	680	26	0.007	0.012	0.019	0.033	0.038	0.040	0.043	0.054
			Hardened	280	940	24	0.007	0.012	0.017	0.029	0.033	0.034	0.036	0.045
		Ni or Co based	Annealed	250	840	24	0.007	0.012	0.017	0.029	0.033	0.034	0.036	0.045
			Hardened	350	1180	22	0.006	0.010	0.015	0.025	0.028	0.029	0.031	0.038
			Cast	320	1080	22	0.006	0.010	0.015	0.025	0.028	0.029	0.031	0.038
	Titanium alloys	Pure titanium		200	680	58	0.007	0.016	0.025	0.042	0.050	0.053	0.055	0.068
		α and β alloys, hardened		375	1260	45	0.006	0.014	0.021	0.035	0.040	0.044	0.050	0.060
		β alloys		410	1400	45	0.006	0.014	0.021	0.035	0.040	0.044	0.050	0.060
	Tungsten alloys			300	1010	22	0.006	0.010	0.015	0.025	0.028	0.029	0.031	0.038
	Molybdenum alloys			300	1010	22	0.006	0.010	0.015	0.025	0.028	0.029	0.031	0.038
H	Hardened steel	Hardened and tempered		50HRC	-									
		Hardened and tempered		55HRC	-									
		Hardened and tempered		60HRC	-									
	Chilled cast iron	Hardened and tempered		50HRC	-									

The cutting data are average recommended values. For special applications, adjustment is needed.

Solid Carbide End Mill XP Line Cutting Parameters

Materials						M125-6ES Square shoulder milling (Finishing) 						
ISO	Material classification			Brinell hardness (HB)	Tensile strength Rm(N/mm²)	Cutting speed Vc(m/min)	fz [mm/Tooth]					
							Mill diameter [mm]					
							4	8	10	12	16	20
P	Unalloyed steel	C≤0.25%	Annealed	125	428	300	0.068	0.116	0.144	0.173	0.202	0.225
		0.25<C≤0.55%	Annealed	190	639	280	0.068	0.116	0.144	0.173	0.202	0.225
		0.25<C≤0.55%	Heat-treated	210	708	280	0.068	0.116	0.144	0.173	0.202	0.225
		C>0.55%	Annealed	190	639	280	0.068	0.116	0.144	0.173	0.202	0.225
		C>0.55%	Heat-treated	300	1013	260	0.065	0.110	0.136	0.164	0.161	0.211
		Free cutting steel (short-chip)	Annealed	220	745	280	0.068	0.116	0.144	0.173	0.202	0.225
	Low-alloyed steel	Annealed		175	591	300	0.068	0.116	0.144	0.173	0.202	0.225
		Heat-treated		300	1013	240	0.058	0.100	0.125	0.150	0.175	0.196
		Heat-treated		380	1282	240	0.058	0.100	0.125	0.150	0.175	0.196
		Heat-treated		430	1477	203	0.050	0.085	0.106	0.128	0.149	0.167
	High-alloyed steel and high-alloyed tool steel	Annealed		200	675	100	0.041	0.071	0.088	0.105	0.123	0.137
		Hardened and tempered		300	1013	82	0.041	0.071	0.088	0.105	0.123	0.137
		Hardened and tempered		400	1361	70	0.033	0.061	0.076	0.092	0.119	0.121
	Stainless steel	Ferritic/martensitic, annealed		200	675	100	0.041	0.071	0.088	0.105	0.123	0.137
		Martensitic, heat-treated		330	1114	82	0.041	0.067	0.082	0.095	0.111	0.119
M	Stainless steel	Austenitic, quench hardened		200	675	213	0.049	0.084	0.101	0.125	0.146	0.162
		Austenitic, precipitation hardened (PH)		300	1013	170	0.037	0.070	0.096	0.110	0.130	0.145
		Austenitic/ferritic, duplex		230	778	213	0.049	0.084	0.101	0.125	0.146	0.162
K	Malleable cast iron	Ferritic		200	400	225	0.082	0.139	0.173	0.208	0.242	0.270
		Pearlitic		260	700	225	0.082	0.139	0.173	0.208	0.242	0.270
	Grey cast iron	Low tensile strength		180	200	225	0.082	0.139	0.173	0.208	0.242	0.270
		High tensile strength/austenitic		245	350	225	0.082	0.139	0.173	0.208	0.242	0.270
	Nodular cast iron	Ferritic		155	400	75~85	0.075	0.130	0.163	0.196	0.228	0.253
		Pearlitic		265	700	200	0.074	0.128	0.160	0.192	0.223	0.247
	GGV(CGI)			230	400	75~85	0.075	0.130	0.163	0.196	0.228	0.253
N	Wrought aluminium alloys	Non-aging		30	-							
		Aged		100	340							
	Cast aluminium alloys	≤ 12% Si, non-aging		75	260							
		≤ 12% Si, aged		90	310							
		> 12% Si, non-aging		130	450							
	Magnesium alloys			70	250							
	Copper and copper alloys	Unalloyed, electrolytic copper		100	340							
		Brass, bronze, red brass		90	310							
		Cu alloys, short-chipping		110	380							
		High-tensile, Ampco alloy		300	1010							
S	Heat-resistant alloys	Fe-based	Annealed	200	680	33	0.033	0.055	0.070	0.082	0.097	0.112
			Hardened	280	940	30	0.031	0.052	0.064	0.074	0.087	0.100
		Ni or Co based	Annealed	250	840	30	0.031	0.052	0.064	0.074	0.087	0.100
			Hardened	350	1180	27	0.031	0.050	0.061	0.070	0.082	0.091
			Cast	320	1080	27	0.031	0.050	0.061	0.070	0.082	0.091
	Titanium alloys	Pure titanium		200	680	116	0.033	0.055	0.070	0.083	0.097	0.113
		α and β alloys, hardened		375	1260	95	0.031	0.051	0.065	0.074	0.087	0.100
		β alloys		410	1400	95	0.031	0.051	0.065	0.074	0.087	0.100
	Tungsten alloys			300	1010	27	0.031	0.050	0.061	0.070	0.082	0.091
	Molybdenum alloys			300	1010	27	0.031	0.050	0.061	0.070	0.082	0.091
H	Hardened steel	Hardened and tempered		50HRC	-							
		Hardened and tempered		55HRC	-							
		Hardened and tempered		60HRC	-							
	Chilled cast iron	Hardened and tempered		50HRC	-							

The cutting data are average recommended values. For special applications, adjustment is needed.